Thu Mar 30 10:50:24 EDT 2017
Hope.Brian@epamail.epa.gov
FW: Letter regarding new EPA proposed rule
To: CMS.OEX@epamail.epa.gov

DRF

From: Jessica Sandler [mailto:JessicaS@peta.org]
Sent: Thursday, March 30, 2017 10:47 AM
To: Pruitt, Scott <Pruitt.Scott@epa.gov>
Cc: Morris, Jeff <Morris.Jeff@epa.gov>; Thomas, Russell <Thomas.Russell@epa.gov>; Kavlock, Robert <Kavlock.Robert@epa.gov>; Keigwin, Richard <Keigwin.Richard@epa.gov>
Subject: Letter regarding new EPA proposed rule

To the Honorable Scott Pruitt,

Welcome to your new role. Attached is a brief letter regarding our organization's concerns.

Thank you,

Jessica Sandler

Vice President for Regulatory Testing

People for the Ethical Treatment of Animals

PEOPLE FOR
THE ETHICAL
TREATMENT
OF ANIMALS

Washington, D.C.
1536 16th St. N.W.
Washington, DC 20036
202-483-PETA

Los Angeles
2154 W. Sunset Blvd.
Los Angeles, CA 90026
323-644-PETA

Norfolk
501 Front St.
Norfolk, VA 23510
757-622-PETA

Oakland
554 Grand Ave.
Oakland, CA 94610
510-763-PETA

Info@peta.org
PETA.org

March 30, 2017

The Honorable Scott Pruitt
Environmental Protection Agency
William Jefferson Clinton Building
1200 Pennsylvania Avenue, N. W.
Mail Code: 1101A
Washington, DC 20460

VIA USPS and email to: Pruitt.scott@EPA.gov

Dear Administrator Pruitt,

Congratulations on your recent appointment. People for the Ethical Treatment of Animals and our more than five million members and supporters are committed to using innovative, scientifically valid test methods that replace or reduce the use of animals, while providing information that better protects human health and the environment.

In 2016, Congress passed and the president signed into law the Frank R. Lautenberg Chemical Safety for the 21st Century Act. This act amended the Toxic Substances Control Act (TSCA), received almost unanimous bipartisan support, and directed the Agency to reduce and replace the use of vertebrate animals in chemical testing.

Yet, in its January 17 procedural rule for prioritizing chemicals for risk evaluation under TSCA, the Office of Pollution Prevention and Toxics (OPPT) proposes a screening process that could require chemical manufacturers to conduct extensive toxicity testing – *before it even prioritizes chemicals for risk evaluation*. As noted in numerous public comments submitted, this "pre-prioritization" step, which our legislators never intended, would produce paralyzing uncertainty in the regulated community. Further, the Agency is proposing to initiate an entirely new screening process, rather than more fully adapting its 2014 work plan in which it identified 90 chemicals for further assessment. The Agency's resources would be more effectively used by prioritizing these already identified substances at a pace consistent with its ability to complete risk evaluations under TSCA.

While we are very concerned with OPPT's interpretation of the amended TSCA, we enthusiastically support initiatives of the Office of Research and Development, the National Center for Computational Toxicology (NCCT), the Office of Pesticide Programs (OPP), and OPPT that reduce animal use, and it is vital that the Agency allocate funds for their continued support. For example, the Agency's Toxicity Forecaster (ToxCast) initiative leads the world in developing

Affiliates:
- PETA Asia
- PETA India
- PETA France
- PETA Australia
- PETA Germany
- PETA Netherlands
- PETA Foundation (U.K.)

automated, high-throughput technologies to screen thousands of chemicals rapidly, reliably, and cost-effectively. NCCT research also includes virtual tissues, advanced computer models capable of simulating how chemicals affect humans. OPP is implementing a process to fulfill its stated commitment to implement 21st century animal-free methods that can assess the toxicity of pesticides in less time, using fewer animals, reducing costs, and better ensuring the protection of human health and the environment.

Thank you for your attention to these matters.

Respectfully,

Jessica Sandler, MHS
Vice President for Regulatory Testing
tel: 757-622-7382, ext. 8001
email: JessicaS@peta.org

cc: Jeffery Morris, OPPT Director
Rusty Thomas, NCCT Director
Robert Kavlock, Ph.D., ORD Acting Assistant Administrator
Rick Keigwin, Jr., OPP Acting Director

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Washington, DC 20036
202-483-PETA

Los Angeles
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Los Angeles, CA 90026
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March 30, 2017

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Environmental Protection Agency
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VIA USPS and email to: Pruitt.scott@EPA.gov

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Respectfully,

Jessica Sandler, MHS
Vice President for Regulatory Testing
tel: 757-622-7382, ext. 8001
email: JessicaS@peta.org

cc: Jeffery Morris, OPPT Director
Rusty Thomas, NCCT Director
Robert Kavlock, Ph.D., ORD Acting Assistant Administrator
Rick Keigwin, Jr., OPP Acting Director

PETA PEOPLE FOR THE ETHICAL TREATMENT OF ANIMALS
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501 Front St.
Norfolk, VA 23510
757-622-PETA
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The Honorable Scott Pruitt
USEPA Headquarters
William Jefferson Clinton Building
1200 Pennsylvania Avenue, N. W.
Mail Code: 1101A
Washington, DC 20460

20460-

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

MAY 30 2017

OFFICE OF CHEMICAL SAFETY
AND POLLUTION PREVENTION

Ms. Jessica Sandler, MHS
People for the Ethical Treatment of Animals
1536 16th Street NW
Washington, DC 20036

Dear Ms. Sandler:

Thank you for your letter of March 30, 2017 to the EPA Administrator regarding replacing or reducing the use of vertebrate animals in chemical testing.

The EPA will carefully consider your letter and comments on the prioritization and risk evaluation rulemakings. As required by the amended Toxic Substances Control Act, the EPA must explain the basis for any decision that requires the use of vertebrate animals and take into consideration reasonably available existing information when utilizing the Agency's testing authority. The EPA is developing a plan to promote alternative testing methods and strategies with the intention of reducing, refining, and/or replacing vertebrate animal testing.

Again, thank you for your letter. If you have further questions, please contact me or your staff may contact Jeffery Morris, Director, Office of Pollution Prevention and Toxics at (202) 564-3810.

Sincerely,

Wendy C. Hamnett

Wendy Cleland-Hamnett
Acting Assistant Administrator
Office of Chemical Safety and Pollution Prevention

Date: Thu Mar 30 10:57:01 EDT 2017
From: Hope.Brian@epamail.epa.gov
To: CMS.OEX@epamail.epa.gov
Subject: FW: Only National and State Archeological in Abq in jeopardy

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-----Original Message-----
From: Judy Young [mailto: (b) (6)
Sent: Thursday, March 30, 2017 10:28 AM
To: Pruitt, Scott <Pruitt.Scott@epa.gov>
Subject: Only National and State Archeological in Abq in jeopardy

Dear Mr. Pruitt,

I live in close proximity to the only archeological (Spaniard/Pueblo) site in Albuquerque. This site is fenced off in the only green area park (Singing Arrow Park) in Eastgate Sector.

This site (a green park) is scheduled to be torn up & replaced by a 15,000 sq. ft. Public Building in September.

The Master Plan of this park calls for a small visitors center to to built once the site is excavated. The city has bypassed all procedure & protections (Environmental Impact Study, Traffic Impact Study, Community/Cultural Impact Study, etc) by applying & receiving a conditional zone change against opposition from stakeholders. Don Harris, city councilor for this district, is the perpetrator of this atrocity. A city councilor is elected to protect the city, but instead he is destroying it. We have followed all procedural avenues to stop this action to no avail.

This site sits at the top of a hill & if this building is built could put houses below it in a flash flood zone. The building will not only replace absorbable ground, but it will create a funnel like area that jeopardizes homes downhill from it from flash flood potential.

Please help us. Many of the homeowners are selling and moving. Anyone who purchases the homes will be in jeopardy.

Please help us to stay in our homes and environmentally protect this neighborhood.

My number is (b) (6)

Many thanks.

Judy Young

Sent from my iPhone

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Region 6
1445 Ross Avenue, Suite 1200
Dallas, TX 75202-2733

1 APR 2017

Ms. Judy Young
State Department

RE: AX-17-000-6881: Citizen Complaint/Inquiry: Albuquerque, NM, Construction of Municipal Building

Dear Mrs. Young:

Thank you for your March 30, 2017 e-mail, addressed to Administrator Scott Pruitt, regarding concerns for the proposed construction of a City of Albuquerque Municipal Building near your residence and the need for an environmental study to address potential impacts for this community project. Since the State of New Mexico is within the jurisdiction of Region 6 of the United States Environmental Protection Agency (EPA), your letter has been referred to me for a direct reply.

From the information you provided and other information Regional staff obtained on this city project, we have determined that the construction of this city facility is a non-Federal action and the EPA has no jurisdiction to intervene. While I know this is not the response you hoped to hear, I appreciate you reaching out to the EPA. We encourage you to continue to work closely with your local officials.

Thank you for sharing your views. If you have any further questions, please contact Robert Houston of my staff at (214)-665-8565.

Sincerely,

Cheryl T. Seager
Director
Compliance Assurance and
Enforcement Division

Scott Pruitt
Administrator
Environmental Protection Agency
1200 Pennsylvania Avenue, N.W.
Washington, D.C., 20460

RECEIVED
2017 MAR 30 AM 10: 18
OFFICE OF THE
EXECUTIVE SECRETARIAT

Dear Mr. Pruitt,

I am writing to express my displeasure at the recent executive action approving the construction of the Dakota Access pipeline.

The Keystone XL pipeline is controversial and ill-advised for a number of reasons; chief among them are serious environmental concerns. The Keystone XL pipeline's two methods of extracting the petroleum are incredibly dangerous and damaging to the surrounding environment. In one, the enormous amounts of natural gas and water pumped into the ground create toxic runoff, the accumulation of which can cause a whole host of issues in native animal species and humans (such as respiratory illnesses, neurological problems, and the like). The second method is no less harmful — strip-mining the sands and releasing the oil through heating destroys the environment. According the the New York Times (2014), the practice has already destroyed acres of Alberta forest and is known to produce significantly more carbon pollution than other conventional oil extraction processes.

While the project would supposedly increase jobs temporarily, the environmental price s too great. In the midst of what has become the sixth mass extinction in history, we cannot afford to cause such damage to some of our country's last natural refuges. To do so would be responsible and short-sighted.

Sincerely,

Liz Turner

Liz Turner

(b) (6)

FCL20305 10

Scott Pruitt
Administrator
Environmental Protection Agency
1200 Pennsylvania Avenue, N.W.
Washington, D.C., 20460

MAR 30 2017

20460-

FOREVER USA

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 8
1595 Wynkoop Street
Denver, CO 80202-1129
Phone 800-227-8917
www.epa.gov/region8

APR 07 2017

Ref: 8OC

Liz Turner
(b) (6)

Dear Ms. Turner:

Thank you for contacting the U.S. Environmental Protection Agency's Region 8 Denver office. We appreciate your interest and concern about the Dakota Access Pipeline. The U.S. Environmental Protection Agency (EPA) does not have an approval or permitting role in the project. However, under the EPA's National Environmental Policy Act authority, we provided comments in January and March of 2016 to the U. S. Army Corps of Engineers regarding its draft environmental assessment for the Dakota Access Pipeline. The EPA's comments are part of the public record on this matter. Please find the letters online at https://www.epa.gov/nepa/region-8-comment-letter-dakota-access-pipeline-project. The U.S. Army Corps of Engineers did not have an additional public comment period and posted the final Environmental Assessment on July 2016 at this site: http://cdm16021.contentdm.oclc.org/cdm/ref/collection/p16021coll7/id/2801.

The U.S. Army Corps of Engineers is the appropriate authority and best resource for questions regarding status and next steps. If you have a local health or safety concern, please contact the local public health department or state authority about the specific matter.

Sincerely,

Betsy Smidinger
Assistant Regional Administrator
Office of Ecosystems Protection
and Remediation

SOM
UAF SCHOOL OF MANAGEMENT

School of Management
University of Alaska Fairbanks
201 Bunnell Building • P.O. Box 756080
Fairbanks, Alaska 99775-6080
907 474-7461 • FAX 907 474-5219
www.uaf.edu/som

AACSB ACCREDITED

March 21, 2017

President Donald Trump
1600 Pennsylvania Ave NW,
Washington, DC 20500

Dear President Trump:

I am writing today to suggest that you allow as much oil and gas exploration in Alaska to move forward as possible. Off-shore and on-shore oil and gas reserves in Alaska may be substantial and could help keep oil prices low. The Obama and other administrations have cut-off a lot of Alaskan federal lands and coasts from oil and gas development, but now with a volatile Middle East and difficult economy, it makes sense for national security reasons to open up these areas.

You see oil and gas exploration and development, especially in the arctic regions, takes time to do right. Sometimes a discovery can take ten years until first production, such as happened with Prudhoe Bay. Therefore, we must allow exploration to start happening right now. National security and the potential for an oil crisis should take priority over previous presidents' federal oil lease withholdings, and override any precedent of previous Presidential orders.

Currently the U.S. shale oil reserves look prolific. However, much shale oil is light-oil not mid-weight crude oil. Such light oil can include C3's to C7's such as propane and pentene which are difficult to convert into gasoline. Pentene can be used in winter grade gasoline, but usually not summer. Some of Alaska's oil and gas prospects that are cut off include a lot of mid-weight crude oil potential, which would be valuable.

If tensions in the Middle East intensify and if we reach a mid-weight crude oil shortage, oil prices can skyrocket even with the vast amounts of shale oil available. The shale oil can be too light and then not be able to help assuage an oil crisis. We may hit a window of dis-opportunity between when light oil is made useful and when peak mid-weight crude oil occurs.

I include a paper about the future oil market and a book that analyses the fall of the Soviet Union since that event may parallel some of our current oil and energy economic situations. This is based on my academic freedom, which gives me the leeway and the responsibility to explain my research to the general public and its elected officials. The book is not a gift nor is this a solicitation from a paid lobbyist. I am giving to you my academic information, which is my responsibility to do. Please use it wisely and if there any question do not hesitate to contact me.

Sincerely yours,

Douglas B. Reynolds

Dr. Douglas B. Reynolds
Professor of Oil and Energy Economics

cc. Michael R. Pence, Rex W. Tillerson, Steven Mnuchin, Jeff Sessions, Ryan Zinke, Tom Price, Ben Carson, Elaine L. Chao, Rick Perry, Betsy DeVos, David J. Shulkin, John F. Kelly, Mike Pompeo, Nikki R. Haley, Scott Pruitt, Linda McMahon, Mick Mulvaney, Dan Coats, Sonny Perdue, R. Alexander Acosta, Robert Lighthizer, Reince Priebus, Stephen K. Bannon, Jared Kushner, Thomas P. Bossert, Kellyanne Conway, Carl Icahn, Donald F. McGahn II, Peter Navarro, Sean Spicer, H.R. McMaster.

OPINION

COMMUNITY PERSPECTIVE

Oil lessons from USSR's fall, 25 years later

By Doug Reynolds

For those interested in history, make sure on Christmas Day that you pour a shot glass full of chilled Stolichnaya vodka, offer cheers to your health and drink it in one gulp. Then reminisce on the 25th anniversary of the fall of the Soviet Union, which officially dissolved on Dec. 25, 1991, when Soviet Premier Mikhail Gorbachev relinquished all remaining power to the then-President of Russia, Boris Yeltsin.

The history of the Soviet Empire is intriguing. Radical comrade Vladimir Lenin incited a Communist revolution in 1917 and, with a motley crew of intellectuals and the working class, he created the Union of Soviet Socialist Republics (U.S.S.R.). The U.S.S.R. not only survived for seven decades, enduring Stalinist purges, the Great Patriotic War (World War II) and the Cold War, but actually thrived and achieved greatness. Recall, the Soviets were the first to put a satellite and a man into outer space. Plus, the Soviets were able to consistently increase steel production by 3 percent per year and oil production by 10 percent per year, signifying a vibrant industrial complex.

Through it all, the Soviet Union and its satellites managed to attain military preeminence and could boast nuclear missiles and circuses, ballets, health care and a dacha for every citizen. Indeed, the Soviet Union was more energy efficient than the decadent United States, with Soviet densely packed housing, district heating, trains and street cars as opposed to American land-yachts, McMansions and sprawling highways. However, suddenly, after 70 years of solid if unspectacular economic growth, the Soviet Union inexplicably fell within a short span of three years.

The key to terminal Soviet history is the year 1989, when Soviet oil production started its long descent. This is usually attributed to Soviet inefficiency. However, in that same year, Soviet natural gas production skyrocketed, a puzzling dichotomy in that both oil and natural gas production use similar workers, capital machinery and technology. You cannot have efficiency and inefficiency in basically the same industry, at the same time and location, unless scarcity is involved with one but not the other.

The Soviet oil and natural gas dichotomy is similar to Alaska: Natural gas is abundant and production could increase if there were a pipeline; but oil production continues its decline partly due to scarcity. In other words, it was not Soviet inefficiency so much as oil scarcity that caused the oil production decline, which in turn caused the Soviet economic crisis and collapse of the empire.

The signal for the Soviet Union's terminal crisis was the incredible ruble devaluation in October 1989. Indeed, America also faced an oil production decline and crisis in the 1970s leading to its own recessionary stagflation. If you cannot find more oil given the technology at hand, production will decline, and with it your economy, too, no matter what type of economic system you have.

Luckily, we have nothing to learn from the Soviet Union's fall since these days everyone is sure that there is plenty of shale oil in America. Or do we? The one thing that no one considers about shale oil is how it is mostly composed of very light oil, called natural gas liquids, rather than the more important mid-weight crude oil. Mid-weight crude is better suited to making gasoline, diesel fuel and jet fuel. What this means is that the U.S. and the world will be able to produce quite a lot of propane and petroleum liquids with shale oil, but will face difficulty converting those liquids into high-octane gasoline and other fuels. An additional barrier is the lack of infrastructure at present to perform this conversion. The upshot could be that we will have high gasoline prices even as many petroleum liquids prices are low. In other words, we may have a lot more to learn from the Soviet Union than you would expect.

The formula for the West's economic future lays not so much in shale oil, per say, but in finding ways to effectively use the light petroleum liquids. One option is to build complex refinery systems to chemically transform the light liquids into suitable high-octane gasoline. Another alternative, though, is to simply use propane, butane or natural gas cars and set up natural gas or propane fueling systems. Both options will require massive investment and probably have some bottlenecks even if it all works out. Regardless, America's energy system will decline in efficiency and it will affect our economy. We could be in for an economic decline similar to the Soviet Union's, so make sure you enjoy that vodka.

Doug Reynolds, Ph.D., is a professor of oil and energy economics at the University of Alaska Fairbanks. He can be contacted at dbreynolds@alaska.edu.

The Future of Proven Oil Reserves

by Douglas B. Reynolds
University of Alaska Fairbanks Economics Department

As posted on the International Association of Energy Economics (IAEE)
and the United States Association of Energy Economics (USAEE) website:
http://www.usaee.org/feeds.aspx;
Energy News: Today's Headlines (as of October 17, 2016)

The usual explanations for the decline and fall of the Roman Empire include such things as political corruption, inflation of the currency and the heightened incursions of the barbarians. However, Fagan (2004) gives a more compelling reason that may explain the Ward-Perkins (2006) data on the reduction in the production of Roman Baths starting in the Northern Regions of Rome. What Fagan says is that weather patterns changed with a slow cooling starting in northern Europe and moving south. Furthermore, this cooling made it such that northern Roman regions could no longer produce as much wheat as before but instead had to produce millet, which was more resilient to the cooler wetter weather but which also reduced the productivity of those regional farms. This transition from wheat to millet reduced the output of the Roman economy and in turn the tax base from which Rome could collect, which weakened the state and resulted in the *Crisis of the Third Century*. This slow decline and fall of Rome is in stark contrast to the very striking decline and fall of the Soviet Union as explained in Reynolds (2016) where a peak in oil production is the clear and decisive factor of its collapse.

However, the surprising fact about the Soviet Empire's history is not so much that the Soviet Union fell (officially twenty five years ago on December 25, 2016) as much as it survived for over 70 years in the first place. This suggests that the rise and fall of the Soviet Union has more to tell us about economics than meets the eye. One explanation that may help explain Communist history is the stroke of luck behind Soviet economic expansionary success: the abundance of Soviet energy resources available, particularly oil resources. However, the bane of the USSR's economic demise was Soviet peak oil as Reynolds (2000) and Reynolds and Kolodziej (2008) explain. This means that oil production often increases at first but then decreases—i.e. there is a tendency for a peak in oil production as Soviet peak oil attests—which is a very powerful economic force in any economy. This is the Hubbert (1956a) curve, which needs to be considered forthrightly by all economists.

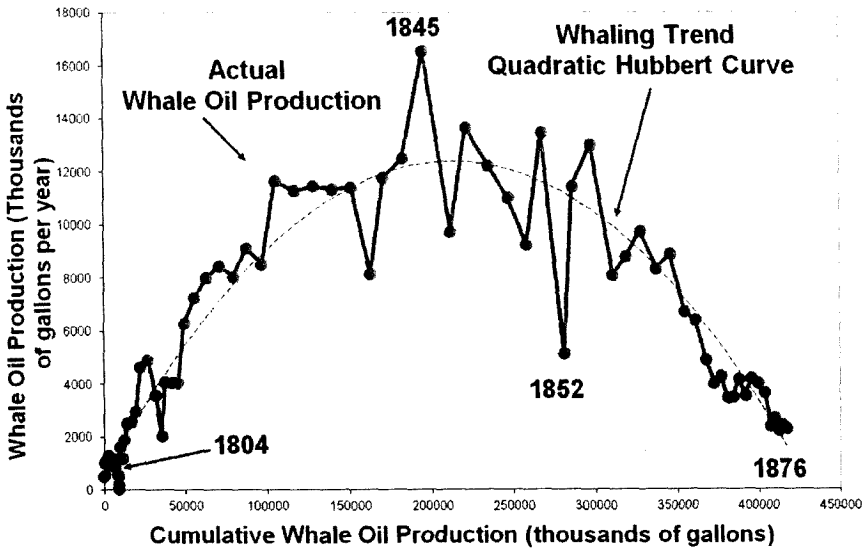

Figure 1, Hubbert Curve Example: Whale Oil Production in the 19th Century vs. Cumulative Production (Bardi 2007)

Fortunately, today the world does not appear to be close to any peak in oil production as the supply has increased by roughly 10% since 2009, contrary to Reynolds (1999b) initial prediction. This gives credence to resource optimists such as Adelman and Lynch (1997), Simon (1998), Lynch (2002), Brandly (2004), Bartlett (2004), Maugeri (2004) and Jahoda et. al (1973) that technology and economic innovation can overcome any scarcity of natural resources including energy scarcity. Resource pessimists such as Deffeyes (2001), Goodstein (2004), Hall and Klitgaard (2012) and Bardi (2011) still contend that resource scarcity—particularly oil scarcity—will pose a problem for the economy. Plus, Reynolds (2011) shows that, so far, most civilizations, up to and including the Soviet Empire, have not successfully overcome a peak in energy supply, although, one can argue that Russia carried on after the fall of the Soviet Union with new technology. Still, it is clear that post Soviet Russia had to endure a substantial reduction in its standard of

living, as did Rome in its day and as we are likely to do in our day. Indeed, we may have already begun to experience economic decline as Cowen (2011) explains.

Nevertheless, many energy economists do not believe in peak oil even though the economic theory behind the Hubbert curve is well established in Reynolds (2009 and 1999a), with empirical and experimental work in Bardi (2005 and 2007) and Jakobsson et. al (2012) although, ameliorated with the idea that multi-cycles can and do exist (see M. King Hubbert 1962, p. 55, Hubbert 1956b, p. 10-11, Reynolds 2014; Reynolds and Zhao 2007, and Reynolds and Kolodziej 2009). I show the theoretical game in class. Therefore, the Hubbert curve theory should actually be in every textbook. Notwithstanding theory, this debate on oil scarcity is relevant again now that the latest estimate of proven oil reserves for the U.S., as posited by Nysveen (2016) and reported in Tencer (2016), which shows quite an increase in reserves, is bantered about. While the estimates of world oil reserves still suggest that eventually we will attain limits to growth due to oil scarcity, it also gives hope to resource optimists that there is still plenty of oil, particularly shale oil, for the foreseeable future by which time nuclear fusion or some other energy technology will create a new era of abundance.

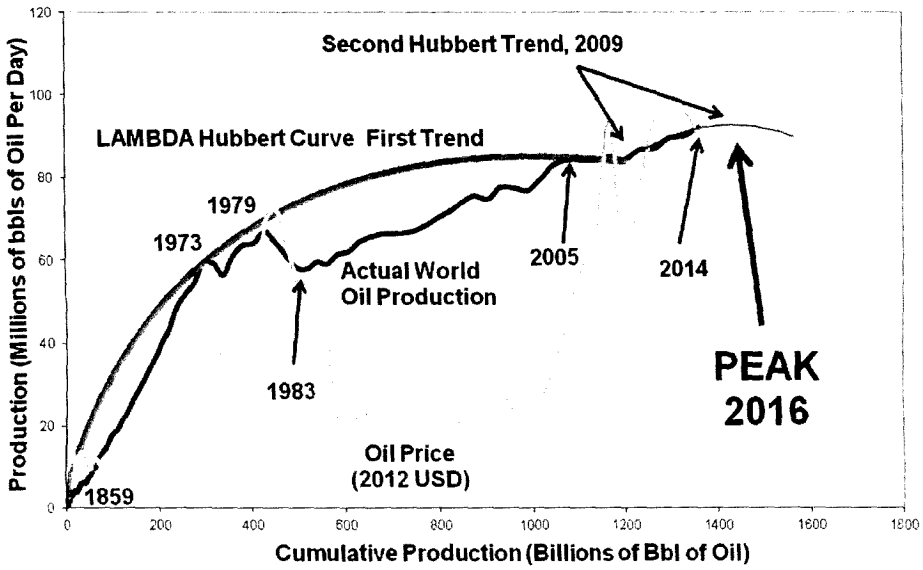

Figure 2, World Peak Oil After the Start of the Second Hubbert Trend (Reynolds 2015 and 2014)

Looking closely at the Nysveen reserve estimate, the evidence suggests that the U.S. has more oil reserves now than either Saudi Arabia or Russia, depending on what the true Saudi and Russian reserves are. While the new larger estimate may be accurate due to shale oil technology, giving resource optimists a fact upon which to hang their hat, there is nevertheless some confusion about what U.S. reserves really consist of. For example, one of the interesting aspects about this debate is the question of what oil is. That may sound like an unnecessary question since everyone believes they know what oil is, but it can be a more nuanced question than you think.

Consider past oil and gas statistics. According to DeGolyer and McNaughton (1979), in 1920 the U.S. produced 1.2 million barrels per day (MBD) of oil, which included about 2% of natural gas liquids (NGL). By 1950, the US production was close to 6 MBD and NGLs consisted of 8.4% of the total. By 1970 we were at 11.3 MBD with NGLs consisting of 14.6%. Also according to EIA (2002), the NGL production in the U.S. went from about 15% of total oil in 1970 to 25% in 2000. Lately liquid petroleum gas (LPG) has gone from 14% of the combined gasoline and LPG consumption in 2008 to 21% of combined consumption by 2014. Not only that, but over the last decade LPG production and consumption have increased by 22% even as LPG prices have decreased. In contrast, gasoline consumption has decreased by 3% partly due to high gasoline prices. That being the case, why has there recently been, relatively, so much LPG supply availability, even though its price has been low, and so little gasoline supply availability, even though its price has been high?

In addition, since about 1950, NGLs and crude oil were often put together into one statistic often called "oil." That method of comingling the identity of liquids production saves a lot of confusion for the general public so that they did not have to become petrochemical experts just to be able to understand basic oil market statistics, which can and do affect the economy. In addition, other economic agents, such as gas station chains that might buy oil futures for a certain purpose or bakeries that use propane or fuel oil and have to make contracts, also like a simple oil statistic. In general, NGLs were not a large part of the oil and gas market and were therefore assumed to be able to be melded together into a general oil market statistic. Then NGLs and LPGs could be priced at a certain percentage below a given WTI oil price, which worked well as long as there was plenty of mid-weight crude oil to go around.

But now we have shale oil, and shale oil is not always high valued mid-weight crudes of oil but often includes lower valued light crudes and NGLs. So that brings us to the statistic that the U.S. has 264 billion barrels of oil reserves. The question is, what are those reserves exactly? Are they natural gas liquids with a lot of propane or are they more valuable mid-weight crudes or both? This

is like asking the question, was Ancient Rome producing more wheat or more millet in 250 A.D.? Even though they sound the same and are measured in the same way, they are in fact quite different from a nutritional point of view and, more pertinently, from an economic point of view. The question becomes important because oil was just recently at a $100 per barrel price ($16.6 per mmbtu) at the same time when propane was selling for $1 per gallon (or $10 per mmbtu); an energy price differential of about 60% and a price differential that still persists, with oil recently at $8 per mmBtu and propane at $5 per mmBtu. The U.S. oil reserves statistics, then, make it sound as if the U.S. has 264 billion barrels of valuable mid-weight crude oil, period, when it could be that we have mostly less valuable NGLs. This is an important point and it goes to the heart of the question of whether peak oil is real or not.

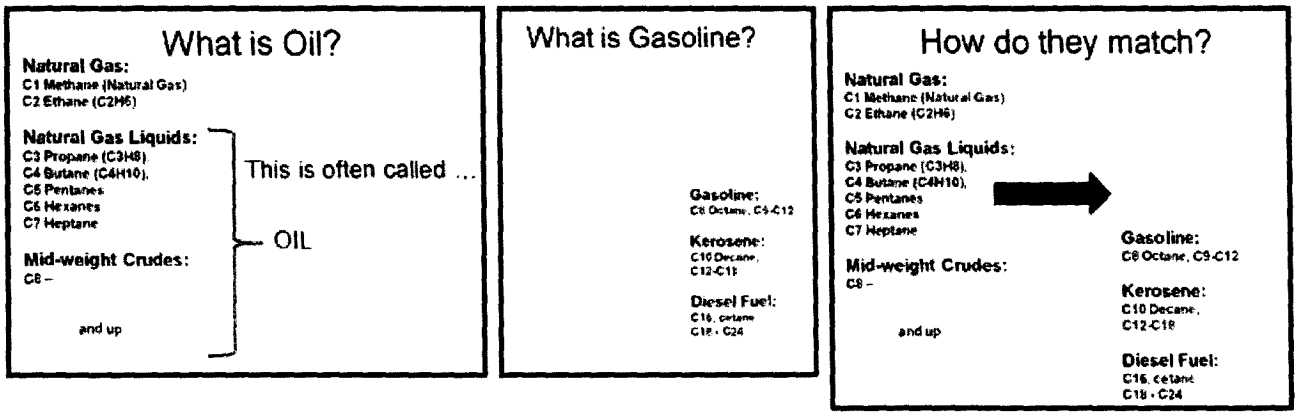

Figure 3, The Chemical/Refining Transformation from Oil to Gasoline

The problem is that not many people in the general economy are going to understand the nuance between NGLs and mid-weight crude oil, kind of like trying to decipher and understand the nuance between a Rembrandt and a Vermeer work of art. Although the difference in painting can be hard to decipher, the difference in price at an auction can be quite substantial. Likewise, the difference between NGLs, light crudes and mid-weight crudes can make a big difference in economic productivity. Even some pentane and hexane hydrocarbons are going to be difficult to use for producing motor gasoline in the summer, which makes an even murkier oil reserves picture. Peak oil may not be peak oil after all, it may be peak mid-weight crudes, but most people will not comprehend the difference or the significance.

On the one hand, we know that Germany, Turkey and other locations use propane and even butane for automotive fuels so it does seem rather easy to be able to use light crudes for transportation purposes and, therefore, that NGLs, light-crudes and mid-weight crudes are all oil. However, there will need to be major infrastructure adjustments to be able to use propane and butane for automotive travel. Furthermore, important machinery, such as farm machinery, will not easily be able to use such fuels, and this can make farms or other economic entities less effective. This can reduce the productivity of the economy, and the transition is likely to be jerky rather than smooth.

On the other hand, you can always use pure natural gas (methane) to run automobiles, although, as Flynn (2002) shows, natural gas propulsion systems have so far not been very successful. For example, Utah (Krauss 2008) appeared on the surface to have put up a successful natural gas vehicle fuel system, but upon close inspections the details show the realities of long lines, waiting for fill-ups and a lack of supplies at crucial times. Such systems often encounter bottlenecks, due to the high costs of the infrastructure to provide the fuel, that gasoline and diesel systems have never had to contend with since the days of the 1970s oil crisis. Bottlenecks in supply, and other distribution problems may be worthwhile if the fuel is cheap, but that implies a cost to economic efficiency which is the whole point of resource scarcity.

Some might also argue that most if not all NGLs can be made into gasoline and diesel products using such process as hydrocracking, alkylation, polymerization and dehydrogenation, although as A. Abazajian (2016) shows these processes can be expensive and can have bottlenecks associated with them. Plus new gasolines from NGLs often have less BTUs per gallon and are more volatile chemically and so require chemical stabilizers. Alternatively, some engineers envision using propane or natural gas self-driving cars that can fill-up all night long in order to be prepared for the rush hour traffic in the morning, like an army of taxi drivers. What is missing is the idea that these systems, too, have their problems. For example, Queenan (2016) brings up the idea that these cars can be hacked and made to kidnap you, or worse yet, they can all be remotely commandeered to drive right into the propane or natural gas filling stations in order to strategically destroy infrastructure.

They also require significant economies of scale. When you have large economies of scale, you get a natural monopoly that tends to become socially inefficient. For example Vanderbilt's New York Railroad, Gates' Microsoft and Rockefeller's Standard Oil all had one thing in common, they built innovative, cost effective products, but they made most of their money by gaining monopolies in their respective markets. At first, such monopolies are good for society creating innovation and reducing costs, but later on they become less effective. Regulation and government ownership are two solutions to reducing monopoly costs, but those solutions are not necessarily efficient as governments are slow to reduce bottlenecks within such systems whether as a regulator or as an owner.

People may think that electric cars like Tesla's will lead the way, but compared to a Tata Nano, a Tesla, even if its price can be reduced by half, could not compete; and theoretically if a Tesla can be made cheaper, than so can a Tata Nano. The only reason the

Tesla is in any way competitive now is because the average American automobile is over-priced with features that are unneeded, but which could be removed with little harm, such as super-sized engines with super sized cabins. Indeed, we may have a car bubble.

So, it's not a question of what energy is possible to use, but a question of what economic costs will be involved in changing over to a new energy system, as the Soviet Union itself shows. In the Soviet Union's case, there was a decisively quick peak and decline of its primary energy resource, oil, and then its economy fell. In Ancient Rome's case, there was a more nuanced slow motion peak and decline of its primary energy resource—wheat—that caused its economic crisis. We will probably encounter something between the Soviet case and the Roman case probably faster than Rome's fall but possibly a bit slower than that of the Soviet Union's fall. Although, given the fact that many conventional oil fields can decline as fast as 7% per year and that shale oil fields can decline as fast as 30% per year, and can experience severe bottlenecks when the industry tries to increase shale production, then the Soviet case could be the closer case study than the Roman case. Nevertheless, in both situations there was hyperinflation (which I would define as anything faster than about a 30% increase in price levels per year, contrary to the text book definition of anything greater than 30% per month), which can help loosen restrictive labor markets during such a crisis. This makes the Energy Information Administration's job, never mind the Federal Reserve's job, the Treasury Department's job and the U.S. Mint's job, quite the challenge. Regardless, society must be prepared for hyperinflation, although, such hyperinflation could help reduce social unrest and recessionary fatigue as it did in post-Soviet Union.

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COLD WAR ENERGY

The Rise and Fall of the Soviet Union

by Douglas B. Reynolds

Douglas B. Reynolds
Professor Oil and Energy Economics
School of Management
University of Alaska Fairbanks
303 Tanana Dr., Rm 201,
PO box 756080
Fairbanks, Alaska 99775-6080

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A fundamental problem for the economies of Eastern Europe and the Soviet Union was the decline in Russian oil production. Russia was the main oil producer for the communist countries, and its production decline starting in 1988 pushed the economies of the Soviet Empire over the brink of disaster, and into collapse. What is more, the oil production decline did not stop with the break up but continued until 1996, exacerbating the economic problems of Russia and the former states. Certainly much of Soviet economic stagnation in the 1970's and 1980's was caused by a lack of innovation. Possibly military defense spending played a role in furthering the economic collapse, and Gorbechev and his policy of glasnost were a big factor in changing Soviet society since this allowed people to feel free to react politically and express their desire to change communist rule. However, the straw that broke the camel's back and that ultimately caused the decline and fall of the Soviet Union was an oil shortage.

"Not only has the bourgeoisie forged the weapons that bring death to itself; it has also called into existence the men who are to wield those weapons — the modern working class — the proletarians. In proportion as the bourgeoisie, i.e., capital, is developed, in the same proportion is the proletariat, the modern working class, developed — a class of laborers, who live only so long as they find work, and who find work only so long as their labor increases capital. "

Manifesto of the Communist Party
By Karl Marx and Friedrich Engels

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Doug Reynolds

UAF
UNIVERSITY OF ALASKA FAIRBANKS
School of Management
P.O. Box 756080
Fairbanks, Alaska
99775-6080

FCF 2025194

MAR 30 2017

Scott Pruit
U.S. Env. Prot. Ag.
1200 Pennsylvania Ave N.W.
Washington D.C. 20004

Thu Mar 30 11:03:32 EDT 2017
Hope.Brian@epamail.epa.gov
FW: Congratulations, now let's empty the swamp.
To: CMS.OEX@epamail.epa.gov

From: Monty [mailto:mcampbell@global-carbon-solutions.com]
Sent: Wednesday, March 29, 2017 6:42 PM
To: Pruitt, Scott <Pruitt.Scott@epa.gov>
Subject: Congratulations, now let's empty the swamp.

Dear Sir,

You may already know about DieselGate (VW rigged emission certification on its ("clean") diesel cars. EPA didn't know & did not care to check and verify any OEM vehicle certifications. Over 17,000 EPA employees and not one checked into even one single VW OEM self certifications?

DieselGate continues. News flash, VW was not alone in this. Now it comes out in the news that Dodge Ram and most all other diesel vehicles also lied on their OEM self certifications. Who is next, Ford or GM? YES!!
Already the press is blaming Trump. EPA had, 10 years ago, about 17,000 employees, yet only 18 ever touched a vehicle. Does EPA need 20,000 to police regulations? 200,000?
Hell NO!

From my understanding of the science of chemical "pollution," there is no OEM catalytic converter technology that can actually meet 2016 emissions, much less 2017, not 2018. That is with reasonable mpg & performance. OEM/EPA emissions technology can't get there from here.

As the truth filters out, I expect "CyanideGate" to appear at some point. You see, all catalytic converters direct a chemical reaction toward particular product(s). In this case, NO + CH2 -> CN + H2O -> HCN + OH.
Nitrogen Oxide formed from the heat of combustion reacts with HC emissions (from partly burned fuel molecules) over the catalyst to form CN + water. CN is then converted to hydrogen cyanide when it comes in contact with cooler moisture/water, dissolving cyanide into water, in human lungs or ground water, it makes no difference.

All catalytic converts generate HUGE quantities of cyanide gas. Along with the poison gas HS (hydrogen sulfide), and phosgene (WWI) poison gas chemical weapon.

I think that you will find that this whole converter thing goes back to the S. African gold mine interests. For every oz of gold produced, other precious metals were also produced, such as platinum, platium, & rhodium. And, just like the diamond market, prices are driven up by concealing the actual quantity available. But, think of the vast profit to be made by bribing U.S. politicians to mandate cyanide converters on ALL U.S. vehicles. Then E.U. Then world wide. Why else is it illegal to sell used (working) converters? Why is the entire converter market locked up by S. African mining company spin offs (recyclers making new converters from recovered metals)? A monopoly.

Just imagine the damage the EPA is now doing to the U.S. Imagine the chronic fatigue syndrome sufferers. Imagine the accidents caused by poison gases. Imagine what the EPA is doing to the children.
It's not really about pollution, is it? It's about profits, HUGE PROFITS for the hugely rich. Sickness for the poor.

Expect to have your google search results for "cyanide converters" different from someone not connected with the auto industry or government. Google did not return my "cyanide auto converter emissions") query to me, but rather allowed a friend's search to contain web pages describing chronic fatigue syndrome and many other horrors. I wonder why google tampered with my search?

But, more importantly, I have an emission reducing technology that does not produce cyanide, HS, not even phosgene gas. The toxicity of 2 of these gases together is perhaps 100 X that of a single gas. Imagine the 3 together, in traffic at least 2 hours each day in traffic. Why does the EPA mandate poisoning u.S. citizens?
That cyanide is absorbed in rain, fog, and even irrigation, intended for crops. Hydrogen cyanide dissolves heavy metals and normally insoluble toxic substances, carrying them into irrigation and drinking waters.

Crops are forced to bio-accumulate these poisons, which then bio-accumulate in animals (yes, even humans). Why is this the law?

My technology has been proven to reduce emissions by up to 90%, while increasing mpg by 40%. But, no OEM was interested. Why? Probably because the fix was in. It was much cheaper and easier to simply cheat.

Against all odds, President Trump was elected.
Against all odds, you were appointed to the EPA.
Let us not waste this moment.
Can I help you "drain the swamp?"

Sincerely,
Monty Campbell

March 23, 2017

Mr. Scott Pruitt
Administrator
US Environmental Protection Agency
1101 A
1200 Pennsylvania Ave. NW
Washington, DC 20460

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OFFICE OF THE
EXECUTIVE SECRETARIAT

Dear Mr. Pruitt,

Congratulations on your appointment to the EPA. I wish you much success in your new post, and I admire your strength in calling the status quo into question, including a healthy skepticism regarding the science explaining global warming. Clearly, we are seldom presented with truth.

To help you in your new and highly important job, I enclose two transcripts of Clarity Radio broadcasts given by Mr. Bryan Farnum of Toronto, Canada. On his internet radio website, Bryan presents new information about our environmental concerns that are not available anyplace else, and that are in agreement with your questioning of much of the science presented to the public.

In particular, I thought you and your staff members might like to be aware of the connections Bryan has found between Genetically Modified crops and climate change, as well as the impact underground nuclear testing has. Many of the

issues people waste time debating are merely drops in the bucket compared to these two core issues. I invite you and your staff to read these transcripts and investigate Bryan's research further to help you accomplish your goals and responsibilities to our environment and to our American people, as well as to Planet Earth. Bryan is currently developing scientific tests which will prove the points he is making about GMOs in a simple, inexpensive, and straightforward fashion.

Best wishes to you and your staff, as you embark on your administration, as you work toward addressing these weighty and controversial concerns. I trust your consciences will lead you toward what is best for all!

Sincerely,

A concerned U.S. Citizen

January 17, 2016 Clarity Radio Broadcast
Cold Fusion Particles; X, Y DNA; North Korea

(Intro: "Go West" Radio Edit by Pet Shop Boys)

And we are back. Welcome everyone around the world.

Today... Yes, it's the 17th of January, year 2016. My name is Bryan Farnum. Welcome. You are listening to Clarity Radio.

What a broadcast. Going to be intense... It's going to be really, really intense.

So, we got Segment 1, which is, "Cold Fusion Wave Particles." I'm going to try to go through that very quickly. But it's important for scientists... I'm helping a group of scientists. And they need to have this information so they can help you live longer.

Segment 2, "How to Deal with People Who Give You Problems." And we're going over the X and Ys' DNA program. Absolutely fascinating what we have learned...

And Segment 3: "Noble Gases and Your General Health." We're not talking about royal families around the world passing wind and the impact of that gas on your health. That's not what we're talking about. We're going right into science. I mean, we're... You're going to gain so much knowledge, particularly as it relates to GMO. We learned something so amazing about GMO food and gases, beyond what I've already spoken about.

And Segment 4: Canada's Role in... well, with North Korea. It's a mess. That country is... I mean, they're really, really messed up. It's a messed up country. Really is. And the problem is: the people who should be watching the bouncing ball, they're not watching. They don't have a clue. They don't have a clue what's going on. So, if you've got someone you know in the government that's a Member of Parliament: have them listen to this broadcast. You may help save this country and the future... the world. So, let's get started.

(Segment 1: Cold Fusion and Gravity)

Segment 1... So, what needs to be in place for cold fusion? There needs to exist nine different variables.

- So, we need oxygen. Oxygen. Without oxygen, cold fusion cannot exist. And even some scientists say, "Well, what is he talking about?"
- Number two... You need some sort of circular energy, which we're talking about helium. We're talking about helium gas coming together with a hydrogen atom that causes a negative charge that helps to feed other atoms... yes... and other gases.

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- And He says number three... Argon gas. I mean, this is a gas that will interact with helium. We're going to talk about it more. We're getting there.
- And number four... Nitrogen, another variable.
- And number five... You've got radon. Radon gas. Amazing what this is, as it relates to the health of the human body. It's just incredible.
- And six... We've got neon... another gas... another important gas.
- Seven... You've got xenon. And for the love of me, why is it x-e-n-o-n? It should be z, the way you pronounce it. Let's get rid of X from our alphabet. It shouldn't be there. It's a waste of time. It's wrong. It's not correct.
- And then, we have eight, which is krypton. And we're not talking about Superman. This is another important gas.
- And nine... We've got carbon.

So, we're going to talk about all of these nine variables right now. You don't need to really make notes because we're going to post this information for you. In fact, all of these segments will be posted.

So, let's talk. Let's talk about it. Oxygen. He says oxygen plays a role as a transportation mechanism for cold fusion particles. He says oxygen also serves to amplify the negative charge of cold fusion particles. See, what we need to do: we need to be able to crawl before we can walk. We need to have a general idea of how these energies could be created. So, this is the purpose of this segment here: to think outside the box. He says oxygen also serves as a instrument to keep the cold fusion particles separated from each other as it moves throughout our atmosphere. And He says the oxygen prevents the cold fusion particles from basically clumping up together. Because they need to be separate. They need to flow without this clumping protocol taking place.

He says, for example, oxygen does exist on Mars. And He says, therefore, cold fusion particles exist in the Mars atmosphere. Wow. He says we can... we should consider creating the correct technology, a generator where we can just suck that energy. And we can land on Mars and we've got that energy right away. We don't have to start building a dam. Or we don't need to drill for oil. We don't have to have a negative impact on Mother Mars. It's not necessary. Can you imagine that there's a technology where you can go into the desert anywhere on this planet and you can pull down energy and all the sudden, you've got a light bulb going in your tent? And we are heading in that direction.

He says... number two... Circular energy. He says this is dismantled energy. He says it's an energy that has 100% negative charge. The negative charge is very important because anything that enters your body should have a negative charge. A negative charge is something that is friendly to chemistry. He says the 100% negative charge is important to facilitate harmonious interactions. They bring elements together, whereas in most cases, a positive charge creates division.

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And where does it come from? Helium. This is a master atom. It's noble. And He says this charge that comes from this atom: it really is recognized, going deep, as being stubborn. But at the same time, it follows instructions.

But the importance of helium, which is really neat: it actually helps to keep the universe together. And if we have any depletion of helium, we potentially... we're in danger. We become one step closer to the universe being destroyed. It's really... is very important, this gas. He says helium gas is manufactured by various creations of life. Disease, in the universe, is a reflection of a depletion of helium deposits.

And you know, when we talk about helium... The human body needs to have a good supply of helium. And if we do have that good supply of helium: genetic cancer would not take place. I mean, this is not recognized. The importance of helium is not really recognized, as it relates to health, particularly when we're talking on a cellular level and we're talking on a subatomic level. It's not understood. But that's okay. That's why I'm here.

And so, He's going back to this circular energy, which only comes from helium gas... Oh! It only comes from helium gas. Wow. Okay, that's neat. Helium atom interacts with hydrogen atom... yes... causing a negative charge to be released by the helium atom. Wow. So, the helium atom eventually releases this negative charge that interacts with the noble gases connected to our topic: the neon, the argon, the krypton, the xenon, radon, etc., etc.

But He says... What's really interesting is: see, these noble gases, they're very difficult to come together and keep them together. I mean... But He says there are three gases yet to be discovered that will cause these noble gases to bond. He says it is the trinity of gases. It is divine. And He says it's not to be released now because we still have much more to learn about cold fusion. But I'm going to provide that information.

Dismantled means to break away from the atom. He says the three gases that are required is to allow a process to take place, to allow everything to come together. There's a protocol. There's a staging. There's a sequence. There's timing. And He says no billionaire will be able to take this information and hold the world ransom. No one will be able to take this information and patent this information and put it on the shelf. They will not be able to do it.

The third point... Argon. He says the argon gas interacts with the negative charge... that negative charge that comes off the helium. Right? As the helium interacts with the hydrogen, there's that negative charge. And He says the argon gas is a very sensitive gas. It is made stable with the interaction with helium. So, helium... well, yeah, acts as a stabilizer for argon and other gases that we are speaking of today. But again, He's saying... Here we go. He says the importance of argon, helium and other noble gases is very simple: He says noble gases, although they can be stubborn, they do follow instructions well. And they don't really have a mind of their own. But He says,

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"Question mark." I guess that has a lot to do with what these noble gases are interacting with.

He says the argon, after it interacts with the negative charge, it will then interact with nitrogen. So... So, this charge is very, very important to allow that interaction to take place. And once the argon, again He says, absorbs the negative charge from the helium, it bonds with nitrogen. Folks, this is chemistry. But it's important for me to give this information. There's someone out there that needs to know this information.

The fourth... Nitrogen needs to exist for cold fusion to exist. So, nitrogen is required in order that the argon and nitrogen bond. Yes. I've got two thoughts coming at the same time. And this is a big question mark. He says electricity cannot exist without nitrogen. But He says, "Don't explain it now." He says, "Keep going." Interesting...

So, the bonding of argon and nitrogen is a partial building block/foundation to create cold fusion particles, which is the necessary foundation, He says, to create all energies in the universe. For all the energies in the universe already has been created. So, this would have to take place from... you're going to go back to the Big Bang Theory, in the earlier stages of creation of this universe. He says cold fusion particle is the footprint, the core supporter for existence of all types of energy. So that's why we're discussing this. This is the foundation that supports other energies. He says cold fusion particle is... well, it's like the carrots, celery and onions to a cook. And He says when truth is spoken, it's very easy to understand.

But when argon and nitrogen come together: it creates a subatomic energy. Don't worry about this term, okay? Don't worry about it. Just sit back and say, "Thank God Bryan is doing this broadcast. Someone is going to get this information that understands it and will do something constructive with it." So, argon and nitrogen, when it comes together... here we go... is the expression of thought. So, argon is the expression of dormant thought. And nitrogen is the expression of active thought. So, subatomic energy is simply thought.

And I tell you, when we talk about chemistry: even in chemistry, there is a duality. The dormant thought of argon is negative thoughts. The opposite, the nitrogen, is good thoughts. So, there's a duality, from the get-go, when this universe was created. And it's expressed in gases.

Five... Radon is required to bond with neon. So, radon is another gas. So, in order for radon to bond with neon, radon must absorb the helium negative charge for the actual bonding to take place.

So, what's the symbolic expression of radon and neon? Well, the two coming together: it represents spoken word. Wow. So, radon represents a negative spoken word. And neon represents a positive spoken word. Again, there appears to be... you got it... a duality. It's amazing, just amazing. See, we have to understand the chemistry

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consciousness. I mean, we walk around, we just take a look at the physical. And we make a lot of statements on the existence of information of the physical. And remember: once you think you've got it right, you've got it wrong. You've got it wrong. So, radon is the dominant spoken word... And He says, "No, you didn't hear me correct." I love when He... I love when I'm corrected. Radon is dormant spoken word. Thank You, Father. And neon is the active spoken word. Wow. So, there's that duality, but we're talking spoken word. Before, we were speaking of thought.

So, when the universe was created, everything was already compacted in the universe. So, every thought, every spoken word was spoken for.

So, once they are bonded, they collide. They collide with what? Argon and nitrogen. Wow. That's for neon to bond. So, in order for radon and neon to bond, they have to come together with nitrogen... He says one of the unknown gases/elements interacts with these gases. So, basically, it's bringing together the radon, neon, the argon and nitrogen. Let me see, Father...

He says, "Keep going." He says, "Keep going." I got a question mark here. He says, "You'll deal with that next time." Thank You.

So, six... Neon. Neon needs to exist... He says there's something profound that we need to learn in the fifth that can't be revealed now. Okay. I'm going to go with it.

So, the sixth... Neon needs to exist to bond with radon. So, after they bond, they collide with the argon and nitrogen, and they create one temporary molecule. And these things don't stay together that long.

And so, the bringing together of thought and spoken word... He says, even though we have the chemistry of thought and spoken word coming together: thought and spoken word cannot exist without action. So, that means other gases that are connected to action. And He says the whole infrastructure, the structure of the universe is predicated on... well, yeah: thought, spoken word and action.

And He says these gases we have been speaking of exist in the human body. And He says the same goes for the human body: that our chemistry is predicated on thought, spoken word and action. Okay, now we're getting somewhere. And He says the more negative thoughts humans have, the higher levels of argon gas is produced in the human body. Wow. Okay? So, the more humans... well, that speak poorly, the higher levels of radon gas will exist in the human body. He says based on the elevation of these gases, for example: when these gases reach a certain point, they bring disease into the human body. So, this level is not really understood. It's a very unique level.

Now, number seven... We're on seven. Xenon, He says, is required to bond with krypton. And don't worry about all these different gases. Just get the guts of the

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information I'm giving you here. And He says xenon and krypton collide with the four other elements that are already together.

And He says xenon represents dormant, negative action. Krypton represents active, positive action. And He says, again, for xenon and krypton to bond: xenon must receive this 100% negative charge from helium. So, you can see helium is playing a very important role to bring these gases together. And He says after xenon has received the 100% negative charge from the helium, it eventually bonds with krypton.

But He says in order for these two gases... well, to bond together, they have to interact with the other gases. But more importantly, there is that unknown gas that we speak of the three... has to be present to allow this to take place. And these unknown gases can be created/manufactured through a process to be understood, based on our current element portfolio. That means that we can take what we already know and, through chemistry, we can create these gases. So, I mean, that's good news. So, I'm going to study this and give the world the process, what needs to be done.

Point number eight... Krypton. Xenon bonds with krypton, which then bonds with the other gases. So, at this stage, we have... Already, we've got thought, spoken word and action coming together. So, if a human being continually... Thank You, Father... has anger actions... A lot of us do. The body will release xenon. And of course, if you do this a lot, you're going to have high levels of this gas. But if a human being is just expressing love, mostly love... well, there's krypton. And who would figure that our body can do this? I mean, we have thoughts of just being to fly to a different planet with a cape and to go and get this krypton rock. No. But our body can actually produce it.

So, keeping all of this in mind, we need to understand that, on a cellular level, we need to understand how thought, spoken word and action can bring disease into the physical body. And there will be tests that will be developed to verify this truth.

So, the ninth... Carbon. Well, we're not going to be around if we don't have carbon. So, carbon then, eventually, interacts with all these six gases to create what we call a particle wave. And so, the next element, again, to really understand is carbon. That's what He's saying. And for scientists who have a deeper understanding: what we're talking about is the expression of consciousness and how, on one level, consciousness is expressed. So, cold fusion is the expression of particle waves. And so, these particle waves are made up of six gases that we know of today, plus the other three. And as we go on, there may be something else. So, we just have to be open to that something else. Remember: once you think you've got it right, you've got it wrong.

So, the particle waves is the baseline foundation that helps to support different energies. The energy cannot be destroyed. But in order for energy to be created, the particle waves must exist first. Wow. He says it is true that once the universe has been created, no new energy can be created. It's about balance. So, the cold fusion particles, again, simply help to support the existing energies or amplify, on some level,

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other energies. He says the sixth gases... Or the gases, rather, that we've been speaking of, played a very important role in the creation of this universe. That's wonderful. It is so wonderful. Again, for the carbon to bond with the other six gases, you've got to have the three unknown gases to come together and help the process.

And by the way, the cure for certain types of cancer: it is this technology we are speaking of. They cannot find a cure for cancer through any other technology. This technology, this understanding of the gases and those other three gases: this is the cure for most types of cancer. Wow. He says, "Remind them." These gases can be created/manufactured by the existing chemistry that we know of. We just need to understand: how is it done?

And He says, again, oxygen must exist. We've been talking about the other noble gases. But oxygen has to exist. And oxygen helps to play a role in fusing together the cold fusion particles with other energies.

So, it's... I mean, this is deep. And we're just about two, three minutes over the half-hour mark. But I mean... This... This is... I wish I had more time to present the information to you. You know, I only spent maybe three hours discerning this. I didn't have 20 years of research, like many scientists today have, to present to the world something so profound. And I know as I gain more knowledge through spending more time discerning, I'm going to be able to provide much more information. And we're going to clarify point number five the next time we get together. So, it's good. I mean, there is hope that... Number one... That we're on our way to getting a new technology created. And number two... That there is possible hope that there may be a cure for cancer coming down the road. But that's far off. That's way far off.

So, anyways, we're going to break. And you know, those who read the newspaper, watch the news, we lost a good friend: David Bowie. And he's somewhere up in the sky. And I want to say that I really, really enjoyed David Bowie. He was part of my life. I know he was probably part of most people who listen to this broadcast. And I grew up with David Bowie. I loved his music. And I was not one to judge him or criticize him. I just think that he was a gifted individual who brought so much joy to so many. David Bowie, we love you. And may God receive you well. Thank you.

("Space Oddity" by David Bowie)

(Segment 2: How to Deal with Problematic People)

And we're back. Wow. Yes, it's still the 17th of January. My name is Bryan Farnum. You are listening to Clarity Radio.

That last segment was intense. I mean, it's very deep. I got to listen so well. That was one of the most intense segments I've done. But we're on number two. And I got to tell

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you though... We're talking about the people who can be problems in your life. And that I did this week... I went and actually we developed the test for X and Y. And we actually... I tested myself. And I took my urine. And I wanted to know who... What was I? And so, I tested for X and I tested for Y. And I said, "Hey, hey..." You know, it's like, I mean... It showed that I was both X and Y. And I was saying, "There's something wrong here. You're either going to be X or Y." Remember: once you think you've got it wrong... or you got it right... (laughs) Thank You, Father... You got it wrong. And I really got it wrong.

Then I went back and I asked the Christ, "You know, going back some 2,000 years ago, when He was in physical body, was He just Y?" "No." "Was He both X and Y?" "Yes." And I go, "Oh! So, I don't need to be so concerned." And... but it taught me that the X and Y simply represents duality. And so, as we speak about the gases, there's duality, right? But our human behaviour is based on duality. And so, we can lean towards the X. Or we can lean towards the Y. But I'm going to talk about, just in general, the Xs and the Ys. But I'm glad to say that the test has been developed. And the darn thing works. You know, so... Oh boy. So, it's like... I go, "Oh boy." Yeah, this is not something that's going to be made available to the general public. This is just for me to know, that know, that know, that what I speak of, it's true.

So, we're on number one... So, what about the X and Y DNA program? He's... Well, the X.... Let's talk about the X... He says they can't survive unless there's a fight. So, the X part of you is programmed to have a fight. And this DNA program is for you to win. Like you've got to win. And so, the true self-value, He's saying, of the X is the importance of winning. And if you lean more towards the X and you lose: well, you can get very upset. But if you're more towards the X, that DNA program, and the more disappointment you have in life: you can choose to die. You can just give up on life very easy.

And this is really, really, really interesting. And so, you can be mostly Xs. Or you can be mostly Ys. Or you can be like 80% X, for example. He's giving me an example. And 20% Y. Or vice versa. But whatever that relationship is will dictate your personality.

So, He says the Xs love war. They love to fight. And He says 50% of the population on the planet have an X DNA. And 50% of the Xs, He's saying... Oh, I see what's He's saying. I see what He's saying. No, no, no... He's saying 50% of the Xs is split up. So, actually what He's showing me is... What He's showing me: there's 100%... Okay, let me get it right. 100%. Then He says 10% is combination of X and Ys. Then, He's showing me 50%. Let me get it right. And 50% are the Xs, mostly the Xs. And the other 50% of the 90%, what He's saying... He's saying original... So, 50% of the 90% are mostly Xs and the other half are Ys. So, that's what He's saying. So, He's saying 90% divided by 2: that's the X and Ys. Then, He says the 10% that makes up the 100% is basically a combination of X and Ys. Interesting. I hope I didn't lose you.

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So, really, we live a life where we are pre-programmed. And again, He's saying, based on that program, it will dictate your behaviour, even the experience that's been written for you to go through. Yes, written... Written.

So, point number two... The Ys. So, I don't want to go into, "The Xs are bad; the Ys are good." I don't want to go there because I don't have enough maturity. I don't understand what this is all about. He says, "That's right." (laughs) I don't. So, 50% of the population of the planet are Ys, right? And so, He's saying that there is a division with the Ys of light soul pool and dark soul pool. And He says the Ys... well, they're able to overcome losing much better than the Xs. And the Ys, they like to work hard and earn their keep. The X don't like to earn their keep. They like to steal from the Ys. Remember: this is like a behaviour program. Are you leaning more towards the X that likes to steal? Or are you leaning more towards the Ys where you basically like to give?

He says 90% of all law suits are started mostly from people who move towards their X DNA program. It probably makes sense because that's... that's the DNA program that maybe you need to have in place to sue someone. But like I said, I don't quite understand it. But what He's telling me: that 99% [needs to be discerned further] of all law suits are started from someone who is, He says, mostly an X DNA program. Thank You. So, it's mostly.

So, number three... So, how does a Y deal with a problematic human being that is X DNA driven? Besides avoiding them completely, how do they do it? I mean, how do you do this? Well, you need to consider the following. He says all X DNA program individuals, okay... This is who are mostly Xs. They're probably like 80%. We're talking constant. You know, this is through most of their human life experience. This is a high level X... He says they are mostly cheap people. They don't give. They take more than they give. If they give 10%, they'll steal 90%. That's the program. There is no balance. There's no balance.

He says they love to go to events where people get injured. Soccer, football... England... People who know me, they know that I don't like to see people get hurt. And I don't like to hear about people getting hurt. I'm very sensitive that way. If there's blood being spilled, I'm probably going to faint. If I don't faint, I'm going to feel queasy. I mean, that bothers me. Well, if you're mostly an X: that does not bother you. And He says those who are mostly Xs: they're not really able to forgive. They're not able to forgive.

Now, He's saying, "Let's get off topic here." As we look at soldiers around the world, okay? So, these are close to 100%, the figures I'm going to give you. He says North Korea: 100% of their soldiers are 90% or more X DNA driven. They love to fight. ISIS is 100%. The US is 90%. Russia is 100%. China is 60%.

There's a point I'm trying to deliver here. Canada... Here's the point... Percentage of soldiers that are mostly X: 1-5, 15%. That's why we are peace keepers. We are

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already programmed to be a peace keeper. We're not programmed to be ground troops, to go in and get killed. That's not our DNA program. And it has nothing to do with being a coward. It's not our program. It's not our purpose. The role for Canada based on this... And we can do a simple test. A simple test. It will demonstrate that what I'm saying is true. We are peace keepers. So, we should not listen to the rhetoric of other countries that say, "Canada, you're not doing what you're supposed to be doing." I mean, that's hogwash. We should not listen to that rhetoric.

So, point number four... So, how do we deal with these people who give us problems? Particularly when they're only there to win. Because if you're mostly programmed on a X DNA program, that means if you lose... If someone beats you at cards, someone hits the ball further than you, someone wins the lottery not you: you're going to be angry. You see, when you win against an X DNA programmed person that is mostly X DNA: they will have revenge towards you. Remember: very few can actually forgive. So, what you need to do with these individuals: you don't let them know what you're doing. You don't make commitments to them that you can't keep. You don't even make them your business or marriage partner. This is assuming that you're in balance. Because if you get involved with someone who is mostly an X, that person or persons will make your life miserable. Don't judge or criticize them because they can't handle this. And don't let them make important decisions for you. This is valuable information. You know who these people are. You don't need a profile. You know who these people are.

So, point number five... I mean, the question, "Why does God have the Xs here and the Ys, where there's such an imbalance in the duality?" Because that's what we're basically saying is that we've got a very small percentage of the human population... let's saying anywhere from 5 to 10% that's in balance. The 90% is out of balance.

He's saying the most recent economic crash: it was the X DNA that caused the economic crash and caused certain banks to fail. When you take a look at Warren Buffet and Bill Gates: they're in balance. Both of them are. You know that they're in balance. They're very, very smart, sharp business people. On top of that, they give. They give millions, zillions. They give. How many billionaires do you know that give the way these two billionaires do? And when you look at billionaires today, you ask the question, "What do I know about them being a giver?" That's what you got to ask yourself. "Is this billionaire a giver? Or is the billionaire a taker?"

He says Planet Earth is a staging for people to go through hell. Wow, no kidding. He says half of the Xs don't have a soul. He says their soul's gone. We're talking about 25% of the population. He says they are the ones that is causing the big problems on this planet. So, those are the ones that you don't want to let them know hardly anything that's going on.

Then, He says half of the Ys: part of their soul is in purgatory. And so, these are the ones that's going through their bad karma in order to get their soul back. We'll talk about that later.

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But I look at... It's like God having an experiment where He makes one group that can't forgive unconditionally and the other group that can forgive unconditionally. So, the experiment demonstrates: as long as you have the individuals who are mostly programmed to be an X on this planet, it's a no-win situation, unless we understand how to deal with it.

He says the Jewish people... well, they're in balance. They are able to forgive through atonement. Is it atonement? Atonement. Thank You, Father. And He says for the Palestine, Palestinian... Thank You. He says 95% is mostly X.

Kim Jong-un: 100% mostly X. So, we have to understand how to deal with these individuals. The idea is when you're dealing with someone who is mostly an X, you have to ask yourself, "What do they need to experience in order for them to think they have won?" That's how you can overcome the ones who are mostly an X. And you have to think deep.

So, point number six... The science between X and Y. He says there is a separate biomarker... yes... to confirm X or Y. Well, I know that because we did that just today. Did it on my own. And one of the things that I do is... For example, if there is a test to show if you're really connected to Christ: I will develop that test and I will be the first one to test myself. Because I know I'm 100% connected to Christ. And then, the evangelists who say I'm not: they'll come up with the right protocol, the right approvals in place... I'll say, "Let's do it. Let's see who you are." This would be a good, good study by some university. Let them go through ethics. Let them comply with whatever, whoever they have to comply with to get this thing done.

But He says, yes, there is an issue with ethics. The test could be abused, particularly if it's misinterpreted. And innocent people could be slaughtered. And it usually happens that the ones who are slaughtered are the ones that are doing good for the world. I mean, that's just the way it is.

So, the seventh point... Racial profiling. This is very interesting here. He says in the United States, 30% of the Black African Americans, He says, are mostly X DNA. Then, He says 70%... It's a fluctuation between X and Y, mostly Y. But I want to focus on the 30%. But He says in the last year, 90% of the Black African Americans killed by the police were mostly driven X DNA program. So, there's something that we need to know on a psychological level: what is the psychology of someone who is mostly driven to be an X and a Y? And what does it mean if someone is tested? For example, they're 100% X and 100% Y? And how does it impact the overall body chemistry? How does it impact taking drugs, pharmaceutical drugs, food, diet? Like, there's a lot of questions. Because once you open up one box, you're going to open up another box.

He says in the last year, where a Black African American was killed by a police officer and then a protest followed: everyone who was shot and killed, strangled, whatever...

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they were mostly Y DNA program. So, but what's really interesting: that nobody, no one protested for the ones that were mostly X. But what is really important: how on a subconscious level the protesters knew that something went wrong with these people. To me, that's what's profound.

So, number eight... Religion. We're looking at X and Ys. Now, this is really interesting now. Okay. Okay, type of religion... Here we go. Who is it first? Catholic Church. 25% of the members... well, is mostly an X. The Ys... well, 75%. Now, the Catholic priests... The Xs: 97%. 3%: the Ys. So, you can see with that 97% the potential problems these individuals have caused and continue to cause around the world, outside the Church and inside the Church.

He says Buddhists. Well, the general population... The Xs: 10%. The Ys: 90%. Then, the Buddhist monks, the priests, ministers, preachers, whatever... The Xs is 10%. The Ys is 90%. Wow. Wow.

Muslims, in general... The Xs are 20%. The Ys: 80%. So, you can see the issue with the general population of Muslims: for the most part, they're good people. Then the Muslim imams... The Xs: 98%. And the Ys: 2%. So, you can now see what's going on with Muslim religion, who's causing the problems potentially. It is the imams. It is not really the general membership, population of Muslims. This is important. This is important for the world to understand these numbers.

He says all X DNA, which is mostly X DNA... whether it's preachers, teachers of religion, whatever: they're false teachers.

He says Jewish population, in general. Well, it's less than 1%. We said 100%. But you know what? We're going to say there's going to be at least 1% for the X. We're going to say there has to be at least 1. And the Ys is 99%. And the Jewish rabbis... The Xs is 5%. And the Ys is 95%. So, if there's anything that's going on where the Jewish people are going to be misled: it's going to be among this 5% of rabbis that we have assigned the X mark. I mean, it's fascinating. It's absolutely fascinating when you think about this.

So, point number nine... See, to deal with people who can create problems, you got to know what the core truth is, in the first place. You got to know. So, if you take a look at American politics, for example... So, you take a look at Republicans in general... The Xs: 60%. Man, they love war. And the Ys: 40%. Now, here we go... Republican politicians... The Xs: 92%. Americans vote for Republicans: they are voting for war. And the Ys is 8%.

But, here we go. The Democrats... The Xs in general: 5%. This is just the general population of Democrats in the States. The Ys is 95%. Now, here we go. Democratic politicians... The Xs: 80%. So, you've got Republicans politicians 92% and the

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Democrats is 80%. They're both potential war parties. And the Ys for the Democrats, of course: 20%.

The future of the United States is going to be very difficult if they do not become in balance in the X and Y equation. And if that's the future of the United States, the United States may be responsible for causing the rest of us to fall. And that's why it's so important that radical change takes place in the United States. And it will only take place if they.... someone of influence is prepared to accept core truth.

Members of the NRA... Here we go. Here we go. The Xs percentage: 100%. So, how can the President of the United States come up with a reasonable gun law with the NRA, when most of them are programmed to basically kill, to fight, not able to forgive? How do you come up with a reasonable gun law? You know how you do this? It's very, very simple. You don't let the NRA choose. You let the American people choose. You make a vote where every American can vote on a new gun law. That's what you do.

So, here we go. We're going to go to break. And I'm going to study this more, and more, and more. And we're going to learn more and more about this. But I've noticed that this is a very serious situation if you do not understand this relationship. Because you're going to run into people who are mostly driven to be an X DNA program that will potentially cause problems for you. So, you need to know how to deal with these people.

So, we're going to break. My name is Bryan Farnum. It is the 17th of January, year 2016. And you have been listening to Clarity Radio. Thank you.

("Get Together" by The Youngbloods)

(Segment 3: Noble Gases and Your General Health)

That's right: love one another right now. My name is Bryan Farnum. And it is the 17th of January, year 2016. We're moving along. You're listening to Clarity Radio.

Wow, I'm just thinking about my last statement, in reference to the NRA. It's amazing that no one has been able to figure this whole thing out in the United States. You can't allow the NRA to vote on anything to do with guns, not based on their X DNA program. There's no way. You know, whether it's a referendum or something like that... whatever. The 300 million plus people should vote. Not a group of politicians. They shouldn't vote. It should be 300 million plus people voting on the future of their country, in reference to guns. Why is no one talking about this? Wow. It's such a simple solution.

So, here we go. So, we're on Segment 3. We're talking about noble gases and your general health. This is... This section here is really... It blew me away. And every time

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I do something like this, it's like I have to come up with a new test. You know, sometimes I'm afraid to do the segment because then He says, "Okay now, do the test."

And most of my time is now spent in research. And that's where most of my time is spent. I've got to be able to help seven billion people. And now, some of you are very upset that you can't see me. And I will discern whether or not I'm supposed to. If I get the answer, "No," I'm not allowed to. And that's one thing I won't do is go against the actual discernment. I won't go against Christ. And if you're in trouble, I can actually go to Christ and Christ will go the Almighty God. And if there's approval for something to change, that can be granted. But that's... I mean, you really, really have to... You've got to earn it. And unfortunately, most people have not earned it. They simply look at me as a commercial transaction. And that's the big mistake they make with me.

So, here we go. So, number one... Argon. So, we're going to talk about three gases. And they're the negative side of the noble gases that we spoke about in Segment 1. So, we're going to talk about argon, radon and xenon. Xenon... That X. Get rid of the X. Go. Go. Go. I'm talking about the alphabet.

So, in the universe, when there is a imbalance, a chemical imbalance in God's creation, our human body, a plant: there likely is the presence of argon, radon or xenon. Oh, You want to get into it. Alrighty. Okay, let's do it. He says... Here we go.

For example, in genetically modified foods, there does exist, He says... yeah... three gases. Oh, more than that. But the three same gases we're talking about: the argon, radon and xenon. So, when in a healthy state... this is important... these gases... well, they should not exist. But this is what's fascinating. He says if you boil GMO corn and you've consumed it: argon gas is released into your digestive tract. Thank You. And so, argon gases, when it enters your digestive tract, it compromises your digestive enzymes. Wow. Oh, and you know, this can be tested. "Do You want me to... You want me to do these tests? You do?" He says, "Yes." Yeah okay, I have no problems with it.

And He says GMO corn releases radon gas... here we go... 12 days after it has been picked. Wow. So, this is something different. We were talking about argon, when you boil it, I mean, it's still there. But it's not there when you boil it with the radon gas. But there's something else going on. He says, however, if you feed raw, uncooked GMO corn to animals or even to humans, to kids: the radon gas is released into the stomach, the system, whether it's animals or humans. So, radon gas is released. So, consumption of radon gas... Let's call them poisons. Well, what does it poison? Let's say, the animal meat. It poisons the animal meat. So, if it's farmed fish... well, you know they eat corn. The chickens, the pigs... You name it. If they consume uncooked, raw GMO... and it's... talking about corn... they are being poisoned. He's saying even some corn syrup could have this gas. So, when we eat the animals, we're taking in that gas too. We don't understand enough about gas particles.

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So, He says GMO corn or GMO plants releases xenon gas through the roots of the plant and destroys the integrity of the soil. Oh, my gosh. And that can be tested. And the number one thing it does: it reduces the levels of phosphates for farming in the soil. And it's a potential serious problem, right now, in North America.

So now, He's saying all foods need to be tested for these gases. There has to be a study done. He says of all the foods that man can consume: GMO food is the only source... here we go... of argon, radon for man. And for the soil, it's xenon. I mean, this is the truth. Wow.

Let's go to point number two... See, no one's talking about this. He says there are two sources of argon gas for humans to receive. One is internal. And the other is external. So, we talk about the GMO external. So, let's talk about the internal. We spoke slightly something about it already. But He says the chronic negative thoughts of hurting others will generate argon gas in your body. That's why you want to have good thoughts about other people, all the time. He says the release of argon gas, He says, is number one disease throughout history is brain aneurysms. So, the more negative thoughts you have about... and they're basically malicious intent thoughts about wanting to carry out harm to another: this is a brain aneurysm. Your body releasing argon gas...

He says the second most common disease... Remember, this is negative behaviour on your part. This is internal we're talking about. It's heart attacks, heart disease. This is from holding a grudge, not forgiving others and wishing harm. So, if you're mostly DNA programmed to be an X, you're going to be more likely to end up with heart attacks, heart disease. That's why these tests are very important because you can almost predict the outcome of someone. He says insurance companies, which I don't want to go there... He just gave me insurance companies.

But He says the third most common disease is stroke. And this is from not wanting to live anymore because people around you make you angry. Wow. This would be intense feelings that... negative feelings that you experience on a regular, daily basis. And then, you've got this build up of argon gas. Human stem cells release argon gas.

So, number three... How does the human body manufacture radon gas, which is the spoken word? To deal with the... Is connected, not which is. Is connected to the spoken word. Now, here we go. He says no radon gas in the human lungs equals no asthma. So, He says people, in general, who have asthma are judging people harshly. If no one verbally judges another human being harshly, maliciously: they cannot have asthma. It's very rare for a baby to have asthma. And many are diagnosed of having asthma. But it's not really asthma. But the spoken word: I mean, the more you speak poorly, maliciously of others, you're going to have that build up of radon gas in your lungs. Hey listen, when you take a... the ultrasound: it's not going to pick that up. A CAT scan won't pick it up. MRI won't pick it up. The PET scan won't pick it up. Likely yes, the urine... The blood, yes... But He says it's all connected to lung disease when you have the presence of radon gas.

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...chitis: this is from criticizing people all the time, maliciously. It's tough. But who would figure this one out? Not me. If I didn't have this gift, I would not even know this.

So, the next is pneumonia. And they got to get rid of the P. They got to put N there. This is hating oneself and hating others through one's own spoken word. One wants to die. High levels of radon gas in one's lungs. You just need to understand: your spoken word can eventually do you in. Be kind. Forgive. But for me to say forgive: when certain people are not DNA programmed to forgive, I know this is difficult. But if you believe you can forgive: make that your first option.

Number four... Can the human body manufacture xenon gas? Wow. Xenon. Wow, wow... What is this connected to? Now, He's telling me blood clots. Now, He's telling me amputation. Okay, what is this all about? This is to do with action, yes. Mostly connected to bad karma. Okay. He says mostly connected to bad karma. This is connected... Blood clots is the major role that xenon gas plays, creating the chemical environment/condition that may lead... in most cases, leads to amputation. So, vascular disease is mostly associated with the presence of xenon gas. So, if you are a diabetic and you've got the presence of xenon gas... let's say, in one of your limbs or your arms: there's a 90% chance or greater that that limb will be amputated. That's very scary. And a test can be developed.

And it's not easy to develop these tests. Because you got to know the chemical that's involved. There's different types of coppers for example. There's different types of nickels. I mean, you've got so many choices. It's not just copper and nickel. You've got to know the correct frequency of that copper or nickel. Then, on top of that, you've got to know the sequence, how you enter those chemicals into the container that's holding the liquid. If you order up the chemicals, then you put them in the wrong order: the test will not work. It's very, very tricky. So, when I discern these chemicals, I really need to be able to listen.

So, He says... point number five... The explanation of karma and xenon gas. So, what do we mean by bad karma? Okay so, let's go into this. It means that one had nine separate incarnations. They committed the same injury to another in each of those incarnations. They did nothing to change their pattern. But they would have been told to stop what they're doing, in every case. So, the bad karma acts as a deterrent to change the original, destructive pattern of behaviour.

So, once the ninth injury has occurred... well, the bad karma, from that point, cannot be lifted. Because Christ is the one that takes on the karma. So, I can't go to Christ and say, "Listen, will You take this karma on?" If there's nine incarnations and I go to Christ and I say, "Will You go to the Almighty God on my behalf to have this lifted?" and there's nine incarnations already taken place, and that person did not listen: the answer will always come back, "No." But if there's eight, and the person's very sincere, and I go to Christ, Christ will go to the Almighty God, in every case, and get the approval. And

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Christ will come back to me. In most cases, will say a, "Yes," but this person then chooses to help and do God's work. It's not a commercial transaction. And that's where people make a big mistake with me. Well, the first mistake they make is that they say I'm not connected to Christ. That's the big mistake. Then, they have created huge karma on themselves by believing that. So, it's not easy. So, how do you know? How do you know if you're programmed, or someone else has influenced you in the spirit realm to make you think in a different way to trick you?

You know, I asked one of the questions today... There's a lot of TV shows about psychics. And we were in a general conversation. And I asked the Christ, I said, "For anyone who watches these psychic TV shows, do they create bad karma?" And the answer came back, "Yes." "And the actual psychic," I asked, "the actual psychic, is that person creating huge bad karma?" The answer came back, "Yes." Because in most cases, that psychic is taking someone away from Christ, from truth. And they're going into a realm that they have no business going into. So, I was surprised. But I wasn't surprised. So, you have to be very careful when you look through the TV channels. Don't sit down and watch those programs. So again, He's saying if there's less than nine injuries... Again, He says if the person's prepared to make a sincere commitment to change: you can be healed. You can be set free. But He says your karma can only be passed onto Christ if you are really sincere. He's saying that again. And He's saying you cannot con Christ. You cannot do a con job on Christ. It's not possible.

So, point number six... Can you create bad karma by knowing the truth about GMO, for example, and not ensuring that the right people are notified of this truth? Yes. You see, once I learn something, I have to get it out there. Otherwise, I create karma. So, if I asked, for example, for someone to help me, and you're in a position where you don't: you could create bad karma. And I do need your help.

So, how can you help? Well, you can tell at least six people of this radio program and give them the information that you learned about the argon, radon and xenon and other topics. And remember that the argon... when we're talking about GMO food: that's connected to human digestive system imbalances, over time, that can lead to a serious illness. Radon is animal, fish meat poisoned. Xenon is the roots of the GMO releasing gases to the soil to destroy the phosphate levels and other levels.

He says send letters to Greenpeace and letters to major activist organizations. Tell them about these gases. Tell them about the radio show. You only want to send letters to people who are not promoting GMO. You want to send letters to people who are against GMO. Send letters to TV show producers that promote healthy living, worldwide. Let them know about this truth.

The truth will set us all free. And don't be afraid. I mean, you're simply asked to write a letter. Would you do what I'm doing right now today? Would you do this radio show? Would you have the courage? How many of you? Not too many. But all you're asked

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to do is to send a letter, to talk to six different people of influence. Let them know. Send an email.

But He says in the case of not helping to stop GMO food... We're on point number seven. What is the potential consequences that can... one can pay in respect to the bad karma? Well... Well, first of all, you've got to do this nine lives. You've got to ignore this message nine times. And so, you're playing spiritual roulette. Are you on your third life? Are you on your ninth, final life? And you'll know.

And so, you... If I ignore it, I would come back in another incarnation with a very serious food sensitivity. It's not to GMO. But it's to God's creation. So, if you basically knew the truth, you had influence to make a change: why should you come back into another incarnation and enjoy God's creation, when you helped to poison so many individuals? Why? And that's your karma. Don't go down that route.

You can come back and you can't conceive children. Your sperm is compromised. Your egg is compromised.

You can go through severe obesity. I mean, people who know the farm industry, the... when they feed GMO corn to the cows: they become fatter. And the cows that graze on the natural soil, grass: they're not as big. But remember: as these GMO cows become very big, very huge, they have these gases that's in their system, that you are taking in. Remember. And not to mention, potentially, these gases going into the cows' milk that your children or you are drinking. See, we just don't get it. We don't get it. And very few people around the world are prepared to do the science on this.

Number eight... So, what else can you do to protect others and yourself? Well, this is what you need to go. You don't go crazy. You need to start your own seed bank. And store it. Seek out organic farmers and let them know about this truth. Go to your local Member of Parliament, minister, worldwide. Let them know about this truth. And do not present yourself as a crazy fanatic. Be careful with the words you choose to describe me. Just call me an ordinary man with a spiritual message, who has the gift of scientific intuition, who is a inventor. Make it very, very simple.

And point number nine... Well, what is it? Yeah, that's a good question... "So, what would prevent you from protecting your family, yourself and others from GMO?" Well, number one... You need to have all the truth, the facts. So, you continue to listen to this broadcast. We will give you more information. As we develop the test, we will tell you it's been developed and we will tell you the results. But in the meantime: help me out. Let people know about this truth. Is there any other reason that would stop you from doing it? No. There's no other reason. You just need to know the truth. And I will not let you down. I will give you the truth.

And you need to, to help you, create a data base of GMO facts that you learn from this broadcast. This will help you. And He says, yes, the test of argon, radon, and xenon...

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here we go... will be developed very quickly. He says it will be done within a year. But actually, it's going to be done a lot sooner than that. Maybe it's a year where we're going to take... It's going to be accepted as being very serious. But it doesn't take long. He says... here we go... once it is announced that the test has been developed... here we go, yeah... and that it works, you then are to notify the same people that you contacted this month or next month and let them know of the tests. Let them know of the results. And when I do announce it, I will have someone credible to validate that the test actually does work. I will get someone who will swear; that you will say, "Yeah, you know what? I can trust what this person is saying." So, that's the promise I will give to you. Because that's the promise Christ is giving to me.

Because one of the things that we need to do is we need to come together. And we need to, particularly Canada here... This is such an incredible, incredible country. We have a great system here. But because we are much more spiritual, we're much more loving compared to most other countries... We're not a war country. Because we are all of these things, we make other countries feel uncomfortable. And they want us to be like them. And we can't be like them. And so, as we move along and we don't become like them, they will choose to beat us up, to make our life difficult. They will force us to do things that we don't want to do. And so, one of the ways that the Christ is going to help this country, eventually seven billion people, is to provide the science in different areas, different fields of medicine, of farming that will show the correct path that we should all go.

So, we are going to break now. And the next segment's going to be a very difficult segment. If you got any kids, young kids in the room: please don't have them listen to the fourth segment. It's way too sensitive.

My name is Bryan Farnum. It is the 17th of January, year 2016. You are listening to Clarity Radio. Thank you.

("Brothers in Arms" by Gregorian)

(Segment 4: Canada's Role/North Korea)

And we are back. I tell you: this broadcast has been the toughest I've done because of the truth. And whenever you speak truth and you put the truth out, particularly through the media, there is an impact. And things are changing in the spirit realm where the information is going to be really received. Certain changes were made.

And so, it's the 17th of January, year 2016. You're listening to Clarity Radio. My name is Bryan Farnum. Welcome.

And so, number four... this segment... We're going to walk you through. And I welcome all agencies, government agencies, intelligent agencies, all human beings.

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And the purpose of this next segment is to try to avoid a major potential conflict with North Korea. We may not be able to avoid the actual conflict. But what we may be able to do is shorten the actual conflict, so it doesn't expand into something that... Well, you know where it can lead to.

So, here we go. Point number one... And we're talking about Canada's role. And this is why Canada needs to really recognize that... I mean, our soldiers are not mostly programmed to be X DNA. We're not. I mean, this is tough. You know, we are peace keepers. And science can prove that. And we have to accept science, particularly when it's proven to work.

So, Kim Jong-un of North Korea... I hope you're listening. So, it's about his DNA. He's like 100% X. And so, he's got a very serious mission. He's determined. And so, the issue is: how do we stop him from his mission, his agenda, which the world knows? So, how do we make him believe he has won? And that's the key here. So, what does Kim Jong-un need to experience, in order to feel that he has won? And we're going to start off with eight different possibilities.

- So, number one... Of course, he would want all sanctions lifted off North Korea.
- And number two... He would want North and South Korea to have some sort of economic trade agreement. Some of this, he knows on a conscious level. And the other is on a subconscious level. So, I've gone into his conscious and I've gone into his subconscious through Christ. And so, Christ does not lie to me. Kim Jong-un would lie to me. That's why I would not go to him direct. That's why I'm not going to go into the spirit realm and talk to someone who's died. They'll lie to me. But if I go to Christ: Christ will not lie to me.
- The third... North Korea gets a seat at the UN or has some sort of say.
- Number four... He wants to have a nuclear bomb to protect North Korea from Iran. Whoa. From Iran. So, who's thinking about that, right?
- Number five... For the United States to open up trade with North Korea. I mean, we have to find out how do we do this. And we're coming to it.
- And six... For Canada to be a peace broker. That would be nice, wouldn't it? That we wake up tomorrow morning, we find out that Canada is some part of international peace committee. Oh, my gosh, God would give this country so much favouritism. God would give Justin Trudeau, our Prime Minister, so much favouritism. The Members of Parliament who supports our Prime Minister so much favouritism. But the question is: do the Members of Parliament, do they all love themselves? Because if they don't, they won't support this.
- Seven... He is not to be assassinated by Russia and/or Iran. See, this is subconscious. This is subconscious.
- And number eight... His family members are not to be killed. It's conscious and subconscious.

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So, let's move onto point number two. So, how does Kim Jong-un... well, how does he have to feel that others have won? Let me see here. Hang on. So, in other words, the question really is... It's coming to me. What does he need to understand to know that he's made someone win? I mean, he has to make South Korea feel they have won. So, how does he do that? Well, he has to stop all military aggression, and return to diplomatic talks, and not break them off. He has to be consistent with his behaviour. But then again, his behaviour is consistent. It's consistent inconsistent. So, he is consistent with his overall behaviour.

See, South Korea needs to return certain prisoners that's in jail in South Korea, back to North Korea. This is part of this subconscious arrangement. So, when South Korea and North Korea and South Korea's allies are negotiating with North Korea and North Korea's allies: a prisoner exchange needs to be on the table to lead towards peace.

And now, on a subconscious, there's this thought that says South Korea is to allow North Korea to open up an embassy in South Korea. That would be wonderful. But how do you get there? How do you deal with such an individual who is mostly X DNA driven? Who is mostly... Meaning, who mostly only cares about what he wants. He wants to steal from others. He can't forgive. And to get what he wants, he wants war.

The third... The third point... North and South Korea... well, economic trade agreement. So, the following information is very important for all governments to understand. He's saying this is mostly to do with China and its relationship with North Korea. So, part of the peace process: North Korea has to give China infrastructure projects first right of refusal. This is part of the subconscious deal. And in time, if we do get to this point, where we are negotiating peace... the world is negotiating peace with North Korea: you will see that this will come to pass.

Then, He says part of the deal is North Korea... well, is to buy raw materials from China. Again, the first right of refusal. It's not to do with anything else. So, that economic trade agreement is really to do with China; that North Korea really has to establish a contract/agreement, giving China the first right of refusal for infrastructure and raw materials, the purchase of.

So, this is what Canada, the government needs to consider these points, if they are to act, one day in the future, as a peace broker. And the answer: privately, they will end up doing this. Thank You.

Point number four... North Korea gets a seat at the UN or has some sort of say. Okay so, this is almost like an impossible dream. I mean, how can this be? Let's look at this. He says... here we go... it's more to do with North Korea's relationship with China.

So, how do you make China feel they have won by allowing North Korea to have a seat? Well, North Korea must agree never to vote against China at the UN. See, as we move along with each point, what we're seeing is that there is a subconscious, very

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close relationship between North Korea and China... China dictating what North Korea is to do or not to do. So, when the world is actually talking to North Korea, when you send a threat to North Korea: you are also sending a threat to China. You need to pay attention to this.

He says for the UN to feel they have won... Okay so, this is what the UN needs, on a subconscious level: that North Korea agrees not to wage war against South Korea. That's very simple, but yet very difficult to achieve.

So, for North Korea to feel they have won, how does this happen with this whole issue with the UN? What is it? China agrees never to invade North Korea. So, part of the deal, this relationship is that North Korea agrees never to invade South Korea, on the condition that China does not invade North Korea. This is part of the deal. This is subconscious. So, the world is being given a option, opportunity, a road map on how to win peace in that area, particularly with North Korea.

For China to feel they have won... well, North Korea agrees not to go to war with South Korea... here we go... unless China approves. So, subconsciously, what China is saying to North Korea, "You do not go to war with South Korea, unless we approve." So, that means if North Korea does go to war with South Korea: China gave the approval. So, the western world has to wake up to this relationship and take one's head out of the sand, and realize that this is what's going on, on a subconscious level. Now, maybe, a month, six months from now, it's going to be conscious. But this is the truth that we need to understand. We all need to understand.

So, point number five... So, the leader of North Korea... He wants to have a nuclear bomb to protect North Korea from Iran. And even Iran is so misunderstood by the western world. So misunderstood. So, here we go.

For Iran to feel they have won... Because I mean, X DNA program. Again, there's nothing about forgiveness. I mean, you're talking with the supreme leader of Iran that is like over 90% X DNA program. This person wants war. This individual so desperately wants to have a nuclear bomb. So, for Iran to feel they have won, North Korea agrees not to interfere with any oil pipeline where the Iranians have interest. I don't understand the geographics of the area. But that's what it is.

And so, He's saying for North Korea to leave Iranian pipeline interests alone, Russia agrees to supply North Korea with crude oil and never cut off their supply. So, I'm showing the potential dynamics of what really needs to be understood in completion, giving you the overall picture. We're giving you a macro understanding. We're not giving you the micro.

So, for Russia to agree to supply North Korea with crude oil... This is subconscious here. For them to feel they have won, they need North Korea to agree not to attack South Korea and not bring Russia into a war. So, that means potentially: if North Korea

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goes to war with South Korea, they receive the approval from China and they got the approval from Russia. So, that means, when the United States or any western country threatens North Korea, that threat goes to China and to Russia now. You see, as we go on, we give you more information.

So, for North Korea to agree not to go to war with South Korea and bring Russia into a world war, the Americans need to agree not to do anything to destabilize the North Korean government. Wow. Wow, is that possible? Wow...

For the Americans not to agree to destabilize North Korea, Kim Jong-un needs to step down as dictator and agree to form a democratic government. I mean, this is something else. This really is something else.

So, for Kim Jong-un to agree to a democratic system, the US government must agree to allow Kim Jong-un to keep his family fortune and take the money out of the country. See, at the end of the day, Kim Jong-un only cares about his family fortune. He does not care about the people of North Korea. Doesn't care.

So, the sixth... For the United States to open up trade with North Korea. Here we go. The US needs Kim Jong-un to step down as dictator and replace it with a democratic government. See, this is information for the Canadian government if they become the peace keepers, the peace negotiators.

So, He's saying Kim Jong-un needs to know South Korea will build plants in North America and train the people of North Korea, giving China the first right of refusal. [There's no accident for Bryan to say "North America" because that is the ultimate goal for peace. In addition, in the short term, Kim Jong-un needs to know South Korea will build plants in North Korea and train the people of North Korea, giving China the first right of refusal.] So, there's... It's to do with money. It's economics, a trade deal where mostly China gets the benefit.

For this to happen, United States needs to get North Korea to agree to build no more nuclear bombs and agree not to test any more nuclear bombs. Oh, my gosh. Oh, my gosh.

Well, for Kim Jong-un to feel that he has won, where he would agree to this, to stop testing the nuclear bombs: United States needs to agree not to deploy any nuclear missiles aimed at North Korea on South Korea soil. Wow, that is like... That's like United States saying, "Hey, get that off the table. We don't trust you. We're going to have our nukes right where it's going to be. But not just one. We're going to multiply it by ten." But there's a way to do this.

And so, for the United States to win and agree to this, they don't need any other conditions. Once North Korea shows that they have a serious, sincere intent, plan not to build any nuclear bombs or test, the United States will say that's okay. But of course,

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before this happens, the North Korean's have met many other conditions to satisfy the United States and to satisfy the world.

But it's just amazing, where you've got the North Korean leader holding the whole world hostage, potentially. And you got the supreme leader of Iran holding the whole world, potentially hostage. It's just amazing.

Okay so, here we go... Point number seven... For Canada to be a peace broker. Okay, here we go. For Canada to win and become the peace broker: they need the United States to approve. So, that's the protocol. That is the subconscious protocol.

And so, for the United States to feel they have won and they have approved Canada as a peace broker... well, Canada needs to do something. They need to agree not to vote against the United States at the UN. I mean, that's a tall order. But let's micro manage this. And let's find out: what do You mean by this?

It means that: for Canada to win and agree to this... well, they need to know, before... Going back. So, they don't vote against the United States at the UN: they need to agree... When I say, "they": the United States. Thank You. Needs to agree not to enter any new war without full consensus of the UN. Okay? So, that's what it is. So, Canada can make a deal with the United States not to speak, go against the United States, not to vote against the United States, particularly at the UN. But they have to agree... United States has to agree not to enter a new war without the full consensus of the UN. And that is God's contract for Canada. That is God's spiritual contract.

So, if Canada enters a war with the United States without the full consensus of the UN: Canada has created bad karma. That's it. And we're in big trouble. Don't worry about what the United States will do to Canada. Worry greater what the consequences, spiritual consequences will be to every citizen in this country. It would be economic. Economic consequences. Wow.

So, for the United States to feel they have won by agreeing not to enter any new war without full consensus of the UN, the United States need acknowledgement... here we go... from Russia that they will not enter any new war without UN approval. So, that's what we should be aiming for. The United States should be talking to Russia about this issue right now. And say, "Let's make a deal where we do not enter any new war without the consensus of the UN." That's where we should be going. And then, if they don't agree: no country should support them. Because any country that supports the war that does not have 100% UN consensus by way of majority vote: that country that enters that war will create bad karma.

So, for Russia to feel they have won and agree to... well, all new wars must have UN approval: United States must agree not to do anything to destabilize any foreign government. This is the spiritual contracts that I am releasing to the world. So, that

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means that the United States government would not be allowed to destabilize any foreign government. For example, Quebec... for example.

This is... What? Am I talking out of the side of my mouth? No. This is a potential real threat. So, the United States needs to agree to Canada that they will not do anything to destabilize Quebec and separate Quebec from Canada. That has to be part of the deal. That needs to be on the table.

So, for the United States to feel they have won and they agree not to destabilize any government, United States needs a commitment from Iran to become 100% democratic and the United States needs Canada not to speak publicly against American foreign policy. Wow. See now, we're going deeper. This is the potential events unfolding. And so, I'm giving the spiritual contracts to the Canadian government how to respond to these situations as they unfold.

So, for Canada to agree not to speak against the US foreign policy: the United States must agree not to ask Canada to send troops to war, where United States played a role in the destabilization of the government of the country they are going to war against. This is very, very important. If I'm the Prime Minister of Canada, I'm going to ask the President, "Okay so, you want me to send my troops. Did you play any role in destabilizing the government? Did you?" If there's no answer: no support. If it said, "Yes": no support. That's how it has to go down for the future, for the world. We cannot be known as the dumb cousins. And I love the United States. But we are not being used effectively as peace keepers. And our soldiers are DNA programmed mostly to be peace keepers. They're not programmed to go to Afghanistan and get their legs blown off.

Number eight... Kim Jong-un is... well, not to be assassinated by Russia and/or Iran. Remember: this is potentially as things unfold. So, for Russia to agree not to assassinate Kim Jong-un, Russia is to win by Kim Jong-un... well, what? Getting approval from Russia before going to war with South Korea and also approval from Russia on what weapons are to be used. Okay so, now we're going deeper here. So, Russia needs to give approval, again, to Kim Jong-un on whether or not they should go to war. But more importantly, what weapons are to be used.

So, again, when the western world sends a threat to North Korea: that threat is going to Russia and that threat is going to China. We don't need someone in the Oval Office in the future who is just going to blast away, without having any type of regard for that relationship between North Korea and Russia, North Korea and China.

So, Kim Jong-un will agree to seek approvals from Russia... If that happens, if that truly does happen... If he does seek such approvals, Russia needs North Korea to get approval from China before going to war with South Korea. So now, Russia puts pressure on North Korea to make sure North Korea gets approval from China.

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So, the relationship is Kim Jong-un, on a subconscious level, will agree to do this if Russia gives Kim Jong-un military support, equipment. You could actually draw a map, a scale and you can actually use it as a timeline as things unfold. Then you can see how we should respond.

Then He says something to do with Iran now. Iran will agree not to assassinate Kim Jong-un if Kim Jong-un agrees to buy nuclear waste from Iran to build a nuclear bomb. Okay, here we go. Here we go. Again, Iran will agree not to assassinate Kim Jong-un if Kim Jong-un agrees to buy nuclear waste from Iran to build a nuclear bomb. Okay. This may even be taking place.

So, Kim Jong-un will agree to take on the nuclear waste, subject to half the bombs North Korea makes belongs to North Korea. And the other half of the bombs North Korea makes belongs to Iran. Oh my gosh.

Iran will agree to do this, subject to North Korea getting Iran's approval before using a nuclear bomb. So, if this relationship does develop, Kim Jong-un is not allowed to use the nuclear bomb against South Korea unless Iran approves and also China has to approve and Russia has to approve.

So now... Now, I go further. So, if the western world sends a threat against North Korea: that threat now is against Russia, China and Iran on a subconscious level.

And so, I've discerned on a subconscious level the supreme leader of Iran... Yes, he does want a nuclear bomb. Which countries are the target? There's only six.

- One is France.
- The second is Britain.
- The third is Israel.
- The fourth is United States.
- The fifth is Egypt.
- And the sixth is Saudi Arabia.

So, these countries here: France, Britain, Israel, United States, Egypt, Saudi Arabia... On this nuke situation, they need to get together. And they really need to get along with each other and not go against each other. They have to come as one for them to deal with Iran in the future. And for them to deal with Russia and China, North Korea. We're almost done here.

Point number nine... Kim Jong-un's family members are not to be killed. So, this has mostly to do with certain family relationship members of Kim Jong-un and certain military leaders within the country of North Korea. So, Kim Jong-un is to avoid family assassination... well, he must get approval from Russia, China and Iran before going to war with South Korea. So, here... Very interesting. So, the math equation, the spiritual contracts says that if he doesn't get approval to go to war with South Korea from

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Russia, China, maybe Iran: he has family members, he has military personnel... I say, personnel... that have a spiritual contract to assassinate him if he does not get such approval.

So, I mean, there's hope. Because on a subconscious level, he knows that if he goes against this, he's going to be killed. But there's also hope that this information... the United States, Canada can take this information and put a strategy together to win peace over in that region. Of course, part of the strategy, which we haven't really spoken about, has to include South Korea.

If we don't do this right, potentially we are looking at nuclear war down the road. But we don't need to go that path. All we need to clearly understand, the western word: we are simply not dealing with North Korea alone. And stop making these red line statements. Think about it.

So, let me see if there's anything else. Hang on...

We're done. I've said everything. I'm not going to talk about Pakistan. But that's another hot potato, which Pakistan itself should never be trusted by the western world.

So, we're going to come back on the 31st of January. And we're going to have another broadcast. I'm going to deal with that cold fusion point number five. And wow... You know, there's something that wasn't clear. And so, He wants to provide a clear explanation. And it won't take too much time.

Again, if you can help with the GMO situation, and advise the right people.

And I ask governments around the world to really take three days to think about what's been spoken here today. And just know that I really do want to help this country, Canada, United States. I love the people of the United States. And people who are Americans: you know how much I love you. And you know, I just want to see the best. But I see the path that the United States is going right now is not exactly the best path.

But although even that Iranian... that deal that they made with the United States: in the long run, it's going to prove to be beneficial for the United States because a lot of things are going to be unravelled that will expose certain things about the Iranian government that will place the United States with its allies to change its path and make better choices and make better decisions, particularly with the issue how they need to deal with the supreme leader of Iran and how they need to deal with the government of Iran.

We just need to be able to understand that one of the biggest threats... He's coming through to me... is our own self. Is when we have the capability to do something and make the right decisions and make something that will bring peace to the world and we don't do it: then we ourselves, our own inner self become our biggest threat. And so, don't allow us/you to become your own biggest threat.

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... my name is Bryan Farnum. Thank you for listening. This is a 100% mc^2 broadcast. Again, it's the 17th of January, year 2016. And you're listening to Clarity Radio. Thank you very much.

("Uno" and "Drei" by Deuter)

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Segment 1, "Nine Ways In which GMO Crops Destroy the Soil"
Segment 2, "What is the Potential Economic Impact of GMO Foods?"
Segment 3, "What is the Solution to the GMO Crisis?"
Segment 4, "A Special Healing of the Soul"

Nine Ways in which GMO Crops Destroy the Soil

Well hello. As many people come back from their cottages or they're sleeping somewhere around the world, as I address the many people who listen every week. And the governments of the world, I say to you, we will have at least 70... I say to all of you, please transcribe this broadcast and allow your head of state to know this truth. For you have a huge responsibility to minimize the suffering of the world. For you... for even I know you so well, better know than you will ever know yourself through my gift. I know where you've been. I know what you've done. I even know where you're going to go when you leave here. So please do what is necessary to protect all of life. So there are nine ways in which GMO foods destroy the soil.

Number one... and many will say I'm crazy, just like they thought about the interleukins, about genes having memory and this is another event where one day they will say that he was right. But I'm hoping that they're going to say this right away because if the governments of the world support GMO foods, we are going to be in big trouble. I mean big trouble.

For I say to any university in the United States, in Canada, if you'd like to put on a big event, have me on the stage and have all your professors... I want all your professors in front of me. Give me any topic. You tell me what you want to talk

about and we'll talk about it. Because I have no fear who works through me... it's because it is Divinity, it is truth that works through me, I have no fear.

So GMO plants have a certain behaviour program. There's a gene that's in the plant, we call this a greed gene, g-r-e-e-d, greed. And what does it do? Well, it wants to take over everything. It will take more minerals, water. It will deplete it from the soil. It will take much more compared to an organic plant. Eventually it erodes the soil because it also puts back into the soil, harmful, hazard waste. It destroys the soil. It's a plant that doesn't like to share with anyone else. It's a plant, through it's psychology, it's only happy when it makes others unhappy. We're talking Mother Nature. We're also talking about those who consume the food. It's a behaviour profile.

Second point... does not like sunlight. Compared to the organic plant, the natural plant... I'm going to say natural. I don't like to use the word organic because not every plant is defined as organic. I'm going to say the natural seed God-created plant... I mean, when you have sunlight not coming in, it means that you have some struggle with truth, because the sunlight represents truth. So in other words, this plant really doesn't like sunlight so it's not a plant of truth. This plant is a master deceiver. It pretends to do good for man but it does quite the opposite. They have a gene that says they can't stand sunlight. See the natural, divine plant grows during the day. The GMO plant mostly grows at night time. And so what happens is, you know, like attracts like... You know, scientists, they want you to believe that opposite attracts. It's not completely true. In most cases, it's like attracts like. And so what happens is, if you've got this GMO food that says, "Hey, I don't need so much sunlight," well, what's going to happen is there's going to be a change in the light strands that come from the sun. So the sun's going to provide a reduction in essential light strands. And one day I'm going to do a very important broadcast on what each light strand means. And so in other words, the GMO plant is not utilizing all of the essential light strands that God has given to all plants, to all of life. And there's a process where GMO food grows... the process on a cellular level is called nuclear fusion. On a natural level, it's called cold fusion. And so again, as I mentioned last week, when you have cancer, the process of disease on a cellular level is nuclear fusion. And when you're in health state, that's in a state of cold fusion, c-o-l-d, which again, people are going to say, "Bryan, you're crazy," but it will be proven one day to be true.

So as we move to the third point, contamination of farmer's soil... talking about cross contamination. And now the interesting thing, when we take a look at the last three years, of all the soil in North America, not less than 1% of the total farming soil that's available is low in essential nutrients. Where if you take a look at the GMO crops, they're about 95% low in essential nutrients. I mean this is a big deal. This is a huge factor, okay? And so, we need to be able to study and

review the soils and we should actually go back to the last ten years. And take a look at how the toxins are released into the soil, from the plant, into the water system, into the well system and how we can study the depletion of the population of essential insects that help in protecting the growth of the plant. I mean, God did not give the insects, just because they're a pest. They work in the natural order of life, of creation of life, and I will do a special broadcast one day on the insects and really what their role is.

The fourth point, I mean, GMO plants, crops will cause a decrease in rainfall in the area that, well, in the farm area where these plants are being grown. And you know, one of the things, you know, the scientific community really needs to... I mean, they have to get their act together because they're too sloppy and they don't have enough courage. Some do, but most don't. And see I asked the question, I said, "When someone earns a PhD, do they really earn their PhD through academic development as far as going to school, university, doing your thesis and getting your PhD?" The answer came back, "No," because a lot of people can do that, people who have the opportunity, the parents can put them through school. There's a lot of people can do that. And so I asked the question, "How does one earn their PhD?" It's by taking that PhD and utilizing that PhD to protect others and to use it to bring truth forward and to perform good deeds as a result of you getting that PhD. And a lot of scientists today are not doing this. Now the scientific community, I need your help. I cannot be the only courageous person on this planet. I know there's more of you out there. And we have a huge problem today. And it's going to get worse. You see, what's causing the decrease in rainfall... what's really going on? A natural plant releases three gases into the environment. The GMO plant releases two gases. That third gas that the GMO plant is missing, that is the gas that triggers rainfall. Scientists, go out there and get with the program. So that gas is sending a message, "Hey, we need rain," and so we will find that in those areas where governments elect to choose to take good lands and grow GMO, those areas will be faced with a drought. So not only will that area be impacted in reference to the farmland, the trees, the other plants, life in general. It's going to create an imbalance in the overall population, the birds, the insects, the animals because the plants are going to die. The trees will start to die. Scientists go out and earn your PhD. Move forward and stop with the excuses and stop saying to the world, "Yes, I know this, this, this, this to be true." But you're afraid to work with someone like me that can really get to the bottom of things real quick. We cannot afford to have cowards. This issue is too important for our children, for Canada, this country, for the United States, for the world.

The fifth point, pollutes the water system. Fish get a weak immune system. Frogs get a weaker immune system. End up killing plant life in the rivers.

Let's move on to the sixth. So when we take a look at the subconscious purpose of GMO foods, call this mad science. It's to create imbalance, disharmony, reduce the human population, not by people getting sick. Well, yeah, that's one issue. No, it's by war. I started to figure it out today. It's by war. Because if you have a shortage of food and water as a result of scientific negligence, and you've got countries that are saying, "Hey, I'm not going go with GMO," and they've got the rich soil. They're preserving everything. Then you've got maybe a country like China that causes their country to go through a major drought and so they say, "You know what? We're going to take over that country that has rich soil." In the other matrix, Russia went with GMO foods and destroyed most of their farmlands. That created a big problem.... yeah... war for food and water... the contamination of well water.

The seventh point... one of the main factors for global warming, I discerned, was the reduction in rainfall, increase in droughts, the change in the sun's frequency, farmlands becoming deserts, the temperature of the sun becoming warmer. See, we're trying to take on the role of God and we're failing.

The eighth... all the good seed to be destroyed. You've got the water contamination, you've got the cross contamination, you've got the droughts, the plants dying, not producing good seed. For it's important for governments of the world to buy up good seed. Do not give your power away. Through the process of cross contamination, many of the plants will not produce a good offspring. For people, one day, will fight among each other for good seed. That's if we allow it to happen. But this does not have to happen. Every country should have a seed bank that is highly protected.

The ninth... if we look at the top ways in which GMO will hurt man. Well, creates an Imbalance in the insect population. We know the importance of insects, it will trigger less rain, more droughts, water contamination, environmental contamination and not to mention the virus in the plant that will cause the human population to be sick earlier, where genes are being expressed earlier. This is much of what's going on where, you know, we're seeing let's say age forty... I mean there's a lot of sick people out there between 40 and 50 years old. And you go back when you were ten years old, I mean, you're grandparents for the most part were healthy. And now you've got parents between the ages of forty and fifty, I mean they're sick. They have major chronic disease. And so what we need to decide, what are we going to do? And governments of the world, there's a solution that I will put forward. But I will say that the governments of the world that really embrace this truth and make plans to protect their people... You know, you take the people of Africa... you've got some good soil in Africa. You know, what you do is, the soil that has no GMO food, take a good picture of it. Take a picture. Take the camera. Then five years from now, after you've planted the crops, go back and take a picture of what's going on. Ten years from now,

take a picture. Then take a picture of all those who are crying out for food. They're starving. Take a picture. But for the other countries, the other countries that pay attention, you will be blessed, and you will have abundance of food to help those countries who refuse to listen. But at the end of the day, we're still in good shape and it's a beautiful world.

Thank you.

You're listening to the July 12th, 2009 Truth Radio broadcast on HYPERLINK "http://www.blunt.fm" www.blunt.fm with host Bryan Farnum. We're going to take a short break and Bryan will be back after the break with the next topic, "What is the Potential Economic Impact of GMO Foods."

[music break: Ace of Base, "Beautiful Life"]

We'd like to thank Ace of Base for "Beautiful Life".

You're listening to the July 12th, 2009 Truth Radio broadcast on HYPERLINK "http://www.blunt.fm" www.blunt.fm with host Bryan Farnum.

Just before Bryan begins the topic, What is the potential economic impact of GMO Foods?, Bryan asked me to quote from this Irish Medical Journal. And I haven't had even a chance to read this to Bryan. He just asked me for some bullet points from it. I spoke earlier this week to Dr Elizabeth Cullen from Ireland. She is the honorary secretary of the Irish Doctor's Environmental Association and she wrote a letter to the Irish Medical Journal about GMO foods and I'm just going to read some bullet points and I will put the entire letter up after the broadcast in a PDF file for people to read. This is part of her letter.

"Foods containing genetically modified ingredients are on sale in Irish shops. In a survey of soya based foods undertaken by the Food Safety Authority of Ireland in 2002, over half of the products tested contained genetically modified ingredients. Such products included baby foods and soya desserts. This soya bean contains a foreign gene from a common soil bacterium..."

And then further down, she talks about...

"The availablity of these products is a cause of serious concern, as there are good scientific grounds for the opinion that genetic engineering of plants designed to be eaten, may be harmful to the health. GM is the process whereby genes are associated with specific qualities that are transferred to unrelated species by methods not seen in nature..."

and then further down...

"Indeed, it can be argued that gene transfer via current GM techniques resemble the process of viral infection far more closely than it resembles traditional breeding."

then further down in the letter...

"Approximately 40% of all GM foods on sale contain DNA from a soil bacterium, which produces an insecticide... causing the plant to produce this chemical."

And then further down...

"Little research has been conducted on unintended compositional changes from genetic engineering. More research is urgently needed. Issues of chronic toxicity, carcinogenesis and teratogenesis of genetically engineered foods need are seriously under-investigated. The results of research to date with animals are disturbing. Immune system damage and proliferation of the gastric mucosa have been found in rats fed GM potato, reductions in cellular metabolism, changes in the liver and pancreas in rats fed GM soya, allergic reactions and subsequent lung damage in mice... and a preliminary report indicating low-birth weight and fatalities in rats fed GM soya"

And then further on, and this is something you mentioned last week, Bryan

"To accurately assess any adverse health impacts, it is a necessary to have a baseline health data collected prior to the introduction of the food under surveillance. However, little or no such information is available globally, leading to the situation whereby it is virtually impossible to link adverse health impacts with the ingestion of GM food."

And we do thank the Irish Medical Journal for that quote there.

We do.

Now, I'm just going to put some background music on and Bryan is going to begin the next topic

What is the potential economic impact of GMO Foods?

Wow, very powerful statement. Of course, governments are aware of this truth. But it can be scientific proven. I mean, we don't need this baseline. This is just... I mean, how are you going to have this baseline when the growth rate of GMO world-wide is growing at such an alarming rate? I mean, how are you going to prove anything, right? But you can.

But what is the potential economic impact of GMO foods because this is... I said, "Father, will governments change if people get ill?" "No." The answer's no. In fact, if you take 100 of the top North American corporations, I have discerned that they do not care about the public health, the safety. And I don't care which CEO you are, let's get together and you show me that you do care and I will discern areas in which your company has done certain things that demonstrate that you don't care. That's my gift. I can just lay at night and it's... it's like I'm roaming the internet, but I'm roaming the archives of the Heavens.

And so the first economic impact is well, is war. Instead of governments taking the good tax dollars and helping in education, health care, social programs, they will be forced to increase their military equipment needed... ships, submarines, guns, missiles, defense systems. Why? Because hey, someone may invade you if you've got good soil, if you've got water. And what will happen is that the governments will increase the deficits. As a result of the war, they create less harmony, more division. New economic alignments will be formed worldwide, weakening the central international banking system of the United States of America, the Federal Reserve. I mean, it's brilliant. It's absolutely brilliant. How do you bring the United States down? Through GMO food. Just increase the percentages, the odds, for us to have war.

Second point... economically, well, food will just sky rocket, because there's going to be a cartel that's going to control the seed. The farmer's going to go back to the cartel and say, "Okay, we need some more seed," and they're going to say, "Hey, our price has gone up 40%." And you take a look at certain countries in Africa, they would rather have their people starve than buy the seed. But maybe, at the end of the day... but not maybe, I know... by the countries in Africa rejecting the seed, they're actually helping the people and they're helping their own economic region. They're protecting the health of their soil, of their water systems, of their fishery systems, of nature. They are protecting their part of nature. That's what they're doing. Because with this cartel, you're going to have economic sub powerhouses. And these economic sub powerhouses will actually push the smaller corporations, the small farmers out of business, to the point that we have to rely on the one seed that is bringing harm to the human population.

So if you go on to the third point, the potential economic collateral damage... Well, as the war goes on of course, people... they die, right? Yeah, see what happens, two thoughts come into me at the same time... so we're talking about the wounded, the ones with no arms, no legs, that suffer with different mental disorders. You know, we take a look, the food crisis, the water crisis... our young children, all the sudden they're losing hope, drop out of school. What was

deemed important to our grandparents, the way of life is no longer important to these young children.

The fourth point, we have higher unemployment rates. The world economy becomes fiercely competitive for food and for water. As the nature cycle becomes more out of balance, increase in crime, a breakdown of social values, social structure... I mean it's hard to believe that this food can potentially cause all this. But it's going to. Why? Because it did in another Groundhog Day. And back then, the government just sat back and let it all happen. Back then, not too many people were courageous. But President Obama, he addresses Ghana, and he's talking about conscience, that we have to be more conscious, that he wants to protect those who speak the truth. But the people around him, are they at the conscious level that they can accept this truth? Is he at the conscious level that he can accept this truth? We ask all our ambassadors around the world to make sure that the appropriate parties get a recording of this broadcast. All governments that's been assigned to you, please make sure that they get a copy of this broadcast. And I thank you for your support.

See the fifth point, it's about the money. The government ends up forced to spend more money protecting our borders, our waterways. This becomes a heavy tax obligation on the citizens, well, because the money's got to come from somewhere. And as the economy becomes more unstable, the international banking system potentially becomes more unstable, as new alliances are formed around the power of control over food and water. And as time goes on, as these farmlands turn into drought, the real estate values drop, and the farmers can't get financing from the banks. I mean, this is where we're heading. And people today will say, "Bryan, you're crazy." But when it does come true, the same people who said I was crazy, as they drink their water, they choke on their water and they hide their face. And when they're asked to come on this broadcast, they don't return the phone calls.

The sixth... increase health burden. We're talking dollars. The health care system... people getting sick earlier, so governments around the world, you've got to start putting more money away. As the virus from the plant triggers gene memory, you're going to have a lot of people getting sick, aches and pains, all these MRIs, different blood tests. And you're going to walk around and you're going to say, "We got to blame it on something else." More people become dependent on pharmaceutical drugs. The work performance declines. People can't go to work. You know, around the days of when our grandparents were working, they can work until their sixty-five... most of them. And you've got a group between forty and fifty, I mean they're getting sick and they're dropping like flies. And this is where we're heading.

The seventh... potential change in balance of power, of course. Even royalty around the world, they take this food and they have a gene memory that is triggered that can cause them to get sick prior to their time, well, it has an impact. Their death has an impact on the world, particularly if they're there doing good for the world. Parents are going to be dying sooner. Even some of their children are going to be getting sick sooner. Grandparents, well, they're going to start dying sooner or getting sick sooner. Because this plant is not there to bring harmony, balance to this planet.

The eighth... the spiritual purpose is to separate us from God, from truth because this plant's not of truth. It's not a plant that likes sunlight. I mean, there's certain religions, their building, they have no windows. They don't allow the sunlight to come into the building. For this religion is not of truth. It's of mind control. So what happens spiritually... again, this is brilliant, of those in the spirit realm that have orchestrated this, I mean, absolutely brilliant... See all the actual decisions are made in the spirit and then they're expressed in this stage. So what has been written, decided, has been decided in the spirit realm and we're simply the actors. And you shouldn't get too concerned or get worked up over this. Because there is a Math Equation... when truth goes out, truth will help to diffuse much chaos. See through the chaos that GMO may potentially continue to create, who is man going to blame? The scientists? No. (laughs) No, they're too busy taking the glory. No, no, no, no no, you're not going to blame the scientists. Most will likely blame God. "Father, Father, why are all these people suffering? Why is the land drying up? Why is it my pastor, my priest, my rabbi, why did they not tell me about this? Why Father, why are you punishing us? What did we do?" And so in your mind, you have a false belief that you should be punished. And it's a false belief, because what this does, this contribution to chaos with this plant, it causes people to create more karma. They do more harm to others... well, because of war. And because many other events that can come out of this plant. It's going to create much more mental, emotional imbalances among the human population as things turn to worse.

So moving on to the ninth point, you know, I wanted to know what were the top three false beliefs that connect religion and GMO food. Because they do work hand in hand because you're not hearing any religious leader saying that we shouldn't be having this. Because if they truly had the gift to discern truth, they would know that what I'm saying is true. But they don't. They depend on their memory, their ability to remember, their intellect, their IQ and many of these individuals are geniuses. They know what to say at the right time, but those who are gifted have very few words to say. We don't need to speak much. So through the use of GMO foods, it actually strengthens religion. I couldn't believe it. I could not believe it when I discerned that today... just today. I go, "My gosh." Okay so, how does it? It's false beliefs. Because the false beliefs that the world's going to be told is that God will not allow GMO foods to harm the human

population. You're going to believe it. You're going to buy into it. Many will buy into it. Well actually most of the people who listen to the broadcast will not do it. But most of the world will, because they don't have the luxury to listen to this broadcast. And then what they're going to say, because this is what happened in the other Groundhog Day, "Those who speak against GMO food, they're part of the anti-Christ." Absolute brilliant. And the third point, they're going to make you believe that God blesses man with knowledge to help man. And they're going to say, "GMO food is just one good example." Meanwhile, you've got the water problems, the rain problems, the drought problems. You can't drink the water. You've got real estate values going down. You've got good soil being turned into deserts. And you've got farmers today world-wide committing suicide... in India, in the Americas. That's what we have.

And the truth is not getting out to the world. And I will work with a government, with their scientific team, and help them develop a test that will confirm the hazards to man. You will be given that molecule to test. Forget about this baseline nonsense. It ain't going to work. And I've always discerned that science will eventually come around. And the science that man embraces will eventually bite man in the behind. I've discerned that many times. And so, I'm not here to, through revenge, to expose this information. I'm here through love, with great concern for this planet. I'm here to give truth that is needed to day. So that we can make intelligent informed decisions today, so that we are not facing the United States of America having these big large prison camps throughout their country, people being transported by train to these prison camps because people decided to riot over food and water. And this spreads throughout the whole world. This can be avoided. And this must be avoided. And the people out west... I mean, governments in North America, we need to go out west and we need to help the farmers, because many of the farmers out west, you don't listen. And you don't have enough courage. And you need to have greater courage. And I pray that you will have that courage.

Thank you.

We're going to take a short break and Bryan will be back after the break with the next topic, "What is the Solution to the GMO Crisis?" You're listening to the July 12th, 2009 Truth Radio broadcast on HYPERLINK http://www.blunt.fm www.blunt.fm with host Bryan Farnum. We'll be back in a few moments.

[music break: The Pet Shop Boys, "Go West"]

We'd like to thank The Pet Shop Boys for singing "Go West" and that was from the Live 8 Concert.

You're listening to the July 12th, 2009 Truth Radio broadcast on HYPERLINK "http://www.blunt.fm" www.blunt.fm with host Bryan Farnum. Bryan is going to begin the next topic

What is the Solution to the GMO Crisis?

I know a lot of you are sitting back and you're saying, "Wow, now I've got to go shopping tomorrow. Which grocery store do I go to?" (laughs)

"Well, honey, I think it's time to plant some seed in the backyard." (laughs)

"Fred, how are we going to do that? We live in a condo." (laughs)

Okay so, there are nine points. (laughs) Oh boy, all those people living in the condo, eh? Maybe they're going to have, on the top of the roof, some farm field.

Okay, here we go. So what is the solution? You see, in life, there's always a solution. It's just that we need an infusion of truth. Because we can't have solutions if we don't have truth. You know Iraq? Well, we don't have a solution because we don't understand the truth. Afghanistan... the same thing. We have imbalance there because we don't have the truth. Problem with North Korea, we don't have the truth. India, Pakistan... we don't have the truth. Israel and Palestine... we don't have the truth. Because hey, if we had the complete truth, through that understanding, we would have the solution. So where you do not have the solution, in every case, there is a fragment of truth missing. So the problem with GMO foods is that the complete truth is not understood by the general public. And there's a lot of hesitation for this truth to be expressed.

So the first solution, we need to have an International Council formed. And I said, "Okay Lord, who is it again?" (laughs) And yes, guess what? Yeah, Canada, Norway and Japan. (laughs) Okay, and I said, "Lord, I think they may be listening, because I know the Governor General is aware of this. She's received a letter. And I believe she's received some correspondence from the Queen of England, so... well, I don't know, you know, Lord are they really listening?" He says, "They are." So I'm hoping that someone's going to have enough courage to move this thing forward. And so here, what are they going to do? Well, they're going to be taking a look at what's going on with the GMO food, among other things: the drought conditions, the decline in insect population, the increased rate of disease among populations, the overall adverse impact that GMO food has on the world. They're going to be given lots of information. But this will be a sub group of the International Council. And this sub group will report to the International Council but they will be responsible for protecting the

interests of this planet, all life that exists, of course, including mankind. So that's going to be a huge responsibility.

The second point... well, there needs to be lots of money made available for this GMO research. There's very little money made available that is given to those scientists with sincere intent to validate the claims in favour or against... these scientists that have a neutral position. It seems that the scientists that get the money are the ones that are working for big business. And so the International Council, the sub council would orchestrate and make sure that scientists are carefully selected. I will help out with that process because I, through my gift, I know every scientists and I can see what their intent is on a subconscious level. And through this sub agency, there would have to be a central reporting agency for all governments including scientists, research study groups. Report anything that is of great importance, particularly if that information is negative, that it brings harm against anyone or anything. This research would support a central reporting agency that includes that all scientific studies get funneled into this one central location worldwide and it would involve setting up ethical comparison studies. We need this to be done, you know, to avoid potentially what can take place. See, a lot of people in religion, particularly Christians, they just sit back and they read scripture. And throughout history, there's a famine and they read Revelations, "Oh, there's going to be a famine," and all this stuff, but they just sit back and they just accept it. But they don't talk about this truth publicly. They're too busy taking the money in. But they're not really protecting our interests. And the ones that are gifted, on some level, are not courageous enough to speak up.

The third point... nations around the world need to set up non GMO growing areas. So that means a major part of a country, maybe one province, for example, is completely GMO free. Why is this important? Because you've got to be able to do the comparison study. You've got to be able to take a look at the adverse impact, negative impact of GMO foods, crops compared to the region that does not have GMO foods. Governments worldwide, you need to provide incentives, financial incentives, for natural farming, organic farming. Because at the end of the day, it's going to be proven that this was a good investment. You have to provide the incentives. Even for stores to be created, they sell non GMO products. Because even these stores will be proven to help to reduce the health risk, disease among your governing population. Because at the end of the day, someone's going to have to pay the bill. Well, in the United States, they're trying to make sure everyone's covered with insurance. People going bankrupt every day because they can't pay their hospital bill. Here in Canada, we have a good system but the system can crack if we do not manage our environmental issues wisely and if we do not take this message tonight seriously. Then, of course, down the road, "Bryan, you were right. I'm sorry we didn't listen to you." But in the meantime, the soil in Canada was destroyed, the water destroyed, and people got sicker and sicker and sicker.

The fourth... there has to be an international separate monitoring system, something to monitor outside this International Council... another sub group and they could actually be like the police force. They actually implement. They come up with laws, they come up with policies based on receiving information from the other sub group that was doing the collective data exchange of the various scientific data from other groups worldwide or from other groups outside the scientific community. Then they meet, exchange the information and that information is help to create international laws to protect this planet with a primary focus that if we don't do this, we're looking at an increased occurrence of war among nations. And so this group would be responsible for follow up on all studies showing adverse negative impact on whatever, that they would make sure that these reports are forwarded to all governments. So they would be the liaison and they would communicate with all governments. And one of the laws, in the short time, is that all governments should pursue, consider is not more than 20% of the farmland that's available in one particular country, that is being used, I'm saying usable farmland... I'm not talking about vacant, I'm talking about actual usable farmland... it should not be more than 20% of the total usable farmland. So the nations, the countries, the governments, the provinces that accept this, you're going to be better off. And that 20% should be completely in a separate area. It should not be part of your "Let's take the best soil in your province and use this best soil as a guinea pig." It should be in an area where you have inferior farmlands because the biotech companies say, "Hey, we don't need such great land." So why would you give them your best land? Well for many of you, you know why. You know why.

The fifth point... biotech companies should be made financially fully accountable, responsible for bad science. What I've discerned is that governments should not provide any funding, research grants to biotech companies. And the governments that do provide the funding, they should be prepared to share in the financial damage, compensation that would be awarded to those groups, farmers that claim to be harmed. Because it's going in that direction... it's going. Biotech companies, labs, the universities should be required by law to make public their findings, particularly if the findings are negative. And by law, they should be required to provide this to the public within three months. The third, this is my discernment. This is not me thinking of what should be done. This is actually discerned. Biotech corporations must be in a position where they are not allowed to control the media. I had one client that came and saw me with huge environmental allergy issues. I discerned in another incarnation this person was a scientist that was involved in the altering of plants. So the scientists are going to be coming back in another incarnation. They're going to come back sick. And what they're going to find out is that the science that they believed in, in that life will not be able to help them.

Six... the movement of the seed, the products... the biotech corporations should not have more than 20% market control. I discerned that grocery stores should not be forced to sell GMO foods with the fear of punishment or some level of intimidation. Again, He wants me to say again that biotech corporations should be made to compensate farmers for damages to their soil. Very interesting... this is very interesting... biotech corporations should not be allowed to own any grocery store, food outlets. When that happens, we're S. O. L. You can kiss the small farmers goodbye.

The seventh point... biotech corporations must make full disclosure to the public, well, what's in the plant. If there's a viral strain, bacteria, I mean, antibiotics, because there are some plants that do have antibiotics. They want to feed this to the animals... gets into the human population, causes the human immune system to become weakened... mad science. Doctors use this terminology, antibiotic resistance... a great term. But to feed this to the human population? Oh my gosh, to find that their bone weakness, bone disease. The population... much will suffer with ADD, which makes us dumb, more complacent. I mean, it's tough.

The eighth... the government responsibility? Governments worldwide should let the public know the harm and disclose all information that they have if they have information that shows that these plants are harmful. They have to enforce strong biotech laws. And governments have to do what is necessary to protect their resources, particularly Canada. Water... I've discussed the water issue. It's a big issue. Our Arctic, protect it. Protect our farmlands. And bring in laws that control the use of GMO in this country and then watch the other countries slowly fall apart.

The ninth... news media... international, domestic, they should be made to have a legal responsibility to report adverse effects of GMO food planting worldwide, particularly if they are approached by honest scientists. It must be by law that they report this. They must report the studies and report the violations of biotech corporations. The question is, "Do all governments worldwide have GMO foods on their menu? Do all royal families worldwide have GMO food on their menu?"

Thank you.

Mr. Scott Pruitt, Administrator
U.S. Environmental Protection Agency
1101 A
1200 Pennsylvania Ave. NW
Washington, DC 20460

FCF 2025208

MAR 9 2017

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EXECUTIVE SECRETARIAT

March 24, 2017

Scott Pruitt, Administrator
U.S. Environmental Protection Agency
Mail Code 1101A
1200 Pennsylvania Avenue NW
Washington, D.C. 20460

Water Docket
U.S. Environmental Protection Agency
Mail Code 2822T
1200Pennsylvania Avenue NW
Washington, D.C. 20460

Office of Water
U.S. Environmental Protection Agency
Michael Shapiro, Acting Asst. Administrator
Mail Code 4101M
1200 Pennsylvania Avenue NW
Washington, D.C. 20460

Office of Water
U.S. Environmental Protection Agency
Benita Best-Wong, Acting Principal Deputy
Asst. Administrator
Mail Code 4501T
1200 Pennsylvania Avenue NW
Washington, D.C. 20460

Re: Waters of the United States; Potential Revisions to Clean Water Rule--Scientific and Technical Information to be Included in Administrative Record

Dear Mr. Pruitt, Mr. Shapiro and Ms. Best-Wong:

This letter is submitted on behalf of Earthjustice, Sierra Club, and Puget Soundkeeper Alliance (the "Conservation Organizations"). On February 28, 2017, President Trump signed an Executive Order directing review and potential revision of the Waters of the United States Rule, 80 Fed. Reg. 37,054 (June 29, 2015) (hereafter the "Clean Water Rule"), instructing that such review and any revision must be in keeping with Justice Scalia's opinion in *Rapanos v. United States*, 547 U.S. 715 (2006). In news stories that same day and shortly thereafter, Mr. Pruitt vowed to quickly withdraw the Clean Water Rule. Based upon the Executive Order and Mr. Pruitt's statements, the Conservation Organizations assume the directed review and likely withdrawal/revisions to the Clean Water Rule are occurring. This letter is to ensure that a number of scientific, technical, and legal matters are before, and considered by, the U.S. Environmental Protection Agency (the "Agency") and that they are included in the administrative record for the Agency's ultimate decision.

INTRODUCTION

The Federal Water Pollution Control Act (a/k/a the Clean Water Act) is one of our nation's most important and prescient environmental laws. Congress enacted the protections in the Federal Water Pollution Control Act at a time when news reports of horrific pollution incidents highlighted the fact that our waters were in trouble and we could not continue to allow their use as dumping grounds for pollutants without wreaking havoc on entire ecosystems and

NORTHWEST OFFICE 705 SECOND AVENUE, SUITE 203 SEATTLE, WA 98104

T: 206.343.7340 F: 206.343.1526 NWOFFICE@EARTHJUSTICE.ORG WWW.EARTHJUSTICE.ORG

jeopardizing our drinking water, food sources, commerce and recreation. To that end, Congress' stated purpose and intent was to "restore and maintain the chemical, physical and biological integrity of the Nation's waters." 33 U.S.C. § 1251(a). Congress did not say that only those waters navigable in fact or with a significant nexus would receive those protections. Rather, it defined "navigable waters" generally as "waters of the U.S." 33 U.S.C. § 1362. The Legislative History of the 1972 Federal Water Pollution Control Act further demonstrates that Congress intended broad application of the law and its jurisdictional reach in order to foster the critical protective and remedial purposes of the law. Statements from both House Members and Senators in policy and conference committees made clear that the term "navigable" as used in the Act was not intended to constrain the reach and jurisdiction of the Act to protect against and clean up pollution in all our nation's waters. Members pointedly stated that they were concerned that inclusion of the word "navigable" *not* be read as limiting the Act's application in any way. Rather, their stated intent was for the Federal Water Pollution Control Act to have as broad an application as possible to protect all waters of the U.S. Members noted that the intent was to move away from the constrained notions of jurisdiction, and, in particular, notions regarding navigation, in order to ensure that waters are protected in a full and comprehensive way. *See* A Legislative History of the Water Pollution Control Amendments of 1972 (Cong. Res. Serv.), at 178-79, 250-51, 327, 818, 1495.

Further, the Act is plainly a water pollution act, not a law about navigation (in any sense). The Army Corps of Engineers ("COE"), early in the life of the Federal Water Pollution Control Act, made an unsuccessful effort to impose strict navigation constraints on its obligations by construing its jurisdiction very narrowly under the new laws to match its jurisdiction under navigational laws such as the Rivers and Harbors Act of 1899. In *Natural Resources Def. Council v. Callaway*, 392 F. Supp. 685 (D.D.C. 1975), the court soundly rejected the COE's attempt finding that the Federal Water Pollution Control Act dictated a wider sweep in order to address pollutants to the nation's waters.

As EPA research and reporting repeatedly shows year after year, we still have a long way to go in applying the Clean Water Act and meeting its directives and, therefore, attempts to constrain application of the Clean Water Act will be extremely damaging to our nation's waters. Toxics are still discharged into our waters while agricultural discharges are almost wholly unregulated, account for almost half of the pollution entering waterways, and account for a very significant portion of the waters that are currently failing to meet basic standards of cleanliness (including the hypoxia problem in the Gulf and toxic algae blooms in lakes throughout the Midwest). *See, e.g.,* EPA, *Nat'l Rivers and Streams Assessment* (Feb. 2013) where EPA reports that for its 2008-09 study well over 50% of the waters assessed exhibited *poor* conditions and only 20% were classified as "good." The results by region were even more disappointing with 62% of the waters in the east classified as poor and 58% in the plains states. (Copy enclosed.)

EPA's summary of states' reported water quality data paints a similarly dismal and apparently worsening picture. States' reported data on EPA's website at https://ofmpub.epa.gov/waters10/attains_index.control#total_assessed_waters, (last visited March 22, 2017) show that states have an extremely poor record of assessing the quality of their

waters with rarely more than one-half of waters assessed and often a small fraction, despite this being an obligation for the last forty years. And, of the waters that states have assessed, 55% of rivers and streams, 71.7% of lakes, and 50% of bays/estuaries are *failing* to meet one or more water quality standards. (These numbers have worsened over the last several years—in 2014 states' reported data had 53% of rivers and streams and 68% of lakes failing to meet standards.) Some regions' numbers are even worse. For example, the Region 6 states (which include Texas and Oklahoma) have assessed only slightly more than 11% of their rivers and streams and of those they report that 60% of them fail to meet basic water quality standards. For lakes in Region 6, 51% have been assessed and over 65% of them are too dirty to meet standards. Data in Region 3 (which includes states such as West Virginia and Pennsylvania) show 37% of lakes have been assessed and 83% of them fail to meet standards. Region 9 (which includes California and Arizona) report that only 24% of rivers and streams have been assessed with 87% of them failing to meet standards, 39% of lakes have been assessed with 87% failing, and 5% of estuaries and bays have been assessed with 98% of those failing to meet basic standards of quality.

Discharges of pollutants into our nation's water have not been eliminated and in many respects are not even controlled. Lake Erie, once a ray of hope for positive change under the Act, has descended once again into a cesspool of algae blooms and dead fish due to unabated and increasing nutrient runoff from farms and development. *See* reporting regarding City of Toledo's closure of water supply due to toxic algal blooms and extent of toxic bloom for 2014, "Behind Toledo's Water Crisis, a Long-Troubled Lake Erie," NEW YORK TIMES, August 4, 2014; "Lake Erie's Algae Explosion Blamed on Farmers," CBC News, August 7, 2014. The City of Des Moines, Iowa has tried, unsuccessfully, to address the skyrocketing expense of removing nitrates from the city's drinking water that is coming from upstream pollution sources. http://www.desmoinesregister.com/story/opinion/columnists/iowa-view/2017/03/22/lawsuits-real-losers-iowans-suffering-dirty-water/99501730/ (DES MOINES REGISTER, March 22, 2017).

The news is not better for wetlands, which are critical to groundwater recharge, controlling flooding, cleansing waters, and providing important habitat. Development and agriculture continue to decimate wetlands. In the latest comprehensive reports, agencies reported that we had lost over 50% of our wetlands nationwide; but in parts of the Midwest and coastal areas the figure is as high as 90% or more with attendant disastrous results for clean water. *See*, *e.g.*, EPA Wetland Status & Trends, water.epa.gov/type/wetlands/vital_status.cfm and (copy enclosed); Dahl, T.E., *Status & Trends of Wetlands in the Conterminus United States, 2004-2009, Report to Congress*, U.S. Dep't of Interior, at 16 and 89-90 (2011) (copy enclosed). While the USFWS reports the *rate* of wetland loss has slowed, losses still outdistance gains as recently as 2009, the last year USFWS reported. *Id.* This holds true in USFWS' status and trends report for coastal wetland as well, where it is reported that the nation continues to suffer a net loss of coastal wetlands (copy enclosed). And even when wetland acres are not lost, they are often degraded, losing functions and values as wildlife habitat, natural flood control and natural water quality control. Development also continues to contribute to stormwater runoff and hugely-altered hydrographs and erosion by eliminating wetlands and natural riparian areas and covering the landscape with impervious surfaces, pouring toxic chemicals and fertilizer into natural

streams and triggering extreme erosion.[1] Plainly, the protections of the Federal Water Pollution Control Act are still needed on a broad scale as we are very far from reaching its goals and directives. The greatest and most sustainable Clean Water Act success stories are directly attributable to strict application of the Act's controls.

DOCUMENTS TO BE PLACED IN THE RECORD UNDERLYING THE AGENCY'S REVIEW AND ANY REVISION OR WITHDRAWAL OF THE CLEAN WATER RULE

As the Agency proceeds with its work under the direction of the Executive Order, it is critical that the Agency consider the wealth of information outlined above and already developed by the Agency and the COE in the years of study and in the development of the Clean Water Rule. In the work to develop the Clean Water Rule, the Agency and COE consulted with the nation's top scientists on topics such as hydrology, geology, stream morphology, wetlands, and aquatic biology. The Agency's and CEO's consultation with the scientists helped to ensure the broadest and best protections for waters of the U.S. in keeping with the Supreme Court's and many Circuit Court's direction to include waters in "significant nexus" with larger downstream rivers. This makes both scientific and legal sense in that waters are not static on the landscape, and to protect the waters of the U.S. requires an understanding and protection of all waters in connection with larger waters—chemically, physically, and biologically – as directed by Congress in the Act itself. The Conservation Organizations therefore refer you to, at a minimum, the documents referenced herein and below, and call upon you to ensure that they are part of the record of your actions under the Executive Order and any action taken to review, reconsider, withdraw, affirm, amend, or replace the Clean Water Rule. We enclose a copy of each of these documents with this letter for inclusion in the administrative record:[2]

A. EPA, *Nat'l Rivers and Streams Assessment* (Feb. 2013);

B. EPA, *Nat'l Rivers and Streams Assessment Technical Report* (Mar. 2016);

C. EPA, *Nat'l Rivers and Streams Assessment Fact Sheet*;

D. EPA, National Wetland Condition Assessment (2011);

E. Dahl T.E., *Status & Trends of Wetlands in the Coterminus United States, 2004-2009, Report to Congress*, U.S. Dep't of Interior (2011);

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[1] It must also be noted that the proposed budget blueprint attacks funding for voluntary cleanup measures across the country, meaning that only through Clean Water Act regulation will improvements be made.

[2] The Conservation Organizations also assume that citations to the Agency's own databases and information reported by the states regarding status of waters, cited above, is part of the record for the actions described related to the Clean Water Rule.

F. Dahl T.E., *Status & Trends of Wetlands in the Coastal Watersheds of the Coterminus United States, 2004-2009, Report to Congress*, U.S. Dep't of Interior (2013);

G. EPA and COE, *Connectivity Report, preliminary for external review*, (2014);

H. EPA and COE, *Connectivity Report* (final) (Jan. 2015);

I. *Preliminary comments from individual members of the SAB Panel on Connectivity Report* (Aug. 2014);

J. *Letter from SAB to EPA on Connectivity Panel Activity and Report* (Sept. 2014); and

K. EPA, *Technical Support Document in Support of Clean Water Rule* (May 2015).

Please do not hesitate to contact the undersigned should you have any questions.

Sincerely,

Janette K. Brimmer
Jennifer Chavez
Earthjustice
And on behalf of Sierra Club and Puget Soundkeeper Alliance

Enclosures
cc: Aaron Isherwood, Sierra Club (w/o encls.)
Chris Wilke, Puget Soundkeeper Alliance (w/o encls.)

EARTHJUSTICE

203 Hoge Building, 705 Second Avenue, Seattle, WA 98104-1711

Scott Pruitt, Administrator
U.S. Environmental Protection Agency
Mail Code 1101A
1200 Pennsylvania Avenue NW
Washington, D.C. 20460

FCF 2025193

MAR 30 2017

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

MAY 26 2017

OFFICE OF WATER

Ms. Jennifer C. Chavez
Earthjustice
705 Second Ave, Suite 203
Seattle, Washington 98104

Dear Ms. Chavez:

Thank you for your letter dated March 24, 2017, to the U.S. Environmental Protection Agency (EPA) Administrator Scott Pruitt regarding the definition of "waters of the U.S." Your letter has been referred to me in EPA's Office of Water.

On February 28, 2017, the President signed the "Executive Order on Restoring the Rule of Law, Federalism, and Economic Growth by Reviewing the "Waters of the United States." The Executive Order calls on the EPA Administrator and the Assistant Secretary of the Army for Civil Works to review the final Clean Water Rule and "publish for notice and comment a proposed rule rescinding or revising the rule...." The Executive Order directs the EPA and the U.S. Army Corps of Engineers to "consider interpreting the term 'navigable waters'" in a manner "consistent with Justice Scalia's opinion" in *Rapanos*. The Scalia standard describes the scope of Clean Water Act jurisdiction to include relatively permanent waters and wetlands with a continuous surface connection to relatively permanent waters.

Following the Executive Order, the EPA and the Army published a *Federal Register* notice on March 6, 2017, announcing the agencies' intention to review and rescind or revise the 2015 Clean Water Rule consistent with Justice Scalia's standard. This notice helps ensure the interested public is aware of the rulemaking process and can be prepared to provide input as rulemaking proceeds. To meet the objectives of the Executive Order in a clear and expeditious manner, the agencies have decided on a two-step approach. The first step is an initial rulemaking to maintain the legal status quo by recodifying in the Code of Federal Regulations the regulatory approach that is in place now under a court stay and that has been in place for decades. The second step is a rulemaking to revise the definition of waters of the U.S. consistent with direction in the February 28, 2017 E.O. Both steps will follow procedures under the Administrative Procedures Act for public notice-and-comment on each rulemaking.

The EPA has initiated Federalism consultation on the new definition that will be developed under Step 2 per EPA's implementation of Executive Order 13132. Additionally, the EPA began consultation with tribal governments on April 20 regarding the new definition to be developed under Step 2, in accordance with the 2011 EPA Policy on Consultation and Coordination with Indian Tribes.

On May 1, EPA and the Army Corps sent a Step 1 draft proposal package for OMB interagency review. Upon completion of that review, the agencies will publish the proposed rule for public notice-and-comment.

Your letter and the documents you shared with EPA are particularly relevant to our step 2 rulemaking and as we develop that proposal and prepare the record and docket for that rulemaking, we will consider including these documents.

Information about these actions can be found on EPA's website at https://www.epa.gov/cleanwaterrule.

Sincerely,

Michael H. Shapiro
Acting Assistant Administrator

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

MAY 26 2017

OFFICE OF WATER

Ms. Janette K. Brimmer
Earthjustice
705 Second Avenue, Suite 203
Seattle, Washington 98104

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Sincerely,

Michael H. Shapiro
Acting Assistant Administrator

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OFFICE OF THE
EXECUTIVE SECRETARIAT

Mr. Donald J. Trump - President, U.S.A.
The White House
1600 Pennsylvania Avenue NW
Washington, DC 20500

March 28, 2017

Dear Mr. Trump - President, U.S.A.,

We are winning our 4+ year fight against Ohio EPA overreach. However, even now the Ohio EPA continues to mandate our neighborhood sewer project's "double remedy" after the Devola neighborhood has already resolved the original drinking water problem with a waterplant upgrade ($2.6M reverse osmosis).

Please help the Muskingum Township Devola bedroom neighborhood continue to win our struggle against Gov. John Kasich's Ohio EPA overreach.

Please see the enclosed syllabus and its 5 referenced letters.

Sincerely,
an informal Devola ad-hoc group for reasonable drinking water solution, member(s)

Glen E. Pawloski & Marcia Pawloski

Glen E. Pawloski & Marcia Pawloski, [redacted] (b) (6) 0

cc: Scott Pruitt - Federal Cabinet, EPA Administrator
Ron Feathers - President, Washington County Commissioner
David White - Washington County Commissioner
Rick Walters - Washington County Commissioner
Ken Schilling - Muskingum Township Trustee
Washington County Townships' Communication Team (5 members)
Washington County Board of Health (5 members)
Richard A. Wittberg, PhD., Washington County Health Dept. - Health Commissioner

Syllabus

1.) Letter 3/23/17 to John Kasich - Ohio Governor (1 page)

2.) Devola neighborhood door-to-door handbill distributed 3/4/17 (2 pages)

3.) Washington County legal team (County Prosecutor's office) response letter to OEPA (drafted 3/16/17 approved 3/23/17) (4 pages)

4.) Letter 3/19/17 to Washington County Commissioners, Ron Feathers - President (1 page)

5.) Letter 5/29/13 to Washington County Coroner, Dr. Ken Leopold, MD - The letter asks how was the nitrate lethal dosage and its toxicity limits derived? (1 page)

Mr. John Kasich
Ohio Governor
Riffe Center - 30th Floor
77 South High Street
Columbus, OH 43215 March 23, 2017

Dear Mr. Kasich - Ohio Governor:

Please read the enclosed 2 page handbill representing those who are opposed to the city sewer project in the neighborhoods of Devola & Oak Grove, Muskingum Twp., Washington County.

An opposed majority 285 households have signed the enclosed 2 page complaint against the Devola Phase 2 Sewer Project.

The handbills are the result of the drive to get feed back from effected households with septic tanks. These households wish to help our Board of Health, county commissioners and county legal team fight OEPA overreach. These handbills also help inform you the city sewer project is unappreciated for numerous reasons previously and presently addressed by the WCBOH and WCCs on behalf of our Washington Co. citizens.

Please note 60/285 signed Devola handbills and 14/94 signed Oak Grove handbills have added additional comments to their handbill. These handbills are on top of each of the Devola and Oak Grove separate stacks of handbills.

Please, to reduce costs, only the signature page is typically provided. One handbill "master copy" is enclosed (2 pages). The master copy is the top copy on each of the Devola and Oak Grove stacks, marked "handbill master copy", and attatched to this letter.

Sincerely,
an informal Devola ad-hoc group for reasonable drinking water solution,member(s)

Glen E. Pawloski & Marcia Pawloski

Glen E. Pawloski & Marcia Pawloski
(b) (6) a
D

cc: Washington Co. Board of Health (5 members)
Washington Co. Commissioners (3 members)

" Handbill Master Copy "

Devola Area Targeted for Sewer, Oak Grove Next if Devola Falls

Do you want to pay $24,200 for a sewer and have an $86 monthly sewer bill? Be warned. Silence is acceptance. Act now!

Our 3 Washington Co. Commissioners (WCC) and their county attorney met with Ohio EPA February 22 and received rehashed orders to sewer Devola. This bad news appeared in The Marietta Times 2/28/17. The OEPA has threatened to immediately call the Ohio Atty. General after 30 days if WCCs do not respond to the-now-twice-modified OEPA Devola sewer orders.

Devola residents are encouraged to complain to your WCCs about the new sewer orders. It seems Devola is perpetually targeted to pay for a punishing & expensive "double remedy" for an original problem resolved with a 2/2014 waterplant upgrade. Please, let's encourage the WCC's fight to eliminate the OEPA sewer project. How?

Under ORC law, your Washington County Board of Health (WCBOH) has jurisdiction over septic tank systems -- not the OEPA and not the WCCs. The WCBOH wrote a letter to the OEPA 2/13/15 and requested termination of the Devola Phase-2 Sewer Project. The letter listed 9+ reasons for complete dismissal of the sewer project. The letter was approved unanimously by roll call vote of the full WCBOH.

Perhaps chief among WCBOH's reasons, quote: 1.) "Considering that the original complaint made by the Washington Co. Health Commissioner in 2011, was identified as 'unsafe nitrate level in the drinking water', but acknowledging that since January of 2014 this complaint has been completely satisfied by OEPA approval and successful operation of the reverse osmosis upgrade at the Devola water plant", and 2.) "Considering that the WCBOH finds there is currently no immediate or imminent threat to public health due to the Devola septic systems", and 3.) "Considering that the currently proposed cost to sewer Devola is a financial hardship on the Devola residences affected, especially given that the original unsafe water complaint has been satisfied", and 4.) "WCBOH respectfully requests the WCCs and the OEPA to either dismiss in its entirety the Devola Phase-2 Sewer Project or, at the very least, to delay the project until proof can be submitted to us and the residents of Devola that this project will have a significant beneficial effect on public health and the environment."

Especially exciting and hopeful is the WCBOH latter reason (4.), which may be supported by the U.S. Supreme Court's 5/29/15 decision, which ruled the EPA must use a reasonable cost/benefit analysis before implementing regulations; and especially in Devola's case when the proposed OEPA sewer orders (regulations) demand too high a

cost ("double remedy"), while yielding minimal environmental benefit.

Additionally, other than WCBOH's jurisdiction, it may not be legal for OEPA to fail septic tank systems on private land. It seems President Trump and EPA Administrator Scott Pruitt's agenda is to overturn "Waters of the U.S." which are apt to have imported "Waters of the State" regulations. If the federal regulations are determined illegal, then may the Supremacy Clause determine those imported state laws, illegal ? (OEPA's "Waters of Ohio")

Wastewater technicians have known the OEPA long range agenda has been to pursue and even forcibly implement regional WWTP construction, no matter the cost. The WCBOH has recognized its own track record and indicated -- in over 200 years there is not one documented death from septic tank systems in Washington County. And the countywide Township Trustees Association has said there is not even one documented illness from septic tank systems throughout the same time period. Regarding the WCBOH's 200+ year safety record, the countywide Township Association's Communications Team (TACT) has asked what could be wrong with septic tank systems ? TACT has suggested that over the county's 200+ year history and safety record, a bureaucratic health commissioner has existed for only the last 15 years.

You are requested to help our WCCs & WCBOH fight OEPA overreach. Who in our Muskingum Twp. communities of Devola & Oak Grove do not want the city's nontransparent sewer projects to replace our WCBOH approved septic tanks ?

Please help. Be counted. Please sign your name, address and date this complaint if you are against the city sewer project. Return it ASAP to Glen Pawloski, 111 Marshall Road-Devola, Marietta, OH 45750. Altogether, these complaints will be forwarded to WCCs, copied to the WCBOH and also the OEPA's boss, Governor Kasich. You are welcome to add your personal comments on how the OEPA's city sewer project will affect you. Back in August 2015 the expired Devola Phase-2 Sewer Project was revalued $24,200 per homeowner, plus new monthly $86.00 sewer bill, given, 62 homes on Lawton Road and its $1.5M cost, WCC Ron Feathers informally estimated.

Name	Address	Date
_____	_____	_____

OFFICE OF THE
WASHINGTON COUNTY
PROSECUTING ATTORNEY
205 Putnam Street
Marietta, OH 45750

Kevin A. Rings, Prosecutor

Assistant Prosecutors
Alison L. Cauthorn
Amy Graham
Nicole T. Coil
R. Kelly Hamilton

Telephone (740) 373-7624
Facsimile (740) 373-8748

March 23, 2017

Tiffani Kavalec, Esq.
Peter Simcic, Esq.
Ohio Environmental Protection Agency
Lazarus Government Center
50 W. Town St., Suite 700
P.O. Box 1049
Columbus, Ohio 43216-1049

Via Facsimile and ordinary mail

Re: Washington County Commissioners-Modified Director's Final Findings and Orders

Dear Ms. Kavalec and Mr. Simcic:

This letter is in response to the Modified Director's Final Findings and Orders (hereinafter "MDFFO") which you provided to me and the Washington County Commissioners (hereinafter "Commissioners") on February 22, 2017. The Findings of the MDFFO appear to contain only one change from the Proposed Modified Orders provided to the Commissioners on August 4, 2015. This is paragraph 8 of the MDFFO which states that "the additional sampling confirmed that the source of nitrate and E. coliform contamination is due primarily from failing septic systems, dry wells and off-lot discharging systems within the Devola area." Unfortunately, the Findings, and this statement in particular, create more questions than it resolves. As a result, the Commissioners now seek further clarification and answers to the following issues.

The first issue involves the OEPA's collection of the 2016 data and the conclusions resulting therefrom. The Ohio EPA did not notify the Washington County Health Department ("WCHD") of when it was conducting this testing, as had been previously agreed. This resulted in the Commissioners and WCHD having no knowledge of the conditions at the time of testing.[1] There was also no testing at the locations of the 2010 borings. As a result, the 2016 data also provides no insight into whether or not there is an upward or downward trend regarding the nitrate levels. Data trends are as important, if not more important, than the data itself. This is especially important since nitrates were the only contaminant detected at all in the groundwater by the Ohio EPA. As a result, the Commissioners would like clarification as to how the Ohio EPA can make

[1] There are also questions regarding the E. coliform data. It appears that the E.Coli samples were not collected in accordance with O.A.C. 3745-1-04 since there are no times stated for when the samples were collected, and because the power point indicated they the samples were collected more than thirty days apart.

or support its sweeping conclusion that nitrate levels in the groundwater "remain high" when only two 2016 borings revealed a nitrate level above the accepted 10 mg/L (and only one of those was above 11 mg/L), and the current nitrate levels of the 2010 borings remains unknown. In a like manner, the Commissioners also seek clarification as to how the Ohio EPA can allege these slightly elevated levels in the groundwater can result in any type of significant health risk when the nitrates in the drinking water are within accepted levels.

The second major issue raised by the MDFFO is the Ohio EPA's conclusion that the Devola septic systems are the "primary" cause of the nitrate contamination in the groundwater. It is uncontroverted that there is not a problem with nitrates in the Devola drinking water since the reverse osmosis system has reduced the nitrate levels in the Devola drinking water to well below Ohio EPA set limits. The WCHD believes that the data shows that the same reverse osmosis equipment which has fixed the nitrate problem in the drinking water is also likely gradually solving the higher nitrate levels in the groundwater. Prior to the equipment being installed, the Ohio EPA's data revealed nitrate levels at the water plant were going up at a rate of around .25 mg/liter per year. After the installation of the reverse osmosis system, levels appear to be going down at a rate of around .2 mg/liter. Thus, the groundwater problem seems to be self-correcting. If the Ohio EPA has data to the contrary, the Commissioners would like to review it.

In addition, while the Ohio EPA states that the contamination is "primarily due to failing septic systems, dry wells and off-lot discharging systems within the Devola area," the Findings of the MDFFO neither state that all of the septic systems, dry wells and off-lot discharging systems are failing nor state why the Ohio EPA believes that any are failing. There is no evidence in the Findings that the Ohio EPA either performed inspections of any of these systems or documented any evidence of failing systems including, but not limited to, visual or olfactory evidence of poorly treated sewage.[2] The Ohio EPA also does not state in its Findings how it has concluded

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[2] The Commissioners are aware that the Ohio EPA's position is that all dry wells are all failing and prohibited under Ohio law, but there is no legal or scientific authority to support this position. R.C. §3718.012 states that "A sewage treatment system that was in operation prior to the effective date of this section shall not be required to be replaced with a new sewage treatment system under this chapter or rules adopted under it and shall be deemed approved if the system does not cause a public health nuisance or, if the system is causing a public health nuisance as provided in section 3718.011 of the Revised Code, repairs are made to the system that eliminate the public health nuisance as determined by the applicable board of health." The Ohio Department of Health similarly stated on its website that it was just a "rumor" that septic systems were not grandfathered in the law. The Ohio Department of Health website stated that "You can keep your system as-is as long as there's not sewage on the top of the ground, missing parts/pieces or backup in your home." The Attorney General has also stated in at least one opinion that "R.C. Chapter 3718 contains a grandfather provision." OAG 2012-005.

that the residential lots in Devola are unsuitable for individual sewage disposal systems, or why repair or replacement of the existing on-site sewage disposal systems is not an acceptable solution to remedy the situation. This is especially the case since the WCHD has inspected over 118 of the 320 permitted septic systems in Devola to date, and none have revealed that any system had failed. In addition, the Ohio EPA fails to discuss or consider other potential causes of elevated nitrate levels, such as fertilizers, despite stating that the contamination was only "primarily" caused by the "failing" septic systems and thus implying other causes are also to blame. Consequently, the Commissioners would like for the Ohio EPA to explain and document how it has concluded that the contamination in the groundwater is due primarily to "failing" septic systems when the Ohio EPA did not conduct any inspections of these systems and the results of the WCHD's inspections of these systems would support the opposite conclusion.

In a like manner, the Ohio EPA never explains in its MDFFO, or in its power point, how sewering will fix the elevated nitrate levels in the "waters of the State." In fact, the WCGDH believes the data shows that the result would be just the opposite. Septic systems in Devola reduce nitrates as water moves through the soil profile. Sewering would collect all the nitrates at the sewage treatment plant, and then dump them into the river in a concentrated form. The WCHD believes that the data shows that such a high concentration of nitrates in the river could lead to algae blooms, or a potentially larger public health threat than slightly elevated nitrate levels in the groundwater. So, the Commissioners also seek further clarification from the Ohio EPA regarding why it favors no removal of nitrates through sewering rather than a gradual removal of the nitrates through the soil profile with septic systems.

Finally, the Ohio EPA has provided no cost-benefit analysis, and has not given the Commissioners an opportunity to set forth an alternate plan to sewering. The Ohio EPA has provided this option to other respondents in similar situations.[3] Such an option seems particularly appropriate in a situation like this where there is no overwhelming direct evidence of failing septic systems, the drinking nitrate levels are within accepted levels, and there appears to be confirmation in the data that the slightly elevated groundwater nitrate levels are slowly decreasing over time. In fact, the Findings of the MDFFO do not even state that a specific law has been violated or that the conditions in Devola rise to the level of a public health nuisance

---

[3] *In the matter of: Geauga County Board of Commissioners; In the matter of: Preble County Board of Commissioners;* and *In the matter of Seneca County Board of Commissioners* are all cases in which the Director's Final Findings and Orders provided the respondent with the ability to submit to the Ohio EPA a general plan for sewage improvements or other methods of abating pollution and correcting the unsanitary conditions. These plans are to include cost estimates for the required improvements and cost effectiveness analysis of the alternatives based on total present worth.

pursuant to O.A.C. 3745-1-04. Rather, there is only the general allegation of violations of Ohio's general "water quality criteria set.

Given all of these issues which require additional clarification, the Commissioners cannot currently accept or sign the Orders contained within the MDFFO. However, the Commissioners remain willing to keep communication open with the Ohio EPA to resolve this matter. The Commissioners just do not currently believe that the Ohio EPA has made its case with the Findings and evidence it presented in the MDFFO. If the Ohio EPA can provide the Commissioners with more data and analysis, as well as provide more flexibility with the timetable set forth in the Orders, then there is still hope that this matter can be amicably resolved.

Either way, I would respectfully request that the Ohio EPA reconsider its decision to come to Washington County, Ohio to explain and discuss these issues with the residents of this community prior to enforcing the MDFFO. The Commissioners feels confident that any safety concerns which the Ohio EPA has can be eliminated, and that such a meeting would go a long way toward the residents of Washington County, Ohio being able to accept sewering in Devola and other areas of Washington County. It cannot be overemphasized how financially detrimental the current MDFFO will be for many of the residents of Washington County. As a result, the residents are entitled to hear from the Ohio EPA itself why the MDFFO sets forth the most economical method of eliminating the slightly elevated nitrate levels in Washington County.

Sincerely,

Nicole T. Coil

Nicole Tipton Coil
Assistant Prosecuting Attorney

cc: Ron Feathers, Washington County Commissioner
Rick Walters, Washington County Commissioner
David White, Washington County Commissioner
Richard Wittberg, PhD, Washington County Health Commissioner

Washington County Commissioners
Mr. Ron Feathers - President
223 Putnam Street
Marietta, OH 45750

March 19, 2017

Dear Mr. Feathers:

We are grateful for the letter from our county's legal team to the OEPA. We are glad for our county's leadership who prompted the county prosecutors to write a response to the OEPA to project many of your questions and concerns about the agency's testing and reporting methods. We thank the WCBOH and WCCs for your service and protection from OEPA overreach.

Our informal discussion Thursday, March 9, 2017; you raised the question " Are OEPA potable water nitrate limits too stringent ?" You asserted European(?) nitrate water limits "are easy" compared to OEPA limits. The enclosed letter (5/29/13) to Dr. Ken Leopold, MD is an inquiry about nitrate toxicity limits. The letter asks if nitrate limits might be as awkward as is (the observation of) OEPA metal limits is for copper and zinc ? Please consider OEPA permits drinking water with three times more copper & zinc concentration than what is permitted to be discharged in wastewater effluent! The metals are safe to drink but we can't put it in our wastewater ? Go figure.

Two major planks of the Communist Party are as follows:

1.) They do not want you to own private property.
2.) They do not want you to have any disposable income.

Thus, is the bureaucratic OEPA/EPA the perfect engine for implementing the communist agenda ? At what cost is the environmental agenda ? Now county households are under attack as OEPA/EPA regulations run out of U.S. factories to close and eliminate!

Sincerely, Glen E. Pawloski & Marcia Pawloski

an informal Devola ad-hoc group for reasonable drinking water solution, member(s)
Glen E. Pawloski & Marcia Pawloski, 111 Marshall Rd. - Devola, Marietta, OH 45750

cc: David White - Washington Co. Commissioner
Rick Walters - Washington Co. Commissioner
Washington Co. BOH (5 members)
Wash. Co. Twp. Communications Team (5 members)
Nicole Coil - Assistant Prosecutor
Kevin Rings - Prosecutor
Allison Cauthorn - Assistant Prosecutor
Richard Wittberg, PhD - WCHD Health Commissioner
John Kasich - Ohio Governor
Scott Pruitt - Federal Cabinet EPA Administrator
Donald J. Trump - President, U.S. Cabinet/President

May 29, 2013

Marietta Memorial Hospital
Dr. Ken Leopold - Coroner
Washington Co Board of Health
Suite 220
Marietta, OH 45750

Dear Dr. Leopold:

At the May 14th Health Board meeting I had briefly spoke about a couple examples of OEPA stringent pollution limits. Those examples (copper, zinc, mercury) are the basis to help illuminate the nonsensical and absurd pollution limits imposed by the OEPA. Pollution limits are environmental law. Environmental laws can be reassessed, appealed and repealed.

Nitrate limits for drinking water may be analogous to the environmental limits for copper, zinc, mercury. The nitrate limit for drinking water is 10 ppm. One nonsensical environmental law stipulates how water that is deemed safe for people to drink is contrarily deemed unsafe and cannot be discharged as WWTP effluent. Perhaps then, nitrate limits for drinking water may also be too stringently over-regulated similarly as copper, zinc and mercury limits. The OEPA certainly seems suspect of having an alternative agenda, given many of its regulations are non-sensically oppressive, have expensive consequences and seemingly not conditional upon the axiom of protecting human health.

Therefore, I would like to know more about the toxicity of nitrates, especially and more specifically, the lethal concentration dosage (LCD) for inducing "Blue Baby Death Syndrome". BBDS seems to be the OEPA's focus concerning nitrate limits in drinking water.

Dr. Leopold, would you please research and provide me information about the various stages of nitrate poisoning and the concentrations that are known to directly promote those degrees of poisoning?

Many people are curious how much water an infant (< 6 months old) would have to drink, and for how long, when the water contains 10 ppm nitrate, before it is apt to induce BBDS? Could a baby humanly-possible ever consumer the necessary volume of nitrate water that would induce BBDS?

How much would it cost (fee for professional opinion) to research the answers to my drinking water nitrate questions? Thank you for your interest and help.

Sincerely,

Glen E. Pawloski

cc: Andy Thompson

C. E. Pawloski
111 Marshall Rd - Devola
Marietta, OH 45750

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MAR 30 2017

Mr. Scott Pruitt
Environmental Protection Agency
Office of Administrator - Mailcode 1101A
1200 Pennsylvania Ave NW
Washington, DC 20460

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To: Pruitt,Scott

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Department: 1101A

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Ninilchik Traditional Council

P.O. Box 39070
Ninilchik, Alaska 99639
Ph: 907 567-3313 / Fax: 907 567-3308
E-mail: ntc@ninilchiktribe-nsn.gov
Website: www.ninilchiktribe-nsn.gov

March 16, 2016

RECEIVED
2017 MAR 30 PM 2: 19
OFFICE OF THE
EXECUTIVE SECRETARIAT

Hilcorp Energy Company
Attn: Jeffery Hildebrand, Chairman & CEO
Post Office Box 61229
Houston, Texas 77208-1229

Re: Ninilchik Traditional Council's Interest in Cook Inlet spill #17239903801

Jeffery Hildebrand, Chairman & CEO,

Ninilchik Traditional Council would like to express its concerns pertaining to the spill in the Cook Inlet located between platform A and Nikiski. The Cook Inlet was determined by Congress to be the ancestral areas of the tribe.[1] The Ninilchik Traditional Council is one tribe of many who share these ancestral ties that are the foundation of the Cook Inlet Alaska Native community. Impacts that result from issues such as these can cause irreparable harm to the cultural practices of the tribe in terms of seasonal practices, subsistence, economics, and long-term impacts from emissions. There are both federally qualified and non-federally qualified communities around the site who rely on federal subsistence through Alaska National Interest Lands Conservation Act (ANILCA), and through harvest opportunities provided by the state of Alaska. This issue effects all of them. The Ninilchik Tribe is in a federally qualified community and participates in both subsistence and non-subsistence harvests and fisheries .

Several issues are associated with this event has raised concerns regarding the tribes interest. These include issues such as impacts to fisheries, marine mammals, shellfish, and endangered species that play a role in the cultural values for the tribe. The regulatory framework that is associated with the Clean Air Act and the Clean Water Act is also a large part of the federal relationship between tribes and the U.S. Government especially when working on projects with federal concerns.[2]

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[1] Alaska Native Claims Settlement Act (ANCSA), 85 Stat. 339, 43 U.S.C. §§ 1601-28

[2] See Judith V. Royster and Michael C. Blumm, Native American Natural Resources Law: Cases and Materials (Durham, NC: Carolina Academic Press, 2002), 227-229; 239-240. "The [CWA] Amendments of 1987 provide that [the Environmental Protection Agency (EPA)] shall treat tribes as states for most purposes and programs of the Act…[including]: permitting authority for the § 404 program; granting or denying certification for federally permitted activities that may result in discharges of pollutants into the waters; and developing management programs for nonpoint source pollution……The CWA also contains a provision for federal settlement disputes between states and tribes sharing common bodies of water. The EPA is required to 'provide a mechanism for the resolution of any

Several examples of impacts to the tribe from this event are clearly evident in management issues associated with traditional resources. For example, the regeneration efforts associated with the razor clam beds in the Cook Inlet.[3] The impacts to the very few saltwater marshes located on the Cook Inlet.[4] As well as the number of violations that are issued annually associated with oil and gas development that clearly demonstrate no effort to improve the occurrence of these releases.[5]

Volatile organic compounds and greenhouse gasses are major constituents in the warming effects that are being experienced all across Alaska. Emissions of carbon dioxide (CO2), methane (CH4), nitrous oxide (N2O), perfluorocarbons (PFCs), hydrofluorocarbons (HFCs), and sulfur hexafluoride (SF6). Emissions of hydrofluorocarbons (HFCs) and perfluorocarbons (PFCs) present higher emission values and require a greater absorption investment to offset the emission rates produced in this type of issue.[6] While the standards for VOC emission of methane is exempt in Alaska, there are issues pertaining to the federal relationship between tribes and the U.S. Government that includes recent regulatory acts such as the American Clean Energy and Security Act of 2009 (ACES) that mandates the reduction of greenhouse gasses. Methane has a high gas potential as a greenhouse gas. Presently the U.S. Environmental Protection Agency has found Alaska to be "Deferred" at this time, but not exempt.[7] This action certainly does not exempt the Federal Government's responsibility of implementing final rules as a responsibility to Federally Recognized Indian Tribes. While these emissions continue, the impacts to cultural resources continue to grow.

There is also the issue of non-point source contaminates found in the Cook Inlet that are associated with similar issues. In this case, methane has a mixing rate of ~28 mg/L.[8] Colder temperatures, as currently seen during this season in Alaska, increase the rate of solubility.[9] When we consider the amount of gas that has been reported as up to 325,000 cubic feet per day and the liters of water in motion in the inlet, there is a potential for methane to also be present in the water column and substrates that result from solubility and glacial silt sedimentation. When we consider the transport of water in the Cook Inlet through the use of items such as buoy surveys, this area of effect is no longer contained by stagnation or degraded by the water chemistry process. This issue has been identified in several works such as the Seldovia Village Tribe Assessment of Cook Inlet Tribes

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unreasonable consequences that may arise as a result of differing water quality standards that may be set by States and Indian tribes located on common bodies of water.

[3] Alaska Department of Fish and Game. (2017) Cook Inlet Personal Use Clam Fishery. Retrieved from: http://www.adfg.alaska.gov/index.cfm?adfg=personalusebyareasouthcentralcookinletclams.main

[4] Alaska Department of Environmental Conservation(2010). Cook Inlet Sub Areas Contingency Plan. Sensitive areas. Retrieved from: https://dec.alaska.gov/spar/ppr/plans/scp_ci/ci_D-SensitiveAreas(2010).pdf

[5] Alaska Oil and Gas Commission (2017). Enforcement and Violations. Retrieved from: http://doa.alaska.gov/ogc/orders/ev/evindex.html.

[6] U.S. EPA (2002). U.S. Greenhouse Gas Inventory Program. Retrieved from:

[7] Martinson, E. (2015) Alaska power plants get exemption from EPA carbon rules. Retrieved from: https://www.adn.com/environment/article/alaska-exempt-epa-climaterule/2015/08/03/

[8] New York State Department of Environmental Conservation. (2012). Open File Report. Dissolved Methane in New York Groundwater. Retrieved from: https://pubs.usgs.gov/of/2012/1162/pdf/ofr2012-1162_508_09072012.pdf

[9] Engineering Resources. (nd). Solubility of Gasses in Water. Retrieved from: http://www.engineeringtoolbox.com/gases-solubility-water-d_1148.html

Subsistence Consumption that provides information about the cultural use and the consumption of fish compared to the estimated levels of known contamination.[10]

This longer-term issue of impact and effects are being ignored. Since the identification of the issue in the first ADEC situation report dated February 15th, 2017 to the date of this letter, the potential emission of methane, water column contamination, and benthic contamination is "unknown" and the reported amount exceeds 9 million cubic feet of gas.[11] Reportedly, the facility has no engineering associated with the facility to simply shut it off.[12] This negligence leaves the responsible parties liable.

ADEC has also largely ignored these impacts in the Situation Reports provided about the leak.[13] The response to the incident as well as the potential for harm to the Alaska Native culture is not being evaluated. In fact, the initial information had to be retrieved from the U.S. EPA because it had not been delivered to the Cook Inlet tribes. This lack of consideration and delivery of partial information demonstrates that there is no intent to consider the cultural values of Alaska Natives. These cultural impacts should have never been allowed to take place.

The Ninilchik Traditional Council, the governing body of the federally recognized Ninilchik Village Tribe, has a long-standing commitment to assisting our tribal members and providing tribal support to the Ninilchik community. We believe that this process will have impact on our tribal youth, elders, and the community we serve. Thank you for your time and consideration in this matter. We look forward to working with you.

Sincerely,

Cc: file
U.S. EPA Director, Scott Pruitt
ADEC Commissioner, Larry Hartig
Bureau of Indian Affairs, Bruce Loudermilk
Alaska Governor, Bill Walker
Secretary of Interior, Ryan Zinke

[10] Meril, T. Opiem, M. (2013). Assessment of Cook Inlet Tribes Subsistence Consumption. Retrieved from: http://www.seaotter-sealion.org/downloads/SVT_Subsistence_Consumption_report.pdf
[11] Alaska Department of Environmental Conservation. (2017). Sitrep. Retrieved from: dec.alaska.gov/spar/perp/response/sr_active.htm.
[12] Personal Communication U.S. EPA (February 15th 2017). Information communicated to the U.S. EPA indicated that the line could not be shut off because of additional petroleum products in the leaking line.
[13] Alaska Department of Environmental Conservation. (2017)Sitrep. Retrieved from: dec.alaska.gov/spar/perp/response/sr_active.htm.

Ninilchik Traditional
Council
P.O. Box 39070
Ninilchik, AK 99639

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Environmental Protection Agency
Attn: Scott Pruitt, EPA Director 1101A
1200 Pennsylvania Avenue, N.W.
Washington, D.C. 20460

FCF 20251195

Thu Mar 30 14:47:41 EDT 2017
Hope.Brian@epamail.epa.gov
Fw: Memo from SBA Advocacy on Executive Orders 13771 and 13777
To: CMS.OEX@epamail.epa.gov

DRF

From: Williams, Emily M. <emily.williams@sba.gov>
Sent: Thursday, March 30, 2017 2:27 PM
To: Williams, Emily M.
Subject: Memo from SBA Advocacy on Executive Orders 13771 and 13777

Please see attached memorandum from SBA Office of Advocacy Acting Chief Counsel Major L. Clark, III on recent Executive Orders 13771 and 13777 signed by President Trump. Advocacy strongly endorses the principles and policies of these Executive Orders and urges that they be implemented consistent with the Regulatory Flexibility Act (RFA)in order to reduce the regulatory burdens and the disproportionate impacts of regulations on small entities.

Please let myself or Charles Maresca, Director of Interagency Affairs know if you have any questions.

Thank you,
Emily

Emily Mantz Williams
Outreach and Events Specialist // Acting Congressional Affairs and Public Relations Manager
SBA // Office of Advocacy
409 3rd St. SW, Washington, D.C. 20416
emily.williams@sba.gov
202.205.6949

ADVOCACY
REGULATION • RESEARCH • OUTREACH

U.S. SMALL BUSINESS ADMINISTRATION
OFFICE OF ADVOCACY
REGULATION • RESEARCH • OUTREACH

MEMORANDUM

TO: **Heads of Agencies**

FROM: **Major L. Clark, III Acting Chief Counsel for Advocacy, U.S. Small Business Administration**

DATE: **March 30, 2017**

SUBJECT: **Implementation of Executive Orders 13771, "Reducing Regulation and Controlling Regulatory Costs," and 13777, "Enforcing the Regulatory Reform Agenda"**

As required by Executive Order (EO) 13272[1], I am writing to advise you of the activities of the Office of Advocacy (Advocacy) related to recent Executive Orders on the reduction of regulatory burdens and offer additional assistance related to these new policies. Advocacy strongly endorses the principles and policies of these Executive Orders and urges that they be implemented consistent with the Regulatory Flexibility Act (RFA)[2] in order to reduce the regulatory burdens and the disproportionate impacts of regulations on small entities.

Congress established the Office of Advocacy under Pub. L. No. 94-305 to advocate the views of small entities before federal agencies and Congress. Because Advocacy is an independent office within the U.S. Small Business Administration (SBA), the views expressed by Advocacy do not necessarily reflect the position of the Administration or the SBA.[3] The RFA, as amended by the Small Business Regulatory Enforcement Fairness Act of 1996 (SBREFA), gives small entities (businesses, organizations, and local governments) a voice in the federal rulemaking process and requires agencies to consider the impacts of their rulemakings on small entities. Under EO 13272, Advocacy provides training to agencies on the RFA.

Over the coming months, Advocacy will be making available additional assistance and tools to implement Executive Orders 13771 and 13777 and engaging in outreach to small entities to identify opportunities to reduce burdens on small entities. Advocacy will also be seeking additional opportunities to train policy officials and regulatory staff on the RFA and its importance in the implementation of these EOs.

[1] Executive Order 13272, signed August 13, 2002 (67 Fed. Reg. 53,461 (August 16, 2002). Section 2(a) requires the Chief Counsel for Advocacy to "notify agency heads from time to time of the requirements of the [Regulatory Flexibility] Act."

[2] 5 U.S.C. § 601, *et. seq.*

[3] 15 U.S.C. § 634a, *et. seq.*

To initiate Advocacy assistance to your agency in the implementation of EO 13771, EO 13777, and the Regulatory Flexibility Act, please provide me with the names of the officials you have designated as the Regulatory Policy Officer, named under EO 12866, section 6(a)(2), and the Regulatory Reform Officer, named under EO 13777, section 2(a).

This information should be sent to Charles Maresca, Director of Interagency Affairs, SBA Office of Advocacy, Charles.Maresca@sba.gov, as it is available. Please also contact me or Mr. Maresca if you have any questions about this memorandum or your agency's compliance with the RFA.

Thank you for your consideration of these requests. I look forward to a productive effort to reduce the regulatory burdens on small entities.

cc: Dominic Mancini, Acting Administrator
Office of Information and Regulatory Affairs
Office of Management and Budget

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

APR 13 2017

OFFICE OF
SMALL AND DISADVANTAGED
BUSINESS UTILIZATION

Major L. Clark, III
Acting Chief Counsel
U.S. Small Business Administration
409 3rd Street, SW
Washington, D.C. 20416

Dear Major L. Clark, III:

I am writing in response to your letter dated March 30, 2017 to the U.S. Environmental Protection Agency (EPA) regarding the implementation of Executive Orders (EOs) 13777, "Reducing Regulation and Controlling Regulatory Costs" and 13777, "Enforcing the Regulatory Reform Agenda."

You have requested the names of the Agency officials designated as the Regulatory Policy Officer under EO 12866, section 6(a)(2), and the Regulatory Reform Officer, named under EO 13777, section 2(a). Administrator Pruitt has designated Samantha Dravis, Senior Counsel/Associate Administrator for EPA's Office of Policy, as the Regulatory Policy Officer under EO 12866, and the Regulatory Reform Officer, under EO 13777.

The EPA Office of Small and Disadvantaged Business Utilization (OSDBU), looks forward to working with you in the implementation of both EOs as well as Regulatory Flexibility Act training opportunities.

If you have any further questions, please contact me at rogers.joanb@epa.gov or 202-564-6568.

Sincerely,

Joan B. Rogers
Deputy Director
Agency Small Business Ombudsman

DAILY READING FILE

GOVERNORS' BIOFUELS COALITION

• **Nebraska** Gov. Pete Ricketts, Chair • **Iowa** Gov. Terry Branstad, Former Chair • **South Dakota** Gov. Dennis Daugaard, Former Chair

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March 6, 2017

The Honorable Donald J. Trump
President of the United States
The White House
1600 Pennsylvania Avenue
Washington, DC 20500

Dear Mr. President:

We write on behalf of governors from states across the nation who believe that two of America's great treasures are agriculture and renewable fuels and to commend you for your positive statements about biofuels over the last year.

Our states are the home to over 200 biorefineries that are producing tens of thousands of jobs, sequestering tons of carbon, saving millions of barrels of foreign oil, and making enormous financial contributions to our states' and the nation's economies. As governors, we agree that one of the best ways to meet the nation's energy needs is to expand biofuels production.

We look forward to working with your Administration to maximize these benefits through the following initiatives, which can be addressed with regulatory modifications and better alignment to current law:

- The U.S. Environmental Protection Agency (EPA) should provide parity for E10 and higher ethanol blends. EPA's erroneous legal analysis that E15 — although it is an even cleaner fuel than E10 — does not qualify for the decades-old partial exemption of E10 from the *Clean Air Act's* fuel volatility limitations discriminates against higher blends of ethanol and demonstrates unnecessary red tape from Washington, DC.

- EPA's lifecycle carbon findings should be updated. The EPA has failed to update lifecycle carbon findings for a decade, thereby sanctioning the use of obsolete data. This distorts the public's perception of biofuels' environmental benefits. Recent studies show that an effective way to reduce the carbon in gasoline is the widespread use of high-octane, lower carbon gasoline blends.

- The EPA should enforce the Renewable Fuel Standard as approved by Congress.

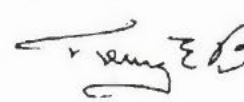
P.O. Box 94922 • Lincoln, NE 68509 • Phone 402 651-2948 • www.GovernorsBiofuelsCoalition.org

- EPA should update the 2014 Motor Vehicle Emission Simulator (MOVES) model to prohibit spurious comparisons of high- and low-ethanol emissions factors. The MOVES model — which EPA requires the states to use in developing their state implementation plans — negatively impacts those who live in the nation's largest cities or near congested roadways.

We believe these steps will further advance the development of the nation's renewable energy resources by removing bureaucratic administrative barriers. We look forward to working with you, your Administration and Congress to further our states' and the nation's biofuel energy development.

We would welcome an opportunity to renew that important state-federal partnership. Thank you for your consideration of our request and your commitment to the nation's energy future. Please contact us if we can be of further assistance.

Sincerely,



Pete Ricketts Vice Chairman and Governor of Nebraska	Terry E. Branstad Former Chairman and Governor of Iowa	Dennis Daugaard Former Chairman and Governor of South Dakota

cc:

The Honorable Rick Perry, U.S. Secretary of Energy Nominee

The Honorable Scott Pruitt, U.S EPA Administrator

The Honorable Sonny Perdue, U.S Department of Agriculture Nominee

The Honorable Mick Mulvaney, White House Office of Management & Budget

GOVERNORS' BIOFUELS COALITION

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USA FOREVER

The Honorable Scott Pruitt
U.S. Environmental Protection Agency
1200 Pennsylvania Avenue, N.W.
Washington, DC 20460

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1211 Avenue of the Americas, 2nd Floor
New York, NY 10036
Phone 212.301.5454 Fax 212.301.3115
neil.cavuto@foxnews.com

Neil P. Cavuto
Senior Vice President, Anchor & Managing Editor
Business News

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March 10, 2017

Administrator Scott Pruitt
Environmental Protection Agency
Office of the Administrator 1101A
1200 Pennsylvania Avenue, NW
Washington, DC 20460

Dear Administrator Pruitt,

Thank you for taking time out of your busy schedule to appear on my FBN program. It was a pleasure having you as a guest, and I enjoyed speaking with you about the need for government agencies to prioritize. Your political and legal expertise, as well as your insights, added so much to the conversation, and I look forward to speaking with you again.

Sincerely,

Neil Cavuto

FOX NEWS channel

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ADMINISTRATOR SCOTT PRUITT
ENVIRONMENTAL PROTECTION AGENCY
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March 16, 2017

The Honorable Edmund G. Brown Jr.
Governor, State of California
State Capitol, Suite 1173
Sacramento, CA 95814

Dear Governor Brown:

On behalf of the San Diego County Board of Supervisors (Board), I am requesting your Administration's help in finding a permanent solution related to sewage spills in Mexico that impact San Diego County. We have the responsibility to protect the public and environmental health of this region, and the untreated sewage spills from across the border have been a recurring issue for decades in the Tijuana River, which flows into the Pacific Ocean and along the coast of San Diego County.

The ongoing concern of untreated sewage flowing into the Tijuana River and ultimately along San Diego County's coast from across the border was highlighted just last month, when an estimated 143 million gallons of sewage were spilled into the Tijuana River from Mexico between February 6 and February 23. The size of this spill was unprecedented, and initial reports suggest that it was due to a rupture in a sewage collector pipe. This was followed by another sewage spill of 145,000 gallons on March 1, 2017. The sewage spills have resulted in beach closures stretching from the International Border to the City of Coronado, impacting beaches and communities in the Cities of Imperial Beach, Coronado and San Diego. Additionally, these spills have caused considerable economic injury to businesses and to local governments through the loss of sales tax revenue for a large portion of the San Diego region's coastal communities. The unprecedented size of the February sewage release has garnered national attention, discouraging visitors and tourism. It was especially egregious that Mexican authorities did not immediately notify our community of the spill.

On March 2, 2017, the International Boundary and Water Commission (IBWC) announced an investigation into the February spill to determine when the spill occurred, quantify how much sewage spilled, specify the characteristics of the sewage, and identify problems in procedures to notify the Commission and the public. This investigation will clarify important details related to the spill, but additional action is needed to identify and pursue a permanent solution to this ongoing issue.

This is a critical issue that must be addressed to protect the public and environmental health of this region, and with the recent spills and beach closures weighing heavily on our coastal communities, our Board respectfully urges that your Administration work with the IBWC and any other interested parties to find and implement a permanent solution to this ongoing problem. The technology exists to prevent and contain these sewage spills, and a solution must be identified and agreed upon with our neighbors and partners in Mexico.

Sincerely,

DIANNE JACOB
Chairwoman

Cc: Commissioner Edward Drusina, International Boundary and Water Commission
Secretary of State Rex W. Tillerson, United States Department of State
Administrator Scott Pruitt, United States Environmental Protection Agency

1600 PACIFIC HIGHWAY, ROOM 335 • SAN DIEGO, CALIFORNIA 92101-2470
(619) 531-5522 • FAX: (619) 696-7253 • TOLL FREE: 800-852-7322
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www.diannejacob.com • EMAIL: dianne.jacob@sdcounty.ca.gov

DIANNE JACOB

CHAIRWOMAN, SECOND DISTRICT
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Viejas

March 16, 2017

Mr. Edward Drusina
Commissioner, International Boundary and Water Commission
4171 North Mesa, Suite C-100
El Paso, TX 79902-1441

Dear Commissioner Drusina:

On behalf of the San Diego County Board of Supervisors (Board), I am requesting the International Boundary and Water Commission (IBWC) to find and implement a permanent solution related to sewage spills in Mexico that impact San Diego County. We have the responsibility to protect the public and environmental health of this region, and the untreated sewage spills from across the border endanger our residents and have been a recurring issue for decades in the Tijuana River, which flows into the Pacific Ocean and along the coast of San Diego County.

The County of San Diego appreciates the IBWC's March 2, 2017 announcement of an investigation into the spill that took place between February 6 and February 23 to determine when the spill occurred, quantify how much sewage spilled, specify the characteristics of the sewage, and identify problems in procedures to notify the Commission and the public. The ongoing concern of untreated sewage flowing into the Tijuana River and San Diego County's coastal waterways from across the border was highlighted by this unprecedented spill, which dumped estimated 143 million gallons of sewage into the Tijuana River from Mexico. This was followed by another sewage spill of 145,000 gallons on March 1, 2017.

The sewage spills have resulted in beach closures stretching from the International Border to the City of Coronado, impacting beaches and communities in the Cities of Imperial Beach, Coronado and San Diego. Additionally, these spills have caused considerable economic injury to businesses and to local governments through the loss of sales tax revenue for a large portion of the San Diego region's coastal communities. The unprecedented size of the February sewage release has garnered national attention, discouraging visitors and tourism. It was especially egregious that Mexican authorities did not immediately notify our community of the spill.

The mission of the IBWC is to provide binational solutions to problems arising under United States-Mexico treaties, which include sanitation and water quality. As stated in the 1944 treaty, the United States and Mexico "agree to give preferential attention to the solution of all border sanitation problems" (Treaty of February 3, 1944). In furtherance of that mission and the 1944 treaty, and because this is a critical issue that must be addressed to protect the public and environmental health of our region, our Board respectfully asks that the IBWC include in its investigation an examination of possible permanent solutions to the repeated flow of untreated sewage into the Tijuana River from Mexico and seek the implementation of those solutions.

Sincerely,

DIANNE JACOB
Chairwoman

Cc: Governor Edmund G. Brown Jr., State of California
Secretary of State Rex W. Tillerson, United States Department of State
Administrator Scott Pruitt, United States Environmental Protection Agency

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DIANNE JACOB

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The Honorable Scott Pruitt
Administrator
United States Environmental Protection Agency
Office of the Administrator
1200 Pennsylvania Avenue, NW
Washington, DC 20460

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State of Oklahoma

Department of Agriculture, Food, and Forestry

Mary Fallin
Governor

Jim Reese
Secretary of Agriculture

March 16, 2017

Mr. Scott Pruitt, Administrator
Environmental Protection Agency
Office of the Administrator - 1101A
1200 Pennsylvania Avenue, N.W.
Washington, DC 20460

Dear Administrator Pruitt:

I recently read the online article published by Environmental Working Group titled "*As Okla. Attorney General, EPA Nominee Did Nothing to Protect Oklahomans from Toxic Swine Waste*". I know this type of propaganda is distributed in an attempt to sway public opinion and discredit your integrity.

As you know large swine operations in Oklahoma are licensed by the Oklahoma Department of Agriculture, Food, and Forestry (ODAFF) as well as ensuring compliance with state statutes and rules. As a result of this article, I wanted to provide you with some general procedures that ODAFF takes on a regular basis to address potential impacts to ground water at these large swine operations.

In general, groundwater monitoring wells are:

- Annually sampled and evaluated at all large swine facilities. Facility owners are notified of each well(s) that exceed established numeric criteria.
- For wells showing up on this "list", ODAFF requires facilities to undertake additional in-depth investigations (and report findings to ODAFF) to determine if the elevated Nitrate concentrations are related to facility operations or infrastructure.
- Based on the data collected from these comprehensive investigations, additional actions may be required.

This information may or may not be relevant in any future discussion you may have, but none the less I wanted you to have this information at your disposal just in case.

Respectfully,

Jeremy Seiger

Jeremy Seiger
Director, ODAFF
Agricultural Environmental
Management Services Division
jeremy.seiger@ag.ok.gov

cmn.wq.2017-sa.299 sa

OKLAHOMA DEPARTMENT OF AGRICULTURE, FOOD AND FORESTRY
AGRICULTURAL ENVIRONMENTAL MANAGEMENT SERVICES
P.O. BOX 528804
OKLAHOMA CITY, OK 73152-8804

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MR SCOTT PRUITT ADMINISTRATOR
ENVIRONMENTAL PROTECTION AGENCY
OFFICE OF THE ADMINISTRATOR 1101A
1200 PENNSYLVANIA AVE NW
WASHINGTON DC 20460

MAR 31 2017

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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 6
1445 ROSS AVENUE, SUITE 1200
DALLAS, TEXAS 75202 – 2733

April 14, 2017

Mr. Jeremy Seiger
Director
Oklahoma Department of Agriculture, Food, and Forestry
Agricultural Environmental Management Services Division
2800 N. Lincoln Blvd.
Oklahoma City, OK 73105

Dear Director Seiger:

Thank you for your letter to the U.S. Environmental Protection Agency (EPA) Administrator, Mr. Scott Pruitt, dated March 16, 2017, regarding the online article published by Environmental Working Group titled "As *Okla. Attorney General, EPA Nominee Did Nothing to Protect Oklahomans from Toxic Swine Waste.*" We appreciate the additional information you had provided in your letter as well. I appreciate your reaching out to the Dallas Regional Office, we have always valued our partnership with the Oklahoma Department of Agriculture, Food, and Forestry (ODAFF). I have asked our Region's Policy Advisor for Agriculture, Randy Rush, to retain the information you have provided should it be needed later.

Mr. Seiger, feel free to contact us as well should you feel the Dallas Regional Office can be of assistance. My contact number is 214-665-7101 or Mr. Rush at 214-665-7107

Sincerely,

WK Honker

William K. Honker, P.E.
Director
Water Division

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E. SCOTT PRUITT
ADMINISTRATOR

May 24, 2017

Mr. Steve Caldeira
President and Chief Executive Officer
Consumer Specialty Products Association
1667 K Street, NW, Suite 300
Washington, D.C. 20006

Dear Mr. Caldeira:

Thank you for your letters of March 13 and April 7, 2017, and thanks to you and your board members for taking the time to meet with me on April 6. The companies and industry that you represent are key to the robust economy and quality of life that the American public expects and deserves.

I appreciate and will carefully consider your views on the U.S. Environmental Protection Agency's Safer Choice program, implementation of the Toxic Substances Control Act, federal ozone standards and the importance of a reauthorized Pesticide Registration Improvement Act.

If you have any questions or comments, please contact Wendy Cleland-Hamnett, Acting Assistant Administrator for the Office of Chemical Safety and Pollution Prevention, at cleland-hamnett.wendy@epa.gov or (202) 564-2910.

Respectfully yours,

E. Scott Pruitt

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Governors' Wind & Solar Energy Coalition

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Phone 402 651-2948
www.GovernorsWindEnergyCoalition.org

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Gov. Jay Inslee

March 16, 2017

The Honorable Scott Pruitt
Administrator
U.S. Environmental Protection Agency
Office of the Administrator 1101A
1200 Pennsylvania Avenue NW
Washington, DC 20460

Dear Administrator Pruitt:

We write to you today on behalf of a bipartisan group of the nation's governors representing states from coast to coast. Wind and solar energy address many of our states' and the nation's important needs such as job creation, economic development, reliable and low-cost energy, and cost-effective emission reductions. We are enclosing a letter we sent to President Trump before your confirmation.

The nation's wind and solar industries have brought prosperity to many communities across America, especially to Americans in rural areas who embrace renewable energy because it has become a stable economic foundation for their communities.

On behalf of the coalition, we look forward to working with you and the your agency as we strengthen America's renewable energy industries. Please feel free to contact us or Larry Pearce, the Coalition's executive director (402-651-2948 or larry@governorscoalition.org).

Sincerely,

Gina Raimondo

Gina M. Raimondo
Chair and
Governor of Rhode Island

Sam Brownback

Sam Brownback
Vice Chair and
Governor of Kansas

Enclosure: Letter from Rhode Island Governor Gina Raimondo and Kansas Governor Sam Brownback to President Trump, February 13.

Governors' Wind & Solar Energy Coalition

2200 Wilson Boulevard, Suite 102-22
Arlington, Virginia 22201-3324
Phone 402 651-2948
www.GovernorsWindEnergyCoalition.org

Rhode Island
Gov. Gina M. Raimondo
Chair

Kansas
Gov. Sam Brownback
Vice Chair

February 13, 2017

The Honorable Donald J. Trump
President of the United States
The White House
1600 Pennsylvania Avenue
Washington, DC 20500

Dear President Trump:

As the governors of Rhode Island and Kansas and the chair and vice chair of the Governors' Wind & Solar Energy Coalition — a bipartisan group of the nation's governors representing states from coast to coast — we look forward to working with you to strengthen America's energy future.

The Coalition's twenty member-states are home to hundreds of wind and solar energy facilities that employ hundreds of thousands of Americans and contribute significantly to each state's economy, and the nation's at large. The growth of the renewable energy industry is an American success story built on federal research and development, state policy leadership, private sector investment, and ingenuity. A new chapter of that story began last year when our country's first offshore wind facility went into service in the waters of Rhode Island.

The nation's wind and solar energy resources are transforming low-income rural areas in ways not seen since the passage of the *Homestead Act* over 150 years ago. For example, U.S. wind facilities pay rural landowners $222 million a year, with more than $156 million going to landowners in areas with below-average incomes. In addition, $100 billion has been invested by companies in low-income counties, where some 70 percent of the nation's wind farms are located[1].

Last year, the country's solar industry employed over 200,000 and added 31,000 new jobs. Most of the installations are in rural areas and have provided landowners another income option. Further, the United States added a record 4,143 MW of new solar in the third quarter of 2016[2]. Wind energy currently generates nearly 25 percent of Kansas's electricity, 35 percent of Iowa's electricity, and five percent of the entire nation's electricity.

[1]*Wind power pays $222 million a year to rural landowners, American Wind Energy Association, March 2, 2016; Wind Is the New Corn for Struggling Farmers, Bloomberg News, October 26, 2016.*

[2]*National Solar Job Census, The Solar Foundation, 2016.*

Members of the Coalition have seen the benefits of renewable energy firsthand, and agree that expanding renewable energy production is one of the best ways to meet the country's growing demand for energy. Today's wind and solar resources offer consumers nearly unlimited electric energy with no fuel costs, no national security impacts, and a number of environmental benefits. The boons of renewable energy can be virtually endless with your Administration's and Congress' support of the key initiatives detailed here. Your support of these initiatives will allow our nation to capitalize on renewable resources, meet the needs of Americans and bolster the economy.

Grid modernization and Transmission Development

Any national infrastructure legislation introduced in Congress should provide significant funding for grid modernization.

Just like other basic infrastructure needs, the nation must address the electrical transmission challenges that a large expansion of renewable energy production will create, including the integration and transmission of significant new renewable energy to all areas of the nation. Across the country, electric utility customers are paying for investments in transmission and distribution system modernization. As the governors work with state utility commissions and the private sector to plan the best electric systems, it is vital that those investment decisions are based on the latest data, technology options and trends.

The complexity of the nation's aging, multi-state grid makes the need for sophisticated modeling and analysis critically important. We ask that you create a new state-federal task force, perhaps in conjunction with the Federal Energy Regulatory Commission and the National Laboratories, to examine options to modernize and streamline state and federal regulatory processes. Improving the regulatory framework will stimulate private sector and utility investments in a resilient electric system that is capable of withstanding security threats and delivering low cost electricity to every region of the nation.

Adopt Comprehensive Long-term Offshore Wind Development Legislation

Offshore wind is an abundant source of renewable energy handily located near some of our nation's largest cities and densest areas of population. However, the United States boasts just one active offshore project – the Block Island Wind Farm along the coast of Rhode Island. Europe currently has 11 GW of offshore wind installed. The Department of Energy's 2015 Wind Vision Report predicted that our country's offshore wind resources could support the installation of 22 GW of new wind by 2030 and 86 GW by 2050. If we capitalized on that potential, a new American offshore wind industry could create thousands of jobs in research and development, engineering, manufacturing, marine construction and other sectors.

Given its location, offshore wind presents greater development challenges than onshore wind, resulting in longer construction times and higher initial costs. In addition, most of the nation's best offshore wind resources are found in federal waters — requiring federal permits and other logistic efforts that can add years to the construction timeline.

Because of these offshore development challenges, different tax incentives, infrastructure investments, and research are needed for offshore wind projects to be successful. Understanding this, the governors

recently informed Congressional leadership that the nation's offshore wind industry cannot grow without specific federal policy foundations that will encourage offshore wind development in shallow and deep water. The governors have urged Congress to approve comprehensive offshore development legislation as soon as possible.[3]

Offshore wind investors need a faster return on their long-term investments, which is why the investment tax credit (ITC) is a better incentive for offshore wind development than the production tax credit (PTC). Tax incentives for the first offshore wind projects will ultimately reduce costs for future projects and for consumers. In order for offshore wind to be successful, a long-term extension of a thirty percent investment tax credit is critical.

Unfortunately, Congress has passed only short-term extensions of the investment tax credit that will expire before a majority of offshore wind projects will qualify. In fact, the National Renewable Energy Laboratory's analysis of the impacts of the recent PTC and ITC extensions found that no offshore wind projects would qualify prior to the 2019 expiration date. The investment tax credit also phases down, similar to the production tax credit, removing the effectiveness of the incentive.

Investor confidence in the nation's offshore wind potential is strong today. Six companies from around the world recently competed in a federal auction for the right to explore building offshore wind energy facilities on the Outer Continental Shelf. This is evidence of the private sector's support for offshore wind development, but that support will disappear without a strong national policy foundation.

It is our hope that your Administration and Congress will support a long-term extension of a thirty percent investment tax credit for offshore wind. Congress already has two pieces of legislation from last session that would address this issue. Bills authored by Senator Markey and Senator Whitehouse (S.3036) would extend the ITC for offshore wind through 2025 so the industry has sufficient time to develop these projects. Other legislation authored by Senator Carper and Senator Collins (S.1736) would allow the first 3,000 megawatts of offshore wind to qualify for the ITC, providing certainty for early developers regardless of timing. Both bills have companion legislation in the House. We support these efforts and other options that provide more certainty and time for the investment tax credit.

Increase Wind and Solar Research and Development Appropriations

The nation's long-term investment in research conducted by the U.S. Department of Energy's national laboratories, state universities, and private companies around the nation is responsible for the extraordinary growth of the nation's wind and solar energy industry. New electricity distribution, storage, controls and end-use technologies are making possible increased resilience and decreased costs to improve economic competitiveness.

Federal funding for energy research and development helps ensure that future generations of Americans are the beneficiaries of the country's tradition of energy innovation and economic competitiveness. This funding will also continue the dramatic cost reductions we've seen over the past 15 years as the average cost of wind and solar energy production continue to fall. For states without fossil fuel resources, wind

[3]*Iowa Governor Terry Branstad and Rhode Island Governor Gina Raimondo to Congressional Leadership, June 29, 2016. Governors' Wind & Solar Energy Coalition.*

and solar offer economic development opportunities for rural areas. For states with natural gas, coal, and oil resources, wind and solar present an opportunity to diversify energy resources.

If the United States does not continue robust federal research and development programs in wind and solar energy, we will cede leadership in these critical technologies to other nations that have demonstrated ongoing high priority commitments to these technologies, such as China. We would also cede the resulting economic development benefits to these nations and would be importing the great majority of our wind and solar equipment from them.

Streamline and Improve Collaboration for Permitting Solar and Wind Energy Projects

It is very difficult to permit wind and solar projects on public land and private land because of unworkable wildlife regulations. Wildlife permitting should allow wildlife-friendly projects and mitigation efforts to advance. An especially effective approach used by past Administrations to address permitting and siting issues is to direct assistant secretary level appointees from key agencies to meet quarterly and report on progress and remaining barriers. Consistent high-level attention, followed by White House questions, can deliver results.

Thank you for your consideration of our recommendations and your support for the nation's energy future. Please contact us or Larry Pearce, the Coalition's executive director (402-651-2948 or larry@governorscoalition.org) if we can be of further assistance.

Sincerely,

Gina M. Raimondo
Chair and
Governor of Rhode Island

Sam Brownback
Vice Chair and
Governor of Kansas

cc:
The Honorable Mike Pence, Vice President
The Honorable Reince Priebus, Chief of Staff
Members, Senate Appropriations Subcommittee on Energy and Water Development
Members, U.S. Senate Finance Committee
Members, U.S. Senate Energy and Natural Resources Committee
Members, U.S. House of Representatives Subcommittee on Energy & Water Development
Members, U.S. House of Representatives Committee on Commerce and Energy
The Honorable Rick Perry, U.S. Secretary of Energy Nominee
The Honorable Scott Pruitt, U.S EPA Administrator Nominee
The Honorable Sonny Perdue, U.S Department of Agriculture Nomimee
The Honorable Jared Kushner, Senior Advisor to the President
The Honorable Mick Mulvaney, White House Office of Management & Budget Nominee

Governors' Wind Energy Coalition
2200 Wilson Boulevard, Suite 102-22
Arlington, Virginia 22201-3324
www.GovernorsWindEnergyCoalition.org

OMAHA NE 680
17 MAR 2017 PM 3 L

The Honorable Scott Pruitt
Administrator
U.S. Environmental Protection Agency
Office of the Administrator 1101A
1200 Pennsylvania Avenue NW
Washington, DC 20460

FCL2029296

MAR 31 2017

20460-

March 16, 2017

RECEIVED

2017 MAR 31 AM 11: 10

OFFICE OF THE
EXECUTIVE SECRETARIAT

EPA Administrator Scott Pruitt
Environmental Protection Agency
Office of the Administrator 1101A
1200 Pennsylvania Avenue, N.W.
Washington, DC 20460

Dear Mr. Pruitt:

Please continue the federal waivers to the Clean Air Act that have been traditionally granted to California, enabling California to enact its own regulations at levels more stringent than the federal regulation. These regulations have given us a cleaner environment and, contrary to expectations, have not impeded our economy. Rather, our economy has GROWN RAPIDLY while our greenhouse gas emissions have dropped.

Mr. Pruitt, if your objective in studying this issue is to eliminate regulations that unduly restrict business, then the evidence from California is that a healthy economy and a healthy environment are not only compatible, but even mutually supporting of one another.

Sincerely,

Nancy Grove

Nancy Grove
(b) (6)

Cc: Senator Diane Feinstein
Senator Kamala Harris
Representative Anna Eshoo

Grove

[redacted] (b) (6)

SAN FRANCISCO CA 940

20 MAR 2017 PM 2 L

FCL2029370

MAR 3 1 2017

Mr. Scott Pruitt
EPA Administrator
Office of the Administrator 1101A
1200 Pennsylvania Ave. NW
Washington, DC
20460

RECEIVED

2017 MAR 31 AM 11:09

OFFICE OF THE
EXECUTIVE SECRETARIAT

March 15, 2017

Honorable Scott Pruitt, Administrator
Environmental Protection Agency
1200 Pennsylvania Ave. NW
Washington, DC. 20460

Dear Sir:

We are trustees of a small subdivision in the St. Louis Mo. area. (74 homes and 2 – 4 family apts.) We are on a 2 cell Lagoon system that is 50+ years old. We assumed trustee duties 15+ years ago and have been within DNR (Mo. Department of Natural Resources) regulations for the last 12 to 13 years, with very few exceptions. Our permit number is MO0090395.

The DNR has passed on to us an EPA regulation on ammonia (copy attached). Our ammonia discharge for 2016 was well within the new specifications for winter time, but **.22** over for the summer time. We were notified in 2015 that we have until April of 2018 to comply.

To date we can find no one who can tell us how we can reasonably meet these regulations and what will work. We have talked to Engineers, sewer operators, testing companies, and no one knows for sure. We have estimates of up to $200,000.00 ($ 2,300+ per family) but no guarantee it will work, and we still will have a lagoon to maintain.

There is a private sewer co. in our area, but it will take hundreds of thousands of dollars to put in the line to reach their plant. Their rates are now $68.00 a month and going up almost every year. As you can see this is pretty outrageous to drop our compliance down a **.22** from 1.64 to 1.4.

Our thoughts are, if the DNR and EPA impose a regulation they should be able to tell us the reason for the regulation, how to comply with it, and an estimate of the costs.

We are hoping you can put some common sense into these regulations, or at the very least delay them for three to four years until some reasonable way is found to meet the regulations.

Thank You.

Justin Larsen Jr., President
El-Chaparrel Estates Subdivision
P.O. Box 208,
Cedar Hill, MO. 63016

OUTFALL #001	TABLE A-2. FINAL EFFLUENT LIMITATIONS and MONITORING REQUIREMENTS for RIVERS and STREAMS 10 CSR 20-7.015(8)

The permittee is authorized to discharge from outfall(s) with serial number(s) as specified in the application for this permit. The final effluent limitations shall become effective on **February 1, 2018**, and remain in effect until expiration of the permit. Such discharges shall be controlled, limited and monitored by the permittee as specified below:

EFFLUENT PARAMETER(S)	UNITS	FINAL EFFLUENT LIMITATIONS			MONITORING REQUIREMENTS	
		DAILY MAXIMUM	WEEKLY AVERAGE	MONTHLY AVERAGE	MEASUREMENT FREQUENCY	SAMPLE TYPE
Flow	MGD	*		*	once/quarter***	24 hr. estimate
Biochemical Oxygen Demand$_5$	mg/L		45	30	once/quarter***	grab
Total Suspended Solids	mg/L		80	60	once/quarter***	grab
pH – Units	SU	**		**	once/quarter***	grab
Ammonia as N (April 1 – Sept 30) (Oct 1 – March 31)	mg/L	3.6 7.5		1.4 2.9	once/quarter***	grab
E. coli[1]	#/100 ml	1030		206	once/quarter***	grab
Total Residual Chlorine[2]	µg/L	17 (130ML)		8 (130ML)	once/quarter***	grab

MONITORING REPORTS SHALL BE SUBMITTED QUARTERLY; THE FIRST REPORT IS DUE APRIL 28, 2018. THERE SHALL BE NO DISCHARGE OF FLOATING SOLIDS OR VISIBLE FOAM IN OTHER THAN TRACE AMOUNTS.

EFFLUENT PARAMETER(S)	UNITS	DAILY MINIMUM	WEEKLY AVERAGE MINIMUM	MONTHLY AVERAGE MINIMUM	MEASUREMENT FREQUENCY	SAMPLE TYPE
Dissolved Oxygen[2]	mg/L	*		*	once/quarter***	grab

MONITORING REPORTS SHALL BE SUBMITTED QUARTERLY; THE FIRST REPORT IS DUE APRIL 28, 2018.

* Monitoring requirement only.

** pH is measured in pH units and is not to be averaged. The pH is to be maintained at or above 6.5 pH units

*** Quarterly sampling is required and samples shall be collected and tested for the parameters listed in Table A-1 if a discharge occurs during the reporting period. If the facility serves a part-time or seasonal establishment/residence(s), then sampling shall occur while the treatment facility is operating and after a discharge begins. See table on Page 4 for quarterly sampling schedule.

---

[1] Effluent limitations and monitoring requirements for *E. coli* are applicable only during the recreational season from April 1 through October 31. The Monthly Average Limit for *E. coli* is expressed as a geometric mean.

[2] Effluent limitations and monitoring requirements for Total Residual Chlorine (TRC) and Dissolved Oxygen (DO) only apply to facilities using the chlorine method of disinfection.

- This effluent limit is below the minimum quantification level (ML) of the most common and practical EPA approved CLTRC methods. The department has determined the current acceptable ML for total residual chlorine to be 130 µg/L when using the DPD Colorimetric Method #4500 – CL G. from Standard Methods for the Examination of Waters and Wastewater. The permittee will conduct analyses in accordance with this method, or equivalent, and report actual analytical values. Measured values greater than or equal to the minimum quantification level of 130 µg/L will be considered violations of the permit and values less than the minimum quantification level of 130 µg/L will be considered to be in compliance with the permit limitation. The minimum quantification level does not authorize the discharge of chlorine in excess of the effluent limits stated in the permit.
- Do not chemically de-chlorinate **if it is not needed to meet the limits in your permit.**
- If no chlorine was used in a given sampling period, an actual analysis is not necessary. Simply report as "0 µg/L" TRC.
- DO monitoring requirements only apply during months that the facility is chlorinating.

El-Chaparrel Estates Subdivision
P.O. Box 208
Cedar Hill, Mo. 63016

SAINT LOUIS MO 630
17 MAR 2017 PM 2 L

FCL2029380

MAR 31 2017

Honorable Scott Pruitt, Administrator
Environmental Protection Agency
1200 Pennsylvania Ave. NW
Washington, DC. 20460

20460-

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 7
11201 Renner Boulevard
Lenexa, Kansas 66219

APR 20 2017

OFFICE OF THE
REGIONAL ADMINISTRATOR

Mr. Justin Larson Jr.
President
El-Chaparrel Estates Subdivision
P.O. Box 208
Cedar Hill, Missouri 63016

Dear Mr. Larson:

The U.S. Environmental Protection Agency has received your letter regarding the anticipated cost associated with improvements for El-Chaparrel Estates Subdivision wastewater treatment facility.

The Missouri Department of Natural Resources on February 1, 2015, issued Missouri State Operating Permit MO-0090395. The facility's receiving stream is Sand Creek, which has designated uses for aquatic and human health-fish consumption, whole body contact recreation, and livestock and wildlife watering. The MDNR's water quality criteria for ammonia toxicology is based on current statutes and regulations for freshwater ammonia criterion. The permit provided El-Chaparrel Estates Subdivision with a schedule of compliance to allow time to evaluate operations, including optimizing operation of the existing facility, obtain an engineering plan and receive an appropriate construction permit if an upgrade is needed, and ultimately implement the selected compliance measures to meet the ammonia limits by February 1, 2018.

Because the MDNR has direct knowledge of the permit and its compliance schedule, the EPA believes that the MDNR would be most helpful in discussing your concerns on compliance measures. The appropriate contact at the MDNR is Chris Wieberg, Chief Operating Permits Section in the Water Protection Program, at (573) 751-1300. In addition, the MDNR's Community Assistance program provides assistance for helping communities find resources such as technical assistance, grants and loans. They will also assist in developing comprehensive plans to address current and future wastewater system needs. The St. Louis Regional Community Service Coordinator is Tracey Haag, (314) 416-2960.

If you have any questions regarding this letter, please contact Glenn Curtis, Chief, Wastewater and Infrastructure Management Branch, at (913) 551-7726, or email him at *curtis.glenn@epa.gov*.

Sincerely,

Karen A. Flournoy
for Edward H. Chu
Acting Regional Administrator

Printed on Recycled Paper

Sent with ProtonMail Secure Email.

Mr. Scott Pruitt

I have been active in politics for many years as well as your campaign during election. I am a fan of your's and glad to see you are in Trumps cabinet. I want to write you to inform you that I reside in HUD housing and since i have had a serious problem and have called many agencie's to see If someone could help me with the issue I have but hit dead end whomever I contact. Since i heard you are Administrator of EPA thought I would go to the top as I am desperate to say the least. I'm going to make this short as I do not know if this is a correct address to contact you and cannot find an email contact for you . I'll be brief for now hoping this gets to you. April 27 of 2016 I had a terrible experience while in my dwelling and went outside to examine a horrible smell, went out side only to find seconds later i was incapacitated with a seizure and if i did not think fast while i could as i was suffering several symptoms as blindness, loss of hearing and internal burning ect; ran into house and popped asperine just as i was about to collapse as breathing also affected and within a few minutes i became somewhat stable and later to find i have lasting impairments and almost died. I really need you're help on this as I am afraid it will happen again as I have not had appropriate help. During research while sick found it to be pesticide poisoning as I saw lawn workers on premises before it happened. Please contact me on this matter as to where i can be referred to and or for further information as i need to resolve this. I have much info on this matter. Thank you sir and god bless you and you're's.

Carmen Kurzatkowski

[redacted] (b) (6) d

[redacted] 4

[redacted] (b) (6) [redacted]

Sent with ProtonMail Secure Email.

RECEIVED
2017 MAR 31 AM 11:08
OFFICE OF THE
EXECUTIVE SECRETARIAT

Carmen Kurzatkowski

[redacted] (g) (a)

HARTFORD CT 061

21 MAR 2017 PM 6 L

Environmental protection agency
c/o 1101A
1200 Pennsylvania Ave.
Washington DC. 20460

MAR 31 2017

FCL2029374

20460-

Hayes, Sharon

From: Hayes, Sharon
Sent: Thursday, April 13, 2017 3:31 PM
To: '(b) (6)'
Subject: US EPA Region 1's response concerning possible pesticide exposure in April 2016 (Control Number: AX-17-000-6946)
Attachments: Document.pdf

Dear Ms. Kurzatkowski,

This is in response to your March 2017 letter to Administrator Scott Pruitt concerning a possible pesticide exposure you experienced on April 27, 2016 outside your dwelling located in Washington Depot, Connecticut (see attached for convenience). Because pesticide use laws come under the jurisdiction of the Connecticut Department of Energy and Environmental Protection (CT DEEP), we reached out to them and learned that they received the same complaint and investigated it last year. As a result of their investigation, they were able to determine that a pesticide application was made on April 25, 2016 by TruGreen. CT DEEP investigative staff attempted to contact you, but their efforts were unsuccessful.

Based on this most recent correspondence, CT DEEP is looking into this again. Should you want further details about the state's investigation, I recommend that you contact the state's pesticide program manager, Diane Jorsey who may be reached by phone at (860) 424-3328 or by email at diane.jorsey@ct.gov.

If you have additional concerns feel free to contact me directly at (617) 918-1328 or by email at hayes.sharon@epa.gov.

Sincerely,
Sharon M. Hayes, Manager
Toxics and Pesticides Unit
US EPA Region 1 (New England)
5 Post Office Square, Suite 100 (OES05-4)
Boston, MA 02109-3912
617-918-1328 (phone)
617-918-0328 (fax)
hayes.sharon@epa.gov

Suzanne Swatsley
(b) (6)

RECEIVED
2017 MAR 31 AM 11:08
OFFICE OF THE
EXECUTIVE SECRETARIAT

March 19, 2017

The Honorable Scott Pruitt
Administrator of the Environmental Protection Agency
Office of the Administrator 1101A
1200 Pennsylvania Avenue N.W.
Washington, DC 20460

Dear Mr. Pruitt:

I am writing to ask you to repeal the regulations that mandated, as of 2009, that all new kitchen stoves sold in the United States must have an electronic ignition in the oven. No more standing or standard pilots. Prior to 2009, stoves with a gas stove top could also have a standard pilot in the oven, but not after 2009, and in this letter I am only talking about stoves with gas stove tops.

This is nothing more than a monopoly by the electric companies. Having an all electric kitchen stove/oven does not save energy nor is it cleaner. It could also be argued that an electric oven is not safer because a house fire could be started by any electrical appliance malfunctioning.

Maybe having an electric oven doesn't sound like it would be an issue, but I can assure you that during a power outage it is. When the electricity is out, the oven cannot be used. Cannot. No electricity, no oven. Whether a major city with frequent brownouts or rural with major, and even minor, storms the potential for food loss is high unless you know how to cook a turkey or bake a cake on the stove top, not to mention the inconvenience.

Many people are not even aware of this issue, myself included, until its time to buy a new stove, and there are many who would like to see the return of the standard pilot in ovens. The people should be given the choice not something mandated by the government under the guise of global
warming to increase the coffers of the electric companies.

Thank you for your attention to this matter.

Sincerely,

Suzanne Swatsley

Suzanne Swatsley

cc: The President, President of the United States
The Honorable Carl Ichan, Director of the Office of Information and Regulatory Affairs
The Honorable Rick Perry, Secretary of Energy

Suzanne Swatsley

[redacted] (b) (6)

20 MAR 2017 PM 1 L

FCL2032489

The Honorable Scott Pruitt
Administrator of the Environmental Protection Agency
Office of the Administrator 1101A
1200 Pennsylvania Ave N.W.
Washington DC 20460

MAR 31 2017

20460-

Fri Mar 31 13:09:09 EDT 2017
Hope.Brian@epamail.epa.gov
FW: Training of GEMI's Scientist & Engineers at USEPA (MAIL CODE -DC 204600
To: CMS.OEX@epamail.epa.gov

From: Nitasha Khatri(GoG-GEMI Dept.) [mailto:labhead-gemi@gujarat.gov.in]
Sent: Friday, March 31, 2017 6:27 AM
To: Pruitt, Scott <Pruitt.Scott@epa.gov>; Press <Press@epa.gov>
Cc: (b) (6)
Subject: Training of GEMI's Scientist & Engineers at USEPA (MAIL CODE -DC 204600

Dear Sir/Madam

Enclosed Please find herewith the letter regarding the training(s) of Officials of Gujarat Environment Management Institute,Gandhinagar,Gujarat (India).

The details are mentioned in the letter, We hope for the positive consideration.

Thanks & Regards

Dr.Nitasha Khatri
Senior Scientific Officer
GUJARAT ENVIRONMENT MANAGEMENT INSTITUTE (GEMI)
(An Autonomous Institute of Government of Gujarat)
Block No. 13,Third Floor,
Dr. Jivraj Mehta Bhawan (Old Sachivalaya),
Sector-10B, Gandhinagar

Contact nO- 09408635040

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सत्यमेव जयते

Dr. Sanjiv Tyagi, IFS
Fellow of Royal Society of Chemistry, London
Director

Gujarat Environment Management Institute(GEMI)

(An Autonomous Institute of Government of Gujarat)

(An ISO 9001 : 2008 & ISO 14001 : 2004 certified Institute)

GEMI/ 257(3) / 815 / 2017

Dt. 30/03/2017

To,
Mr. Scott Pruitt
Oklahoma Attorney General/Administrative Officer,
USEPA Headquarters
William Jefferson Clinton Building
1200 Pennsylvania Avenue, N. W.
Mail Code: 1101A
Washington, DC 20460
press@epa.gov
Pruitt.scott@Epa.gov
Office Phone - Extension
202-564-4700

Subject: - Training of GEMI's Scientist & Engineers at USEPA

Sir,

At the outset we wish to introduce our organization, Gujarat Environment Management Institute (GEMI) an Autonomous Institute of Government of Gujarat in India, under Forest and Environment Department. It is registered under the Society Registration Act, 1860., an Act of Indian Parliament as well as under the Bombay Public Trust Act, 1950., an Act of State Legislature.

The mission of GEMI is "***To Promote Conservation, Protection, and Management of the Total Environment through Scientific and Technical Pursuits in order to maintain or restore the pristine elements of such Environment***".

To fulfil this mission, GEMI has taken up various activities, research studies/schemes and focuses on training in the fields of Water, Air and Land that aims at assessing the environmental impacts while ensuring the sustainability of systems.

GEMI has also set up a "***State of the Art Laboratory***" with NABL accreditation issued as per guidelines of Quality Council of India to support its research activities and analyse the parameters of air, water & wastewater, soil and microbiology. The Institute has following accreditations/recognitions:

1. Recognition under EPA (Environment protection Act 1986)
2. State Water Laboratory under Water (Prevention and Control of Pollution) Act - 1974 of India
3. State Air Laboratory under Air (Prevention and Control of Pollution) Act -1981 of India.
4. NABL ISO 17025 accreditation in Chemical (Air, Water and Soil) & Microbiology.
5. ISO 9001:2008
6. ISO 14001:2004

7. NABET (National Accreditation Board for Education and Training) as per guidelines of Quality Council of India
8. OHSAS18001

As listed in its Memorandum of Association, one of the objectives of the Institute is to collaborate with National/International organizations and institutions having similar objectives, while perpetually developing the capabilities and technical skills of the Scientists and Engineers by imparting trainings including mid-career ones.

In this regard, GEMI has already been collaborating with India's reputed Universities and Organisations. The Institute now also intends to collaborate with your esteemed and prestigious agency ***US EPA*** for projects/research-related activities as well as ***TRAINING PROGRAMS*** that can serve the purpose of ***Conservation, Protection and Management of Environment.*** We believe that promoting and protecting a strong and healthy environment is lifeblood of our Government of India, and that GEMI is vital to that mission.

While the Institute does possess the National Perspective, there is a need to have International collaboration so as to understand the global magnitude of environment. International training and research in environmental and OH&S sciences would play significant role in doing that and providing appropriate scientific solutions to issues of National and international significance for better understanding of environment.

Such trainings envisage to cover general environmental issues such as Air, Soil, Noise, Water, Hazardous/Solid Waste Pollution as well as issues related to OH&S and injury control. Issues pertaining to Climate Change and Ozone Layer Depletion could also be included among the various curricula offered.

We understand that USEPA being the world's largest and prestigious environment agency, plays a leadership role in environment sector and helps visionary organizations achieve their environmental goals.

Ours is an upcoming Institute in the environment sector which has mission and goals similar to USEPA. Hence we wish to collaborate with your esteemed agency. We would therefore request you to provide your kind support to our Institute in providing training to our Scientists and Engineers at your place. May I request you to consider providing training to our Scientists & Engineers with free accommodation? The GEMI shall bear the travel cost to & from to the place of your training.

The detailed profile of the Institute is enclosed herewith this letter for your ready reference. For more information, kindly visit our website www.gemi.gujarat.gov.in. Hoping for positive and prompt response in this regard.

Thanking you

Yours Sincerely,

Dr. Sanjay Tyagi
Director, GEMI.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460
APR 17 2017

Office of
International and
Tribal Affairs

Dr. Sanjiv Tyagi, Director
Dr. Nitasha Khatri, Senior Scientific Officer
Gujarat Environment Management Institute
Block N. 13, Third Floor
Dr. Jivraj Mehta Bhavan
Sector-10 B, Gandhinagar 382010
INDIA

Dear Dr. Tyagi and Dr. Khatri:

Thank you for your letter to the United States Environmental Protection Agency (EPA) and for sharing the mission and activities of the Gujarat Environment Management Institute (GEMI). State environment departments play a crucial role in protecting human health and the environment across the world as do complementary institutes such as GEMI and laboratories that support this work. Your collaboration with partner universities and other organizations builds crucial partnerships.

EPA is not able to accommodate GEMI's request for training. EPA works strategically with national governments and to help build strong environmental institutions. Comprehensive, general training on environment issues is beyond the scope of our partnership capabilities. A discussion of EPA collaboration with India over the last several years can be found at www.epa.gov/international-cooperation/epa-collaboration-india. EPA's website, www.epa.gov, can also serve as a resource for in depth information on EPA regulations and programs.

I wish you success in accessing training and development opportunities for staff and advancing GEMI's mission.

Sincerely,

Lisa Almodovar, Deputy Director
Office of Regional and Bilateral Affairs

Fri Mar 31 13:09:48 EDT 2017
Hope.Brian@epamail.epa.gov
FW: Waters of the U.S. Rule
To: CMS.OEX@epamail.epa.gov

From: (b) (6) [mailto: (b) (6)
Sent: Friday, March 31, 2017 12:23 PM
To: Pruitt, Scott <Pruitt.Scott@epa.gov>
Subject: Waters of the U.S. Rule

Mr. Pruitt, listen up!

Roughly 90 percent of the streams that twist across the American West are ephemeral. Under an Obama Administration rule that has been held up in court, those streams could be protected insofar as they merge downstream with larger waterways. The rule would also protect some wetlands and isolated lakes.

The Environmental Protection Agency based the rule on a 400-page scientific report that synthesized 1,200 peer-reviewed articles. “There’s close to a scientific consensus on this issue,” says Brian Chaffin, a water policy professor at the University of Montana. “Protecting our waters really depends on the quality of tributaries,” says David Cooper, a wetland ecologist at Colorado State University.

Keep the Waters of the U.S. Rule in place and cut out the lying. You are a corporate tool and history will correctly blame you for the environmental devastation you support.

Diana DeLucca
Millersville PA

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, DC 20460

APR 13 2017

OFFICE OF WATER

Ms. Diana DeLucca
(b) (6)

Dear Ms. DeLucca:

Thank you for your letter dated March 31, 2017, to the U.S. Environmental Protection Agency (EPA) Administrator Scott Pruitt regarding the definition of "waters of the U.S." Your letter has been referred to me in EPA's Wetlands Division within the Office of Water.

On February 28, 2017, the President signed the "Executive Order on Restoring the Rule of Law, Federalism, and Economic Growth by Reviewing the "Waters of the United States." The Executive Order calls on the EPA Administrator and the Assistant Secretary of the Army for Civil Works to review the final Clean Water Rule and "publish for notice and comment a proposed rule rescinding or revising the rule...." The Executive Order directs the EPA and the U.S. Army Corps of Engineers to "consider interpreting the term "navigable waters" in a manner "consistent with Justice Scalia's opinion" in *Rapanos*. The Scalia standard describes the scope of Clean Water Act jurisdiction to include relatively permanent waters and wetlands with a continuous surface connection to relatively permanent waters.

Since the Executive Order was issued, EPA has taken two actions. First, we published a *Federal Register* notice on March 6, 2017, entitled "Intention to Review and Rescind or Revise the Clean Water Rule." The notice announces EPA's and Army's intention to review and rescind or revise the 2015 Clean Water Rule, consistent with Justice Scalia's standard. Second, at EPA's request, on March 6, 2017, the Department of Justice advised the Sixth Circuit Court of Appeals that the agencies intend to consider rescinding or revising the Clean Water Rule. The notice is called for by the Executive Order in light of the ongoing Clean Water Rule litigation currently before that court.

Information about these actions can be found on EPA's website at https://www.epa.gov/cleanwaterrule.

Sincerely,

Mindy Eisenberg, Acting Director
Wetlands Division

Fri Mar 31 13:12:00 EDT 2017
Hope.Brian@epamail.epa.gov
FW: a new article on CC&GHGs
To: CMS.OEX@epamail.epa.gov

From: Elettra Agliardi [mailto:elettra.agliardi@unibo.it]
Sent: Friday, March 31, 2017 12:29 PM
To: Pruitt, Scott <Pruitt.Scott@epa.gov>
Subject: a new article on CC&GHGs

Dear dr. Scott Pruitt

EPA

Please, find attached our paper "On the relationship between GHGs and Global Temperature Anomalies: Multi-level rolling analysis and Copula calibration", which can be of interest to EPA. It surprisingly shows that the relationship between increasing rates in global climate change and cumulative emissions is questionable.

Here is an abstract, for your convenience.

Abstract:

The relationship between GHG emissions and global warming is studied through multi-level rolling analysis to assess whether or not there are increasing rates in global change as a result of higher levels of anthropogenic emissions, as we move forward in time. Furthermore, in order to assess whether we observe tail-dependence, representing simultaneous occurrence of extreme events, we employ copula methods. Our main findings do not support views of increasing rates in global climate change as a result of higher levels of emissions. On the contrary, they suggest a constant or even a decreasing effect of emissions on temperature anomalies especially from 2005 onward. At the same time, our copula calibration shows that the Frank copula achieves the best fit. Since the Frank copula is a copula that assigns a low probability to joint extreme events, our analysis does not show tail dependence.

(It has been accepted for presentation at the 2017EAERE Conference, and is available as a RCEA WP 17-5).

Please, do not hesitate to contact me, if you need further details.

With kind regards,

Elettra Agliardi

Professor Elettra Agliardi

Department of Economics

University of Bologna

Director of Studies Master Degree in Resource Economics and Sustainable Development

e-mail: elettra.agliardi@unibo.it

Title page

Informative Title:

On the relationship between GHGs and Global Temperature Anomalies: Multi-level rolling analysis and Copula calibration

Concise Title: GHGs and Global Temperature Anomalies

Author names and affiliations:
Elettra Agliardi, Department of Economics, University of Bologna (Italy), and Rimini Centre for Economic Analysis, e-mail: elettra.agliardi@unibo.it

Thomas Alexopoulos, Department of Economics, University of Peloponnese, Tripolis (Greece) and Department of Economics, University of Bologna (Italy), e-mail: t.alexopoulos@uop.gr

Christian Cech, University of Applied Sciences BFI Vienna (Austria), e-mail: christian.cech@fh-vie.ac.at

Corresponding author:
Elettra Agliardi, e-mail: elettra.agliardi@unibo.it

Keywords: GHGs; Global temperature anomalies; Rolling analysis; Copulas.

JEL Classification: Q54; Q51; C53; C69.

On the relationship between GHGs and Global Temperature Anomalies: Multi-level rolling analysis and Copula calibration

Abstract

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1. Introduction

For more than a decade the question of mankind's effects, through anthropogenic emissions, on global warming has become a deeply polarized one among politicians, scientists, or simple citizens (Witt et al. 2016, Barr et al. 2011, Anderson et al. 2016, Hook et Tang, 2013,). There are controversial views which in many cases are biased by various factors out of any relative science[1]. Attributing trends to a single influence is difficult to establish unequivocally because the climate system can often respond in unexpected ways to external influences and has a strong natural variability. At the same time, results from new risk/uncertainty based assessments suggest that "there is a significant chance that the climate system is more sensitive than was originally thought" (Stern, 2008, page 11). Hence, there is scope for further examining the relationship between anthropogenic greenhouse gas (GHG) emissions and global warming on renovated scientific grounds, rather than subjective estimations with personal beliefs, and climate sensitivity remains an area of active research.

The purpose of this paper is to study again the relationship between GHG emissions and global warming and to assess whether or not there are increasing rates in global change as a result of higher levels of anthropogenic emissions. This valuation will have interesting policy implications as well, which call for different degrees in the urgency of precautionary policy interventions which are required to contrast global warming[2] (see, f.e., Taleb et al, 2014).

In most simulations (see, f.e., Gillett, Arora, Matthews and Allen, 2013, and references there) global warming has been shown to be almost proportional to cumulative carbon dioxide (CO_2) emissions, which makes the climate response to CO_2 emissions (the so-called "carbon-climate response", CCR) a measure which can be used to calculate the cumulative emissions compatible with a 2°C (or 1.5°C)

[1] US government now seems to embrace conservative views about climate change and plans its environmental agenda with less sensitivity on the matter. An example is the recent executive orders by the US President reviving controversial oil Pipelines which had been stalled by his predecessor.

[2] Several world-wide organizations appealed to a precautionary principle in policy measures. For example, the Rio Declaration on Environment and Development states: "In order to protect the environment, the precautionary approach shall be widely applied by states according to their capabilities. Where there are threats of serious or irreversible damage, lack of full scientific certainty shall not be used as a reason for postponing cost-effective measures to prevent environmental degradation".

warming target (Matthews, Gillett, Stott and Zickfeld, 2009; from now onwards, Matthews et al.) - that is, the target representing the (estimated) threshold beyond which climate change would determine dangerous anthropogenic interference[3].

Matthews et al. (2009) were the first to ascertain a proportionality between global warming, measured as the global mean temperature change over some period of time, and the total cumulative carbon dioxide emitted over that period, and they firstly proposed the CCR measure. In most simulation models, they showed that CCR is approximately constant with respect to time and CO_2 emission scenario, implying that "the CCR, when evaluated from climate-carbon models under idealized conditions, represents a simple yet robust metric for comparing models, which aggregates both climate feedbacks and carbon cycle feedbacks" (Matthews et al. 2009, page 1).

However, although such results are useful concepts for climate change "mitigation" policies - that is, policies directed at reducing GHGs emissions (Tol, 2005) -, the presence of large uncertainties in climate and carbon sensitivities[4] prevent confident estimates of the CO_2 stabilization level necessary to avoid the 2°C (or 1.5°C) warming target. At the same time, the CCR refers only to cumulative CO_2 emissions, and is not applicable to emissions of other non-CO_2 greenhouse gases.

In this paper we study the relationship between GHG emissions and global warming following a more practical and observationally-based approach. While the simulation models and the carbon-climate model experiments provide important

[3] The main objective of climate policies is to reduce the amount of anthropogenic greenhouse gas (GHG) emissions to achieve "stabilization of GHG concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system" (UN Framework Convention on CC, art.2). Most of the 'unburnable carbon' debate has recently recognized the need of limiting the global mean temperature increase to 2°C relative to preindustrial times - and even a relatively more ambitious target of 1.5°C was reached in the Paris Agreement in December 2015.

[4] For example, Allen, Stott, Mitchell, Schnur, and Delworth (2000) claim that the predicted response of climate change to a given emission scenario is inevitably uncertain. Recent observed changes appear to be attributable to human influence. Substantial changes in the current balance of GHG warming and sulphate aerosol cooling could increase the uncertainty. Allen et al (2000) try to assess the range of warming rates that are consistent with the observed temperature as well as with the overall patterns of response, which is relatively robust to errors in models' climate sensitivity, global response to sulphate aerosols, etc.

insights describing the climate response to CO_2 cumulative emissions, a relevant measure for policy makers is the response of the real climate system. Thus, historical carbon emissions and observed temperature changes have to be computed. The most direct application of Matthews et al (2009) results is to use surface temperature observations to derive an estimate of CO_2-attributable warming to the present. Here we study the relation between GHG emissions (both in levels and cumulative emissions) and temperature changes from historical observations.

The data set used in this paper consists of GHG emissions for (almost) all countries in various years, in particular, carbon dioxide, methane, nitrous oxide and other GHG emissions. As for the temperature changes, we take the global surface temperature anomalies index, which has been elaborated by the NASA GISS analysis, as developed in Hansen, Ruedy, Sato and Lo (2010). For our study, we employ a multi-level rolling analysis. Our methods, that is, standard rolling correlation, structural breaks, rolling regressions and forecasting analysis, enable us to identify the dynamics, if any, in the relationship between emissions and global temperature anomalies, as we move forward in time. Furthermore, in order to assess whether we observe tail-dependence, representing simultaneous occurrence of extreme events, we employ copula methods. To the best of our knowledge, this is the first paper employing such methods in climate research.

Our main findings show that our rolling analysis does not support views of increasing rates in global climate change as a result of higher levels of emissions. On the contrary, our results suggest a constant or even a decreasing effect of emissions on temperature anomalies especially from 2005 onward. At the same time, our copula calibration shows that the Frank copula achieves the best fit. Since the Frank copula is a copula that assigns a low probability to joint extreme events, our analysis does not show tail dependence. Overall, our findings seem to provide arguments in favour of a skeptical view of global warming.

The rest of the paper is structured as follows: in Section 2 we present our methodology and the data used in the paper; in Section 3 our empirical results are discussed; Section 4 develops a copula approach and presents the main result under this approach; finally Section 5 concludes and offers some extensions of the current work. All our tables and figures are found in the Appendix.

2. Data and methodology

2.1 Data

We employ annual data for our analysis, covering a period from 1960 until 2012 for the main part of our work. Notwithstanding the fact that some time series, e.g. the global temperature anomalies, are extended within larger time samples, due to reasons of common overlapping we restrict our sample within this period only. Our two main data categories concern global temperature and emissions. For the first, we have used Nasa's global mean estimates (GISTEMP, 2016) based on Land-Surface air temperature anomalies (Meteorological Station Data), which we abbreviate with T_dts, as developed in Hansen, Ruedy, Sato and Lo (2010). The GISTEMP analysis gives the global surface temperature anomalies over many years (from 1880 to 2015), relative to the 1951-1980 base period[5].

According to Hansen and Lebedeff (1987), the best estimate for absolute global mean for 1951-1980 is 14 degrees of Celsius, and is used as the conversion factor from absolute scale to temperature anomalies. Except the GISSTEMP analysis, other data suppliers for global temperature are the National Centers for Environmental Information (NOAA) Global Analysis (NOAA, 2016) which uses also absolute values and values in time series, and Berkeley Earth (BERKLEY, 2016) who has released data for two global land and ocean surface temperature products. Both GISTEMP and NOAA describe that absolute estimates of global mean surface temperature are difficult to compile for a number of reasons, for instance in areas with few temperature stations, etc. Regarding temperature anomalies, as shown in Figure 1 below, the data source selection is of minor importance, since in all three cases temperature anomalies are very close to each other.

[Insert Figure 1, about here]

[5] Alternatively, we could use the global land-ocean temperature index, which still employs the GISS analysis, combining available sea surface temperature records with meteorological station measurements. It is shown that, on average, warming in the recent four decades was larger over land than over ocean, in part because of the ocean's larger thermal inertia.

The data for emissions are also annual, both in levels and cumulative emissions for (almost) all countries. We have used total GHG emissions and emissions per different types of gases. Carbon dioxide (CO_2) emissions consist of annual data from 1960 to 2012, whereas methane (CH_4) and nitrous oxides (N_20) and other GHG emissions consist of annual data from 1973 to 2012. The latter three emission types are measured in terms of CO_2 equivalent levels, which allow us to conduct comparisons over time. The annual national estimates for the total fossil-fuel CO_2 emissions - and respective fossil-fuel CO_2 emissions from solid (coal), liquid (oil) and gas (natural gas) consumption - come from Carbon Dioxide Information Analysis Center (CDIAC) of the U.S. Oak Ridge National Laboratory (see Boden et al. 2013). In their work, the total fossil-fuel CO_2 emission estimates are obtained by using the energy statistics of the United Nations (2013), following the methodology of Marland and Rotty (1984). Methane, nitrous oxide and other GHG emissions are from the International Energy Agency (IEA).

All the data sets are categorized and taken from the World Bank's World Development Indicators (http://www.worldbank.org/indicators).

2.2 Methodology

As already mentioned, the focus of this paper is to consider whether there is a changing effect of emissions on global temperature anomalies when different levels of emissions are tested. To do that, we apply a multi-level rolling analysis in several steps. The main idea of using a rolling analysis lies in the identification of a potential dynamic relationship between our examined variables or not. As we move forward in time, new data inputs are considered for examination, and different outputs in terms of estimated coefficients and variables are produced. A strong difference in these coefficients could be regarded as a difference in the causal relationship among the examined variables.

Hence, we first estimate a standard smoothed rolling correlation between each of the GHGs and global temperature anomalies using a 10-year rolling window for the correlation and a 5-year moving average filter to reject unnecessary noise.

Hence:

$$\text{Correlation}(X_i, \text{T\_dts}_i)_{Rolling,Smoothed} = \frac{1}{5}\sum_{k=j}^{j+5} Corr_j(X_i, Y_i) \quad (1)$$

$$where\ i = j,...,j+10\ \&\ j = year_1,...,year_{n-15}\ \&\ X_i = \{GHGs_i, CO_{2i}, N_2O_i, CH_{4i}\}$$

A trend existence in the above estimated time series of rolling correlations could be considered as a sign of changing effect with an upward trend as a stronger relationship and a downward trend as a looser one.

Since correlation does not necessarily imply causation, we further apply a 1-step rolling regression of the logs of cumulative GHGs and cumulative CO2 emissions on the logs of global temperature anomalies, after having tested for stationarity and applied standard specification tests for the full sample (see Table 1). All our time series are stationary and all the specification tests do not reject their Null Hypotheses Hence, the estimated equation is:

$$LT\_dts_{t,i} = C_{1,i} + C_{2,i} \cdot LX_{t,i} + \in_{t,i} \quad (2)$$

where $LT\_dts_{t,i}$ stands for the log of the global temperature anomalies and $X_{t,i}$ stands for the log of either total cumulative GHGs or cumulative CO_2 emissions. Subscript i sets the starting point of the estimated subsample each time, while t stands for the time inside the fixed window of the 30 annual observations.

[Insert Table 1, about here]

Furthermore, to make the interpretation more sound, besides the estimated rolling coefficients $C_{2,i}$, we present additional rolling statistics for rolling P-values, rolling adjusted R-squared, and the AIC rolling information criterion.

After that, we test for the existence of any structural change in equation (2) for the full sample. Hence, we perform two stability diagnostics; namely, the Quandt-Andrews test and the Bai-Perron test. We first apply the Quandt-Andrews breakpoint test for one or more unknown structural breakpoints in the sample and test whether there has been a structural change in a subset of the parameters. We use the Quandt-Likelhood Ratio (QLR) statistic as shown in equation (3), after trimming the first and the last 15 percent of observations. Thus, QLR statistic has the following form:

$$QLR = \max[F(\tau_o), F(\tau_o+1), ..., F(\tau_1-1), F(\tau_1)] \quad (3)$$

Secondly, we apply the Bai-Perron approach for m potential breaks, producing m+1 regimes within the sample. Hence, for the observations $T_j, T_{j+1}, ..., T_{j+1}-1$ in regime j we estimate the following regression model:

$$y_t = L_t' \beta + Z_t' \delta_j + \in_t \quad (4)$$

for $j = 0, ..., m$; where L variables are those whose parameters do not vary across regimes, while Z variables have coefficients that are regime specific. Since equation (2) is a bivariate model, L is a scalar with the unit value and Z represents either total cumulative GHGs or cumulative CO_2 emissions.

Last, we apply a 1-step ahead rolling forecast of LT_dts in equation (2) but we use emissions lagged by one year, and taking annual emissions as well. Therefore, the adjusted equation (2) for forecasting becomes as follows:

$$LT\_dts_{\mathrm{f},i,w} = C_{1,i,w} + C_{2,i,w} \cdot LX_{t_{end},i,w} + \in_{\mathrm{f},i,w} \quad (5)$$

where subscript *f equals* t_{end} *+1,* and stands for the 1-step ahead forecasted value, subscript *w* is for the length of the variable rolling window and t_{end} is always the last value of the estimation subsample. The explanatory variables are:

$$LX_{t-1,i} = \{\mathrm{LGHGs}_{t_{end},i,\mathrm{w},cum}, \mathrm{L}CO_{2t_{end},i,\mathrm{w},cum}, \mathrm{LGHGs}_{t_{end},i,\mathrm{w},annual}, \mathrm{L}CO_{2t_{end},i,\mathrm{w},annual}\}$$

Hence, equation (5) produces four different forecasting models depending on the selected $LX_{t-1,i}$ variable each time.

Instead of a fixed rolling window as before, we have now chosen a variable rolling window. The forecasting objective here is not to go through all the time sample sequentially by using a fixed window and observe any changes in different segments of time as with the rolling regression before, but to remark the changes in the forecasting performance of $LT\_dts_{\mathrm{f},i,w}$ from equation (5), as new and more recent data enter for estimation and, in parallel, when more contemporaneous values of global temperature anomalies have to be forecasted. If forecasting performance, in terms of forecasting errors, becomes better when we approach the present, and conditional on that, emissions keep increasing, this might be interpreted in the

following way: at higher levels of emissions, changes in global temperature are better predicted with changes in emissions, which implies, although indirectly, an increasing effect of emissions on temperature changes at higher levels. If this not true and the forecasting performance of equation (5) is constant or even becomes worse, then this could be interpreted as a constant or decreasing effect of emissions on temperature changes and might give credit to a skeptic view about global warming.

The full sample starts from 1973 and ends in 2013, while the forecasted period *f* lies in between: $T_{window+1} \leq f \leq T_{end}$, where $T_{window+1}$ refers to the first period in the sample after the model's estimation window. As mentioned before, we use a rolling window with different time-lengths in order to examine the forecasting performance of emissions when more recent values of it are included in the estimation sample.

The time-length of the variable rolling window is selected from the following set *N*: $N = \{25, 29, 32, 35\}$

Hence, the output of this iterative procedure is a series of 1 step-ahead forecasts of $LT\_dts_{\mathrm{f},i,w}$ over the remaining observations

To evaluate the forecasted performance of the four models of equation (5), we compare it with an appropriate ARIMA model that is used as a benchmark. Since the benchmark does not include emissions in its right hand side, it enables us to cross-compare the forecast accuracy of our models by using the forecast error measures of Root Mean Square Error (RMSE), Mean Absolute Error (MAE) and the scale invariant measure of Theil's inequality coefficient (Theil IC)

[Insert Table 2, about here]

After applying the standard Box-Jenkins methodology and testing for significance and stationarity (see Table 2 above), we conclude to the following ARIMA model:

$$(1 - \varphi_1 \mathrm{B} - \varphi_2 \mathrm{B}^2) LT\_dts_{\mathrm{f},i,w} = c + (1 + \theta_1 \mathrm{B}^3 + \theta_2 \mathrm{B}^4) \in_{f,i,w} \qquad (6)$$

The ARIMA model in equation (6) is stationary, invertible and properly specified since all its AR and MA roots lies inside the unit circle, the residuals are close to the estimated theoretical correlations and autocorrelations and its response tends to zero when ±2 S.E. impulses are applied (data are available upon request).

Apart from the standard forecast error metrics, we test our models for equal predictive accuracy by applying the Diebold-Mariano test. For the loss function $g(\square)$, we use both the squared and the absolute error as shown below:

$$g_1(e_{jiw}) = e_{jiw}^2 \quad \& \quad g_2(e_{jiw}) = \left| e_{jiw} \right|,$$

$where \quad e_{jiw} = LT\_dts_{f,i,w} - LT\_dts_{real\_t_{end},i,w}$ and $j = 1,\ldots,5$ indicating the four forecasting models and the benchmark.

Thus, the Null Hypothesis of equal predictive accuracy is:

$$H_0 : E[g_k(e_{j,i,w}) - g_k(e_{5,i,w})] = 0 \ \forall i, w \quad \begin{matrix} where\ k = 1,2 \quad depending\ on\ the\ loss\ function \\ and \quad j = 1,2,3,4\ depending\ on\ the\ \text{model} \end{matrix}$$

The results from all our methods, that is the standard rolling correlation, the structural breaks, the rolling regression and the forecasting analysis, enable us to identify the dynamics, if any, in the relationship between emissions and global temperature anomalies, as we move forward in time.

3. Empirical results and discussion

The results are rather neat and supportive of a critical view about increasing changing rates of global temperature anomalies as a result of higher cumulative (or annual) emissions levels. To begin with, the rolling correlations between temperature anomalies and total GHGs in aggregate level, but also in disaggregation with carbon dioxide, methane and nitrous oxide emissions, have a seasonal component only, without any trend-like characteristics (Figures 2 and 3). There may be a slight decreasing trend in the correlations between temperatures and methane or nitrous oxides, especially if smoothed series are used, but certainly there is no evidence for an upward trend in any of the examined emissions. These first findings roughly suggest a constant relationship among our tested variables, free of time dependence.

[Insert Figures 2 and 3, about here]

Moving to the results from the rolling regression of equation (2) we see, both with cumulative GHGs and cumulative CO2 emissions, that when our fixed window shifts more to the right, meaning closer to the present, the respective rolling coefficients are decreasing at the same time when the adjusted coefficient of determination is increasing. Also there is a decrease in the values of the Akaike information criterion

(AIC). To be more specific, we observe two potential thresholds approximately before and after 2005 (see Figures 4 and 5). Before this year, emissions have on average a bigger effect on temperature anomalies with an elasticity of 1.5% for CGHGs and 1.1% for CCO2 emissions respectively and an explanatory power well below 55%. After 2005, elasticities are decreasing on average in 1% and 0.9% respectively with $\bar{R}^2$ on average at 65%. Besides that, the elasticities were significant for the whole sample with p-values lower than 0.02. The same case is with AIC, where less information is passed from emissions to temperature anomalies before 2005 than after it. In other words, not only the effect of emissions becomes smaller but this smaller effect interprets better temperatures fluctuations as well.

[Insert Figures 4 and 5, about here]

Stability diagnostics in Table 3 enhance the argument of one structural regime in which emissions affect temperature anomalies, as both Quandt-Andrews and Bai-Perron tests do not reject the null hypothesis of no breakpoints in the coefficients of equation (2). Despite the fact that the stability diagnostics results might abate the results from the rolling regression which revealed two threshold effects, still and under no circumstances none of them suggest an increase in the effect of emissions on temperature over time.

[Insert Table 3, about here]

Last, in examining the forecast performance of the four models of equation (5), we find considerable results that are in line with all the prior produced results, making our analysis more robust and its interpretation more complete. MAE and RMSE forecast error measures in Table 4 and Figure 6, suggest a constant or a decreasing forecasting power of our models compared to the benchmark. Because these metrics are not scale invariant to different variables or to different time ranges which is our case here due to variable rolling windows, we cannot compare their forecast performance along the horizontal x-axis of window lengths but we can make comparisons across all models for each window.

[Insert Table 4, about here]

Considering this, we observe that both RMSE and MAE become bigger compared to the benchmark as we move forward in time and more recent temperature values have

to be forecasted. This applies to equations (1), (3) and (4) when annual GHGs, annual CO2 emissions and cumulative CO2 emissions are used. The forecast performance of equation (2) with cumulative GHGs is better than the benchmark's performance but their difference is decreasing when more recent values are used. In order to overcome different scaling issues with time we have estimated Theil's IC. The results are again supportive of the main argument of the paper. In all the cases, including that of equation (2), our models forecast performance becomes worse over time compared to the benchmark's or to their initial past performance.

[Insert Figure 6, about here]

As a final evaluation step, we have tested the models for equal predictive accuracy (see Table 5) by applying a Diebold-Mariano test in pair-wise mode with each of them compared to the benchmark. The results validate our forecast analysis, as they reject the null hypothesis of equal predictive accuracy with the benchmark when the larger estimation window is used or in other words when the most recent values have included in the estimation of the forecast model. Furthermore, DM-stats for the models (1) and (3) with a window length of 35 observations, are positive and higher compared with the respective statistics when the window length includes 29 observations. This means that the spread between the significant unequal forecasts becomes larger, which in turn means lower forecast performance of models (1) and (3) when more recent values are forecasted. For the models (2) and (4), the DM-stats which reject the null hypothesis, show an increase in terms of forecast accuracy which nevertheless decreases in the last window, reaching approximately the forecast accuracy levels of the first examined window with 25 observations. In a nutshell, this suggests a rather constant forecast performance over time when we use cumulative levels of emissions. In both cases, we see either a decreasing or a constant forecasting performance of the four models of equation (5) as we move forward in time and newer data are considered.

[Insert Table 5, about here]

All in all, the results are clear and highly indicative: there are no signs of a positively accelerating changing rate of temperature anomalies as we move forward in time, or, in other words, our rolling analysis doesn't support views of increasing rates in global climate change as a result of higher levels of emissions. On the contrary, the results

suggest a constant or even a decreasing effect of emissions on temperature anomalies especially from 2005 onward. Similar conclusions, albeit in different framework, have been reached in the literature[6], treating it as a phenomenon worthy of further explanation in the mainstream scientific discourse.

4. A Copula Analysis

In this section we complement the previous analysis employing a copula approach to study the structure of dependence between GHGs and global temperature anomalies. Copula based methodology is particularly useful to analyse the connection with multivariate extremes and to distinguish between different classes of probability distributions of events, that is, "those in which events are accompanied by well behaved, mild variations (e.g., Gaussian or thin tails), and those where small probabilities are associated with large variations that have no characteristic scale (fat tails)" (Taleb et al, 2014).

Different copulas that model dependence are calibrated on the data. Here we focus on five types of copulas, that is, the Gaussian, the Student, the Clayton, the Gumbel and the Frank copulas (for copula methods, see Nelsen, 2006). Figure 8 shows scatterplots of simulated standard normal marginal distributions that are combined with (i) a Gaussian copula, (ii) a Student *t* copula, (iii) a Clayton copula, (iv) a Gumbel copula and (v) a Frank copula. While all simulated bivariate samples in this example have a similar correlation measure and all marginal distributions are standard normal, the scatterplots look quite different for different copulas.

[Insert Figure 8, about here]

The Gaussian copula is the copula that is implied by a Gaussian distribution. The Student *t* copula is the copula that is implied by a Student *t* distribution. In contrast to the Gaussian copula it displays tail dependence. This implies that it assigns a higher probability to joint extreme events than does the Gaussian copula. The lower the degree of freedom ν the higher the tail dependence. If ν is large, the Student *t* copula resembles a Gaussian copula. In fact, the Gaussian copula is a special case of the Student *t* copula, where $\nu \to \infty$. The Clayton copula displays lower tail dependence but no upper tail dependence. Loosely speaking this means that there is a comparably

[6] Florides et Christodoulides, 2008; Allan et al.,2014; Brown et al., 2014; [a]Boykoff, 2014; [b]Boykoff et al., 2004; Laepple and Huybers, 2014; Tollefson, 2014.

high probability of joint extreme low realisations and a comparably low probability of joint extreme high realisations. The Gumbel copula displays upper tail dependence but no lower tail dependence. The Frank copula does not display tail dependence. Actually, the Frank copula assigns a lower probability to joint extreme events than does the Gaussian copula.

We perform copula calibration with the pseudo-log-likelihood method introduced by Genest and Rivest (1993) that does not make any assumptions on the specific functional forms of the marginal distributions. Rather, this method is based on the size of the observation in comparison to the other observations of the sample of the marginal distributions. More specifically it is based on the ranks of the observation. To calibrate a copula we first have to transform our empirical observations $x_{i,t}$ into so-called pseudo-observations $u_{i,t}$:[7]

$$u_{i,t} = \frac{1}{T+1} \sum_{s=1}^{T} \mathbf{1}_{x_{i,s} \leq x_{i,t}}$$

where T is the number of joint observations and $\mathbf{1}_{x_{i,s} \leq x_{i,t}}$ is an indicator function that takes a value of 1 if $x_{i,s} \leq x_{i,t}$ and a value of 0 otherwise. In other words, the pseudo-observations are calculated as the rank of the observation, divided by $(T+1)$.

Once the pseudo observations are calculated, the copula parameters are estimated with a maximum (log-) likelihood estimation (see Nelsen, 2006). Denoting the (vector[8] of) estimated copula parameters as $\hat{\theta}$,

$$\hat{\theta} = \arg\max_{\theta} \sum_{t=1}^{T} \ln c_{\theta}\left(u_{1,t}, u_{2,t}\right) \ ,$$

where ln is the natural logarithm and $c_{\theta}\left(u_{1,t}, u_{2,t}\right)$ is the density function of the copula to be calibrated with parameter(s) θ, evaluated at $\left(u_{1,t}, u_{2,t}\right)$. That is, the copula parameters are calibrated in such a manner that the log likelihood – the term $\sum_{t=1}^{T} \ln c_{\theta}\left(u_{1,t}, u_{2,t}\right)$ – is maximised.

[7] In their article, Genest and Rivest (1993) divide by T rather than by $(T+1)$. Dividing by $(T+1)$ has the advantage that it keeps the pseudo-observations away from the boundaries of the unit cube where the densities of many copulas take infinite values.

[8] Here only for the Student *t* copula two parameters have to be estimated, while the other bivariate copulas have only one parameter.

Let us analyse the dependence between temperature levels and emissions by calibrating copulas to the data and analysing which of the copulas has the best fit. Because the calibration of a Student *t* copula does not converge in any of the cases, when both parameters, ρ and ν, were calibrated, we calibrate four different Student *t* copulas, where the degrees of freedom are fixed at $\nu \in (3, 10,100,1000)$. A Student *t* copula with $\nu = 100$ is already very close to a Gaussian copula, while a Student *t* copula with $\nu = 1000$ almost returns identical results as a Gaussian copula.

Table 6 displays the log-likelihood that is achieved when fitting the different copulas on temperature levels and levels of emissions. The values can be interpreted as a goodness-of-fit measure: the higher the log-likelihood the better the fit of the copula.

[Insert Table 6, about here]

We first look at the values for the levels of CO_2- and other GHG-emissions. We find that in both cases, the Frank copula achieved the best fit. This result is interesting as the Frank copula assigns a lower probability to joint extreme events than the Gaussian copula (the "benchmark" copula). For other GHG-emissions the Gaussian copula is the one with the second-best fit. Its log-likelihood is higher than any of the Student *t* copulas. Hence for other GHG-emissions and temperature, there is no indication that tail dependence (a high probability of joint extreme events) is prevalent for the data sample at hand. Also for CO_2-emissions and temperature there is little indication that tail dependence might be prevalent, as the best fit is achieved by a Frank copula. The second-best fit is achieved by a Gumbel copula that displays upper tail dependence but the log-likelihood is not very different from that of the Gaussian copula. A further indicator that it is unlikely that there is (strong) tail-dependence is the slightly lower log-likelihood of Student *t* copulas with $\nu \in (3, 10)$ that model a relatively strong tail-dependence.

For methane emissions and temperature levels the Clayton survival copula (Clayton C^{--}) and the Gumbel copula achieved the highest log-likelihood. These two copulas display upper tail dependence, i. e. they assign a higher probability of joint extreme large values. Because the log-likelihoods for the survival Clayton and the Gumbel copula (upper tail dependence) are considerably higher than that for the Clayton and survival Gumbel (lower tail dependence) it seems unlikely that lower tail dependence is prevalent while upper tail dependence is not. Still it remains ambiguous whether tail

dependence exists at all: comparing the log-likelihoods of the Gaussian and the Student *t* copulas, we see that the Gaussian copula has achieved a higher log-likelihood than any of the Student *t* copulas. This is interesting as the Gaussian copula does not model tail dependence while the Student *t* copula does (identical upper and lower tail dependence).

Finally, Table 7 displays the log-likelihoods achieved when fitting copulas on temperature levels and cumulative emissions. Interestingly, in all cases the Frank copula achieved the best fit. The Frank copula is a copula that assigns a low probability to joint extreme events. Also, in all cases the Gaussian copula (no tail dependence) achieved a better fit than the Student t copulas (positive tail dependence).

[Insert Table 7, about here]

In conclusion, our copula analysis does not show tail dependence. Thus, our findings seem to provide arguments less in favour of a strong view of global warming, which opens the path to further questioning.

5. Conclusions

The focus of the paper is to examine the time dependent relationship between global temperature anomalies and levels of GHGs, either annual or cumulative. Moreover, we tried to verify whether this relationship becomes stronger over time as emission levels increase. If this is the case, then over-stressed environmental concerns about climate change should be regarded as the main scenario and appropriate additional measures should be implemented, while those already imposed should be reconsidered to avoid extreme negative outcomes. To examine this, we applied a multi-level rolling analysis. Our results seem to reply in the negative; no changing effect is observed between our variables when we move forward in time and in some cases even a relaxation is apparent with lower threshold effects.

Future global temperature is the product of very complex dynamic ecosystems with multiple underlying and interacting factors; furthermore, if combined with all the driving forces of new inputs of GHGs, such as demographic development, socio-economic development and technological change, future global temperature values

become even more ambiguous[9]. Nevertheless, this research is based on a time series analysis which is subject to various limitations. Hence a negative answer now cannot assure a negative answer in the future as well. Our research identifies analytically the relationship between emissions and temperature, and argues in favor of a potential constant effect of emissions on temperature changes regardless of the level of emissions and given the socio-economic characteristics and environmental factors that existed until now. Moreover, we have focused our research exclusively on the relationship between temperature anomalies and emissions, without considering the relationship between extreme natural events and temperature anomalies. However, the number of realized extreme events of natural disasters may follow, say, a polynomial relationship with temperature anomalies, even if temperature and emissions change at the same rate. This can potentially be translated in disproportional consequences, albeit proportional changing in temperature anomalies but at different levels. Therefore, the highly important nexus between the level of emissions and the frequency and the magnitude of extreme events needs further analysis and remains a question for future research.

[9] IPCC, 2014; Latif, 2010; Barr et al, 2011; Nazarenko et al. 2015, Hansen et al, 2005.

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Appendix I – Figures

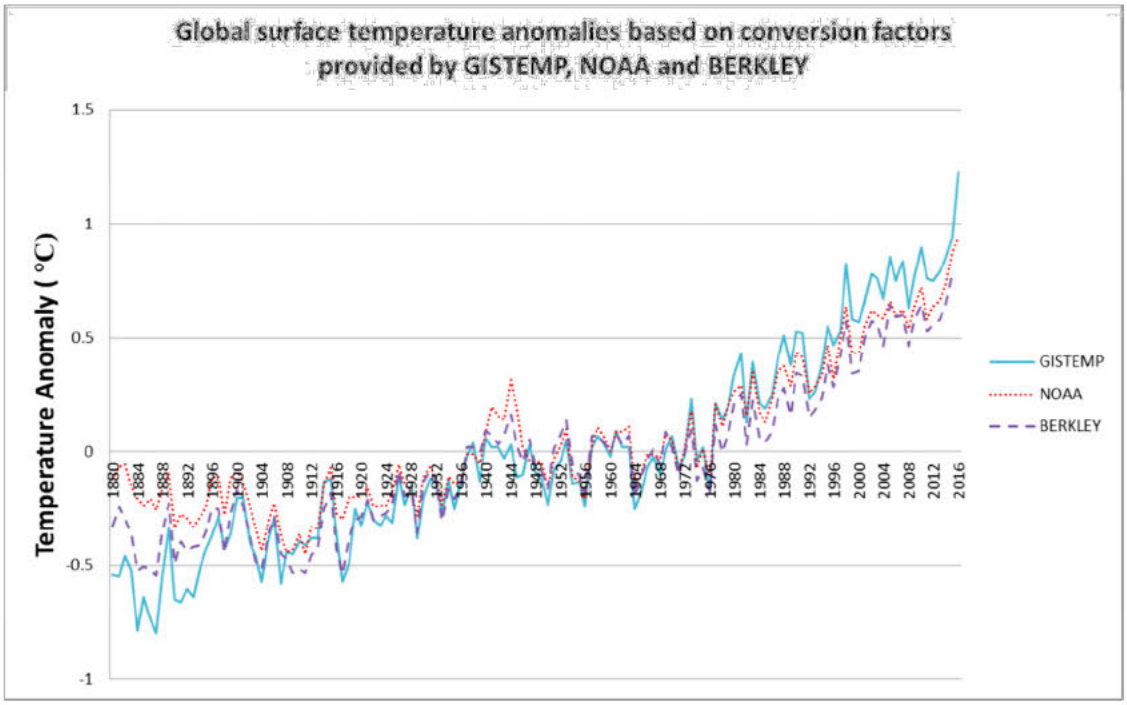

Figure 1. Global surface temperature anomalies based on conversion factors provided by, GISTEMP (continuous line), NOAA (dotted line) and Berkley (dashed line)

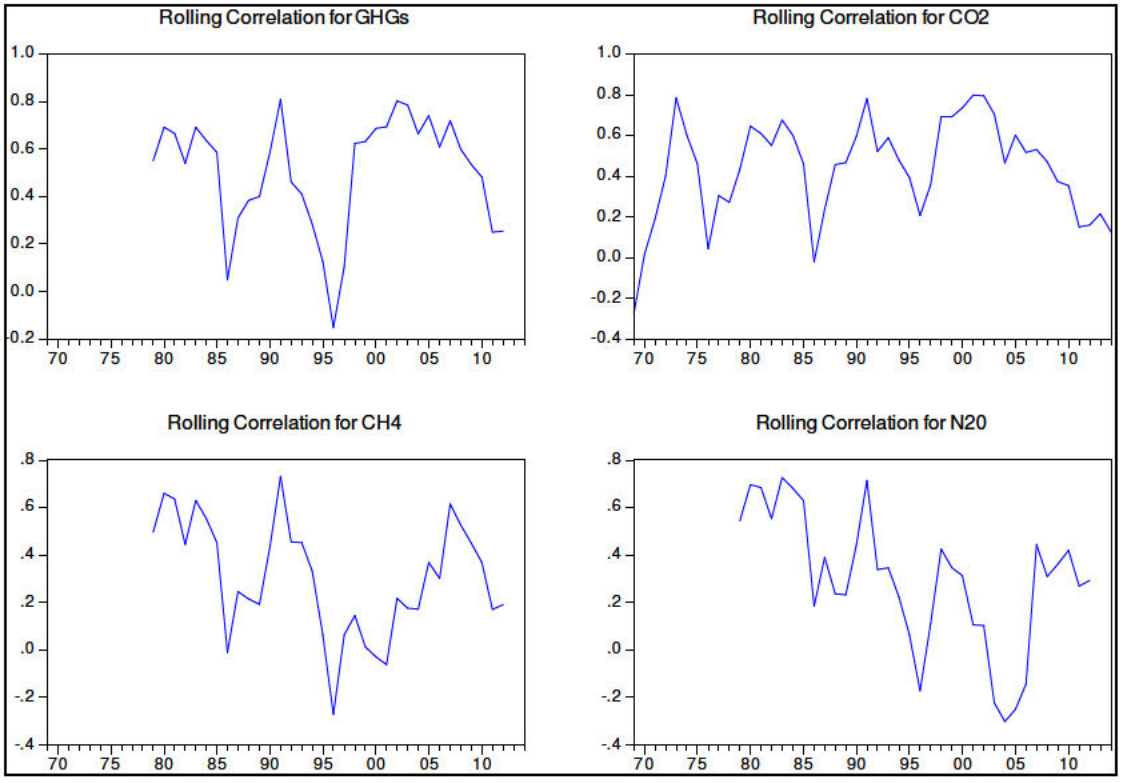

Figure 2. Rolling correlations between temperature anomalies and GHGs, CO_2, CH_4, and N_20 emissions respectively with a 10-year correlation window.

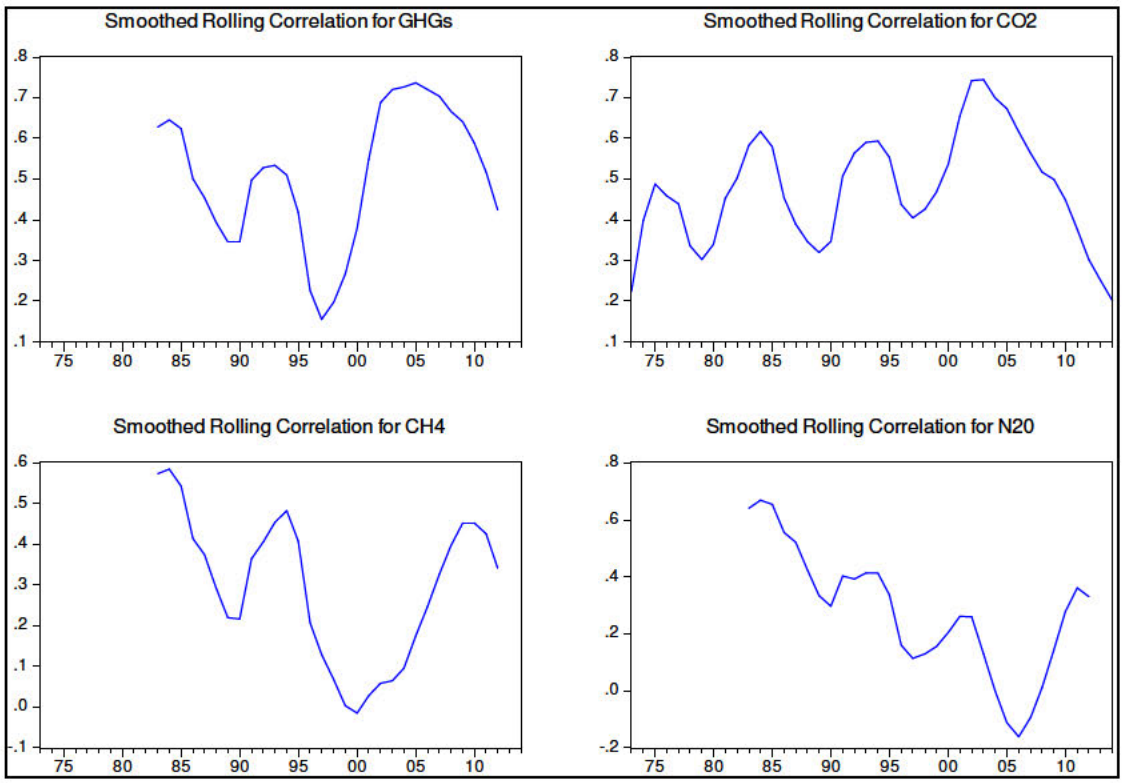

Figure 3. Smoothed rolling correlations between temperature anomalies and GHGs, CO_2, CH_4, and N_20 emissions respectively with a 5-year moving average window.

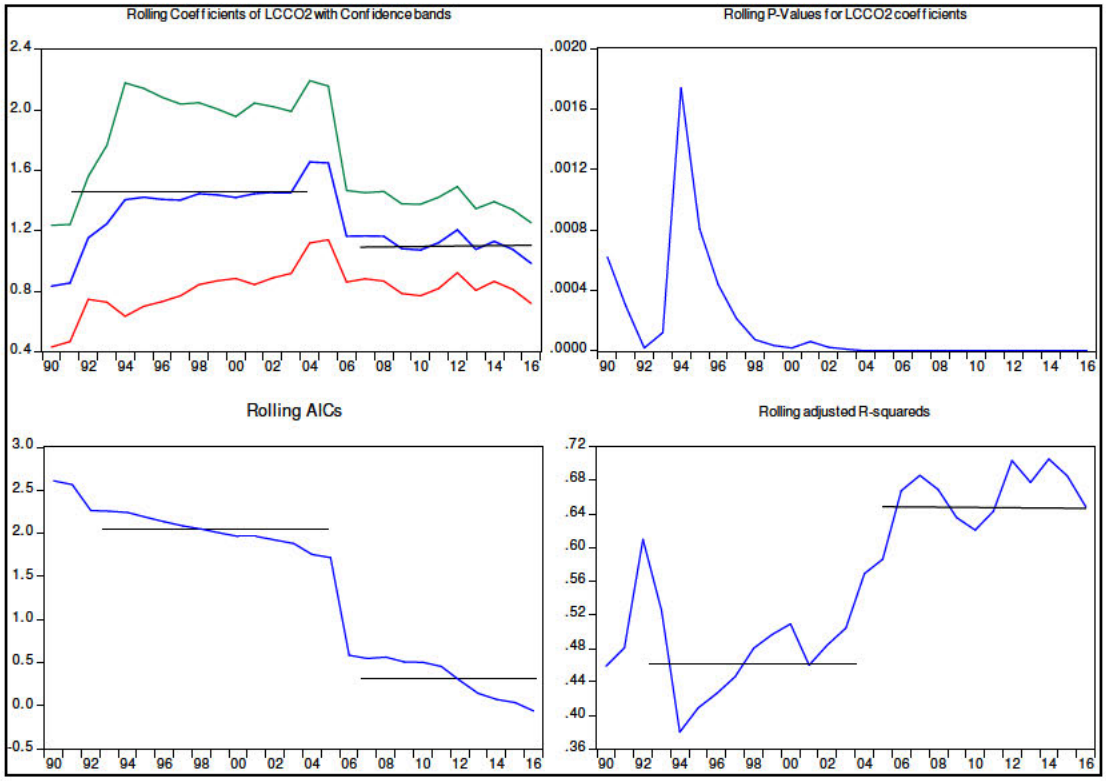

Figure 4. Rolling regression results of the log of cumulative CO_2 emissions on the log of temperature anomalies using a fixed window of 30 annual observations.

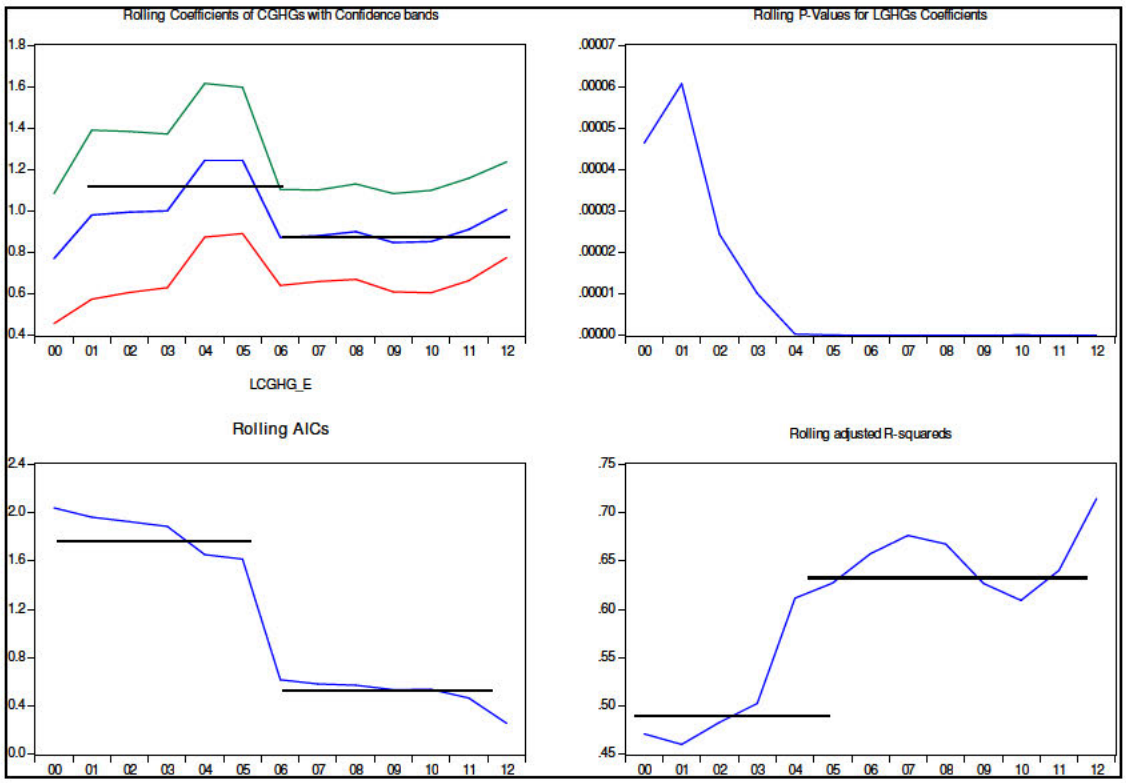

Figure 5. Rolling regression results of the log of cumulative GHGs emissions on the log of temperature anomalies using a fixed window of 30 annual observations.

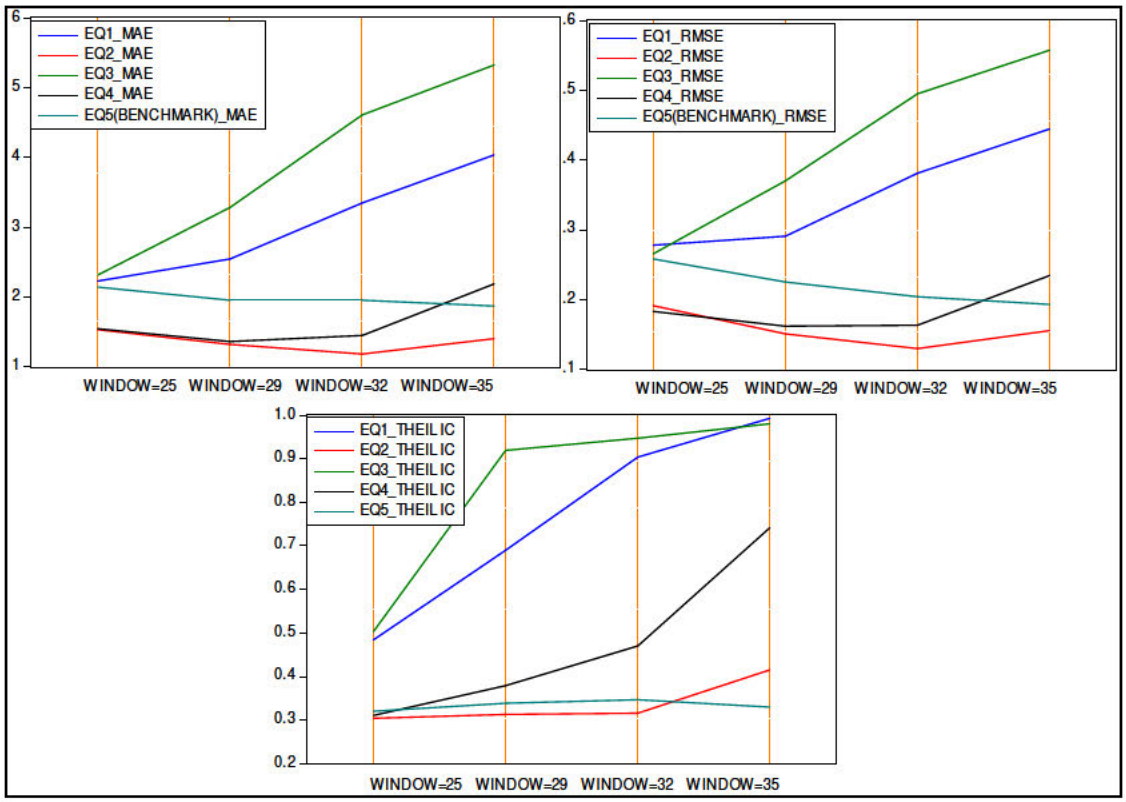

Figure 6. MAE, RMSE and THEIL IC forecast error measures of our examined models (EQ1-EQ4) with cumulative and annual levels of GHGs and CO2 emissions and the benchmark's (EQ5), across all estimation windows.

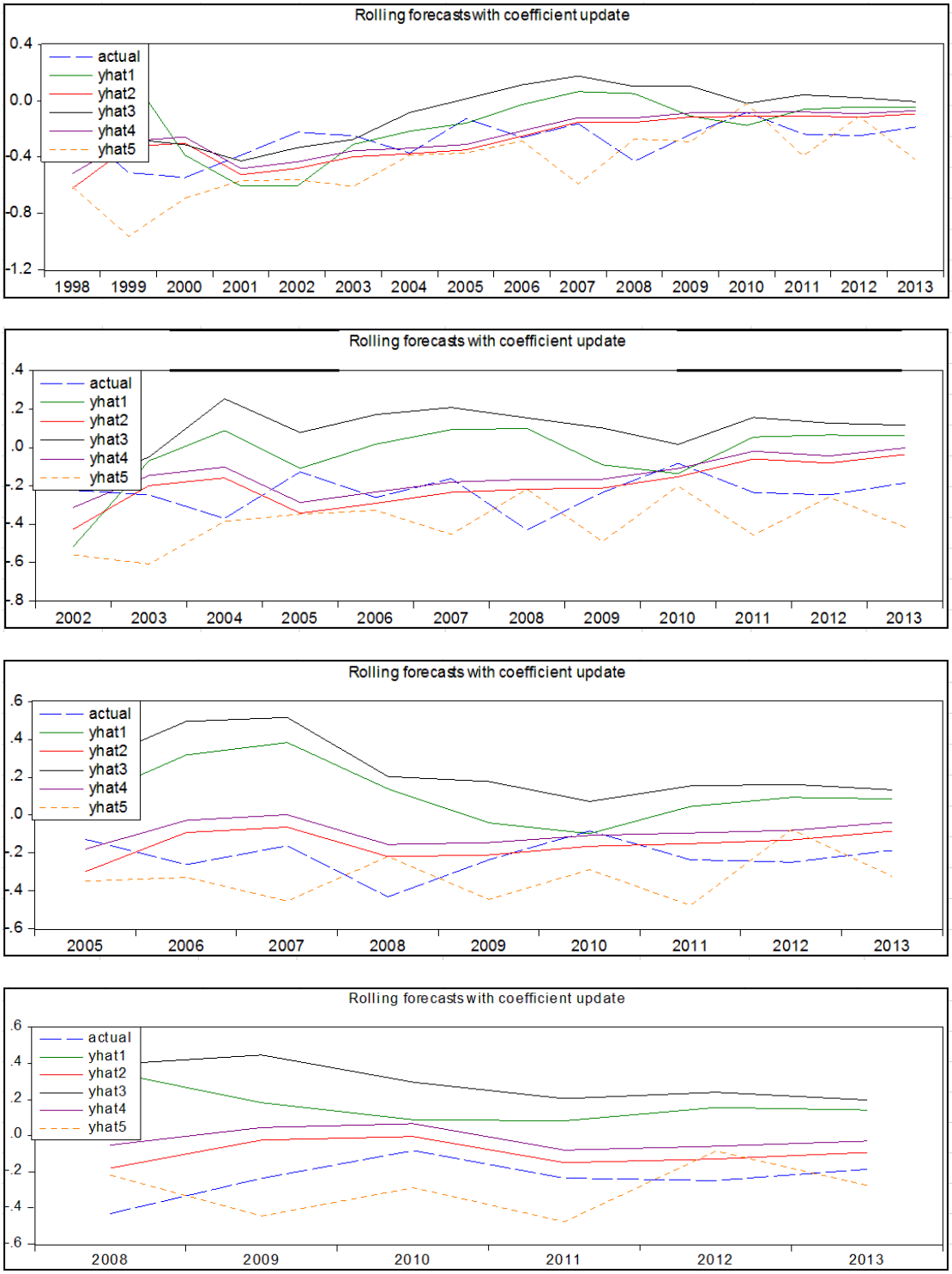

Figure 7. 1-step ahead rolling forecasts of the four models of eq.(5), of the ARIMA model and actual values of global temperature anomalies for all the examined windows

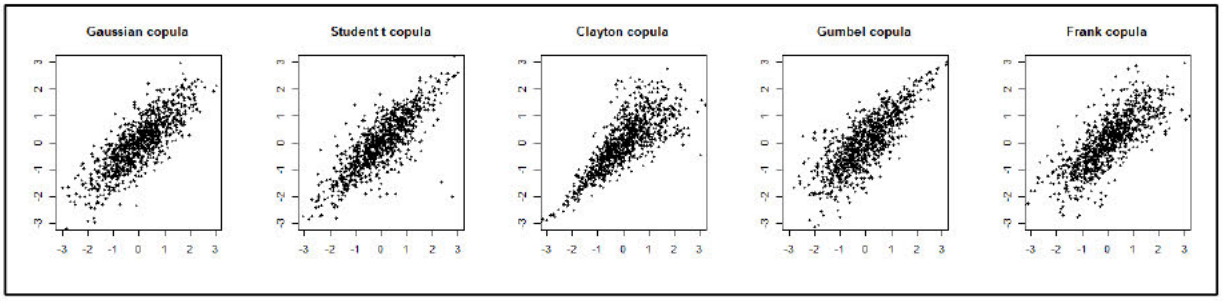

Figure 8

Scatterplots of marginal standard normal distributions that are combined with (i) a Gaussian copula, (ii) a Student *t* copula, (iii) a Clayton copula, (iv) a Gumbel copula and (v) a Frank copula (from left to right). All bivariate distributions have a Kendall's tau correlation measure of roughly 0.6.

Appendix II – Tables

Table 1. Stationarity and specification Tests for the full sample of eq. (2)

	Phillips-Perron Unit Root Test	
Variable	Test statistic	Prob.
LT_dts	-3.54	0.05
LGHGs	-14.29	0.00
LCO_2	-16.18	0.00
	Breusch-Godfrey Serial Correlation LM Test:	
Model	Test statistic	Prob.
$LT\_dts_{t,i} = C_{1,i} + C_{2,i} \cdot LCGHGs_{t,i} + \in_{t,i}$	0.07	0.80
$LT\_dts_{t,i} = C_{1,i} + C_{2,i} \cdot LCCO_{2t,i} + \in_{t,i}$	0.12	0.73
	Residuals Normality Test	
Model	Test statistic	Prob.
$LT\_dts_{t,i} = C_{1,i} + C_{2,i} \cdot LCGHGs_{t,i} + \in_{t,i}$	1.09	0.57
$LT\_dts_{t,i} = C_{1,i} + C_{2,i} \cdot LCCO_{2t,i} + \in_{t,i}$	0.79	0.67
	Ramsey Reset Test	
Model	Test statistic	Prob.
$LT\_dts_{t,i} = C_{1,i} + C_{2,i} \cdot LCGHGs_{t,i} + \in_{t,i}$	0.31	0.58
$LT\_dts_{t,i} = C_{1,i} + C_{2,i} \cdot LCCO_{2t,i} + \in_{t,i}$	0.21	0.65
	Coefficient		
Model	$C_{1,i}$	$C_{2,i}$	$\bar{R}^2$
$LT\_dts_{t,i} = C_{1,i} + C_{2,i} \cdot LCGHGs_{t,i} + \in_{t,i}$ [10]	-12.29	0.85	0.73
$LT\_dts_{t,i} = C_{1,i} + C_{2,i} \cdot LCCO_{2t,i} + \in_{t,i}$ [11]	-14.89	1.06	0.75

Table 2. Stationarity and Estimation results for the ARIMA model of eq. (6)

Variable	**Coefficient**	**Prob.**
C	-0.51	0.05
AR(1)	0.40	0.01
AR(2)	0.32	0.03
MA(3)	0.56	0.00
MA(4)	-0.38	0.00
Coefficient of Determination, R^2	0.70	
	Inverted AR Roots	**Inverted MA Roots**
1	0.81	0.54
2	-0.4	-0.98
3	-	0.22+0.82i
4	-	0.22-0.82i

[10] All coefficients are statistically significant at 1% confidence level
[11] All coefficients are statistically significant at 1% confidence level

Table 3. Stability diagnostics results for eq. (2)

Model	Quandt-Andrews unknown breakpoint test			
	Ave LR F-statistic	Prob*	Ave Wald F-statistic	Prob*
$LT\_dts_{t,i} = C_{1,i} + C_{2,i} \cdot LCGHGs_{t,i} + \epsilon_{t,i}$	0.61	0.68	1.22	0.68
$LT\_dts_{t,i} = C_{1,i} + C_{2,i} \cdot LCCO_{2t,i} + \epsilon_{t,i}$	0.72	0.57	1.45	0.57
Model	**Bai-Perron tests of L+1 vs. L sequentially determined breaks****			
	F-statistic		Scaled F-statistic	Critical Value***
$LT\_dts_{t,i} = C_{1,i} + C_{2,i} \cdot LCGHGs_{t,i} + \epsilon_{t,i}$	3.35		6.70	11.47
$LT\_dts_{t,i} = C_{1,i} + C_{2,i} \cdot LCCO_{2t,i} + \epsilon_{t,i}$	1.61		3.22	11.47

Note:
Null Hypothesis: No breakpoints within 15% trimmed data
* Probabilities calculated using Hansen's (1997) method
** Bai-Perron breakpoint Test: 0 vs. 1
*** significant at the 0.05 level

Table 4. RMSE, MAE and TEIL IC forecast error measures for Equations 1-4 and the bencmark's, across all estimation windows.

	Estimation window											
	window = 25			**window = 29**			**window = 32**			**window = 35**		
	RMSE	**MAE**	**THEIL IC**	**RMSE**	**MAE**	**THEIL IC**	**RMSE**	**MAE**	**THEIL IC**	**RMSE**	**MAE**	**THEIL IC**
Equation 1	0.28	0.22	0.48	0.29	0.29	0.69	0.38	0.33	0.90	0.44	0.40	0.99
Equation 2	0.19	0.15	0.30	0.15	0.13	0.31	0.13	0.12	0.32	0.16	0.14	0.42
Equation 3	0.27	0.23	0.50	0.37	0.33	0.92	0.50	0.46	0.95	0.56	0.53	0.98
Equation 4	0.18	0.15	0.31	0.16	0.14	0.38	0.16	0.14	0.47	0.23	0.22	0.74
Benchmark	0.26	0.21	0.32	0.23	0.20	0.34	0.20	0.19	0.35	0.19	0.19	0.33

Table 5. Diebold-Mariano test results for Equations 1-4.

	Window Length=25		**Window Length=29**		**Window length=32**		**Window length=35**	
Loss Function	$g_1(e_{it}) = e_{it}^2$	$g_2(e_{it}) = \lvert e_{it} \rvert$	$g_1(e_{it}) = e_{it}^2$	$g_2(e_{it}) = \lvert e_{it} \rvert$	$g_1(e_{it}) = e_{it}^2$	$g_2(e_{it}) = \lvert e_{it} \rvert$	$g_1(e_{it}) = e_{it}^2$	$g_2(e_{it}) = \lvert e_{it} \rvert$
				Equation (1) vs. Equation (5)				
DM-Test Statistic	-1.01	-1.17	+1.97	+1.68	-1.58	-1.54	+2.05	+1.76
Probability	*0.39*	*0.26*	*0.05*	*0.09*	*0.10*	*0.11*	*0.04*	*0.08*
				Equation (2) vs. Equation (5)				
DM-Test Statistic	-1.87	-2.12	0.55	0.40	-2.91	-2.88	-2.42	-2.06
Probability	*0.06*	*0.03*	*0.57*	*0.68*	*0.00*	*0.00*	*0.02*	*0.00*
				Equation (3) vs. Equation (5)				
DM-Test Statistic	-0.50	-0.62	+2.45	+1.88	-1.34	-1.29	+2.73	+1.91
Probability	*0.613*	*0.53*	*0.01*	*0.05*	*0.17*	*0.19*	*0.00*	*0.05*
				Equation (4) vs. Equation (5)				
DM-Test Statistic	-1.71	-1.95	+0.95	+0.66	-2.74	-2.62	-1.52	-1.77
Probability	*0.08*	*0.05*	*0.34*	*0.50*	*0.00*	*0.00*	*0.11*	*0.09*

Notes: A negative DM-Test Statistic means larger forecasting errors for equation (5) compared with these of Eq.(1)-Eq.(4), while a positive DM- Test statistic indicates the opposite.

Table 6: Log-likelihood achieved when calibrating copulas on temperature levels and levels of emissions. The two highest values are highlighted.

Copula	level.CO2	level.GH	level.NIT	level.MET
Gaussian	35.58907	**25.10817**	0.003079	6.154866
Student t (ν=3)	34.07031	21.85309	0.134705	4.027596
Student t (ν=10)	35.56345	24.16319	0.107569	5.644866
Student t (ν=100)	35.61811	25.0173	0.013659	6.108593
Student t (ν=1,000)	35.59237	25.09914	0.00413	6.15029
Clayton	20.12282	18.75326	0.020867	1.374209
Clayton C^{--}	34.25629	16.98314	0.079952	**9.969721**
Clayton C^{+-}	-	-	**0.421483**	-
Clayton C^{-+}	-	-	**0.434279**	-
Gumbel	**37.41816**	21.16278	-	**7.981741**
Gumbel C^{--}	28.86561	22.74216	0.001806	2.770918
Frank	**42.657**	**27.72293**	0.002742	6.124983

Table 7: Log-likelihood achieved when calibrating copulas on temperature levels and cumulative emissions. The two highest values are highlighted.

Copula	level.cumCO2	level.cumGH/NIT/MET
Gaussian	36.31334	**32.69776**
Student t (ν=3)	34.18391	30.64534
Student t (ν=10)	35.94368	32.20682
Student t (ν=100)	36.29439	32.65901
Student t (ν=1,000)	36.31167	32.69402
Clayton	20.19954	23.98978
Clayton C^{--}	34.7597	25.04407
Gumbel	**37.92833**	30.38185
Gumbel C^{--}	28.99038	29.5827
Frank	**43.30515**	**34.57172**

Fri Mar 31 13:17:53 EDT 2017
Hope.Brian@epamail.epa.gov
FW: Clean Tech Boosts our Economy
To: CMS.OEX@epamail.epa.gov

From: Paul Chapman [mailto: (b) (6)
Sent: Thursday, March 30, 2017 6:16 PM
To: Pruitt, Scott <Pruitt.Scott@epa.gov>
Subject: Fwd: Clean Tech Boosts our Economy

Dear Mr. Pruitt,

The evidence indicates that recent actions to promote the coal industry will not increase employment; please see the attached report from Yale today. This week the SF Chronicle reported that total employment in clean tech, including solar and wind, is over 450,000, while coal is just 70,000. As a businessman, the economics seem clear: invest in clean tech, especially with support for Midwest industries to make the transition to producing for the clean economy. I trust you and your team are evaluating energy economics and determining EPAs role in promoting a healthy future. I would appreciate your thoughts.

Best regards,

Paul Chapman

Begin forwarded message:

From: Paul Chapman < (b) (6)

Subject: Clean Tech Boosts our Economy

Date: March 28, 2017 at 11:11:31 AM PDT

To: pruitt.scott@epa.gov

Dear Mr. Pruitt,

Following up on my conversation today with your staff, I want you to know that I strongly oppose the efforts underway to scale back the EPA and undermine the progress we have made over the last five decades to protect our environment. I believe that if you study the evidence, you and the administration will see that by protecting the environment, especially through clean tech investments, we have

been able to promote strong economic growth. Attached please find a letter from University of California Berkeley professor and IPCC member Dan Kammen briefly summarizing this information. Please restore a sensible approach to environmental protection, for our country and our people.

Thank you,

Paul Chapman

Inverness Associates

2945 Russell Street

Berkeley CA 94705

(b) (6)

510-520-6657 (c)

510-843-1810 (o)

Paul Chapman

Inverness Associates

(b) (6)

510-520-6657 (c)

510-843-1810 (h)

Yale Economist: Trump Order Unlikely To Alter Tightening U.S. Coal Market

President Trump today lifted a moratorium on the federal coal leasing program, predicting that it will create new jobs and reduce U.S. reliance on foreign energy sources. The order will do neither, predicts Kenneth Gillingham, a Yale economics professor who has published extensive research on the program.

By Kevin Dennehy

The Trump Administration today lifted an Obama-era moratorium on the federal coal-leasing program, predicting that it will create new U.S. jobs and reduce the nation's reliance on foreign energy sources.

Kenneth Gillingham

The new order will do neither, predicts **Kenneth Gillingham**, an assistant professor of economics at the Yale School of Forestry & Environmental Studies (F&ES). Gillingham, who has published extensive research on the federal coal-leasing program, says the program, which was temporarily halted last year by President Obama, was failing in critical ways: it didn't address the social costs of coal extraction or whether taxpayers were receiving fair value for this public resource.

In an interview, Gillingham says that Trump's executive order does nothing to change those realities — nor will it alter the market factors that have driven down the U.S. coal sector in recent years. If anything, he said, opening up federal lands — particularly in the western states

— is more likely to eliminate coal jobs in the Appalachian region.

“Coal plants have been closing over the past two years, and this is not being driven entirely by regulation by any means,” he said. “This is primarily being driven by market forces. Natural gas is a very cheap fuel right now and renewables are getting much cheaper, too. These two factors, along with energy efficiency driving down demand for electricity in general, means that coal is less competitive than it was before.”

Gillingham spent a year as Senior Economist for Energy and the Environment at the White House Council of Economic Advisers (CEA) during the Obama administration.

A new executive order lifts a moratorium on the federal coal-leasing program, which President Trump has called an attack on the coal industry. But in a recent *Science* article you highlighted other concerns with the program. What did you find that you considered flaws with the program?

KENNETH GILLINGHAM: There are two major categories of flaws. The first is that the environmental costs of coal production and combustion are not being accounted for whatsoever. So, this means that the social cost of carbon is not being accounted for in any way, shape, or form. The social cost of coal-bed methane is not being accounted for. Any of the other environmental damages from coal extraction are not being included. There is statutory language that permits the secretary of the Department of Interior to incorporate these costs into the coal-leasing system, because it is required that the program be managed for the public good.

The second category is that there are very real concerns that the federal coal leasing system is not managed in a way that provides a fair return to the taxpayer for the use of the federal resource — owned by all citizens. Now, there’s a real question about what a fair return to the taxpayer *is*. You could say that a fair return to the taxpayer is that all of the profits from federal coal should be given to the taxpayer. Or you could say that a fair return is that *none* of the profits are given to the taxpayer since the coal companies are the ones taking it out. So there is a subjective element to the question of what far return to the taxpayer even *means*. However there is a lot of precedent in how the government makes decisions about a whole variety of other situations: relative to concessions in national parks, where the federal government earns a greater return. Relative to oil and gas leasing: oil and gas leasing charges much higher leases than coal. The federal coal-leasing system is somewhat exceptional in how low the royalties are and how little revenue that it brings in relative to the institutions that govern a variety of other public resources.

Even if the lease program is restored, and new sources are opened up for mining, can coal be competitive in the current energy marketplace?

GILLINGHAM: That's a great question. We already see there are roughly 40 coal plants that are slated to be closed in the next two years. Coal plants have been closing over the past two years. And this is not being driven entirely by regulation by any means.

This is primarily being driven by market forces. Natural gas is a very cheap fuel right now and renewables are getting much cheaper, too. The combination of these two actors, along with energy efficiency driving down demand for electricity in general, means that coal is less competitive than it was before.

It's interesting when it interacts with the federal coal-leasing system, because much of the coal being shut down is higher-cost eastern Appalachian coal. [More than 80 percent of federal coal comes from the U.S. West.] That higher-coast eastern Appalachian coal also requires more labor per ton of coal. So there are more jobs associated with it. Western coal, particularly Powder River Basin coal, is surface coal that requires far fewer jobs per ton of coal produced. Which means that it's very efficient, and which means that it's likely to be some of the very last coal that will still be used for thermal power plants in a transition away from coal. So opening up the federal coal leasing program again is actually more likely to lead to *fewer* jobs in Appalachia than it is to lead to more coal. It still will lead to somewhat more *total* coal, but it will lead to less coal in Appalachia and more coal in the West. Which may mean, in net, fewer coal jobs.

Given the current market forces, how much benefit would U.S. taxpayers receive if Western coal was produced at the costs needed to make it competitive with, say, natural gas? Would it have to be sold on the cheap to be a viable option?

GILLINGHAM: Well, right now they *are* selling it on the cheap. The price of federal coal is generally around $10 per short ton. The price of eastern coal is in the range of $50 per short ton. Now there are differences in the characteristics of the different types of of coal. But even after adjusting for those differences, you still find that there's a dramatic difference between the price of federal coal and the price of eastern coal.

Predominantly what we're seeing on the market is eastern coal being hit very hard while federal coal [in the west] is increasing its market share — and largely continuing to produce. Opening up new lands to coal leasing would continue to increase that share further. On the other hand, increasing the royalty rates for federal coal, such as putting on a social cost of carbon or some other approach — as shown in my work — would produce somewhat less coal from the federal basin. But it would produce somewhat *more* in the east, coal jobs could actually increase because you'd keep more jobs in the east, and you'd bring in significantly more revenue. Some of that revenue from federal royalties is split between states and the federal government, so some of that money could be used to compensate for the coal-producing regions, including eastern ones but also western ones.

The administration is expected to frame the expansion of coal extraction as a way to reduce American dependence on foreign energy sources. Will it have any impact in that regard?

GILLINGHAM: No, there's absolutely no way it's going to change our reliance on foreign or imported energy. The vast, vast majority of our fuel used to produce electricity is domestically produced. What we do import is *oil*, but that's dominantly used for transportation. So this claim is fundamentally misunderstanding the energy system in the United States. So not only is it going to create fewer new net jobs — since you'll be reducing jobs in the east in exchange for more jobs in the west and given the low cost of natural gas — and not make a big difference in terms of the net amount of coal produced and the net number of coal jobs. It's just not going to change the amount of imports into the United States at all. Those are just basic economics.

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A letter to Mr. Trump: the economic case for energy, equity and climate leadership

From the Berkeley Blog, by **Daniel Kammen** | NOVEMBER 15, 2016

Summary: The economic case for clean energy is as compelling as is the climate science. Pursuing both brings together economic advancement and political leadership.

The election of Donald Trump in the United States and the installation of a team at the U.S. Environmental Protection Agency and the Department of Energy who are climate change skeptics stands in the face of not only established science, but also of an unambiguous record of data that clean energy projects simply generate more jobs than those in the fossil fuel sector (Wei et al, 2010).

With solar and wind energy projects reaching prices *in the 2.5 – 4 US cent/kWh range,* the economic case for clean energy is as compelling as is the case for clean energy as the fastest way to provide energy access to the global poor, boosting their economic opportunities and capacity (Alstone, Gershenson and Kammen, 2015). This dramatic growth in the capacity and power of clean energy to meet economic needs in the U. S. (Mileva, et. al., 2016) and abroad means that a simple economic argument exists to be bullish on clean energy even before the local and global environmental benefits. The economic benefits of these clean energy projects are even more profound if combined with domestic manufacturing campaigns around electric vehicles, which brings an entirely new research and company growth angle to the high-tech sector.

In a report we recently released in London, the findings are clear that renewable energy options, in some cases supported by natural gas, and in others without, are a faster route out of energy and economic poverty than coal energy projects, which often get in the way of economic growth and empowerment (Granoff, et. al., 2016).

Many of the challenges we are seeing today globally relate to issues where clean energy can play a vital mitigating role. The resource demands of mega-cities translate directly into massive costs, economically and heath damaging pollution, and politically costly unrest. In a recent assessment (Kammen and Sunter, 2016) we have found that the capacity for new technologies to turn urban areas into healthier sites of greater and greater levels of self-generation address all these evils. The production and export of the mixture of clean energy and water technologies, and of the smart sensors, energy storage technologies, and the efficient systems needed to implement these innovations, is a global growth industry that can make the Paris Climate Accords a new pillar of economic growth and political stability.

A sound, economically empowering, energy plan would not be complete without a focus on these energy opportunities, a situation made more compelling because the global energy markets are embracing the clean energy transition. Jordan, Kenya, Morocco, Nicaragua, China, and many other nations are examples of places seeing a merging of the business and environmental case to push for and beyond the Paris Climate Accord goals.

My laboratory is modeling the energy transition opportunities in each of these nations (http://rael.berkeley.edu/project/SWITCH), and the results consistently find that the clean energy dominated path is the best economic path as well. These nations are building giga-watt scale clean energy power plants, and ramping up the innovation and industrial sectors at the same time. Sub-national regionals are pursuing these energy strategies in great numbers, too, with the "Under 2 degree MOU" (http://under2mou.org) an example of the fast and diverse pace of these programs.

The smart money is on clean energy. The U.S. would be turning its back on both economic and leadership opportunities by not pursuing these goals. A president who claims to be a populist would be a hypocrite to do anything but actively promote and campaign for a sustainable climate and the clean energy business that goes with it, and to do so in ways that promotes energy access, equality, and environmental justice. These are all pro-business, pro-worker positions. As the activity at CPP22 in Marrakech attests, the world will be pursuing clean energy and climate friendly goals with or without the United States; it would be folly not to want to lead and profit from this transition.

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From: Mroz, Jessica
To: "(b) (6)
Subject: Re: Clean Tech Boosts our Economy
Date: Friday, April 28, 2017 11:54:27 AM

Dear Mr. Chapman,

Thank you for your emails to U.S. Environmental Protection Agency Administrator Scott Pruitt, and for providing EPA with research regarding energy production and job growth.

We agree that it is possible to foster job growth at the same time as protecting our environment.

Again, thank you for your emails.

Jim

Jim DeMocker, Director
Office of Air Policy and Program Support (OAPPS)

Fri Mar 31 13:21:34 EDT 2017
Hope.Brian@epamail.epa.gov
FW: Congratulations
To: CMS.OEX@epamail.epa.gov

DRF

From: Marnie Satterfield [mailto:MSatterfield@carbonleaf.net]
Sent: Friday, March 31, 2017 1:00 PM
To: Pruitt, Scott <Pruitt.Scott@epa.gov>
Cc: Paul Cicio <pcicio@carbonleaf.net>
Subject: Congratulations

March 31, 2017

The Honorable Scott Pruitt

Administrator

U.S. Environmental Protection Agency

1200 Pennsylvania Avenue, NW

Mail Code: 1101A

Washington, DC 20460

Dear Administrator Pruitt:

On behalf of myself and the Industrial Energy Consumers of America (IECA) we congratulate you on your recent appointment. No one is better suited to lead the U.S. Environmental Protection Agency and make the desperately needed changes to drive economic and job growth. We are enormously supportive of your efforts and desire to work with you and the Administration to “Make America Great Again,” and especially rebuild the manufacturing sector.

We look forward to working with you and your team in the days and years ahead. Please feel free to call me at any time if I can be of assistance and provide support to your efforts.

Sincerely,

Paul N. Cicio

President

The Industrial Energy Consumers of America is a nonpartisan association of leading manufacturing companies with $1.0 trillion in annual sales, over 2,300 facilities nationwide, and with more than 1.6 million employees worldwide. It is an organization created to promote the interests of manufacturing companies through advocacy and collaboration for which the availability, use and cost of energy, power or feedstock play a significant role in their ability to compete in domestic and world markets. IECA membership represents a diverse set of industries including: chemical, plastics, steel, iron ore, aluminum, paper, food processing, fertilizer, insulation, glass, industrial gases, pharmaceutical, building products, automotive, brewing, independent oil refining, and cement.

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Industrial Energy Consumers of America
The Voice of the Industrial Energy Consumers

1776 K Street, NW, Suite 720 • Washington, D.C. 20006
Telephone (202) 223-1420 • www.ieca-us.org

March 31, 2017

The Honorable Scott Pruitt
Administrator
U.S. Environmental Protection Agency
1200 Pennsylvania Avenue, NW
Mail Code: 1101A
Washington, DC 20460

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Paul N. Cicio
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Children's Health Protection Advisory Committee

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Chair:

Barbara Morrissey, MS
Washington State Department of Health
P.O. Box 47846
Olympia, WA 98504-7846
(360) 236-3368
barbara.morrissey@doh.wa.gov

Committee Members:

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Ellen Braff-Guajardo, JD, MEd
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*Member until 03/25/2017

March 30, 2017

Administrator Scott Pruitt
United States Environmental Protection Agency
1200 Pennsylvania Ave, NW
Washington, DC 20460

RE: Protecting Children's Health under Amended TSCA

Dear Administrator:

The Children's Health Protection Advisory Committee (CHPAC) supports the continuing efforts by the Environmental Protection Agency (EPA) to protect children from harmful exposure to environmental chemicals. EPA has new opportunities under the 2016 Frank L. Lautenberg Chemicals Safety for the 21st Century Act (hereinafter 'amended TSCA'), which Congress passed with broad-based stakeholder and bipartisan support. The Act contains many positive changes including the requirement to use a risk-based safety standard for new and existing chemicals and greater ability for the Agency to require chemical information from manufacturers. It also requires EPA to specifically protect sensitive subpopulations including infants, children, and pregnant women in safety evaluations.

Children's unique behaviors and physiology can increase their risk of exposure to and health outcomes from chemicals in commerce. Because impacts to a child's health carry forward into adulthood, protecting this subpopulation benefits the entire population. In this letter, CHPAC responds to a request from the Agency for guidance on how risk evaluations mandated under the amended TSCA should address children as a potentially exposed and susceptible subpopulation (Attachment A). CHPAC wishes to emphasize that in addition to infants, children and pregnant women; other lifestages and subpopulations are important to consider under amended TSCA, including pre-conception, adolescence, lactating-women, and populations whose traditional diets or other indigenous practices may increase risk for toxicant exposure.

In implementing the amended TSCA, *CHPAC recommends* that the EPA give highest priority to chemical substances potentially of concern for children's health; to substances that children are likely to encounter; and to substances detected in biomonitoring studies of children, women of reproductive age, cord blood, or pregnant women.

In addition to our recommendations below, we would like to call your attention to two previous letters[1] from CHPAC that pertain to EPA's approach to children's exposures to environmental chemicals. Amended

[1] CHPAC, Evaluating existing and new chemicals for potential adverse impacts on children (July 2007) https://www.epa.gov/sites/production/files/2014-05/documents/7312007.pdf
CHPAC, Criteria for identifying chemicals of concern for children (including prenatal and preconception exposures. (March 2011). https://www.epa.gov/sites/production/files/2014-05/documents/chpac_chemicals_letter_3.pdf.

TSCA provides EPA the authority to act on several of those recommendations and CHPAC continues to support those recommendations that pertain to the amended TSCA.

Charge 1: Recommend methods and approaches for children's risk evaluation under amended TSCA

Use a Lifestage Approach

CHPAC recommends that EPA use lifestage analysis when evaluating impacts of chemicals on children under TSCA. A lifestage approach incorporates key age-related characteristics into risk assessment including children's unique and evolving anatomy, physiology, toxicokinetics, diet, environment, and behaviors. The unique characteristics of key developmental stages are important to address because these characteristics can influence exposure estimates, levels of concern, and the dose-response relationship used in a risk evaluation.

The lifestage approach includes a range of developmental stages from conception through fetal development, infancy, and adolescence. Standardized age groups corresponding to distinct lifestages have been developed for use in risk assessment at EPA and have been proposed for use globally (EPA, 2006; Cohen Hubal et al., 2014).

Children's diets differ significantly from adults. Breastmilk and infant formula reconstituted with tap water are unique sources of nutrition for the first four to six months of life and are sources of infant exposure to environmental chemicals. The transfer of contaminants from maternal blood to breastmilk has been well documented (Haraguchi, 2009; Sundström, 2011). Children also drink more water than adults. Formula fed infants have higher exposure to water contaminants (Kahn and Stralka, 2009). A preschool child's diet is much less varied, and they consume more milk, fruit, and vegetables, than most adults. These dietary differences place children at increased risk of ingesting toxic chemicals and pesticides present in these foods (American Academy of Pediatrics Council on Environmental Health, 2012; Landrigan and Etzel, 2014).

Behavioral factors can magnify a child's toxic exposure. Young children actively explore their environments by crawling on the floor engaging in oral exploration and hand-to-mouth activity. These behaviors increase their oral intake of toxic substances including those that accumulate in house dust (Johnson-Restrepo et al., 2009; Mitro et al., 2016).

Children's immature metabolic pathways typically make them more vulnerable to chemical toxicity due to their reduced ability to detoxify and excrete chemicals. For example, an infant's increased absorption and decreased excretion of manganese puts them at greater risk of manganese's neurotoxic effects compared to adults (Erikson, et al., 2007; Neal and Guilarte, 2013). Infants may also be at lower risk if their immature metabolic system is unable to convert a chemical to its toxicologically active form.

In response to Charge 1, CHPAC reviewed several chemical risk evaluation approaches and lifestage frameworks that address the unique characteristics of children from conception through adolescence. In addition, we searched for useful approaches and tools to use in children's exposure and risk evaluations. Potential frameworks, tools, and data sources are described in Attachment B.

In general, *CHPAC recommends* that EPA use the Agency's 2006 framework for lifestage assessment (EPA, 2006) along with its 2016 draft agency guidance on human exposure assessment (EPA, 2016) to guide its risk evaluations for children under amended TSCA. The World Health Organization framework (World Health Organization, 2006) is also a useful supplementary compendium of children's unique physiology, behaviors, and exposure pathways. Regarding when

to assess children's exposure in chemical evaluations, we highlight the decision tree presented at an OECD workshop in 2013 and believe is a useful starting point (OECD, 2014).

It is clear from our review that EPA has been a leader in developing state-of-the-art practices for incorporating children's unique behaviors and physiology into chemical risk assessment. We commend the Agency for this effort.

Screen for Developmental Toxicants in TSCA Risk Evaluations
Testing for developmental toxicity is critical to understanding the potential impacts on early lifestages. We encourage EPA to use its authority under amended TSCA to require chemicals to be screened for developmental toxicity especially if exposure to women of child-bearing age and children is likely. Further, the duration of observations must be sufficiently long to capture adverse outcomes across the life course. Developmental toxicity testing is critical because impacts on fetal development are not reliably predicted or characterized by toxicity studies in adult animals.

While standard *in vivo* developmental toxicity tests are invaluable tools, they are subject to limitations. The developmental toxicity methods are not comprehensive in covering all developmental toxicity outcomes and most do not contain observations for latent adverse outcomes that emerge across the life course (Makris et al., 2011). These limitations can be minimized by incorporating the methods developed by the National Toxicology Program (NTP), such as the modified one generation reproduction study design that greatly increases the power to detect post-natal developmental effects (Foster, 2014; Foster, 2017).

We encourage EPA to follow the recommendations of the National Research Council in 2007 (NRC, 2007) and the National Academies of Sciences, Engineering, and Medicine in 2017 to incorporate, where appropriate, new technologies and approaches to screening for developmental toxicity. These include *in vitro*, *in silico*, non-mammalian models such as zebrafish, and genomics and other "-omics" technologies. These could enhance traditional screening approaches such as structural alerts from modeling and "read-across" from chemical analogs. These new tools also have potential to broaden understanding about mode of action and human relevance of developmental toxicity observed in laboratory animals.

Use Biomonitoring to Inform Exposure Assessment
Biomonitoring data can be highly useful in developing estimates of chemical exposure and in understanding aggregate chemical exposure from multiple sources and pathways. CHPAC encourages EPA to use biomonitoring information from women of reproductive age and young children whenever it is available. Since children under six years of age are not regularly included in existing NHANES[2] protocols, EPA could commission or support biomonitoring studies specifically addressing chemical exposures of young children. Further, EPA should require manufacturers to submit biomonitoring data whenever available.

Charge 2: Priorities for new methods and approaches to improve children's risk evaluations under TSCA

CHPAC recognizes that there are many existing approaches that can be implemented to appropriately incorporate children's unique risks into safety evaluations. There are also many needed areas for further development. Here we highlight three critical areas for Agency focus: children's exposure information, age-appropriate safety factors, and methods for identification and characterization of developmental toxicants.

[2] The National Health and Nutrition Examination Survey (NHANES) conducted by the CDC.

Children's Exposure Information

Greater accuracy and more detailed information in the area of actual exposures of children would improve the risk evaluation process. Four types of data would be especially helpful:

- Chemical use data including down-stream uses of chemicals in products encountered by children. *CHPAC recommends* that EPA work with industry (e.g., processors) and other stakeholders to understand the uses of chemicals in consumer and children's products.
- More current data for "Children/toddler" activity patterns. *CHPAC recommends* EPA review, for example, the European Scientific Committee on Health and Environmental Risks opinion on chemicals ingested by children from toys that included a literature review of child-specific exposures (European Commission, Scientific Committee on Health and Environmental Risks, 2016).
- Aggregate information on children's exposure to a substance under all conditions of use, including exposures that are not regulated under TSCA, such as cosmetics, food and pesticides. *CHPAC recommends* that EPA use its full authority, including its new administrative order authority, to gather any needed information about uses of these substances to fill data gaps, including information on aggregate exposures. Failure to consider aggregate exposure through all routes of exposure and products may significantly underestimate a child's total exposure and allow an unreasonable risk.
- *CHPAC recommends* that EPA research and identify biomarkers of exposure and effect in children (e.g., measures of DNA-methylation, surveillance of urine levels of toxicants or metabolites), use NHANES multi-year data for exposure and health outcomes assessment, and develop validated methods to detect and estimate the concentration of chemicals likely to appear in the bodies of children and pregnant women and in breast milk.

Age-Appropriate Safety Factors

CHPAC recommends that for risk evaluations on existing chemical substances, as well as reviews of new chemical substances and assessments of significant new uses of existing chemical substances, EPA should apply age-appropriate safety factors for children. Some frameworks to consider include:

- 10x safety factor used under the Food Quality Protection Act (FQPA).
- Age-dependent adjustment factors used to protect children in cancer risk assessment (EPA, 2005).
- Child-specific reference doses developed by the California EPA (OEHHA, 2015).

While a full ten-fold additional margin may not be needed in all cases, the specific consideration of any unique sensitivities of early lifestages should explicitly be considered. An age-specific safety factor should be the "default" approach, especially where uncertainties and data gaps in children's exposure or vulnerabilities exist. Filling these data gaps will require more research and information regarding a chemical's predicted or observed pharmacokinetics (i.e., absorption, distribution, metabolism, and excretion data) and mechanism of action during early-lifestages (Felter et al., 2015).

Improved Methods to Identify and Characterize Developmental Toxicants

There are a variety of *in vivo* models that can be used for developmental and reproductive toxicity. While informative, these methods require high numbers of laboratory animals and may still miss important information about potential developmental harm for many substances. Many new approaches and tools have been developed (e.g., Tox21 program) that could be helpful in identifying and characterizing developmental toxicity of a new or existing chemical substance.

CHPAC recommends that EPA focus on development of a tiered approach to screening and testing for developmental toxicity. There may be the opportunity to design appropriate and cost-effective testing strategies based on sufficient understanding on the target organ and developmental period of susceptibility or based on physiologically-based pharmacokinetic modeling (Neal-Kluever et al.,

2014; Knudsen et al., 2011). Our recommendation aligns with specific language in the amended TSCA to increase reliance on testing assays that are more economical, rapid, and do not require laboratory animals.

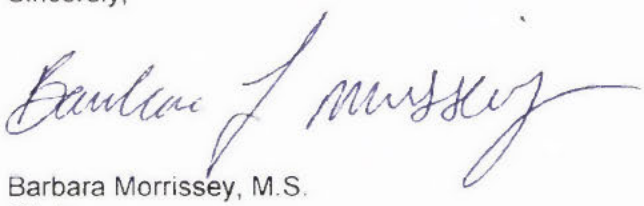
Regarding developmental toxicants with an endocrine disrupting mechanism of action, EPA should consider the principles outlined by the Endocrine Society regarding translation of endocrine findings from animal research to human health (Gore et al., 2015). If not already done, EPA should also update EPA's *in vivo* developmental toxicity assays to incorporate the changes suggested by the NTP's research program (Foster, 2014; Foster, 2017) and made to OECD 421 and 422 related to endocrine-related outcomes.

Charge 3: Identification of experts who may be consulted for further help in addressing or developing specific risk evaluation approaches or methodologies for potentially exposed or susceptible subpopulations

In response to this charge, CHPAC suggests a two-step nomination process: 1) identification of individuals with appropriate knowledge, expertise, and background based on tangible evidence, such as peer-reviewed publication; and 2) contacting potential individuals to inquire if they are willing to be nominated and to identify any potential conflicts of interests that might prevent them from providing unbiased advice to the EPA. *CHPAC recommends* that EPA consult with individuals with expertise in hazard, exposure, or risk assessment with a focus on children. Experts on other specific endpoints (e.g., developmental or reproductive toxicity, early-life carcinogenicity, respiratory development, breast milk exposures, childhood activity patterns) could be consulted for further help in development of risk evaluation approaches. In addition, CHPAC continues to be available to address specific questions from the Agency.

In summary, CHPAC supports a strong Agency effort to protect children from harmful exposure to chemicals evaluated under TSCA. We believe that the approaches outlined above will improve evaluation of new and existing chemicals for unintended impacts on sensitive early lifestages. We appreciate this opportunity to comment and we thank you for your commitment to safeguarding children's health.

Sincerely,



Barbara Morrissey, M.S.
Chair

cc: Wendy Cleland-Hamnett, Office of Chemical Safety and Pollution Prevention
Ruth Etzel, Office of Children's Health Protection
Brenda Foos, Office of Children's Health Protection
Tala Henry, Office of Pollution Prevention and Toxics
Jeff Morris, Office of Pollution Prevention and Toxics

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Attachment A

Amended Toxic Substances Control Act (TSCA) Potentially Exposed and Susceptible Subpopulations Workgroup
US EPA Children's Health Protection Advisory Committee (CHPAC)
Charge
December 13, 2016

Background
The Frank L. Lautenberg Chemicals Safety for the 21st Century Act, amends the Toxic Substance Control Act. Among other things, the new TSCA requires EPA to conduct risk evaluations to determine whether a chemical substance presents an unreasonable risk of injury to health or the environment, without consideration of costs or other non-risk factors, including an unreasonable risk to a potentially exposed or susceptible subpopulations identified as relevant to the risk evaluation under the conditions of use. The amended TSCA Definitions in Section 3(12) states: "the term "potentially exposed or susceptible subpopulation" means a group of individuals within the general population identified by the Administrator who, due to either greater susceptibility or greater exposure may be at greater risk than the general population of adverse health effects from exposure to a chemical substance or mixture, such as infants, children, pregnant women, workers or the elderly. In the Lautenberg Act susceptible subpopulations are to be considered in the evaluation of new and existing chemicals, as well as several other provisions.

EPA has been working to gather existing Agency guidance that is useful in developing the potentially exposed or susceptible subpopulations approaches needed under the amended TSCA and will provide this information to the workgroup for consideration. The approaches will be incorporated in a publically available guidance on risk evaluation. It is anticipated that this guidance will be updated as the available science and methods continue to develop.

Charge
CHPAC's expert advice is requested on the topic of addressing children's environmental health, as it relates to potentially exposed and susceptible subpopulations, in the risk evaluations mandated under the amended TSCA. In particular recommendations regarding:

- Currently available data sources, methods, approaches, and descriptions for best considering potentially exposed or susceptible subpopulations, especially related to children,
- Identifying and prioritizing the children's health risk evaluation approaches or methodologies in need of further development, and
- Identification of experts who may be consulted for further help in addressing or developing specific risk evaluation approaches or methodologies for potentially exposed or susceptible subpopulations.

Attachment B

Potential Frameworks, Methods/Tools and Data Sources for lifestage approach for risk evaluation

Author and publication year	Strengths (or highlights)	Source
	Frameworks	
EPA 2006	• Conceptual framework that provides an important overview of considerations for evaluating early-life exposures and subsequent outcomes. • Developmental lifestages considered include preconception, prenatal, infant, child and adolescent. • Incorporates timing and dosimetry concepts as unifying factors for exposure and hazard components of the analysis.	U.S. Environmental Protection Agency. (2006) A framework for assessing health risks of environmental exposures to children. National Center for Environmental Assessment, Washington, DC; EPA/600/R-05/093F.
EPA 2016	• Draft document integrating many elements from *EPA 2006* into guidance for conducting human exposure assessment. • Section 4.4 has helpful guidance on identifying lifestages, vulnerable groups and populations of concern for exposure assessments.	EPA. Guidelines for Human Exposure Assessment, Peer review draft, January 2016.
WHO 2006	• Chapter 7 provides a similar framework as *EPA 2006*. • Other chapters supply detailed data on children as related to: biological differences, susceptibilities associated with specific developmental stages, important exposure pathways, and unique characteristics of children that affect exposure.	World Health Organization. Environmental Health Criteria 237. Principles for evaluating Health Risks in Children Associated with Exposure to Chemicals. ISSN 0250-863X.

Attachment B cont'd

Potential Frameworks, Methods/Tools and Data Sources for lifestage approach for risk evaluation

Author and publication year	Strengths (or highlights)	Source
E.A. Cohen Hubal et al., 2014	• Summarizes a WHO review of exposure-related characteristics of age groups from birth to 21 years old. • Proposes standardized age groups for use in risk assessment and to guide standardized data collection on these characteristics by governments and health researchers.	Identifying important life stages for monitoring and assessing risks from exposures to environmental contaminants: Results of a World Health Organization review. Cohen Hubal et al., 2014 (http://www.sciencedirect.com/science/article/pii/S0273230013001530)
OECD 2014	• Decision tree on when to assess children's exposure in chemical evaluations as presented at a 2013 OECD workshop (See Figure 4).	OECD. Report on OECD workshop on children's exposure to chemicals. Series on Testing and Assessment. No. 209 ENV/JM/MONO (2014) 29.
Halifax Project (2012 -2015)	• Produced key insights into biological processes involved in cancer which may help EPA use mechanistic data to refine their chemical carcinogen assessments. • This framework may help EPA screen for carcinogenic potential with Tox21 tools. • Smith et al. suggest a systematic way to identify, organize, and summarize mechanistic information as part of the carcinogen evaluation process in IARC reviews. • Participating scientists have also published on the importance of evaluating a chemical's potential to disrupt key biological defense mechanisms such as inflammation suppression, anti-growth signaling, and immune suppression of proliferating cells (*Carcinogenesis*, Suppl 1, 2015).	• Smith et al. (2016) Key Characteristics of Carcinogens as a Basis for Organizing Data on Mechanisms of Carcinogenesis *Environ Health Perspect* 124(6):. https://ehp.niehs.nih.gov/15-09912/ • Assessing the carcinogenic potential of low dose exposures to chemical mixtures in the environment: the challenge ahead. Volume 36, Supplement 1; *Carcinogenesis*. June 2015. • More on the Halifax Project http://www.gettingtoknowcancer.org/environmental_exposures.php

Attachment B cont'd

Potential Frameworks, Methods/Tools and Data Sources for lifestage approach for risk evaluation

Author and publication year	Strengths (or highlights)	Source
	Methods/Tools	
OECD 2013	• Contains an overview of methods and tools used by various entities for child-specific hazard and exposure assessments. • The compilation originates from an international (OECD) survey of governments and other groups regarding practices for assessing special risks to children from environmental contaminants.	Organization for Economic Co-operation and Development (OECD). Assessing the risks of Chemicals to Children's Health: an OECD-wide Survey. Series on Testing & Assessment No. 192. ENV/JM/MONO(2013)20
EPA 2014	• Contains important details in Sections 2.2-2.4 and 3.3 for modeling an emerging pathway of concern for young children: house dust. • Provides a helpful framework for addressing this pathway for chemicals likely to contaminate house dust or indoor air.	US EPA, Child-Specific Exposure Scenarios Examples, 600/R-14/217F, September 2014, www.epa.gov/ncea.
EPA 2005	• Guidance on using age-dependent adjustment factors to account for higher cancer risk when mutagenic chemical exposure occurs in early life. • Recognized that early life exposure to agents that affect hormone systems, impair immune function, or induce developmental abnormalities in tissues may increase cancer risk, but insufficient data were available and analyzed to support a recommendation.	EPA. (2005) Supplemental guidance for assessing susceptibility from early-life exposure to carcinogens. Risk Assessment Forum, Washington, DC; EPA/630/R-03/003F. https://www3.epa.gov/airtoxics/childrens_supplement_final.pdf

Attachment B cont'd

Potential Frameworks, Methods/Tools and Data Sources for lifestage approach for risk evaluation

Author and publication year	Strengths (or highlights)	Source
RIVM Netherlands	• CONSEXPO consumer exposure (computer) model. • Helps estimate indoor exposures (via inhalation, dermal or oral routes) to substances from consumer products (*e.g.*, paint, cleaning agents, and personal care products).	The Netherlands, National Institute for Public Health and the Environment. ConsExpo Web. Revised October 2016.
OEHHA California 2015	• Guidance oriented towards airborne contaminants and assessment of multiple contaminants at a given site. • Provides child-specific methods for estimating contaminant concentrations in breast milk based on modelled or empirical data of chemical in soil, air, garden vegetables/crops, or water. • Also supplies a method for estimating bioaccumulation in angler-caught fish and in breast milk based on chemical properties, metabolism and excretion. • Modifying factors for risk such as social determinants of health are discussed qualitatively. • Child-specific reference doses incorporate age-related adjustment factors for cancer.	Air Toxics Hot Spots Program Guidance Manual for the Preparation of Health Risk Assessment, March 2015.
ECHA REACH R.15 2016	• Describes tools and models used to conduct consumer exposure assessment for chemicals in consumer materials. • Appendix R.15.3 compares computer tools for estimating consumer exposure.	ECHA. Guidance on Information Requirement and Chemical Safety Assessment, Chapter R. 15: consumer exposure assessment. July 2016 https://echa.europa.eu/documents/10162/13632/information_requirements_r15_en.pdf

Attachment B cont'd

Potential Frameworks, Methods/Tools and Data Sources for lifestage approach for risk evaluation

Author and publication year	Strengths (or highlights)	Source
Data sources		
EPA 2011	• Provides data by age-group for early lifestage exposure assessments including intake of water, food, and breastmilk; ingestion of soil and dust; and frequency of hand-to-mouth and object-to-mouth activity.	Exposure Factors Handbook: 2011 Edition. EPA/600/R-09/052F.
RIVM Netherlands	• Site provides numerous factsheets with many of the default assumptions in the CONSEXPO model. • They include data sources relevant to children's exposure, *e.g.*, estimates of mouthing time for children by age in months and frequency of contact with different types of children's products.	• http://www.rivm.nl/en/Topics/C/ConsExpo/Fact_sheets • "Oral exposure of children to chemicals via hand-to-mouth contact" (2007) http://www.rivm.nl/dsresource?objectid=bac32ade-dfb8-459e-b02c-a6f589d0683e&type=org&disposition=inline • "Children's Toys Fact sheets" (2002). http://www.rivm.nl/dsresource?objectid=b6c07cb6-9bc2-4c50-ba19-cf1f7af39b5c&type=org&disposition=inline

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U.S EPA Headquarters
William Jefferson Clinton Building
1200 Pennsylvania Avenue, N.W.
Mail Code: 1101A
Washington, DC 20460

Route E

To: Pruitt,Scott

Mailstop ARN

Department: 1101

Sigcon

881789820

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

JUL 24 2017

OFFICE OF CHEMICAL SAFETY
AND POLLUTION PREVENTION

Barbara Morrissey, M.S.
Washington State Department of Health
P.O. Box 47846
Olympia, Washington 98504-7846

Dear Ms. Morrissey:

Thank you for your letter of March 30, 2017, to the U.S. Environmental Protection Agency regarding the Children's Health Protection Advisory Committee (CHPAC) recommendations for implementation of the Frank R. Lautenberg Chemical Safety for the 21st Century Act amendments to the Toxic Substances Control Act (TSCA).

We appreciate the CHPAC taking the time to form a workgroup and consult with us about potentially exposed and susceptible subpopulations under TSCA, as amended by the Frank R. Lautenberg Chemical Safety for the 21st Century Act. We are especially appreciative that the CHPAC was able to provide input in response to our charge in a short timeframe to meet the needs of our chemical assessment program. The EPA has considered your recommendations and offers the following responses.

Charge 1: Recommend methods and approaches for children's risk evaluation under amended TSCA

Using a Lifestage Approach

The EPA agrees with CHPAC's recommendation to use a lifestage approach, as it is important to consider key age-related characteristics of children in distinct age groups. The EPA has been looking to existing EPA guidance on this topic, including the *Guidance on Selecting Age Groups for Monitoring and Assessing Health Risks of Environmental Exposures to Children* (2005), *A Framework for Assessing Health Risk of Environmental Exposures to Children* (2006), and the *Exposure Factors Handbook* (2011). We appreciate the CHPAC's input regarding other potential frameworks, and we will evaluate how we may use this information going forward.

Screen for Developmental Toxicants in TSCA Risk Evaluations

The EPA agrees with the CHPAC that if exposure to women of child-bearing age and children is likely, developmental toxicity information is critical. The EPA intends to identify such

susceptible subpopulations in conducting risk evaluations under TSCA. If the EPA finds such exposures are likely, but data and information do not exist to conduct a reasoned evaluation, the EPA would likely seek to obtain such information prior to undertaking risk evaluation.

Also, under section 4 of TSCA, the EPA is required to consider approaches that will reduce and replace, to the extent practicable, the use of vertebrate animals in toxicity testing. Prior to making a request for vertebrate testing, the EPA is required to consider the available toxicity information, computational information, bioinformatics, high-throughput methods, and predictive methods. The EPA would consider and use such non-vertebrate information in determining whether vertebrate testing is needed for developmental toxicity endpoints. In fact, the EPA has used structural alerts and "read-across" approaches in our everyday activities under TSCA, particularly for the evaluation of new chemicals. We will certainly consider the recommendations of the National Research Council in 2007 and the National Academies for Sciences, Engineering, and Medicine in 2017 in advancing these efforts.

Use biomonitoring to inform exposure assessment

The EPA agrees with CHPAC's recommendation to use biomonitoring information when it is available, particularly in assessing children's exposure. Regarding submission of biomonitoring data by manufacturers, the EPA notes that manufacturers are required to submit all data in their possession or control on health, safety, and the environment, when submitting a pre-manufacture notice for a new chemical substance. For risk evaluations on existing chemicals, the EPA may use biomonitoring, among many other types of data to inform the hazard assessment.

Charge 2: Priorities for new methods and approaches to improve children's risk evaluations under TSCA

Children's Exposure Information

The EPA agrees with CHPAC's recommendation for improved childhood exposure information. Consistent with your recommendation, in developing the scope for the first ten chemicals to undergo risk evaluation under TSCA, the EPA:

- Held a public meeting and more than forty outreach meetings with industry and other stakeholders, to gather information on uses of chemicals, including consumer and children's products to better understand and assess exposure pathways. The input the EPA received from the public meeting can be found in the EPA's Docket EPA-HQ-OPPT-2017-0002.
- Is aware of the European Scientific Committee on Health and Environmental Risk's 2016 report and finds the recommendations useful. In fact, the EPA has used the CONSEXPO model and approach referenced in the report. Furthermore, the EPA's Consumer Exposure Model (CEM), that is applied in TSCA risk assessments, was recently updated to include mouthing and ingestion exposure scenarios described in the report.

- Appreciates your recommendation regarding the need to include aggregate exposures to children and intends to discuss our consideration of aggregate exposure as is required under TSCA section 6(b)(4)(F)(ii).
- Recognizes that while the TSCA program does not directly engage or fund research, it does use NHANES (National Health and Nutrition Examination Survey) data, when appropriate, in evaluating exposures and risks to chemicals.
- Also participates on the EPA Biomonitoring Workgroup for identifying candidate chemicals for NHANES.

Age-Appropriate Safety Factors

The EPA appreciates CHPAC's input on the application of age-appropriate safety factors for children, and agrees that the extra margin may not be needed in all cases. The TSCA program generally adheres to the age-dependent adjustment factors outlined in the Supplemental Guidance for Assessing Susceptibility from Early-Life Exposure to Carcinogens (2005) and also considers the application of other age-appropriate safety factors when evaluating the available scientific data. The Agency has used safety factors when assessing new chemicals. The EPA will consider the references provided by the CHPAC as we consider this issue further.

Improved Methods to Identify and Characterize Developmental Toxicants

The EPA will consider CHPAC's request to incorporate new approaches to developmental toxicity. In particular, the EPA is considering a wide array of screening and alternative testing approaches (e.g., high-throughput *in vitro* data, computational toxicology, etc.) to incorporate into the prioritization process mandated by TSCA section 6(b)(1)(A). In addition, the EPA is developing a strategic plan to promote the development and implementation of alternative test methods and strategies to reduce, refine, or replace vertebrate animal testing, as required by TSCA section 4(h)(2)(A). During the development of these processes, the EPA will be focused on understanding and implementing tiered and alternative testing methods, including those helpful in identifying and characterizing development toxicity. In addition, the EPA is aware of the recent changes to the OECD test guidelines 421 and 422 (July 2016) and is currently recommending them, on a case-by-case basis, when further testing is necessary.

<u>Charge 3: Identification of experts who may be consulted for further help in addressing or developing specific risk evaluation approaches or methodologies for potentially exposed or susceptible subpopulations</u>

The EPA appreciates CHPAC proposing a nomination process and offering to identify individuals with specific expertise in hazard, exposure or risk assessment for help in development of risk assessment approaches. Certainly, the EPA will continue to engage the CHPAC on children's health topics and we thank you for your offer to continue engaging as we continue with TSCA implementation.

The EPA thanks the CHPAC for its continued support of children's health. The recommendations presented by CHPAC will be helpful in the EPA's efforts to protect children's health.

If you have further questions, please contact me or your staff may contact Tala Henry, Director, Risk Assessment Division at henry.tala@epa.gov or (202) 564-2959.

Sincerely,

Wendy Cleland-Hamnett
Acting Assistant Administrator

Children's Health Protection Advisory Committee

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Chair:

Barbara Morrissey, MS
Washington State Department of Health
P.O. Box 47846
Olympia, WA 98504-7846
(360) 236-3368
barbara.morrissey@doh.wa.gov

Committee Members:

Dick Batchelor
Ellen Braff-Guajardo, JD, MEd
Rebecca Bratspies, JD
Lori Byron, MD, FAAP
Susan Buchanan, MD*
Stephanie Chalupka, EdD, RN, PHCNS-BC, FAAOHN, FNAP*
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Deanna Scher, PhD
Adam Spanier, MD, PhD, MPH*
*Member until 03/25/2017

March 24, 2017

Administrator Scott Pruitt
United States Environmental Protection Agency
1200 Pennsylvania Ave, NW
Washington, DC 20460

RE: Highest Priorities for Childhood Lead Exposure Prevention

Dear Administrator:

Congratulations on your appointment as Administrator of the Environmental Protection Agency (EPA). As the Agency's advisory committee on children's health, we are responding to the following request:

In the context of the recent attention on childhood lead exposure and considering past recommendations from the Children's Health Protection Advisory Committee (CHPAC) and considering current activities (regulatory actions, research, outreach, enforcement, and the Task Force efforts), what is your highest priority advice for EPA?

The current medical and scientific consensus is that there is no safe blood lead level in children.[1] CDC set a reference level of 5 micrograms of lead per deciliter of blood (µg/dL) to identify children who are priorities for public health intervention and case management.[2] Even levels below 5 µg/dL are associated with decreased academic achievement, lower IQ scores, attention-related behavior problems, and antisocial behavior.[3] These neurological effects have lifelong impacts on individuals, families, communities and our society, and may be irreversible. Thus, public health actions must focus on exposure prevention rather than just remedial interventions for children exposed to lead.

Since the 1970s, mean blood levels in young children have dropped dramatically, by more than 94%, as a result of policy actions primarily by reducing lead in paint, gasoline and consumer products; managing existing lead in paint and plumbing more carefully; and removing lead whenever it cannot be safely managed in place.[4] Despite this substantial progress, data from the Centers for Disease Control and Prevention (CDC) show that millions of U.S. children are still being exposed to lead.[5]

In addition, economic and racial disparities in childhood lead exposure persist. Children in low-income households are still three times more likely than children from high-income households, and African-American children are twice as likely as white children, to have elevated blood lead levels.[6] Cost benefit analysis has shown that every dollar invested in controlling those exposures returns at least $17 in social and economic benefits.[7]

To further prevent childhood exposure to lead, CHPAC identified the four highest priorities for EPA action. These are:

- Strengthen the Agency's Lead-Based Paint Hazards Standard for lead in paint, dust, and soil;
- Revise the Lead and Copper Rule to reduce lead in drinking water;
- Improve risk communication efforts to provide clarity and consistency; and
- Encourage the Administration's infrastructure investment program to support healthy housing, childcare facilities, and schools, and safe drinking water.

Strengthen the Agency's Lead-Based Paint Hazards Standard for lead in paint, dust, and soil

Lead-based paint is the most significant source of elevated blood lead levels in young children. The current Lead-Based Paint Hazards Standard[8] at 40 CFR Part 745 Subpart B defines the amount of lead in paint, dust, and soil that poses a significant hazard to children in housing and child-occupied facilities. The standard was established in 2001[9] and needs updating to reflect the current reference level for public health intervention set by CDC. The standard also needs to reflect the latest health research on the risks posed by low levels of exposure to lead in young children, especially in toddlers due to their high hand-to-mouth activity.

The best evidence shows that a young child living in a home meeting the current lead dust standard still has a 50% chance of exceeding the CDC reference level for blood lead. In 2012, EPA's Science Advisory Board recommended that the Agency revise its scientific model to better reflect this risk.[10] In addition, the Department of Housing and Urban Development (HUD) substantially lowered its dust lead standards for its Lead Hazard Control grants on February 1, 2017.[11] These actions indicate that EPA needs to strengthen its dust-lead standards.

For these reasons, CHPAC recommends that EPA, in coordination with HUD, make strengthening the Lead-Based Paint Hazards Standard for paint, dust, and soil one of its highest priorities in its efforts to reduce children's blood lead levels.

Revise the Lead and Copper Rule to reduce lead in drinking water

Drinking water is also a significant source of exposure to lead, as highlighted by several high-profile episodes of municipal drinking water contamination with lead (e.g., Flint, MI, Sebring, OH and Washington, DC) over the last decade.[12] Health risks are highest for formula-fed infants because they drink the most water of all age groups in proportion to their body weight.[13]

In 2015, EPA's National Drinking Water Advisory Council (NDWAC) recommended[14] that the Agency overhaul its Lead and Copper Rule. NDWAC laid out specific recommendations drawn from the lessons learned from the recent experiences. The recommendations included:

- Making lead service line replacement an essential and ongoing part of a long-term program rather than only a last resort when other methods fail. These lead pipes that connect the water main under the street to homes are the source of most of the lead in tap water.
- Establishing a water concentration at which a formula-fed infant is likely to have an elevated blood lead level.
- Requiring water utilities to notify the local health department and residents when tap water tests for lead exceed the abovementioned health-based water concentration.
- Updating how water testing for lead is performed to make it more accurate and relevant.

The American Water Works Association, the primary association representing drinking water utilities, has endorsed NDWAC's recommendations and called for EPA to strengthen the Lead and Copper Rule.[15]

EPA committed to publishing a proposed rule in 2017 and promulgating a final rule as soon as possible after considering public comments. CHPAC recommends that EPA strengthen its lead in drinking water standards in 2017 consistent with NDWAC's recommendations and the lessons learned from recent water system lead contaminations.

Improve risk communication efforts to provide clarity and consistency

Increasing the public's understanding of the risks posed by lead will enable individuals to take action to prevent harm. A key means of communicating this risk is EPA's "Protect Your Family from Lead in Your Home" booklet that is given to every family who is buying or renting a home built before 1978.[16] This booklet, distributed tens of millions of times each year, focuses on lead-based paint hazards, but insufficiently describes other important lead sources including, but not limited to, drinking water faucets, plumbing, traditional and cultural products, and take-home exposures from work. It also treats all homes built before 1978 as equal and does not explain that the likelihood of having lead-based paint varies dramatically based on the age of the home. Finally, it relies heavily on text rather than graphics making it less effective for some audiences.

CHPAC recommends that EPA update the booklet to more effectively communicate the risks posed by lead and more fully describe the various sources and actions people can take to protect their family from lead in their home.

Due to the high level of intra-agency and inter-agency coordination necessary to create consistent, culturally-sensitive, multi-lingual, and impactful messaging about lead and the need for expertise in pediatric environmental health and in risk communication, CHPAC recommends that the Office of Children's Health Protection (OCHP) coordinate pediatric lead risk communication activities within EPA including the update to the booklet.

Beyond updating the "Protect Your Family from Lead in Your Home" booklet, EPA can greatly amplify and extend its lead poisoning prevention communications through partnerships. CHPAC recommends that EPA leverage its limited resources through the following:

- The President's Task Force on Environmental Health Risks and Safety Risks to Children serves as a key body to coordinate federal risk communication regarding lead to provide greater clarity and consistency. Its 2016 report highlights the critical work of nine agencies and departments that protect children from lead.
- The Pediatric Environmental Health Specialty Units (PEHSUs) continue to serve EPA as a conduit for information for the public and health care providers on the hazards of lead in the home, childcare facilities, schools, and other venues in which children may be exposed. Staffed by pediatricians, medical toxicologists, nurses and other health care providers with expertise in pediatric environmental health, PEHSUs are optimally positioned to communicate the risks of lead.
- State and local health departments conduct extensive outreach to the communities they serve. They are a respected source of lead exposure reduction information and, with sufficient resources, effectively reach landlords, renovation contractors, health professionals, and community members.

In sum, CHPAC recommends that in order to achieve the goal of reducing lead exposure EPA should, with OCHP coordinating the effort: strengthen and expand its communication materials; use the President's Task Force to coordinate efforts with other federal agencies; and collaborate more actively with and support PEHSUs and state and local health departments.

Encourage the Administration's infrastructure investment program to support healthy housing, childcare facilities, and schools, and safe drinking water

Infrastructure is often thought of as roads and airports. Reducing lead from all of these sources including eliminating lead in aviation gas and preventing release of lead during bridge repairs remain important. However, CHPAC maintains that healthy housing, childcare facilities, and schools, and safe drinking water are also essential parts of our country's infrastructure and central to reducing exposure to lead. Congress recognized this when it authorized the Water Infrastructure Improvements for the Nation Act and authorized EPA "to establish a $300 million grant program to replace lead service lines on residential property in disadvantaged communities."[17] Congress also provided ongoing support for HUD's lead hazard control grants program in low income housing.

CHPAC recommends that EPA work closely with HUD, CDC, Department of Agriculture, and other sister agencies through the President's Task Force on Environmental Health Risks and Safety Risks to Children to help ensure that all Administration infrastructure investment programs make housing, childcare facilities, and schools healthier, and drinking water safer.

In conclusion, public policies reducing lead exposure have resulted in tremendous health benefits for children. Despite this progress, we know that even low levels pose harm to children's brain development and that there is no safe amount of lead in blood. In addition, low-income children and children of color continue to be disproportionately exposed to lead. To reduce ongoing exposures to lead, CHPAC recommends that the Agency continue current activities to protect children from environmental lead exposure and take stronger and swifter action on our four highest priorities described above.

Thank you for your commitment to protecting children's health and for the opportunity to provide you with this guidance. Please let us know if you or your team have questions or comments.

Sincerely,

Barbara Morrissey, M.S.
Chair

cc: Barry Breen, Office of Land and Emergency Management
Eric Burneson, Office of Water
Wendy Cleland-Hamnett, Office of Chemical Safety and Pollution Prevention
Ruth Etzel, Office of Children's Health Protection
Michael Firestone, Office of Children's Health Protection
Stiven Foster, Office of Land and Emergency Management
Peter Grevatt, Office of Water
Jeff Morris, Office of Chemical Safety and Pollution Prevention
Tanya Hodge Mottley, Office of Pollution Prevention and Toxics
Mike Shapiro, Office of Water

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[1] American Academy of Pediatrics, Council on Environmental Health, *Prevention of Childhood Lead Toxicity, Pediatrics*. 2016;138(1):e20161493. See http://pediatrics.aappublications.org/content/pediatrics/early/2016/06/16/peds.2016-1493.full.pdf.
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E. Scott Pruitt
Administrator

May 25, 2017

Ms. Barbara Morrissey
Chair, Children's Health Protection Advisory Committee
Washington State Department of Health
P.O. Box 47846
Olympia, Washington 98504-7846

Dear Ms. Morrissey:

Thank you for the Children's Health Protection Advisory Committee letter on recommendations for the U.S. Environmental Protection Agency to further reduce childhood lead exposure and improve lead safety communications. We are reviewing these recommendations along with the recommendations that CHPAC provided regarding recent amendments to the Toxic Substances Control Act and its protection of vulnerable life stages including childhood and pregnancy/fetal development.

In response to the continuing public health concern regarding exposure to lead from a variety of sources including old lead paint and in drinking water, the President's Task Force on Environmental Health Risks and Safety Risks to Children, which the EPA co-chairs with the Department of Health and Human Services, is developing an updated federal strategy to address lead risks to children from a variety of sources. We expect this new strategy will broadly address your recommendations to protect children from health risks posed by lead.

We thank you and the rest of CHPAC for your continued active engagement on issues concerning lead exposure in children, and we greatly appreciate your efforts to improve the health of our nation's children.

Respectfully yours,

E. Scott Pruitt

cc: Ruth A. Etzel, M.D., Ph.D.
Office of Children's Health Protection

1200 Pennsylvania Ave. NW • Mail Code 1101A • Washington, DC 20460 • (202) 564-4700 • Fax: (202) 501-1450

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Mr. Pruitt,

I write to you as a concerned citizen, a lover of nature, and a librarian. I am enclosing a copy of Rachel Carson's classic, Silent Spring, in hopes that, if you have not already, you will read it. While many more recent books have been written exploring environmental issues, particularly global warming, which is one of my biggest concerns, I have yet to come across anyone who so effectively and heart-rendingly captures the feeling of loss and grief when our natural world is disregarded and destroyed, as Ms. Carson.

As the head of the

Environmental Protection Agency, I know you will do your best to uphold your duty to protect our environment, and I hope this book can be an inspiration for you in those efforts. As a 27-year-old, my peers and I must live on this planet far longer than many who are in positions to make decisions about its future. Please keep us in mind as you do your work. I sincerely hope that Ms. Carson's words can be a guide for you in the times ahead.

With best wishes,

- Hannah Cyms

(b) (6)

SILENT SPRING

The CLASSIC *that* LAUNCHED *the* ENVIRONMENTAL MOVEMENT

RACHEL CARSON

Introduction by **LINDA LEAR** *Afterword by* **EDWARD O. WILSON**

To Albert Schweitzer
who said

"Man has lost the capacity to foresee and to forestall.
He will end by destroying the earth."

First Mariner Books edition 2002

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Drawings by Lois and Louis Darling

Portions of this book were first published as a series of articles in *The New Yorker.*

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The sedge is wither'd from t
And no birds sing.

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"The cornerstone of the new environmentalism . . . well crafted, fearless, and succinct." — PETER MATTHIESSEN

Rarely does a single book alter the course of history, but Rachel Carson's *Silent Spring* did exactly that. The outcry that followed its publication in 1962 forced the banning of DDT and spurred revolutionary changes in the laws affecting our air, land, and water. Carson's passionate concern for the future of our planet reverberated powerfully throughout the world, and her eloquent book was instrumental in launching the environmental movement. It is without question one of the landmark books of the twentieth century.

This edition includes an afterword by the author and scientist Edward O. Wilson. The introduction, by the acclaimed biographer Linda Lear, tells the story of Carson's courageous defense of her truths in the face of a ruthless assault from the chemical industry following the publication of *Silent Spring* and before her untimely death.

RACHEL CARSON, 1907–1964, spent a good deal of her professional life as a marine biologist with the U.S. Fish and Wildlife Service. Her first three books — *Under the Sea-Wind, The Sea Around Us,* and *The Edge of the Sea* — established her reputation as a first-rate writer on the natural world.

EDWARD O. WILSON is the author of two Pulitzer Prize-winning books, *On Human Nature* and *The Ants*. His most recent book is *The Creation: An Appeal to Save Life on Earth*.

LINDA LEAR is the author of *Rachel Carson: Witness for Nature*.

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Subject: EPA Letter of Support

Dear Administrator Pruitt,

As the new administration sets its priorities for the Environmental Protection Agency, the International Living Future Institute urges you to preserve and protect vital programs at the Agency that support our core business functions and save American consumers billions of dollars per year in utility and health care costs.

Please find attached our letter in support of the EPA's programs.

Thank you,

Amanda Sturgeon, FAIA, LEED Fellow
CEO

International Living Future Institute
1501 East Madison Street, Suite 150, Seattle, WA 98122
P/ 206.223.2028 ext. 01
www.living-future.org

March 23, 2016

The Honorable Scott Pruitt
Administrator
United States Environmental Protection Agency
1200 Pennsylvania Avenue NW
Washington, DC 20460

IMPORTANT EPA PROGRAMS FOR BUSINESS / PRODUCT MANUFACTURING

Dear Administrator Pruitt,

As the new administration sets its priorities for the Environmental Protection Agency, the International Living Future Institute urges you to preserve and protect vital programs at the Agency that support our core business functions and save American consumers billions of dollars per year in utility and health care costs.

For a decade, the International Living Future Institute has been leading the transformation towards a built environment that is socially just, culturally rich and ecologically restorative. We are premised on the belief that providing a compelling vision for the future is a fundamental requirement for reconciling humanity's relationship with the natural world.

> "*Changing our approach to design and construction is critical to achieving the City's environmental goals and ensures we remain a national leader on green and energy efficient buildings and communities," said Seattle Mayor, Ed Murray upon signing city ordinance 11873, changing Seattle's sustainable building ordinances to align with Living Building codes for the construction of green buildings in Seattle*
>
> *"The Living Product Challenge fosters a spirit of support and collaboration that is so refreshingly different that new ideas cannot help but abound and the cross-linking of ideas is absolutely contagious," said Anjanette Green, a Materials Analyst from Stok*
>
> *"The Living Community Challenge asks the community to consider bigger questions, going beyond mitigation of environmental impacts to regeneration, reconnection in a deep way with the natural environment and to making places that foster beauty and spirit," said Mercy Davison, the City Planner for Normal, Illinois, a registered Living Community Challenge project*

The EPA's Energy Star program, created by engaging industry leaders and manufacturers, has long been recognized for leadership in reducing energy use in buildings. Several Energy Star tools are vital for design and development professionals implementing energy efficient projects. Energy Star's Portfolio Manager software enables architects and their clients to track and benchmark the energy and water usage of their entire building asset portfolio. Similarly, the Target Finder tool helps designers evaluate the energy performance of a commercial building design or existing building. These resources help institutional clients such as hospitals and universities confidently target capital investment in efficient new buildings and retrofits which will bring down their operational expenses.

Seeing the effectiveness of this data driven approach, cities across the country have begun requiring the use of these types of energy benchmarking tools for building owners to optimize building energy efficiency, reduce costs, and alleviate strain on electrical grids. According to the Institute for Market Transformation, 24 major US cities and 11 US states have adopted energy use benchmarking ordinances that rely upon Energy Star Portfolio

Manager to function. These cities - including Washington, DC, Orlando, Atlanta, Kansas City, Austin, Seattle and Salt Lake City - use these ordinances to spur immediate and low-cost reductions in energy consumption, and provide the opportunity for increased government efficiency, job creation, and economic and environmental health.

Energy Star's voluntary third party product certifications are important to consumers, and also serve to assure designers that the equipment they specify will meet important performance goals. In fact, in many jurisdictions, energy codes and standards have been adopted that would be difficult or impossible to meet without the use of EPA benchmarking tools and data. Energy Star building ratings also provide trusted outside validation of performance claims for prospective buyers and tenants.

Building technology is advancing rapidly and new materials are constantly coming to market. The EPA's Toxic Substances Control Act (TSCA) Chemical Substance Inventory is a vital tool that designers use to research certain building materials as part of their larger review of those materials. Indoor air quality is another critical component of health considerations. The EPA's Indoor Air Quality program has provided invaluable data regarding issues such as radon mitigation, mold prevention, and chemical emissions from building products. EPA has also developed the testing methods used to verify air quality in order to qualify for voluntary building certification programs such as the Living Building Challenge, LEED, and ASHRAE 189.1. These benchmarks are required by many cities, states, and construction lenders.

Design and construction services are a key export for the United States, and American contractors, engineers, architects, and interior designers are hard at work using their skills to design and construct buildings all over the world. Our expertise in clean, healthy, and energy efficient buildings is a major driver of this demand. Energy Star, indoor air quality, and materials safety information programs are just a few examples of the EPA resources that directly support our design work each and every day. Eliminating tools and data, cutting staff, or reducing funding for any of these programs will severely impact the ability of built environment professionals to meet client demands, fulfill contractual obligations, and carry out the duties of their licensure to protect the public. We look forward to working with you to preserve these vital programs and to further the Agency's mission to promote a cleaner and healthier environment.

Sincerely,

Amanda Sturgeon, FAIA, LFA, LEED Fellow
CEO

cc:
Members of Senate Committee on Energy and Natural Resources
Members of Senate Committee on the Environment and Public Works
Members of Senate Appropriations Committee
Members of House Committee on Energy and Commerce
Members of House Appropriations Committee

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

JUN 16 2017

OFFICE OF
POLICY

Ms. Amanda Sturgeon
FAIA, LEED Fellow
CEO
International Living Future Institute
1501 East Madison Street, Suite 150
Seattle, WA 98122

Dear Ms. Sturgeon:

On behalf of Administrator Pruitt, thank you for your letter and ideas regarding the U.S. Environmental Protection Agency's efforts to protect the environment and also grow the nation's economy. I have shared your ideas regarding third party certifications, benchmarking tools and data and testing methods for indoor air quality with our team working to implement the Presidential Executive Order on a Comprehensive Plan for Reorganizing the Executive Branch (https://www.whitehouse.gov/the-press-office/2017/03/13/presidential-executive-order-comprehensive-plan-reorganizing-executive). This work is inclusive of our efforts to make the federal government work better for the American people, by refocusing the EPA on its intended mission, restoring cooperative federalism, and redesigning sensible regulations for economic growth while protecting the environment. Thank you again for sharing your ideas and for your interest in the work of the EPA.

Sincerely,

Samantha H. Dravis

Samantha Dravis
Senior Counsel and Associate Administrator

Morgan Lewis

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March 27, 2017

VIA U.S. MAIL

The Honorable E. Scott Pruitt
Administrator
US Environmental Protection Agency
1200 Pennsylvania Avenue, NW
Washington, DC 20460

Re: Docket ID No. EPA–HQ–SFUND–2010–1086
Addition of a Subsurface Intrusion Component to the Hazard Ranking System
Final Rule, 82 Fed. Reg. 2760 (Jan. 9, 2017)

Dear Administrator Pruitt:

On behalf of the Superfund Settlements Project ("SSP")[1], I write to encourage the United States Environmental Protection Agency ("EPA") to reconsider its Addition of a Subsurface Intrusion Component to the Hazard Ranking System ("HRS") Rule ("SsI Rule"), 82 Fed. Reg. 2760 (Jan. 9, 2017). The SsI Rule is currently subject to the memorandum of January 20, 2017, from the Assistant to the President and Chief of Staff, entitled "Regulatory Freeze Pending Review" and the EPA's "Further Delay of Effective Dates for Five Final Regulations Published by the Environmental Protection Agency Between December 12, 2016 and January 17, 2017," 82 Fed. Reg. 14324 (Mar. 20, 2017). The SsI Rule, which introduces burden, expense and will divert federal resources with little or no benefit achieved, is precisely the type of regulation that the President is seeking to eliminate or reverse through his two recent Executive Orders on regulatory reform. See

[1] The SSP is an association of major companies from many different sectors of American industry. It was organized in 1986 in order to help improve the effectiveness of the Superfund program by encouraging settlements, streamlining the settlement process, and reducing transaction costs for all concerned. Since its formation, the SSP has provided constructive input to EPA, other federal agencies and Congress on critical policy issues affecting the cleanup of contaminated sites. The members of the SSP have extensive experience in addressing the problems presented by contaminated sites, having been involved at hundreds of Superfund sites across the country over the last 30 years.

Presidential Executive Order of January 30, 2017, Presidential Order on Reducing Regulation and Controlling Regulatory Costs; Presidential Executive Order of February 24, 2017, Presidential Executive Order on Enforcing the Regulatory Reform Agenda. We therefore urge the Agency to refrain from implementing the Rule.

SSP encourages reconsideration of the SsI Rule because it does not constitute sound public policy and is not required under any Congressional statutory directive. As detailed in the enclosed comments on the Proposed Rule, 81 Fed. Reg. 10372 (Feb. 29, 2016), adding vapor intrusion sites to the NPL would be an arduous undertaking that would increase the cost of future HRS-assessments, but likely yield few or no benefits. The SsI component has the potential to overwhelm the Superfund program and divert resources from sites identified by statute as higher priority. Furthermore, the Superfund NPL process, with its lengthy studies, protracted investigations, and adversarial process, is not well-suited to address most vapor intrusion sites, which need expeditious response; and, indeed, these sites are being addressed by state and local government corrective action programs. Because EPA has failed to demonstrate that there is a problem, and that listing vapor intrusion sites on the NPL will solve that problem, EPA should reconsider its SsI Rule.

Thank you for your attention to this matter. I, or members of SSP, would be pleased to speak with your staff or to otherwise provide assistance.

Sincerely,

Ronald J. Tenpas
Counsel to the Superfund Settlements
Project

cc: Don Benton
Senior White House Advisor
(Via e-mail at benton.donald@epa.gov)

Sarah Rees, Director, Office of Regulatory Policy and Management
Office of Policy
Environmental Protection Agency
(via e-mail at rees.sarah@epa.gov)

Morgan Lewis

Ronald J. Tenpas
Partner
+1.202.739.5435
ronald.tenpas@morganlewis.com

April 29, 2016

VIA ELECTRONIC MAIL TO:
THE FEDERAL eRULEMAKING PORTAL

VIA U.S. MAIL TO:
OFFICE OF SUPERFUND REMEDIATION AND TECHNOLOGY INNOVATION (MAIL CODE 5204P),
U.S. ENVIRONMENTAL PROTECTION AGENCY,
1200 PENNSYLVANIA AVENUE NW.,
WASHINGTON, DC 20460

Re: Docket ID No. EPA–HQ–SFUND–2010–1086;
EPA's Addition of a Subsurface Intrusion Component to the Hazard Ranking System; Proposed Rule, 81 Fed. Reg. 10372 (Feb. 29, 2016)

Dear Sir or Madam:

On behalf of the Superfund Settlements Project ("SSP"), I am pleased to submit these comments on the United States Environmental Protection Agency's ("EPA's") Notice of Proposed Rulemaking regarding the Addition of a Subsurface Intrusion Component to the Hazard Ranking System ("Proposed Rule"), 81 Fed. Reg. 10372 (Feb. 29, 2016). For the reasons set forth below, the proposed rule is a solution in search of a problem. EPA should not spend more of its limited resources on an unnecessary rule.

I. Background on the Superfund Settlements Project

The SSP is an association of major companies from many different sectors of American industry. It was organized in 1986 in order to help improve the effectiveness of the Superfund program by encouraging settlements, streamlining the settlement process, and reducing transaction costs for all concerned.

Since its formation, the SSP has provided constructive input to EPA and other federal agencies on critical policy issues affecting the cleanup of contaminated sites. SSP

representatives have also testified before Congress on many of these issues. The SSP also has played an active leadership role in the national policy debate over many Superfund issues, and has been a strong supporter of EPA's Superfund Administrative Reforms since they were announced in 1995.

The members of the SSP have extensive experience in addressing the problems presented by contaminated sites. These companies have been involved at hundreds of Superfund sites across the country over the last 25 years. As just one indicator of the scope of their experience, the members of the SSP have spent well over $6 billion to investigate and remediate contaminated sites since the federal cleanup programs began.

II. The Proposed Rule Is Unnecessary

In reviewing EPA's Proposed Rule and the limited information that EPA has made available to the public on this topic, we find no evidence to suggest that a new Hazard Ranking System ("HRS") pathway is needed for Subsurface Intrusion (SsI). EPA still has not clearly defined the specific problem that it would solve through its HRS revisions. EPA lists four reasons why it is proposing an addition to the HRS. None of these rationales survive scrutiny. We address them in turn.

1. Current HRS Does Not Provide Complete Assessment of Relevant Risk

First, EPA states that it must amend the HRS because the current HRS (40 CFR 300, Appendix A) "does not consider the threat posed by subsurface intrusion in its evaluation of relative risk posed by a site; therefore, it does not provide a complete assessment of the relative risk that a site may pose to the public." 81 Fed. Reg. 10373. While an assessment could always include more data, the current HRS identifies those sites that are the highest priority for removal and remediation. More importantly, despite spending several years developing this proposal, EPA has still failed to identify a single site that this Proposed Rule would allow to be addressed that is not otherwise already in some form of corrective action. And even if one or a handful of sites could be identified, that would hardly demonstrate that the increased expense that the Proposed Rule will generate is justified.

The impetus for this Proposed Rule is a 2010 statement by the Government Accountability Office (GAO)that is quoted in the Proposed Rule:

> EPA ***may*** not be listing some sites that pose health risks that are serious enough that the sites should be considered for inclusion on the NPL. While EPA is assessing vapor intrusion contamination at listed NPL sites, EPA does not assess the relative risks posed by vapor intrusion when deciding which sites to include on the NPL. By not including these risks, states ***may*** be left to remediate those sites without federal assistance, and

> given states' constrained budgets, some states ***may*** not have the ability to clean up these sites on their own . . . However, if these sites are not assessed and, if needed, listed on the NPL, some seriously contaminated hazardous waste sites with unacceptable human exposure ***may*** not otherwise be cleaned up.

Id. at 10381 (emphasis added). Despite four separate qualifiers, EPA appears to have taken GAO's hypothetical as a certainty, and crafted a Proposed Rule to analyze hazardous waste sites that do not exist[1]. In doing so, EPA overlooked the fact that the GAO report itself said that the intrusion issue was already being addressed[2] at 13 of the "up to 37 sites" that might be listed if VI was considered in the listing process.

The HRS, as currently designed, does a satisfactory job evaluating the relative risk posed by a site. This is clear because EPA still is unable to identify sites that do not currently score 28.5 (the HRS cutoff for placing sites on the National Priorities List ("NPL")) but would be listed under the Proposed Rule. The Proposed Rule does not identify a single site that is currently not receiving appropriate remediation because of the absence of the Proposed Rule; rather, EPA's proposal is full of speculative descriptions of what "might" be the case at various sites and why the Proposed Rule "may" or "might" be impactful.

To the contrary of such speculation, sites with vapor intrusion that pose a significant threat to human health or the environment are already in the Superfund pipeline. Thus, they are being addressed — either through removal or remedial actions or state programs -- even without a separate HRS pathway that allows scoring for vapor intrusion issues. Despite initial claims that dozens of contaminated sites could not be listed on the NPL unless the

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[1] While the Proposed Rule is cast as necessary to address "Subsurface Intrusion" broadly, it is clear that the Agency's justification for the Proposed Rule, such as it is, depends fundamentally on stated concerns about vapor intrusion. For example, the Agency states it has identified a total of 1080 sites that may or may not qualify for the NPL and which are "suspected" of having a potential subsurface intrusion problem, of which all but seven are vapor intrusion sites. 81 Fed. Reg. at 10374. Thus, the soundness of this Proposed Rule clearly rises or falls on whether the Proposed Rule will do anything meaningful or necessary to address vapor intrusion issues. We consequently focus the bulk of our comments on that question. We do note, however, that the implications of the SsI assessment being focused on non-vapor intrusions are potentially enormous and unacknowledged. First, the proposal provides no serious justification for the idea that metals or other residues left behind due to SsI present regular and serious risks. And, were that proposition true, the implications for various federal programs would be staggering – for example, what would be the implications for FEMA and related disaster agencies when dealing with inundations of homes due to floods occurring near a Superfund site? Similarly, should HUD or other public housing authorities be expected to test their housing after the water table has had a sustained rise? The fact that such activity does not currently readily occur demonstrates how unlikely such risks really are and why the SsI pathway will contribute nothing of consequence to environmental protection.

[2] See "EPA's Estimated Costs to Remedial Existing Sites Exceed Current Funding Levels," GAO-10-380, p. 37, (May 2010).

HRS is amended, public comments filed with EPA have only ever specifically identified one (1) such site: the Garfield Ground Water Contamination site in New Jersey.

This site provides no support for EPA's Proposed Rule for two different reasons: it is not a vapor intrusion site and therefore demonstrates nothing about the need to address vapor intrusion through the Superfund program and it is a site that has been listed under the current system, demonstrating that a SsI scoring pathway is not necessary. According to EPA, at the Garfield Site groundwater is flooding basements in some homes and leaving behind hexavalent chromium in the form of crystals or dust. This is not a "vapor intrusion" problem by any means. Vapor intrusion is the migration of volatile compounds from the subsurface into overlying buildings.[3] Crystals and dust are not "vapor," and hexavalent chromium is ordinarily not a volatile compound. Moreover,, EPA listed the Garfield Ground Water Contamination site on the NPL, *see* 76 Fed. Reg. 57662 (September 16, 2011), despite the lack of any SsI pathway in the HRS, relying on groundwater issues and relying on the current scoring method. Thus, this site provides no support for EPA's claim that a new scoring pathway is needed.

2. "Substantial" Popular Support for the Proposed Rule

Second, EPA indicates it issued this Proposed Rule "because of the substantial public support for this action." *Id.* at 10374. Popular support, of course, does not itself give an agency authority to issue new regulations, nor does it necessarily suggest that government action is prudent. An agency that acts simply due to the volume or number of commentators, rather than due to the logic and legitimacy of the arguments presented, is by definition acting arbitrarily and capriciously. Indeed, even thoughtful public support can be based on incorrect information. At EPA's February 24, 2011 public listening session, one New Jersey community group spoke at length of its support for listing the Pompton Lakes site on the NPL, and comments addressed to the Pompton Lake site make up a substantial percentage of the 40 supportive comments that EPA cites (see below). The Pompton Lakes site, however, is already being addressed under the RCRA Corrective Action program. Listing Pompton Lakes on the NPL would not provide a faster remedy or a better remedy. EPA Region 2 distributed a fact sheet on the site, making exactly this point.[4]

Even accepting, *arguendo*, that "substantial public support" is a valid reason for rulemaking, the popular support reflected in the record is not "substantial". EPA cites a total of 40 comments received after its Notice of Opportunity for Public Input (76 FR 5370,

[3] OSWER Draft Guidance for Evaluating the Vapor Intrusion to Indoor Air Pathway from Groundwater and Soils (Subsurface Vapor Intrusion Guidance), EPA530-02-004 (Nov. 2002).

[4] U.S. EPA, Qs & As on RCRA vs. CERCLA at the DuPont Pompton Lakes Works Site (Feb. 2011), *available at* http://www7.nau.edu/itep/main/HazSubMap/docs/RCRA-CERCLA/RCRAvsSuperfund_factsheet.pdf.

January 31, 2011) and four public listening sessions. Of these 40, an unspecified "majority" were supportive. Five states and two tribes submitted comments in support, and the Association of State and Territorial Solid Waste Management Officials (ASTSWMO) compiled and presented input from 14 states, which showed that only 13 states supported this action. Comments opposing the HRS addition were "in general" from industry representatives but clearly also came from at least one state[5] and others. In short, despite EPA's language purporting to show "substantial public support," at most there are only 30% of states, 2 tribes, and a small number of environmental groups and individuals that support such action. This is hardly a public mandate.

Perhaps more importantly, there is considerable opposition to this proposal. Comments opposing the proposed rule were submitted by the U.S. Department of Defense and trade associations and industry groups that collectively represent thousands of manufacturers and utilities. After enumerating the types of entities that submitted comments in support of the rule, EPA dismisses the opposing comments with a single sentence: "The comments opposing the HRS addition were, in general, from industry representatives." 81 Fed. Reg. at 10374. That is, of course, simply wrong to the degree it ignores the Department of Defense. More generally, the dismissive attitude reflected in that statement calls into question EPA's objectivity in reviewing the comments that oppose the proposal.

3. Large Scope of Vapor Intrusion Problem

Third, EPA states that there is a need for the Proposed Rule because "EPA evaluated the need for this proposed addition to the current HRS by identifying the scope of the subsurface intrusion contamination problem. These efforts to identify and classify sites that ***may*** pose a subsurface intrusion threat have resulted in the identification of 1,073 sites that ***may or may not*** qualify for the NPL but are suspected of having vapor intrusion issues." *Id.* at 10374 (emphasis added).

The Proposed Rule does not identify the 1,073 sites or provide any details about them and the methodology for identifying them is much less than what is required to genuinely identify the true problem scope. For example, "key word searches" in the SEMS system and the ATSDR account for 328 sites but for those sites there is no accompanying data. The Proposed Rule presents no information regarding the type(s) of sites, the nature or extent of any human or ecological risks posed by vapor intrusion, or the expected costs of addressing vapor intrusion. It is further surprising that EPA has found such a high number,

[5] In ASTSWMO's Comment, "State J" stated "The State recommends that VI not be included as a ranking criteria in the HRS until such time as improved predictive models can be developed that can both screen-in and screen out sites, with an adequate yet not extreme factor of safety. At the present time, predictions on VI are more art than science." Comment submitted by Charles Reyes on behalf of Mary Zdanowicz, Executive Director, Association of State and Territorial Solid Waste Management Officials (ASTSWMO), EPA-HQ-SFUND-2010-1086-0048, April 14, 2011.

considering that the GAO only stated in its report that there might be 37 sites that might be eligible for listing. At the February 24, 2011 public listening session, EPA indicated that GAO obtained this estimate by calling EPA's Regional Offices and asking each Region how many sites might be eligible for listing. Moreover, EPA's own comment concedes that these sites may not qualify for the NPL, even under the Proposed Rule. In short, the 1,073 figure is much more speculative straw man than a well-considered data point on which to justify the Proposed Rule.

The somewhat more detailed information EPA provides in the Technical Support Document as to 11 sites (see Appendix D, describing "Tier 1 Sites") also does little to support EPA's case. One groundwater case described there is on the NPL already, and EPA concedes that at five sites vapor intrusion mitigation is occurring even without this Proposed Rule. Moreover, the site descriptions routinely contain the disclaimer that "sufficient data was not provided to evaluate the ground water migration pathway, surface water migration pathway, air migration pathway or soil migration pathway of the 1990 HRS." Thus, it is entirely possible such sites would warrant listing without the Proposed Rule. Nor is there any assessment of the degree to which state programs or guidance might already be sufficient at each site. Thus, again, it appears that this Proposed Rule is a solution searching for a problem.

Of course, even if sites existed that would only be added to the NPL because of the Proposed Rule, such a site is actually likely to be a poor fit for the NPL due to the response issues that a vapor-intrusion site poses. According to GAO, "[i]ntrusion of contaminated gases into indoor air may lead to fire; explosion; and acute, intermediate, and chronic health effects."[6] Such imminent conditions as fire risk, explosion risk, and acute health effect risks obviously cannot be left in place for years during the NPL listing process, the negotiation of an administrative order for the performance of a Remedial Investigation/Feasibility Study, the conduct of the RI/FS itself, the development of a Proposed Remedial Action Plan, the selection of a remedy, the negotiation of a consent decree for performance of that remedy, and so on.

The NPL remedial program is poorly suited to address immediate or acute risks. The listing process itself often consumes several years. The RI/FS process does not begin immediately, and once it begins, it typically consumes several years more. The development of a proposed remedial action plan, and the selection of a remedy, may each take another year or two. This is simply not the way to deal with vapor intrusion that actually poses an imminent threat to human health. Even though some community groups may want to encourage the NPL listing of vapor intrusion sites — thereby triggering the

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[6] U.S. Gov't Accountability Office. *Superfund, EPA's Estimated Costs to Remediate Existing Sites Exceed Current Funding Levels, and More Sites are Expected to Be Added to the National Priorities List* (GAO-10-751) ("GAO Report") 33 (2010).

groups' eligibility for Technical Assistance Grants — the long, drawn-out process of cleaning up an NPL site is simply not well-suited to address vapor intrusion concerns.

By comparison, the response actions typically taken to mitigate vapor intrusion concerns are relatively straightforward. They certainly do not require years of costly studies under EPA oversight. Such measures include sealing potential vapor entry points, sub-slab depressurization, vapor barrier and passive venting for new construction, and (at commercial and industrial facilities) building pressurization/HVAC modifications. These mitigation activities are most often addressed under state and local programs.

4. No Other National Program Can Address This Contamination

Finally, "EPA has concluded that for non-federal facilities no other national program is able to consistently and comprehensively evaluate and, if warranted, address subsurface intrusion contamination." *Id.* at 10375. As noted above, it is not clear that there are sites with subsurface intrusion contamination that are not currently on the NPL that would only be added due to the Proposed Rule. Moreover, the idea that some amount of impactful national consistency can be brought to bear through the Proposed Rule is fundamentally at odds with EPA's further acknowledgements that EPA does not expect this Proposed Rule to result in additional site assessments being conducted; there is the possibility that increased costs due to Ssl site assessments may contribute to fewer assessments being done in the future; and that only 20 full HRS packages are annually prepared.

Further, the fundamental question as to whether an expansion is warranted does not turn on whether a "national program" exists – Congress has long-recognized, in multiple environmental statutes, that it expects a regime of cooperative federalism to govern environmental stewardship. In turn, where a problem is being effectively dealt with through other approaches, the lack of a "national program" does little to justify the step EPA proposes. Thus, even if additional sites might exist that would qualify under this Proposed Rule, such an expansion of the NPL would still take the program outside its fundamental scope or purpose and unnecessarily so.

The NPL is meant to address the sites that are the highest priorities for long-term remedial action,[7] and the HRS reflects this by weighing the "population factor" that might be affected by a potential NPL site. While vapor intrusion might sometimes affect large areas or multiple buildings, it is more often the case that vapor intrusion sites consist of a few buildings, whether they are residences or commercial buildings, with a very limited population of residents or workers. Sites in the former category will likely be captured

[7] CERCLA §105(a)(8).

under the existing HRS, whereas sites in the latter category are best dealt with under other, local corrective action programs.[8]

Consider, by way of analogy, EPA's highly selective use of Superfund program funds to address abandoned methamphetamine laboratories. These facilities are often relatively small; they affect buildings (as well as land); they release hazardous substances; and they often present both indoor air issues and the potential for explosion. Yet EPA responds to only a very small percentage of such sites, and only when local or state resources cannot address the problem.[9] Most contamination resulting from methamphetamine laboratories is dealt with on a local level, and EPA has provided guidance for local entities to address such sites.[10]

Moreover, as EPA itself demonstrated, this is an area where the States have become increasingly active. As EPA acknowledges, a 2004 state survey indicated that a majority of responding states indicated that they had only informal processes for addressing VI. Yet, by 2009, another study indicated that 9 states had vapor intrusion specific regulations, 3 more had them under development and 34 states had guidance in place or were developing it. Clearly, some 7 years later, State attention to this issue has only further increased – it appears that as many as 48 states now have some type of vapor intrusion guidance.[11] Indeed, in issuing the June 2015 OSWER vapor intrusion guidance, EPA acknowledged this widespread state activity by recommending that "state agencies . . . consider this Technical Guidance when implementing their state-specific guidance for vapor intrusion assessment."[12]

In sum, most vapor intrusion sites are being, and should be, dealt with by state and local governments, not by EPA. "Uniformity" and having a "comprehensive" federal program are not, in of themselves, goals to be achieved when that is the case. To the extent that such sites warrant federal attention, the Superfund NPL program will rarely be appropriate,

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[8] If a locality lacks funding, EPA's Local Governments Reimbursement ("LGR") program may be used. Local governments eligible to receive reimbursement of up to $25,000 under the LGR program include any general purpose unit of local government, such as a county, parish, city, town, township, and municipality, that wants to address the release or threatened release of hazardous substances.

[9] *See, e.g.*. Testimony of James MacDonald, Federal On-Scene Coordinator, EPA, Before the Subcommittee on Criminal Justice, Drug Policy and Human Resources Committee on Government Reform. United State House of Representatives. June 28, 2004.

[10] EPA. Voluntary Guidelines for Methamphetamine Laboratory Cleanup. March 2013 *available at*: https://www.epa.gov/sites/production/files/documents/meth_lab_guidelines.pdf.

[11] Presentation by L.C. Levy, Gradient Corporation, to the Northeast Waste Management Officials Association Webinar (August 14, 2012). Available at http://www.newmoa.org/events/docs/39_41/VI_GuidanceWebinarAugust2012.pdf.

[12] OSWER Technical Guide for Assessing and Mitigating the Vapor Intrusion Pathway from Subsurface Vapor Sources to Indoor Air, OSWAR Publication, 9200.2-154, p.7, fn. 28.

because it simply does not provide the rapid response that is needed. There are exceptions, and those sites are apt to be listed due to other concerns, such as ground water contamination. Because few vapor intrusion sites belong on the NPL, opening up the HRS for this purpose is unwarranted.

III. Superfund Cannot Readily Accommodate a Large Number of New Sites

The Proposed Rule speculates that as many as 1,073 different sites are "suspected of having vapor intrusion issues" of a type that "may or may not" qualify for being added to the NPL. As noted above, such limited analysis of such speculative claims hardly justifies a significant revision to the listing process. Moreover, in the unlikely event that those sites have vapor intrusion, how will EPA manage the additional workload? Currently, many high-priority and high-cost NPL sites await remedy selection and construction completion. Many of these projects are progressing far more slowly than EPA's critics, some of whom commented in support of this Proposed Rule, would like. The Superfund program already has its hands full addressing its current workload, and it does not have surplus financial or manpower capacity for new discretionary projects.

The Superfund appropriation has remained essentially flat and, based on current budgetary constraints, will likely remain flat for the foreseeable future. Under the circumstances, it would be self-defeating for Superfund to take on a new, ill-defined universe of vapor intrusion sites. Each new site added to the NPL will effectively impose significant long-term financial obligations on the already-strained Superfund budget, long before any appropriation is in place for the out-years.

Every new site added to the NPL inevitably diverts resources from other sites, and thereby delays the completion of other high-priority projects. EPA has made it clear that Superfund should not be the "go-to program" for all contaminated sites, because the NPL is "the tool of last resort." *See, e.g.*, U.S. General Accounting Office, GAO/RCED-97-20, *Superfund: Times to Complete the Assessment and Cleanup of Hazardous Waste Sites* 41 (March 1997) (EPA's Detailed Comments on the Draft Report). Flooding the NPL with new vapor intrusion sites that can be, and are being, dealt with through other approaches would be a poor use of Superfund's limited resources and would compromise the program's overall performance.

IV. The Proposed Rule Would Prioritize Non-Drinking Water Sites

At a July 14, 2015 meeting with EPA and OMB officials to discuss the possibility of a Proposed Rule, SSP learned that a primary objective of this rulemaking is actually <u>not</u> to address vapor intrusion *per se*. Rather, the goal is to address ground water contamination at sites that currently score too low for listing because <u>no current or future drinking water supplies are affected</u>. In other words, the goal is to expand the focus of Superfund to

address sites where the ground water is not being used, and is not expected to be used, for drinking water purposes. No justification has been provided for why such non-drinking groundwater should be an area of high priority, as is implicit in a site becoming an NPL-listing.

As EPA has noted "SARA requires that EPA give high priority to sites that have led to closing of drinking water wells or contamination of principal drinking water supplies." Hazard Ranking System, Final Rule, 55 Fed. Reg. 51532, 51547. However, the Proposed Rule states, for the first time, that "The HRS presently does not consider the threat posed at sites by subsurface intrusion problems and direct human exposure, when ground water is not being used as a drinking water source or surficial soils are not contaminated. If promulgated, this proposed rule will for the first time allow the EPA site assessment program to address sites with only subsurface intrusion issues and no coincidental exposure." 81 Fed. Reg. 10375. Raising non-drinking water sources to the priority level of drinking water sources would be a big change from the current HRS, which prioritizes ground water that is a potential source of drinking water. If EPA believes there is a case to be made for changing the priority status, then it should make that case in a transparent manner. EPA has not done that.

As noted above, the Superfund program already struggles to make adequate progress toward its top-priority objective, i.e., selecting remedies and completing cleanups at the hundreds of as-yet-unfinished NPL sites. EPA is criticized each year for not having achieved enough "construction completion" milestones. Adding lower-priority sites to the NPL would make things worse, not better. Every new site added to the NPL diverts resources from other sites, and delays the completion of other, higher-priority sites.

V. EPA's Reassurances Are Misplaced

In addition to the EPA's affirmative statements as to why the Proposed Rule is necessary, the EPA has offered an additional set of assurances as to what the Propose Rule will not do; assurances that cannot be reconciled with EPA's own description. These provide further reason not to move forward. First, and contrary to the assurances that the Proposed Rule will not result in substantial numbers of new listings, the Proposed Rule appears to have an implicit, unjustified bias toward inferring that contamination is present. In particular, the preamble to the Proposed Rule suggests that occupants of structures within an area of subsurface contamination (ASC) can be included as potential exposure targets, even where existing data indicates that there are no documented exposures. Moreover, this appears directly contrary to Section 5.2.1.1.2.1, which states that populations in structures that show no possible SsI route will not be evaluated under the new SsI component. Similarly, for the HRS worksheets, using hypothetical formulas and county household estimates to estimate "population" related to "regularly occupied structures" may produce similar bias.

Second, the Proposed Rule has the potential to greatly increase the level of effort required to score a site, contrary to EPA's assurance that the new SsI component will not result in substantial additional costs and will not significantly complicate site evaluations. In fact, that appears to be a very direct and real risk, given that the EPA appears also to be suggesting that the scoring methodology turns heavily on identifying Areas of Observed Exposure (AOE), in addition to the ASC areas mentioned above. Determining whether an area is an AOE is likely to include indoor air sampling and background air sampling, while setting the boundaries of an ASC is likely to include both groundwater and soil vapor sampling. Each of these will likely involve effort beyond what is currently required for a typical preliminary assessment. Moreover, conducting indoor air sampling in a manner that avoids false positives from other indoor sources or significant outdoor sources, identifying an appropriate number of samples and similar questions all will themselves require effort that is beyond the normal for this stage of the listing process. Finally, EPA must be mindful that even if the HRS addendum only scores significantly those structures that are currently regularly occupied, later assessments as to a listed site might require evaluation of future hypothetical exposures that could occur, dramatically increasing data collection burdens and costs.

Third, it is impossible to square EPA's justification of this Proposed Rule through EPA's reference to 1,073 potential sites with EPA's competing claims that this action will not have significant resource implications. Certainly EPA will have to devote some resources to assessing those 1,073 sites, if simply just to prioritize within them as to what sites will then get more attention for potential scoring. But that sorting alone, especially given the number of sites identified and the apparent paucity of existing information for hundreds of them, signals a major resource investment by the Superfund program to develop sufficient information and then conduct the review required. This necessarily must come at the expense of better priorities. In sum, the resource implications of the Proposed Rule appear to be much greater than EPA has acknowledged. When those are taken properly into account, the Proposed Rule founders even further in its rationale.

VI. Conclusion

The Proposed Rule does not constitute sound public policy. Adding vapor intrusion sites to the NPL would be an arduous undertaking that would consume millions of dollars, require multiple FTEs, and add to the cost and expense of future HRS-assessments, but likely yield few or no benefits. The Superfund NPL process, with its lengthy studies, protracted investigations, and adversarial process, is not at all well-suited to address most vapor intrusion sites. Most vapor intrusion sites are appropriately dealt with, and more expeditiously, by state and local government corrective action programs than by Superfund. Because EPA has failed to demonstrate that there is a problem, and that listing vapor

intrusion sites on the NPL will solve that problem, EPA should not finalize the Proposed Rule.

Sincerely,

Ronald J. Tenpas
Counsel to the Superfund Settlements
Project

Morgan Lewis

Ronald J. Tenpas
Partner
+1.202.739.5435
ronald.tenpas@morganlewis.com

March 27, 2017

VIA U.S. MAIL

The Honorable E. Scott Pruitt
Administrator
US Environmental Protection Agency
1200 Pennsylvania Avenue, NW
Washington, DC 20460

Re: Docket ID No. EPA-HQ-OAR-2002-0021
National Emission Standards for Hazardous Air Pollutants; Site Remediation Proposed Rule, Notification of Reconsideration of Final Rule
81 Fed. Reg. 29821 (May 13, 2016)

Dear Administrator Pruitt:

The Superfund Settlements Project ("SSP")[1] and the RCRA Corrective Action Project ("RCAP")[2] would like to bring to your attention a proposed rule that warrants your close scrutiny. In May 2016, the United States Environmental Protection Agency ("EPA")

[1] The SSP is an association of major companies from many different sectors of American industry. It was organized in 1986 in order to help improve the effectiveness of the Superfund program by encouraging settlements, streamlining the settlement process, and reducing transaction costs for all concerned. Since its formation, the SSP has provided constructive input to EPA and other federal agencies on critical policy issues affecting the cleanup of contaminated sites; SSP representatives also have testified before Congress on many of these issues. The SSP has played an active leadership role in the national policy debate over many Superfund issues, and has been a strong supporter of EPA's Superfund Administrative Reforms since they were announced in 1995.

[2] RCAP was established in 1988 by a group of concerned Fortune 50 companies in the wake of EPA's earliest draft corrective action regulatory proposals. RCAP has two main purposes. One is to advocate cleanup standards and procedures that achieve environmental benefits in a risk-based and cost-effective manner. The second is to provide unique opportunities to stay informed on critical issues and strategies through informed discussions among RCAP members and with senior EPA and state leadership and staff, as well as through special presentations at RCAP meetings.

published the Proposed Rule and Reconsideration of Final Rule regarding the National Emission Standards for Hazardous Air Pollutants ("NESHAPs") for the Site Remediation source category, 81 Fed. Reg. 29821 (May 13, 2016). EPA has proposed to remove the NESHAP exemption for site remediations conducted under the authority of the Comprehensive Environmental Response, Compensation and Liability Act ("CERCLA") and the Resource Conservation and Recovery Act ("RCRA"). Eliminating the exemption will subject such remediation sites to new regulatory burdens and expense. EPA has made its proposal despite EPA itself admitting that **"[w]e do not anticipate any [Hazardous Air Pollutant ("HAP")] emission reductions from the proposed removal of the RCRA/CERCLA exemption."** Thus, by the Agency's own description, this is a proposed rule that, if finalized, would impose new regulatory burdens yet achieve no environmental benefit.

In turn, this proposal is precisely the type of regulatory action that the President is seeking to avoid, eliminate or reverse through his two recent Executive Orders on regulatory reform. See Presidential Executive Order of January 30, 2017, Presidential Order on Reducing Regulation and Controlling Regulatory Costs; Presidential Executive Order of February 24, 2017, Presidential Executive Order on Enforcing the Regulatory Reform Agenda. We therefore urge the Agency to refrain from finalizing the proposed Rule.

As detailed in the enclosed comments on the proposed rule, there is no statutory, regulatory or reasonable basis for removing the exemption. In making its proposal, EPA misread the statute, failed to consider all the impacts of the proposed rule, and vastly underestimated the number of sites impacted by the rule. In fact, there are numerous reasons to maintain the exemption, most importantly because removal of the exemption will have no environmental benefit (because HAP emissions are already appropriately addressed by the CERCLA and RCRA program) while adding to the regulatory burden, a burden EPA greatly underestimated in making its proposal. SSP and RCAP are not alone in this view – the proposal was met with many parties commenting and critiquing the EPA's reading of its regulatory obligations, its estimates related to the burdens that would result if the exemption were lost and EPA's associated rationale for the proposal.

SSP and RCAP respectfully encourage EPA not to finalize the proposed rule and maintain thereby maintain the existing exemption. Thank you for your attention to this matter. I, or members of SSP or RCRAP, would be pleased to speak with your staff or to otherwise provide assistance.

Sincerely,

Ronald J. Tenpas
Counsel to the Superfund Settlements Project
and RCRA Corrective Action Project

cc: Don Benton
Senior White House Advisor
(Via e-mail at benton.donald@epa.gov)

Sarah Rees, Director, Office of Regulatory Policy and Management
Office of Policy
Environmental Protection Agency
(Via e-mail at rees.sarah@epa.gov)

Morgan Lewis

John McGahren
Partner
+1.609.919.6641
john.mcgahren@morganlewis.com

Ronald J. Tenpas
Partner
+1.202.739.5435
ronald.tenpas@morganlewis.com

July 27, 2016

VIA ELECTRONIC MAIL TO:
THE FEDERAL eRULEMAKING PORTAL

Re: Docket ID No. EPA-HQ-OAR-2002-0021
National Emission Standards for Hazardous Air Pollutants; Site Remediation Proposed Rule, Notification of Reconsideration of Final Rule
81 Fed. Reg. 29821 (May 13, 2016)

Dear Sir or Madam:

On behalf of the Superfund Settlements Project ("SSP") and the RCRA Corrective Action Project ("RCAP"), we submit these comments on the United States Environmental Protection Agency's ("EPA's") Proposed Rule and Reconsideration of Final Rule regarding the National Emission Standards for Hazardous Air Pollutants ("NESHAPs") for the Site Remediation source category, 81 Fed. Reg. 29821 (May 13, 2016) (the "proposed rule"). For the reasons set forth below, SSP and RCAP believe there is no statutory, regulatory or reasonable basis for removing the NESHAP exemption for site remediations conducted under the authority of the Comprehensive Environmental Response, Compensation and Liability Act ("CERCLA") and the Resource Conservation and Recovery Act ("RCRA"). To the contrary, there are numerous reasons to maintain the exemption, most importantly because removal of the exemption will have no environmental benefit and only add to the administrative burden of regulated entities, a burden greatly underestimated by EPA in the proposed rule. EPA itself states in the proposed rule, **"We do not anticipate any [Hazardous Air Pollutant ("HAP")] emission reductions from the proposed removal of the RCRA/CERCLA exemption."**

The proposed rule, which would amend the Site Remediation NESHAP to change the description of the members of the Site Remediation source category, was issued in

response to a petition for reconsideration of the Site Remediation Rule (40 CFR Part 63, Subpart GGGGG). As described in more detail below, the petition for reconsideration, and thereby EPA's granting of the petition's request through the proposed rule, is based on an incorrect reading of EPA's authority under Section 112 of the Clean Air Act, EPA's development of the Section 112 source categories and EPA's long-standing practices with respect to the identification of the source categories and their members.

The SSP is an association of major companies from many different sectors of American industry. It was organized in 1986 in order to help improve the effectiveness of the Superfund program by encouraging settlements, streamlining the settlement process, and reducing transaction costs for all concerned. Since its formation, the SSP has provided constructive input to EPA and other federal agencies on critical policy issues affecting the cleanup of contaminated sites; SSP representatives also have testified before Congress on many of these issues. The SSP has played an active leadership role in the national policy debate over many Superfund issues, and has been a strong supporter of EPA's Superfund Administrative Reforms since they were announced in 1995.

RCAP was established in 1988 by a group of concerned Fortune 50 companies in the wake of EPA's earliest draft corrective action regulatory proposals. RCAP has two main purposes. One is to advocate cleanup standards and procedures that achieve environmental benefits in a risk-based and cost-effective manner. The second is to provide unique opportunities to stay informed on critical issues and strategies through informed discussions among RCAP members and with senior EPA and state leadership and staff, as well as through special presentations at RCAP meetings.

The members of the SSP and RCAP have extensive experience in addressing the problems presented by contaminated sites. These companies have been involved at hundreds of Superfund sites and RCRA corrective actions across the country over the last 25 years.

EPA's Analysis of the Petition for Reconsideration is Incorrect

As an initial matter, there is the question as to whether the petition for reconsideration should have even been entertained. The petition complains that the petitioners did not have the opportunity to comment on EPA's determination that CERCLA and RCRA are "functional equivalents," stating that this was a "new argument" for the exemption set forth in the preamble to the final rule. In the original proposed rule, however, EPA stated its reasons why the exemption was included, and that language clearly concluded that the CERCLA and RCRA programs address air emissions from those activities in a manner that satisfies the MACT standards. Specifically, EPA stated it believed the CERCLA and RCRA programs "are the most appropriate, comprehensive and effective regulatory approach to address air emissions resulting from site remediation activities at sites addressed using CERCLA authority and RCRA corrective action sites," 67 Fed. Reg.

49406 (July 30, 2002), and that the "statutory directives under RCRA and CERCLA direct us to address the control of air emissions," 67 Fed. Reg. 49413 (July 30, 2002). That EPA used different language, calling the CERCLA and RCRA programs the "functional equivalent," did not deprive the petitioners of an opportunity to comment. The original proposed rule clearly set forth the details of why those programs provide the functional equivalent of the establishment of MACT standards.

Despite over a decade having passed since EPA provided notice that the Site Remediation source category does not include CERCLA and RCRA cleanups and the regulated community relying on that long-standing determination, EPA, nevertheless, considered the petition and now has proposed to include CERCLA and RCRA sites within the source category by removing what it describes as an exemption for RCRA and CERCLA site remediations. The effect of the removal would result in any site remediation conducted under the authority of CERCLA or RCRA being affected by the Site Remediation NESHAP, whether that be undertaking an applicability determination, or complete compliance with MACT, or something in between.

The petition and EPA's response through the proposed rule incorrectly characterize the source category identification process under Section 112. Congress tasked EPA with publishing a list of categories of major sources and area sources of the hazardous air pollutants listed in Section 112(b) of the Clean Air Act. See 42 U.S.C. §7412(c)(1). EPA, in response to that mandate, published its initial list of source categories on July 16, 1992 and included "Site Remediation" on that initial list. 57 Fed. Reg. 31576, 31591 (July 16, 1992). That initial list and its two-word identification of the site remediation source category, however, was not intended to be the final determination of the Section 112 source categories or the members of those categories. Congress mandated that EPA "shall" revise the list from time to time but no less often than every eight years. 42 U.S.C. §7412(c)(1). EPA properly exercised its statutory authority and fulfilled this mandate in 2003 when it defined the Site Remediation category to exclude cleanups conducted pursuant to CERCLA and RCRA while promulgating emission standards for the Site Remediation category. See 68 Fed. Reg. 58191-58192 (Oct. 8, 2003).

EPA's listing of the source categories in 1992 was not a final identification of all members of the source categories that would be subject to the emission standards developed under section 112(d). Rather, EPA stated that "the Agency considers the listing of categories of sources under section 112(c)(1) to be an ongoing process," referenced its obligation to revise the list, and stated that information gathered during the regulatory development process may result in changes to the list. 57 Fed. Reg. 31576, 31577. EPA conceded in 1992 that it was forced to list broad categories of major and area sources because "the Agency has too little information." 57 Fed. Reg. at 31580. EPA proceeded with this broad, over-inclusive approach because the information gathering processes under Section 112 and its ability to revise the list would enable the Agency to appropriately tailor the

program. See id. "The Agency recognizes that these descriptions, like the list itself, may be revised from time to time as better information becomes available. The Agency intends to revise these descriptions as part of the process of establishing standards for each category." Id. at 31590. EPA defining the Site Remediation category to exclude CERCLA and RCRA cleanups during the promulgation of emission standards for the category is consistent with its statutory authority and mandate,[1] and the Agency provided notice as early as 1992 that it intended to make such revisions.

In the proposed rule, EPA provides only a conclusory statement as to why EPA believes adding CERCLA and RCRA cleanups to the Site Remediation NESHAP through the removal of the exemption is necessary, stating simply that:

> Once the EPA has listed a source category under CAA section 112(c)(1), CAA section 112(c)(2) requires the EPA to establish emissions standards under CAA section 112(d) for the source category or subcategory. The EPA, thus, has an obligation to extend its existing technology-based NESHAP to establish emission standards for all such sources in the Site Remediation source category, including those conducted under the authority of CERCLA and RCRA, under CAA section 112(d).

81 Fed. Reg. 29824 (May 13, 2016). EPA's current view that once it lists a source category under 112(c)(1) it can do nothing other than establish emission standards for all sources within the category is inconsistent with the Agency's statutory authority. In 2005, EPA described the Section 112 process as follows:

> In terms of the first step, Congress required EPA to publish a list of categories and subcategories of major sources and area sources by November 15, 1991. (See CAA 112(c)(1) &(c)(3).) Congress further directed EPA to revise this initial list periodically, based on, for example, new information.

70 Fed. Reg. 15994 – 95 (March 29, 2005). Although Section 112(d) requires EPA to establish emission standards for each category and subcategory, that statutory obligation does not over-ride its statutory duty to revise the categories and subcategories where

[1] Congress foresaw the potential conflicts that may arise from regulating air emissions at complex sites with hazardous waste, and so specifically provided that EPA shall ensure, to the maximum extent practicable, that the regulation of air emissions under Section 112 of the Clean Air Act was consistent with the regulation of emissions under subtitle C of the Solid Waste Disposal Act. See 42 U.S.C. 7412(n)(7).

appropriate, which necessarily would include removing specific activities from a category. EPA cannot interpret Section 112(d) so as to nullify its obligations under Section 112(c)(1) to revise the categories. Instead, these sections go hand in hand. When promulgating emission limits, EPA will develop new information regarding the source category, such as where emissions are adequately addressed like in this case, resulting in a necessary and reasonable change to the members of the category. That the final members of a source category would not be determined until emission standards are published is consistent with section 112 and rational since one cannot challenge the listing of the source category but only challenge the NESHAP rule for an affected source.

EPA's ability to remove specific sources and activities from the source categories and subcategories is a part of its implementation of the NESHAPs program.[2] EPA, for example, excluded from the Site Remediation Rule remediation at gasoline service stations associated with a leaking underground storage tank, remediation conducted at residential sites, and remediation at farms after EPA had listed the Site Remediation category in 1992. See 67 Fed. Reg. 49398, 49400 (July 30, 2002). EPA's removal of CERCLA and RCRA remediation from the Site Remediation category was consistent with its statutory authority and prior implementation of Section 112. Accordingly, it is arbitrary, capricious and an abuse of EPA's discretion to now propose to include CERCLA and RCRA cleanups in the Site Remediation category when other exemptions remain and where EPA has the proper authority to exclude them.

Moreover, Section 112 does not require CERCLA and RCRA cleanups to be a part of a source category. Congress cautioned EPA against applying Section 112 too broadly by requiring that the categories and subcategories listed under Section 112 be consistent with the source categories under the New Source Performance Standards ("NSPS") under Section 111 to the extent practicable. 42 U.S.C. §7412(c)(1). CERCLA and RCRA cleanups are not NSPS categories, and EPA has articulated no health or environmental benefit that otherwise would result from including them in a Section 112 category.

If EPA persists in maintaining the exemptions cannot be legally sustained simply because they have a source category that covers all remediations and all remediation sources therefore must be regulated, then EPA should revise the Site Remediation source category to redefine the category rather than including sources that are already adequately regulated and the additional proposed regulation of which will not confer environmental benefit. Where, as here, including certain sources in a regulatory program would produce no environmental benefit, the sensible response would be to define the category to exclude

[2] Excluding CERCLA and RCRA cleanups from the Site Remediation category is not the deletion of a source category, which would be subject to the deletion process in Section 112(c)(9), because the Site Remediation source category remains on the Section 112(c)(1) list of source categories.

those sources, not mindless imposition of new regulatory burdens through adherence to a prior category description that had not been fleshed out with all relevant information.

No Environmental Benefit Will Result from the Rule

EPA's own analysis indicates that there will be no HAP emission reductions from the proposed removal of the RCRA/CERCLA exemption. That EPA anticipates no reduction in HAP emissions from the proposed rule is not surprising given that RCRA and CERCLA site remediations are already subject to strict oversight and regulation by the agency, and any air emissions from those site remediations are addressed through those programs and permitting (or permit equivalents). EPA thoroughly evaluated whether RCRA and CERCLA site remediations should be included in the rule when originally promulgated, stating:

> [W]e view the Superfund program under CERCLA and the hazardous waste corrective action program under RCRA as the functional equivalents of the establishment of MACT standards under CAA section 112. These programs, as part of the ROD process for Superfund cleanups and the RCRA permitting process for corrective action cleanups, require consideration of the same HAP emissions that we do in establishing MACT standards, and provide opportunity for public involvement in these site-specific remediation determinations.

68 Fed. Reg. 58176 (Oct. 8, 2003). EPA concluded that the CERCLA and RCRA programs provide "an appropriate and effective regulatory approach to address air emissions from those remediation activities." 68 Fed. Reg. 58183 (Oct. 8, 2003).

The proposed rule provides no new information to change those conclusions. To the contrary, the original evaluation remains correct, and RCRA and CERCLA effectively address air emissions from activities conducted thereunder, providing both equivalent environmental protection and robust regulatory oversight.

Removing the exemption from the NESHAP rule for site remediation activities performed under the authority of CERCLA would not result in any practical effect on site cleanup because Section 121(e) of CERCLA separately exempts such activities from the permitting requirements this proposal seeks to apply. The CERCLA exemption relieves parties from permitting requirements, including administrative and reporting requirements, but requires parties to meet the substantive technical requirements such as, in this case, certain air emission controls. Under CERCLA, remedial actions must address ARARs and, accordingly, will satisfy Clean Air Act requirements. In fact, because CERCLA requires

consideration of not only "applicable" but also "relevant and appropriate" requirements, CERCLA sites may be subject to a higher level of protection than facilities regulated under a single medium program. Thus, CERCLA sites are already meeting the substantive goals of the NESHAP rule while the regulated community is complying with the regulatory oversight, reporting and recordkeeping requirements of the CERCLA program. Thus, as EPA has concluded, the CERCLA program is the "functional equivalent" of the NESHAP program.

The RCRA Corrective Action program similarly is the "functional equivalent." RCRA Corrective Actions are required to clean up sites consistent with available, protective, risked-based cleanup standards. 61 Fed. Reg. 19449 (May 1, 1996). Clean up must also prevent transfer of unacceptable concentrations of contaminants from other media to air. 61 Fed. Reg. 19448, 19450 (May 1, 1996). Cleanups are governed by permits or orders providing oversight and recordkeeping and reporting requirements.

As admitted by EPA, the proposal is regulation for regulations' sake, with no benefit. Accordingly, the proposal is in direct conflict with Executive Order 13610 which directs agencies to identify and reduce regulatory burden. Executive Order 13610 seeks to "reduce unjustified regulatory burdens and costs." Our members' facilities are subject to a complex and comprehensive array of environmental regulations, including those addressing site remediations, that are designed to control organic hazardous air pollutants such as the Benzene Waste Operations NESHAP, RCRA Subparts AA, BB, and CC organic emission controls, and other Title V permit provisions. To require compliance with another regulation that has no environmental benefit will not achieve the statutory and regulatory goals but rather will divert staff and resources from other substantive compliance programs that do achieve benefit.

EPA Failed to Consider All Impacts of the Proposed Rule

SSP and RCAP believe the regulatory burden is far greater than identified by EPA, particularly in the impacts on individual facilities. For example, most active and inactive petroleum refineries are subject to some form of RCRA corrective action pursuant to a RCRA operating permit, post-closure care permit, or administrative order, and each facility may contain numbers of Solid Waste Management Units (SWMUs) and Areas of Concern (AOCs) that range from the tens to hundreds. Groundwater itself may be a separate SWMU or AOC in some of these facilities. The proposed removal of the exemption could very well bring the following examples of refinery activities into the Site Remediation rule because they are either directly associated with RCRA corrective action or because the particular facility has a RCRA permit or administrative order that broadly includes or requires the following activities:

- Recovery of groundwater that is comprised of phase-separated hydrocarbons and/or dissolved phase liquids typically would be returned to slop oil tankage. The slop oil system is primarily used for recycling oily waste and residues from routine equipment maintenance, e.g., tank bottoms, which are not defined as remediation material per the Site Remediation rule. If the phase separated hydrocarbon is commingled in the slop oil system, is each tank and associated pumps and piping subject to the Site Remediation rule? The alternative of segregating slop oil systems into rule and non-rule equipment to facilitate recordkeeping and reporting would be costly and unnecessary.

- The dissolved-phase of extracted groundwater in the above-scenario is typically sent to the process sewer system. The process sewer system also receives liquids generated from centrifuging oily spill materials, some of which may be subject to reporting and supervision under a RCRA permit or order. Components of the process sewer, e.g., individual drain lines and separators, are already subject to the Benzene Waste NESHAP. Extension of the Site Remediation rule to these components would duplicate the extensive and complex reporting and recordkeeping already required, and could include additional controls not even justified under the Benzene Waste NESHAP.

- With respect to process sewers, the Site Remediation rule could be construed as including the washing or returning of individually insignificant organic spill liquids to the sewer (potentially subject to RCRA permit conditions for spill reporting and clean-up). Sewers are included in the Site Remediation rule definition of an "individual drain system" used for "discharge" or "disposal" of fluids. See 40 CFR 63.7957. The consequence is that such drain systems would be regulated as part of a "transfer system." See 40 CFR 63.7915 *et seq.*; see also 40 CFR 63.7936(b)(3)(i) (discharge of liquid "remediation material" to a publicly owned treatment works requires at least one, and possibly multiple, notices).

- Dump trucks that haul remediation materials are included in the existing definition of a container. 40 CFR 63.7957. Vacuum trucks that pick up spill materials (potentially covered under general clean-up obligations of a RCRA permit or order) for transport to the slop oil system, sewers, or other locations could be encompassed by the expansion of the Site Remediation rule.

- Stabilization and other forms of treatment of organic remediation materials and spills in containers is often a practical, technically effective, and cost-effective way to manage remediation materials, including spill residues, for prompt disposition. The containers may be RCRA 90-day units subject to Subpart CC air emission controls, but are not necessarily so, i.e., if the materials are not RCRA-hazardous. The level of effort required to include each such activity/event in the determination

of applicability of an expanded Site Remediation rule and, if so, associated recordkeeping will impose a regulatory burden that is simply not justified.

- On-site thermal desorption of RCRA corrective action wastes and other organic-contaminated environmental media is a demonstrated technology. Under the expanded Site Remediation rule, such technology, including, without limitation, conveyance chutes, belts, conveyors, process vents, and residuals management containers could potentially be included despite the fact that such equipment would have already required to be included in a Clean Air Act permit or subject to other air emission control requirements. This duplicative regulatory burden imposed by the expanded Site Remediation rule is unnecessary and could discourage practical technologies for environmental remediation.

RCRA Corrective Actions implemented at operating industrial facilities under a permit or order are typically extremely complicated, have existing administrative processes and can take years or decades to complete. EPA had previously acknowledged that adding HAPs managed during the remediation process may add complexity and unnecessary cost to ongoing industrial operations at the property. For example, removal of HAP contaminated soil associated with a former leaking underground storage tank to a landfill may trigger the operating facility to become a major source of HAP, thus requiring new and unnecessary MACT emission controls on sources that otherwise would be minor in nature. Given the length of time it takes to complete "all remediation at the property," the criteria EPA specifies for the application of this NESHAP rule, this could require long-lasting and unnecessary emission controls and operational complexity at the industrial facility for years or decades.

Applying the NESHAP Site Remediation Rule to CERCLA and RCRA sites associated with industrial operations would, thus, discourage active remediation that could trigger a major HAP source designation. Implementing parties would be incentivized to avoid or delay conducting active remediation that could lead to the facility operations being designated as a major HAP source solely due to the remediation.

Application of the rule may also adversely affect the marketability of CERCLA and RCRA sites as brownfield redevelopment properties. Potential buyers may seek sites that do not have ongoing CERCLA or RCRA remediation that would incrementally add to their minor HAP emission calculations from facility operations and potentially result in them being required to install MACT emission controls on their otherwise low HAP emissions simply because of an ongoing remediation outside of their control.

<u>EPA Significantly Underestimates the Number of Sites Impacted by the Proposed Rule</u>

EPA has vastly underestimated the number of sites that would be impacted by the proposed rule. The proposal's regulatory impact analysis claim that only 69 facilities would be affected by this rule is not credible. This estimate of 69 facilities focuses only on CERCLA sites that are Federal facilities and select RCRA sites that may be associated with a major HAP source facility. With regard to CERCLA facilities, it is unsupportable that EPA limited its review of impact to site remediations on Federal facilities. There are approximately 1200 non-Federal facility CERCLA National Priorities List (NPL) sites or emergency/time-critical removal sites. Among these sites are site remediations co-located with active industrial facilities. Our experience is that remediations often occur at operating facilities. In addition, these remediations often address volatile organic contamination in soils and groundwater, with contaminants such as benzene, ethylbenzene, toluene, xylene, TCE, DCE, PCE, chlorobenzene, 1,2,4- trichlorobenzene and naphthalene, which alone may cause a remediation to make an entire facility a major source under the Clean Air Act or could result in minor sources being moved into the major category. In addition, EPA fails to address non-co-located remediation sites. While discussing the co-location requirement when promulgating the final rule, EPA acknowledged that CERCLA sites might themselves be major sources without regard to co-location. 68 Fed. Reg. 58175 (Oct. 8, 2002). Yet, EPA simply ignores these sites in the proposed rule. EPA also fails to consider the sites that are not major sources but would otherwise still be subject to this rule and recordkeeping requirements. Elsewhere, EPA estimates there are 3,747 RCRA corrective action facilities.[3] Many of these RCRA corrective action site remediations are or will be implemented pursuant to orders and permits, thus subjecting them to this rule as well. At a minimum, whether CERCLA or RCRA, co-located or not, the proposed rule would require these sites to undergo a time-consuming, expensive and difficult evaluation of emissions to make an applicability decision, a burden not addressed by EPA in the proposed rule.

The basis for the claim that only 69 RCRA and CERCLA facilities will be affected is not at all clear, given the wide divergence between that number and the total universe of CERCLA and RCRA sites. Further, the potential scenarios described above indicate that the EPA may have also substantially underestimated the ramifications of the expanded rule, particularly with respect to wastewaters and spill remediation. Based on the foregoing, the total number of sites that would be subject to the proposed rule, in one way or another, would be substantially greater than that considered by EPA, and, EPA's estimated annual cost of approximately $2.16M, correspondingly, is a substantial underestimate.

EPA also states that, while new site remediations "are likely" to be conducted under CERCLA and RCRA, it is "not currently aware of any specific new site remediation facilities that are expected to be constructed." 81 Fed. Reg. 29825 (May 13, 2016). While

[3] www.epa.gov/enforcement/rcra-corrective-action-cleanup-enforcement.

perhaps including the word "specific" makes this statement somewhat defensible, it remains disingenuous. As referenced above, there are almost 1,200 NPL sites in total. Since 2013, EPA has added 34 new sites to the NPL and has an inventory of 55 or more proposed NPL sites. Also as indicated above, there are over 3,747 corrective action sites. New site remediations are not just likely, but are inevitable for far into the future, and each one of these new CERCLA and RCRA sites would be subject to this rule.

If EPA Promulgates the Rule, Changes are Necessary to Address the Regulatory Burden

If EPA nevertheless proceeds with the rule, SSP and RCAP recommends EPA exempt on-going remediations, clarify the regulatory language regarding co-location and exclude non-actively managed remediation materials.

As EPA has readily admitted, the proposed rule will result in no decrease in HAP emissions as the CERCLA and RCRA programs have effectively regulated air emissions from site remediations conducted under their authority. Over the last thirteen years, remedy decisions have been made and remedial actions have been constructed in reliance on the exemption from the CAA Site Remediation rule. To require ongoing remediations to conduct an applicability decision and potentially change course without producing any environmental benefit cannot be defended, particularly as the result of this will only be to delay cleanup. Accordingly, should EPA proceed with this rule, EPA should exempt ongoing CERCLA and RCRA remediations.

EPA proposes to expand the applicability criteria by including remediation activities at sites that are not co-located with one or more other stationary sources. The rationale is explained as "necessary to ensure that site remediations that are themselves major sources of HAP, without regard for co-location with another facility, are now covered by the rule." 93 Fed,. Reg. 29824. However, proposed Section 7881(a)(2)(ii) does not say expressly that the non-co-located site itself has to be a major source of HAP, and could create an unintended interpretation that a site that only meets the threshold of 1 megagram per year of organic HAP is independently subject to the expanded rule. This is not what is intended by EPA's own statements, and the language needs to be clarified in the rule in this regard.

In addition, non-actively managed remediation materials should be excluded if the expansion is adopted. The potential for organic HAP emissions is low when site remediation activities do not include measures, such as excavation and ex-situ treatment, that involve active management of waste or contaminated media. The definition of "site remediation" at 40 CFR 63.7881 should be revised to include only activities or processes that involve active management.[4] .

[4]"Active management" is a concept recognized by US EPA, such as RCRA Online 11025 (re-contouring cover material and adjusting in -place waste is not active management) and RCRA Online 11954 (movement of waste and contaminated media within an area of contamination is not active

SSP and RCAP appreciate EPA's consideration of these comments. If you have any questions regarding them, please contact Ron Tenpas at (202) 739-5435 or ronald.tenpas@morganlewis.com.

Sincerely,

Ronald J. Tenpas
John McGahren
Counsel to the Superfund Settlements Project
and RCRA Corrective Action Project

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management). Examples of non-active management are activities such as in-situ management or treatment of contaminated media or waste and activities necessary to maintain or ensure the integrity of engineering controls

MAR 31 2017

Morgan Lewis

1111 Pennsylvania Avenue, NW
Washington, DC 20004

TO:

The Honorable E. Scott Pruitt
U.S. Environmental Protection Agency
1200 Pennsylvania Avenue, NW
Washington, DC 20460

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

OFFICE OF
SOLID WASTE AND
EMERGENCY RESPONSE

NOW THE
OFFICE OF LAND AND
EMERGENCY MANAGEMENT

APR 13 2017

Mr. Ronald J. Tenpas
Morgan Lewis
1111 Pennsylvania Avenue, NW
Washington, DC 20004

Dear Mr. Tenpas:

Thank you for your March 27, 2017, letter to U.S. Environmental Protection Agency (EPA) Administrator Scott Pruitt. Your letter urged EPA to refrain from implementing the Addition of a Subsurface Intrusion Component to the Hazard Ranking System (HRS SsI) rule, which EPA published in the *Federal Register* on January 9, 2017. Under the "Regulatory Freeze Pending Review" related to President Trump's recent executive orders on regulatory reform, the HRS SsI rule's effective date has been deferred until May 22, 2017.

Your letter raised seven key issues, which I discuss below:

1. "The SsI Rule, which introduces burden, expense and will divert federal resources with little or no benefit achieved, is precisely the type of regulation that the President is seeking to eliminate or reverse through his two recent Executive Orders on regulatory reform."

The revision to the HRS to add a component for subsurface intrusion does not meet the criteria set out in Executive Order 13777 (Reducing Regulation and Controlling Regulatory Costs) and EO 13777 (Enforcing the Regulatory Reform Agenda) for identifying regulations to eliminate.

Executive Order 13777 lists several factors to be considered in determining if it applies to a particular rulemaking, including impact on jobs and costs to the public. As the rulemaking is primarily procedural, it does not directly affect jobs. Furthermore, there should be no connection between site-related employment and site investigatory activities undertaken to define the nature and extent of contamination. Also, a site's addition to the NPL does not impose significant direct costs on any stakeholder as listing only leads to further investigation, not necessarily remediation. EPA is simply adding a component to the HRS that is necessary for evaluating a known risk at sites that cannot be dealt with by other programs and that enables to EPA to use CERCLA remedial authority at sites that previously could not be evaluated for subsurface intrusion.

Additionally, SSP's assertion is based on a misunderstanding about the role and purpose of the HRS and the Superfund program in general. This rulemaking is meant to augment the available evaluation criteria in the HRS for a subset of the most complex and potentially dangerous sites. Pre-screening activities as part of the overall site assessment process filter out the majority of sites by determining which may require no further action, a removal action, or are more appropriately handled by another program.

2. "SSP encourages reconsideration of the SsI Rule because it does not constitute sound public policy..."

Revising the HRS to include the evaluation of subsurface intrusion threats, a known risk to human health, constitutes sound public policy because EPA's mission is to protect human health and the environment, and the Agency has an obligation to address this threat. The subset of sites the HRS is meant to evaluate constitutes the most complex and potentially dangerous sites that other federal or state programs are not able to address. By adding a subsurface intrusion component to the HRS, EPA is now able to evaluate whether these sites warrant further investigation, i.e., by placing them on the NPL.

3. "...and is not required under any Congressional statutory directive"

Revising the HRS to add a subsurface intrusion component is compliant with the CERCLA mandate. Specifically, the statutory requirements in the 1986 Superfund Amendments and Reauthorization Act (SARA), which added section 105(c)(1) to CERCLA, requires EPA to amend the HRS:

> ...to assure to the maximum extent feasible, that the HRS accurately assess the relative degree of risk to human health and the environment posed by sites and facilities subject to review.

In fact, not implementing this rulemaking is contrary to the Congressional mandate within CERCLA, in that without this regulation, EPA is not necessarily identifying all priority sites for further investigation.

4. "As detailed in the enclosed comments on the Proposed Rule, 81 Fed. Reg. 10372 (Feb. 29, 2016), adding vapor intrusion sites to the NPL would be an arduous undertaking that would increase the cost of future HRS-assessments, but likely yield few or no benefits."

Adding vapor intrusion sites to the NPL will not be an arduous undertaking because the methodology will only be applied at sites where SsI is projected; such sites represent only a fraction of future site evaluations. Further, the procedures for implementing the rulemaking at those sites only requires a screening-level site assessment, which is no more burdensome than evaluations performed using other HRS pathways.

The addition of a subsurface intrusion component will not directly increase the typical cost of HRS assessments. The cost of site assessments for HRS evaluations is very site specific and dependent on an array of factors, such as site size, the number of HRS pathways being evaluated, the amount of preexisting information available, site accessibility, and the complexity and variability of site conditions. In most cases, site assessment cost is independent of the pathway evaluated. Furthermore, as explained

previously, the benefit of an HRS evaluation is that it means a site is being addressed when no other cleanup program is available to mitigate any unacceptable risk, thereby protecting human health.

The addition of a subsurface intrusion component to the HRS does not change any of the processes currently in place for evaluating candidate sites for the NPL. Given that the Superfund budget is likely to remain relatively stable or be reduced, the EPA site assessment program will continue to prioritize those sites posing a high risk to human health and the environment, regardless of the transport or exposure pathway by which the receptors are exposed to the hazardous substance releases.

5. "The SsI component has the potential to overwhelm the Superfund program and divert resources from sites identified by statute as higher priority."

The addition of an SsI component to the HRS will neither overwhelm the Superfund program nor will it divert resources from higher priority sites. The number of sites requiring SsI evaluations will be a fraction of the already small number of sites being evaluated per year for possible placement on the NPL.

Regarding SSP's claim that this addition will divert resources from higher priority sites, EPA assumes that SSP is referring to the CERCLA 105 mandate to prioritize drinking water sites. EPA previously provided a response to SSP's comment regarding the prioritization of drinking water sites. Please refer to the attached "Response to Public Comments Support Document."

This rulemaking does not change how sites are scored using other existing HRS pathways and it does not alter the identification of priority sites based on these HRS site scores. Furthermore, the priority for site cleanups is not based on the HRS evaluation but on information collected to perform site-specific risk assessments after placement on the NPL.

6. "Furthermore, the Superfund NPL process, with its lengthy studies, protracted investigations, and adversarial process, is not well suited to address most vapor intrusion sites, which need expeditious response; and, indeed, these sites are being addressed by state and local government corrective action programs."

As previously stated, the Superfund NPL process is not used to address most vapor intrusion sites, only those that no other federal or state cleanup program is addressing or that can be adequately addressed using Superfund removal authority.

7. "Because EPA has failed to demonstrate that there is a problem, and that listing vapor intrusion sites on the NPL will solve the problem, EPA should reconsider its SsI Rule."

There are sites with a human health risk due to contamination via subsurface intrusion that are not being addressed by other programs and need evaluation under CERCLA authority. Some of these sites have already been identified and others are now being identified. Currently, EPA is evaluating for potential NPL inclusion two sites that would not qualify for the NPL without the SsI component. Additional sites with an SsI threat are being screened for possible HRS evaluation.

I understand that you have concerns, however, SSP has neither raised new issues, nor shown that any of EPA's prior responses to the comments you submitted during the public comment period were insufficient. I do not agree that the HRS SsI rule warrants reconsideration. I have enclosed an excerpt of

Again, thank you for your letter. If you have further questions, please contact me or you may contact Terry Jeng at 703-603-8852.

Sincerely,

for James E. Woolford, Director
Office of Superfund Remediation and Technology Innovation

Attachment

cc: Silvina Fonseca, AO-IO
Sarah Rees, ORPM/OP

March 21, 2017

RECEIVED

2017 MAR 31 PM 2:21

OFFICE OF THE
EXECUTIVE SECRETARIAT

Mary S. Walker, Director
Water Protection Division
United States Environmental Protection Agency
Region 4, Atlanta Federal Center
61 Forsyth Street
Atlanta, Georgia 30303-8960

Mr. Namon Mathews
Region 4

RE: Complaint -- Archie Elledge Waste Water Treatment Plant in Winston-Salem, NC
(2801 Griffith Road, Winston-Salem, NC 27103)

Dear Ms. Walker (and Mr. Mathews):

In response to your letter of March 14, 2017, regarding my complaint that I sent to Mr. Scott Pruitt, I am unclear about the role of the Environmental Protection Agency for the general welfare of the citizenry of the United States. You state that you have authority to regulate that Facility under the Clean Water Act. I am, therefore, I am appealing to you to exercise your authority to the fullest extent it allows you. I met with Mr. Minor Barnette and Ms. Courtney Driver on February 13, 2017. I have periodically asked them for updates; they have not made me aware of any efforts on their part (see attachments).

I would have not known that the air is being polluted except for the noxious odor. That is, air pollution is "the presence in or introduction into the air of a substance which has harmful or poisonous effects." The only source of the air pollution in my complaint is coming from the Archie Elledge Waste Water Treatment Plant. Over the past several recent months, there have been many weeks where the air has been polluted from one to five nights and early morning hours in one week.

Living in a healthy environment for me and my neighbors is of great worth.

I am asking the EPA and North Carolina Department of Environmental Quality to put a moratorium on all operations of the Archie Elledge Waste Water Treatment Plant until such time the city of Winston-Salem stops polluting and contaminating the air of the residents who reside in the Griffith Park neighborhood and nearby residential areas. Again, there is no doubt in my mind that if the air quality in the neighborhood is inspected during the nights and early mornings when the plant is operating and creating the noxious gases, the waste water treatment plant would fail inspection.

Please let me know if I need to provide you with additional information regarding this matter. I look forward to hearing from you soon.

Best regards,

Kathy J. Hines
190 Everidge Road
Winston-Salem, NC 27103

cc: Scott Pruitt, Administrator of the U.S. Environmental Protection Agency

Following up -- Meeting -- Complaint About the Air Pollution/Odor from the Archie Elledge Waste Water Treatment Plant on Griffith Road

1 message

Hines, Kathy <hineskj@wfu.edu> Tue, Feb 14, 2017 at 1:41 PM
To: Minor Barnette <barnetwm@forsyth.cc>, courtneyd@cityofws.org

Dear Ms. Driver and Mr. Barnette:

Thanks for taking time out to meet with me on yesterday afternoon, February 13, 2017. However, the waste water treatment plant is causing air pollution in the neighborhood where I live, and as I expressed to you, it is the main source that is creating pollutants and poor air quality inside of my home. Last night, like many other times, I suffered from the gases/odor that get inside my home from the waste water treatment plant off Griffith Road ("Hydrogen sulfide is the chemical compound with the formula H2S. It is a colorless gas with the characteristic foul odor of rotten eggs. It is very poisonous, corrosive, and flammable.").

You mentioned that you were going to bring in a consultant about this matter. I trust that you are going to bring in a consultant immediately.

"Question: What can be done to keep it from being formed in the sewers?
1. Answer: If the hydrogen sulfide is becoming a problem in a very localized area (for example at the treatment plant or at a lift station), oxidizers can be added to the sewage to increase the oxidation-reduction potential. These oxidizers can be oxygen, hydrogen peroxide, chlorine, permanganates, and others."

"Odor control
Odors emitted by sewage treatment are typically an indication of an anaerobic or "septic" condition.[30] Early stages of processing will tend to produce foul-smelling gases, with hydrogen sulfide being most common in generating complaints. Large process plants in urban areas will often treat the odors with carbon reactors, a contact media with bio-slimes, small doses of chlorine, or circulating fluids to biologically capture and metabolize the noxious gases.[31] Other methods of odor control exist, including addition of iron salts, hydrogen peroxide, calcium nitrate, etc. to manage hydrogen sulfide levels. High-density solids pumps are suitable for reducing odors by conveying sludge through hermetic closed pipework."

I look forward to hearing from you soon.

Best regards,
Kathy J. Hines

On Sun, Feb 12, 2017 at 8:01 PM, Minor Barnette <barnetwm@forsyth.cc> wrote:
Ms. Hines,
Thank you for letting me know. I look forward to meeting you tomorrow.
Best regards,
Minor

On Sun, Feb 12, 2017 at 7:37 PM Hines, Kathy <hineskj@wfu.edu> wrote:
Mr. Barnette,

Meeting at 4:00 p.m. on Monday is fine.

Thank you,
Kathy J. Hines

On Sat, Feb 11, 2017 at 10:22 PM, Minor Barnette <barnetwm@forsyth.cc> wrote:
Ms. Hines,
If possible, we need to change the time to 4:00 pm on Monday. We can meet in the Utilities office suite in City Hall at 101 North Main Street, Suite 357 on the third floor. Please let me know if this time and location are

Re: Following up -- Meeting -- Complaint About the Air Pollution/Odor from the Archie Elledge Waste Water Treatment Plant on Griffith Road

1 message

Hines, Kathy <hineskj@wfu.edu> Fri, Mar 17, 2017 at 11:26 AM
To: Courtney Driver <courtneyd@cityofws.org>
Cc: Minor Barnette <bametwm@forsyth.cc>, Frank Crump <frankc@cityofws.org>, Vernetta DeVane <vernettad@cityofws.org>

Ms. Driver,

May I get a progress report?

Best regards,
Kathy J. Hines

On Mon, Feb 20, 2017 at 2:58 PM, Hines, Kathy <hineskj@wfu.edu> wrote:
Ms. Driver,

Are there any earnest efforts being made at this time to resolve the issue and if so, may I know them?

Best regards,
Kathy J. Hines

On Mon, Feb 20, 2017 at 2:49 PM, Courtney Driver <courtneyd@cityofws.org> wrote:

Hi Ms. Hines.

There is nothing new to report at this time.

Courtney L. Driver, PE

Winston-Salem / Forsyth County Utilities | Utilities Director | PO Box 2511, Winston-Salem, NC 27102

W: 336-747-7315 | C: 336-416-6284 | F: 336-727-8432 | courtneyd@cityofws.org

From: Hines, Kathy [mailto:hineskj@wfu.edu]
Sent: Monday, February 20, 2017 2:49 PM
To: Courtney Driver
Cc: Minor Barnette; Frank Crump; Vernetta DeVane
Subject: Re: Following up -- Meeting -- Complaint About the Air Pollution/Odor from the Archie Elledge Waste Water Treatment Plant on Griffith Road

Re: Following up -- Meeting -- Complaint About the Air Pollution/Odor from the Archie Elledge Waste Water Treatment Plant on Griffith Road

1 message

Hines, Kathy <hineskj@wfu.edu> Mon, Feb 20, 2017 at 2:58 PM
To: Courtney Driver <courtneyd@cityofws.org>
Cc: Minor Barnette <barnetwm@forsyth.cc>, Frank Crump <frankc@cityofws.org>, Vernetta DeVane <vernettad@cityofws.org>

Ms. Driver,

Are there any earnest efforts being made at this time to resolve the issue and if so, may I know them?

Best regards,
Kathy J. Hines

On Mon, Feb 20, 2017 at 2:49 PM, Courtney Driver <courtneyd@cityofws.org> wrote:

Hi Ms. Hines.

There is nothing new to report at this time.

Courtney L. Driver, PE

Winston-Salem / Forsyth County Utilities | Utilities Director | PO Box 2511, Winston-Salem, NC 27102

W: 336-747-7315 | C: 336-416-6284 | F: 336-727-8432 | courtneyd@cityofws.org

From: Hines, Kathy [mailto:hineskj@wfu.edu]
Sent: Monday, February 20, 2017 2:49 PM
To: Courtney Driver
Cc: Minor Barnette; Frank Crump; Vernetta DeVane
Subject: Re: Following up -- Meeting -- Complaint About the Air Pollution/Odor from the Archie Elledge Waste Water Treatment Plant on Griffith Road

Dear Ms. Driver:

May I get a progress report, please?

Thank you,

Re: Following up -- Meeting -- Complaint About the Air Pollution/Odor from the Archie Elledge Waste Water Treatment Plant on Griffith Road

1 message

Hines, Kathy <hineskj@wfu.edu> Mon, Feb 20, 2017 at 2:48 PM
To: Courtney Driver <courtneyd@cityofws.org>
Cc: Minor Barnette <barnetwm@forsyth.cc>, Frank Crump <frankc@cityofws.org>, Vernetta DeVane <vernettad@cityofws.org>

Dear Ms. Driver:

May I get a progress report, please?

Thank you,
Kathy J. Hines

On Tue, Feb 14, 2017 at 2:58 PM, Courtney Driver <courtneyd@cityofws.org> wrote:

Thank you, Ms. Hines. It was a nice meeting your yesterday. We are currently in the process of updating our master plan for our two wastewater treatment facilities and I will add the analysis on odor to that scope of work.

Courtney L. Driver, PE

Winston-Salem / Forsyth County Utilities | Utilities Director | PO Box 2511, Winston-Salem, NC 27102

W: 336-747-7315 | C: 336-416-6284 | F: 336-727-8432 | courtneyd@cityofws.org

From: Hines, Kathy [mailto:hineskj@wfu.edu]
Sent: Tuesday, February 14, 2017 1:42 PM
To: Minor Barnette; Courtney Driver
Subject: Following up -- Meeting -- Complaint About the Air Pollution/Odor from the Archie Elledge Waste Water Treatment Plant on Griffith Road

Dear Ms. Driver and Mr. Barnette:

Thanks for taking time out to meet with me on yesterday afternoon, February 13, 2017. However, the waste water treatment plant is causing air pollution in the neighborhood where I live, and as I expressed to you, it is the main source that is creating pollutants and poor air quality inside of my home. Last night, like many other times, I suffered from the gases/odor that get inside my home from the waste water treatment plant off Griffith Road ("Hydrogen sulfide is the chemical compound with the formula H2S. It is a colorless gas with the characteristic foul odor of rotten eggs. It is very poisonous, corrosive, and flammable.").

Kathy J. Hines

(b) (6)

GREENSBORO NC 274
PIEDMONT TRIAD AREA
21 MAR 2017 PM 7 L

MAR 31 2017

Scott Pruitt, Administrator
U.S. Environmental Protection Agency
William Jefferson Clinton Building
1200 Pennsylvania Avenue, N. W.
Mail Code: 1101A
Washington, DC 20460

20460-

CANYON COUNTRY

With clear streams and lush vegetation, the canyon tributaries of the Escalante River offer oasis in the desert. Sunlight streaming between sandstone walls illuminates stately cottonwoods.

SEATTLE WA 980

15 MAR 2017 PM 7 L

[redacted]

The United States is fortunate to have an outstanding State & National Park system.

Please keep these parks protected from logging & commercial use from now ~~into~~ & for perpetuity.

Mary Jo Maute

[redacted]

MAR 2017 APR -3 AM 8:29

OFFICE OF THE EXECUTIVE SECRETARIAT

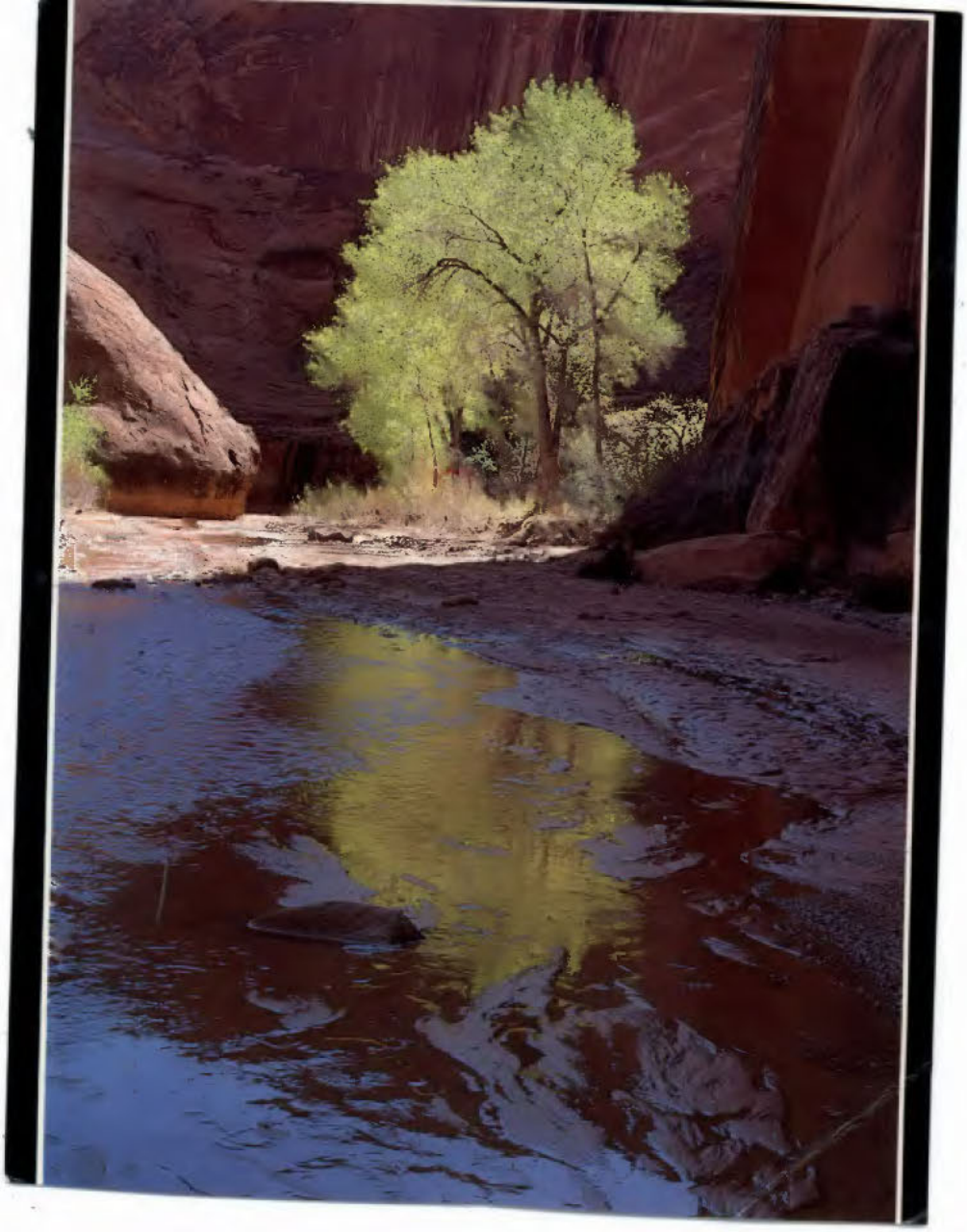
Scott Pruitt
Environmental Protection Agency
1200 Pennsylvania Ave, NW
Washington, DC 20460

FCL202906?

Nature's Design
P.O. Box 255, Davenport, Calif. 95017
Printed in Hong Kong

Photograph by FRED HIRSCHMANN ©1986

FH121



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

April 3, 2017

OFFICE OF THE
EXECUTIVE SECRETARIAT

Ms. Mary Jo Maute
(b) (6)

Dear Ms. Maute:

Thank you for your postcard to U.S. Environmental Protection Agency Administrator Scott Pruitt. Your concerns about protecting national parks are outside the jurisdiction of the EPA and would be more appropriately considered by the Department of Interior.

In an effort to assist you, I have forwarded your postcard to the U.S Department of Interior for careful consideration.

You also can contact the Department of Interior directly by writing to:

U.S. Department of Interior
1849 C Street, NW
Washington, D.C. 20240

I hope this information is helpful. In the meantime, I thank you once more for sharing your thoughts.

Sincerely,

Brigette A. Moritz
Writer/Editor

Moritz, Brigette

From: Moritz, Brigette
Sent: Monday, April 03, 2017 2:17 PM
To: 'OS, DOIExecSec'
Subject: Transfer letter from EPA - Concerns about protecting national parks
Attachments: maute correspondence.pdf

April 3, 2017

The attached correspondence was mailed to the U.S. Environmental Protection Agency. This citizen has concerns about protecting national parks, which is outside the jurisdiction of the EPA and would be more appropriately considered by the Department of the Interior.

I have informed the citizen that her letter has been transferred to you.

If you need the original correspondence, please let me know within 14 calendar days, after which it will be destroyed.

Thank you for responding to this citizen.

Sincerely,

Brigette A. Moritz
Writer/Editor
Office of the Executive Secretariat
U.S. Environmental Protection Agency

Dear Secretary Pruitt,

I'm very concerned about the future of our environment. I know you intend to get rid of regulations, but many of them are there for good reason. Please keep the future of our country + planet in mind as you make decisions. Please do NOT approve the Dakota or Keystone Pipeline.

Sincerely,
Nancy Jacobs

Paul & Nancy Jacobs
(b) (6)

17 MAR 2017

MAR 23 2017

2017 APR -3 AM 8:29

EXECUTIVE SECRETARIAT

FCL2028063

Sec. Scott Pruit
1200 Pennsylvania Ave NW
Washington, DC
20004

Dear Scott

I'm part of the #WomensMarch movemen
I'm from Oregon
and I'm concerned about the Keystone pipeline and D...

Here's why:

pipes leak! We can't drink oil. Clean water, clean air is vital to our country.

In the first 100 days of the new administration, I hope that you understand and take these concerns seriously.

Sincerely,
Tara Nelson

(b) (6)

FCL2028306

2017 APR -3 AM 8:26

OFFICE OF THE EXECUTIVE SECRETARIAT

2017 MAR 34 AM 8:26

Scott Pruitt
EPA 4102
1200 Pensylvania Ave NW
Washington DC
20004

OFFICE OF THE EXECUTIVE SECRETARIAT

15 MAR 2017 PM 11

100 10 ACTIONS 100 DAYS

MAR 23 2017

USA Spoonbill POSTCARD

HEAR OUR VOICE

WOMENSMARCH.COM/100

Mon Apr 03 08:56:47 EDT 2017
Hope.Brian@epamail.epa.gov
FW:
To: CMS.OEX@epamail.epa.gov

From: Tresa brock [mailto: (b) (6)
Sent: Saturday, April 01, 2017 8:15 PM
To: Pruitt, Scott <Pruitt.Scott@epa.gov>
Subject:

I reported this too office in London, Ky to Robert Miller this was what was being used for fill too elevate flood zoned property and was also going into river. I was treated rudely and sent pictures of this too him. About 3 days later the person responsible for this burned all this and covered it up. The smell was horrid I have video of it too. He is a mayor in small county Loyall, Ky and I'm just small person so I was ignored. I have been so upset by this I would appreciate any help thank
you

--

Sent from Gmail Mobile

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 4
ATLANTA FEDERAL CENTER
61 FORSYTH STREET
ATLANTA, GEORGIA 30303-8960

APR 19 2017

Ms. Tresa Brock
(b) (6)

Dear Ms. Brock:

Thank you for your April 1, 2017, email to the U.S. Environmental Protection Agency's (EPA) Administrator, Scott Pruitt. Your email was forwarded to the Region 4 office in Atlanta, Georgia for response.

Assuring compliance with our nation's environmental laws is one of EPA's primary commitments. In carrying out this responsibility, we use many different approaches. One approach is by working in partnership with our State Environmental Agencies to address compliance concerns brought to our attention by the public. In addition, many environmental programs have been delegated to the states and they have primary responsibility for them.

In reference to your concerns involving the use of solid waste to elevate flood zone property and the alleged burning of the solid waste that occurred, we have referred the matter for an investigation and follow-up, as appropriate to:

Mr. Robert Mauer
Complaints Coordinator
Department for Environmental Protection
Division of Waste Management
Field Operations Branch
300 Sower Blvd. 2nd Floor
Frankfort, KY 40601

Mr. Mauer or one of his colleagues will contact you directly. In the interim, if you have questions or additional information that you would like to share with Mr. Mauer, please contact him at (502) 782-6701.

We appreciate your desire to protect and preserve the environment and hope you find this informant helpful. If we may be of further assistance, please contact Reginald Barrino at (404) 562-9635.

Sincerely,

J. Scott Gordon, Director
Office of Enforcement Coordination
Office of Regional Administrator

Mon Apr 03 09:03:13 EDT 2017
Hope.Brian@epamail.epa.gov
FW: Thank you [WARNING: DKIM validation failed]
To: CMS.OEX@epamail.epa.gov

DRF

From: Siebers, Michael L. [mailto:MSiebers@PeabodyEnergy.com]
Sent: Friday, March 31, 2017 4:41 PM
To: Pruitt, Scott <Pruitt.Scott@epa.gov>
Subject: Thank you [WARNING: DKIM validation failed]

Mr. Pruitt –

I had the opportunity to attend the Executive Order signing this week at the EPA building.

It was an event that I will remember for the rest of my life.

Thank you and your team for all your efforts.

If I can ever be of assistance do not hesitate to contact me.

Thank you,

Mike Siebers

(b) (6)

E-mail Disclaimer:
The information contained in this e-mail, and in any accompanying documents, may constitute confidential and/or legally privileged information. The information is intended only for use by the designated recipient. If you are not the intended recipient (or responsible for the delivery of the message to the intended recipient), you are hereby notified that any dissemination, distr bution, copying, or other use of, or taking of any action in reliance on this e-mail is strictly prohibited. If you have received this email communication in error, please notify the sender immediately and delete the message from your system.

Mon Apr 03 09:16:32 EDT 2017
Hope.Brian@epamail.epa.gov
FW: Note to Administrator Scott Pruitt from Michael Cox EPA region 10
To: CMS.OEX@epamail.epa.gov

DRF

From: Cox, Michael
Sent: Friday, March 31, 2017 4:04 PM
To: Pruitt, Scott <Pruitt.Scott@epa.gov>; Benton, Donald <benton.donald@epa.gov>; Ericksen, Doug <ericksen.doug@epa.gov>
Cc: Cox, Michael <Cox.Michael@epa.gov>
Subject: Note to Administrator Scott Pruitt from Michael Cox EPA region 10

March 31st, 2017

Dear Administrator Pruitt,

My name is Michael Cox. Today is my last day after working at EPA for over 25 years. I am writing this note because I, along with many EPA staff, are becoming increasing alarmed about the direction of EPA under your leadership. I understand there are people in the country who distrust EPA, and think we are overreaching our mission. I believe we need to listen to those voices and try to make changes where warranted.

However, I, and many staff, firmly believe the policies this Administration is advancing are contrary to what the majority of the American people, who pay our salaries, want EPA to accomplish, which are to ensure the air their children breath is safe; the land they live, play, and hunt on to be free of toxic chemicals; and the water they drink, the lakes they swim in, and the rivers they fish in to be clean.

I assume you are aware of the current low morale of EPA career staff. I have worked under six Administrations with political appointees leading EPA from both parties. This is the first time I remember staff openly dismissing and mocking the environmental policies of an Administration and by extension you, the individual selected to implement the policies. The message we are hearing is that this Administration is working to dismantle EPA and its staff as quickly as possible. I have highlighted several areas below which are emblematic of why morale at EPA is the lowest since I started in 1987.

1. Denying Fundamental Climate Science: This strikes at the core of the concerns from EPA staff. It was surprising, no shocking, when you stated on National television that carbon dioxide is not a primary contributor to climate change. This is settled science and we have too many other important scientific issues to investigate related to climate change to waste our time debating this issue. I am reminded of a Congressional hearing several years ago when Congressman Henry Waxman asked the CEOs of the major tobacco companies if smoking caused lung cancer. All of the CEOs categorically denied that smoking caused lung cancer. We know, of course, that was not true. You will continue to undermine your credibility and integrity with EPA staff, and the majority of the public, if you continue to question this basic science of climate change.

We are seeing the effects of climate change on the landscape right now. If you do not believe me, travel to Alaska during your tenure and talk with the Alaskans whose way of life is being fundamentally changed because of climate change; visit the Pacific Northwest and see where the streams are too warm for our salmon to survive in the summer; visit the oyster farmers in Puget Sound whose stocks are being altered from the oceans becoming more acidic; talk to the ski area operators who are seeing less snowpack and worrying about their future; and talk to the farmers in Eastern Washington who are struggling to have enough water to grow their crops and water their cattle. The changes I am referencing are not impacts projected for the future, but are happening now

It was encouraging that the President did not withdraw from the Paris Climate Agreement. However, the message from the President's other actions sends the signal to the rest of the world that the USA is no longer a leader in reducing greenhouse gas emissions and moving to a clean energy economy. You are correct that we do not need to choose between jobs and environmental projection. The question is what jobs? Are they jobs to move us forward to a cleaner energy economy or backwards to a dirtier fossil fuel economy?

Your statement that "we got a bad deal" in the Paris Climate Agreement highlights another case where you have not done your homework. The Paris Agreement, while not perfect, was a huge step forward in battling climate change and moving the world in the direction of newer cleaner energy technology.

Fortunately, there are other global leaders, including China and India, who understand the urgency of the problem and are taking action. Domestically we have Governors, Mayors, CEOs, and Tribal leaders who will fill the void created by the lack of Federal leadership. They will take on the task of reducing greenhouse gases that are causing warming and put in place actions that will make their communities more resilient from climate change. And they will do this while their communities continue to prosper.

2. "Our Big Day Today": The email headline that greeted EPA staff on Tuesday March 28th was "Our Big Day Today". The question many of us had was who is "our" referring too? Was it the many EPA career staff that worked for years developing the work that was rescinded or revoked? Was it the EPA career staff that should be jubilant the President came to EPA to poke a finger in our eye (or as many people indicated to give us the finger)? Was it the fossil fuel industry that will benefit most from the President's action? Or was it the coal miners present at the event who are being given false hope their jobs are coming back?

We were frankly insulted that the President would come to EPA to announce that he is overturning the work to battle the most urgent environmental problem of our generation – climate change. It was beyond comprehension that an Administration could be so arrogant and callous.

3. Giving False Hope: The President is right that we need to help the coal miners who have been displaced and help retrain them for the future. The President is, however, wrongthat coal jobs will be coming back after the repeal of the climate change actions. To state otherwise is false and misleading. It is amazing that an Administration that touts itself as business savvy has not done its homework on the market forces at play with coal.

The number of people employed in coal production in the USA has been declining since the high point in 1925 when over 860,000 people were employed to the current low point in 2017 with about 77,000 people are employed (US Department of Labor). The steady decline in employment in the coal industry happened, in general, as coal production increased. The cause of the decline was simple: automation, not job killing regulations.

According to coal companies themselves, the decline in production of coal in the USA will not be reversed to any great extent. There are no major new coal plants coming on line and the price of the most common replacement fuel, natural gas, will continue to decline with the advent of new production. Even if there is an increase in coal production, the number of jobs associated with the increased production will be small due to the automation of the industry.

4. Indefensible Budget Cuts: We were told that you tried to advocate for a smaller reduction in the EPA budget, yet in the end, the budget passed back to OMB had even deeper cuts. The clear message to EPA staff was either you supported the additional cuts or you have little to no influence with the Administration.

We would appreciate a more detailed description of why you are recommending that certain EPA programs be reduced or eliminated. We would love to know, for example, why resources for Alaska Native Villages are being reduced when they are presented with some of the most difficult conditions in the country; why you would eliminate funds for the protection and restoration of the Puget Sound ecosystem which provides thousands of jobs and revenue for Washington State; and why you would reduce funds for a program that retrofits school buses to reduce diesel emission exhaust inhaled by our most vulnerable population - children. To be credible you need to provide details why you believe these programs should be reduced or cut.

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6. Continuing to Demonize EPA: You have had several speeches and interviews over the past several weeks where you continue to demonize EPA, and by association EPA career staff. This has to stop. Criticizing the organization you lead is not the type of leadership that will produce results. As a leader, you need to motivate and inspire your staff. The course you are on will continue to alienate EPA career staff; the same people whom you need to accomplish your agenda and fulfill the expectations of the American people.

7. Lack of Understanding of What We Do at EPA (especially in the Regions): In the Regions, we work very closely with our states and Tribes. When you talk about "cooperative Federalism" it implies that this is some new concept and that we are not currently working with our states and Tribes. This is contrary to my experience and that of many others in the Region. It leaves the impression that you do not understand how closely we work with our states and Tribes now. Also, we have not heard you talk specifically about working with tribes and fulfilling our tribal treaty obligations. Working with Tribes is a high priority for us and one we take very seriously.

You have talked about paying attention to process and rule-making. You are right. However, your remarks that EPA has not been paying attention to process or rule-making are not consistent with the experiences of many EPA staff, me included. I can provide you with dozens of examples, in Region 10 alone, where we have participated in extensive public engagement with states, Tribes, communities, and industry. These types of statements indicate to us that you and your staff do not understand the fundamental work we do at EPA.

8. Please Step Back and Listen to EPA Career Staff

If, by some miracle you or your staff actually read this note, I can only hope you take a step back and realize that you are the leader of an organization of very hard working, dedicated professionals who believe deeply in their work. America is a world leader in protecting our citizen's human health and our environment. Do you really want your legacy to be the person who led the rollback and reversal of the amazing gains we have made over the past 40 years?

I understand the challenges you face when going up against ideologues that appear to cherish fulfilling campaign promises more than doing the analysis and evaluation of what makes sense. But, we are counting on you to advocate for EPA. Unfortunately, up to this point, we have no evidence of this.

Good luck and just remember that EPA staff will respond to leadership that takes into account the science and the opinions of individuals who have devoted their entire lives to fulfilling the mission of EPA – to protect human health and the environment. We understand that our positions may not always prevail, but please take the time to listen to expert voices that might differ from yours and your immediate staff. You may be surprised that you can find common ground on many issues. The health of the American people and our country depends on you.

Michael Cox

Michael Cox

Office of Environmental Assessment

US EPA Region 10, 1200 Sixth Avenue, Suite 900

Seattle, WA 98101

206-553-1597

cox.michael@epa.gov

March 31st, 2017

Dear Administrator Pruitt,

My name is Michael Cox. Today is my last day after working at EPA for over 25 years. I am writing this note because I, along with many EPA staff, are becoming increasing alarmed about the direction of EPA under your leadership. I understand there are people in the country who distrust EPA, and think we are overreaching our mission. I believe we need to listen to those voices and try to make changes where warranted.

However, I, and many staff, firmly believe the policies this Administration is advancing are contrary to what the majority of the American people, who pay our salaries, want EPA to accomplish, which are to ensure the air their children breath is safe; the land they live, play, and hunt on to be free of toxic chemicals; and the water they drink, the lakes they swim in, and the rivers they fish in to be clean.

I assume you are aware of the current low morale of EPA career staff. I have worked under six Administrations with political appointees leading EPA from both parties. This is the first time I remember staff openly dismissing and mocking the environmental policies of an Administration and by extension you, the individual selected to implement the policies. The message we are hearing is that this Administration is working to dismantle EPA and its staff as quickly as possible. I have highlighted several areas below which are emblematic of why morale at EPA is the lowest since I started in 1987.

1. Denying Fundamental Climate Science: This strikes at the core of the concerns from EPA staff. It was surprising, no shocking, when you stated on National television that carbon dioxide is not a primary contributor to climate change. This is settled science and we have too many other important scientific issues to investigate related to climate change to waste our time debating this issue. I am reminded of a Congressional hearing several years ago when Congressman Henry Waxman asked the CEOs of the major tobacco companies if smoking caused lung cancer. All of the CEOs categorically denied that smoking caused lung cancer. We know, of course, that was not true. You will continue to undermine your credibility and integrity with EPA staff, and the majority of the public, if you continue to question this basic science of climate change.

We are seeing the effects of climate change on the landscape right now. If you do not believe me, travel to Alaska during your tenure and talk with the Alaskans whose way of life is being fundamentally changed because of climate change; visit the Pacific Northwest and see where the streams are too warm for our salmon to survive in the summer; visit the oyster farmers in Puget Sound whose stocks are being altered from the oceans becoming more acidic; talk to the ski area operators who are seeing less snowpack and worrying about their future; and talk to the farmers in Eastern Washington who are struggling to have enough water to grow their crops and water their cattle. The changes I am referencing are not impacts projected for the future, but are happening now

It was encouraging that the President did not withdraw from the Paris Climate Agreement. However, the message from the President's other actions sends the signal to the rest of the world that the USA is no longer a leader in reducing greenhouse gas emissions and moving to a clean energy economy. You are correct that we do not need to choose between jobs and environmental projection. The question is what jobs? Are they jobs to move us forward to a cleaner energy economy or backwards to a dirtier fossil fuel economy?

Your statement that “we got a bad deal” in the Paris Climate Agreement highlights another case where you have not done your homework. The Paris Agreement, while not perfect, was a huge step forward in battling climate change and moving the world in the direction of newer cleaner energy technology.

Fortunately, there are other global leaders, including China and India, who understand the urgency of the problem and are taking action. Domestically we have Governors, Mayors, CEOs, and Tribal leaders who will fill the void created by the lack of Federal leadership. They will take on the task of reducing greenhouse gases that are causing warming and put in place actions that will make their communities more resilient from climate change. And they will do this while their communities continue to prosper.

2. “Our Big Day Today”: The email headline that greeted EPA staff on Tuesday March 28th was “Our Big Day Today”. The question many of us had was who is “our” referring too? Was it the many EPA career staff that worked for years developing the work that was rescinded or revoked? Was it the EPA career staff that should be jubilant the President came to EPA to poke a finger in our eye (or as many people indicated to give us the finger)? Was it the fossil fuel industry that will benefit most from the President’s action? Or was it the coal miners present at the event who are being given false hope their jobs are coming back?

We were frankly insulted that the President would come to EPA to announce that he is overturning the work to battle the most urgent environmental problem of our generation – climate change. It was beyond comprehension that an Administration could be so arrogant and callous.

3. Giving False Hope: The President is right that we need to help the coal miners who have been displaced and help retrain them for the future. The President is, however, wrong that coal jobs will be coming back after the repeal of the climate change actions. To state otherwise is false and misleading. It is amazing that an Administration that touts itself as business savvy has not done its homework on the market forces at play with coal.

The number of people employed in coal production in the USA has been declining since the high point in 1925 when over 860,000 people were employed to the current low point in 2017 with about 77,000 people are employed (US Department of Labor). The steady decline in employment in the coal industry happened, in general, as coal production increased. The cause of the decline was simple: automation, not job killing regulations.

According to coal companies themselves, the decline in production of coal in the USA will not be reversed to any great extent. There are no major new coal plants coming on line and the price of the most common replacement fuel, natural gas, will continue to decline with the advent of new production. Even if there is an increase in coal production, the number of jobs associated with the increased production will be small due to the automation of the industry.

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what makes sense. But, we are counting on you to advocate for EPA. Unfortunately, up to this point, we have no evidence of this.

Good luck and just remember that EPA staff will respond to leadership that takes into account the science and the opinions of individuals who have devoted their entire lives to fulfilling the mission of EPA – to protect human health and the environment. We understand that our positions may not always prevail, but please take the time to listen to expert voices that might differ from yours and your immediate staff. You may be surprised that you can find common ground on many issues. The health of the American people and our country depends on you.

Michael Cox

Mon Apr 03 09:18:43 EDT 2017
Hope.Brian@epamail.epa.gov
FW: Freshwater and Agriculture
To: CMS.OEX@epamail.epa.gov

From: Hannah Kate Walcher [mailto: (b) (6)
Sent: Friday, March 31, 2017 2:57 PM
To: Pruitt, Scott <Pruitt.Scott@epa.gov>
Subject: Freshwater and Agriculture

Dear Mr. Pruitt:

Your profile on the EPA website cites that your overarching goal is to “lead the EPA in a way that our future generations inherit a better and healthier environment”. Water is a key element of a healthy environment and the quality of water is decreasing rapidly around the world. What will you be doing during your time as Administrator of the Environmental Protection Agency with the agricultural industry to ensure that clean water is available in the quantities that will be needed future generations of Americans?

Agricultural nonpoint source pollution, which comes from many diffuse agricultural sources, was the leading cause of river and stream impairment while playing the second largest role in the impairment of reservoirs, lakes, and ponds in 2002 (USEPA Office of Water). This nonpoint source pollution is contributed to by poorly managed application of pesticides and fertilizer, overworking of land, and overgrazing (Water Contamination). Excess nitrogen and phosphorus from fertilizers and animal manure can wash into local bodies of water and seep into ground water, being the top pollution from agricultural sources (The Sources and Solutions: Agriculture).

The nitrogen and phosphorus contamination, known as nutrient pollution, can impact human health through the consumption of groundwater and exposure to toxic algae blooms. The U.S. Geological Survey’s 2010 report on nutrients in ground and surface water found that in 64% of monitoring wells had too high of nitrate levels. Consumption of water with too high of level of nitrates causes serious illness and even death, especially in babies. Exposure to algae blooms, brought on my nutrient pollution, can also result in rash, respiratory problems, and neurological damage (The Effects: Human Health).

70 percent of all freshwater used by humans is put into agriculture (Carolan). This majority of freshwater used by humans is exposed to these nutrient pollutants, which comprises the future availability of freshwater. Freshwater will then not be as available for future crops and future generation’s consumption.

You are in the position to make or break the environmental future of an entire nation. Watershed efforts, cover crops, conservation tillage, and appropriate animal waste management practices all help reduce the pollution mentioned above (The Sources and Solutions: Agriculture). However, not all farmers and food industries are using these types of operations. What policies and actions are you going to take with farmers and the agriculture industry to reduce the impact of nutrient pollutants on the critical, and limited, resource of freshwater? Change is needed for not only the success of future crops, but for the overall health of a nation and access to freshwater of future American families.

Sincerely,

Hannah Walcher

Hannah Walcher
Colorado State University - Supply Chain Management

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

APR 25 2017

OFFICE OF WATER

Ms. Hannah Walcher
Colorado State University
(b) (6)

Dear Ms. Walcher:

Thank you for contacting the U.S. Environmental Protection Agency and for sharing your concerns about water quality and agricultural nonpoint source pollution. Nutrient pollution from all sources is widespread and costly, and remains the single greatest threat to America's waters. Excess nutrients increase costs for managing and treating potable water supplies, cause illness from contact with contaminated recreational waters, and have caused economic losses to the fishing and recreation industries. Nutrient pollution also contributes to an increased trend in observed harmful algal blooms in surface waters that can release toxins posing concerns to human health.

The EPA is involved in a wide array of actions to address nutrient pollution from all sources and these activities are detailed at https://www.epa.gov/nutrient-policy-data/what-epa-doing-reduce-nutrient-pollution. In the specific area of agricultural NPS pollution, you are correct that this is a leading source of water quality impacts on surveyed rivers and streams (https://ofmpub.epa.gov/waters10/attains_index.home). Addressing agricultural nutrient losses is an important and sometimes challenging task that under the Clean Water Act is addressed through non-regulatory collaborative approaches. The EPA is working with our state and tribal partners and agricultural stakeholders through a variety of programs to help control nutrient runoff and improve water quality from agricultural sources. A few of these activities are described here.

The EPA coordinates with the United States Department of Agriculture Natural Resources Conservation Service and state water quality agencies to implement the National Water Quality Initiative. Through the NWQI USDA devotes funds to focused implementation of agricultural conservation practices (e.g., cover crops, manure management practices, nutrient management) that address sediments, nutrients and pathogens in 197 small watersheds across the country. The effort is coordinated with the water quality agency in each state and is helping to build collaborative working relationships across agencies while improving water quality in priority watersheds. Local farmers and ranchers and other state, local, federal, and nonprofit organizations are also engaged in making these projects successful.

The EPA co-chairs the Gulf of Mexico Hypoxia Task Force, a forum that includes USDA, three other federal agencies, and 12 Mississippi River basin states. The HTF supports state progress in implementing nutrient reduction strategies, works with Land Grant Universities to address research questions and track progress, and links to a variety of other partners working to tackle this large-scale nutrient problem.

The Clean Water Act Section 319 grant program supports state and tribal NPS programs and watershed scale projects to address all sources of NPS pollution including agricultural sources. Through the

Section 319 program the EPA, states and tribes partner with soil and water conservation districts, USDA field staff, Certified Crop Advisors and other retailers, and local partners to implement water quality projects and reduce nutrient losses. The EPA tracks successful water quality restoration efforts through its *NPS Success Stories* https://www.epa.gov/nps/nonpoint-source-success-stories. These stories track the number of NPS-impaired waterbodies that are partially or fully restored to state water quality standards. An example from Colorado is Box Canyon Creek, where sediment from unpaved roads and livestock grazing areas was degrading the creek. After implementing sediment control measures from the livestock and unpaved road sources, macroinvertebrate diversity – an important measure of stream health - increased in the creek (https://www.epa.gov/sites/production/files/2015-10/documents/co_box_canyon.pdf).

Thank you for your concern about freshwater resources and NPS pollution from agriculture. For more information about our work with agriculture and water quality please see: https://www.epa.gov/polluted-runoff-nonpoint-source-pollution/nonpoint-source-agriculture.
To learn more about agricultural work in Colorado and neighboring states you can reach out to our EPA colleagues in the Region 8 Office (https://www.epa.gov/nps/epa-regional-contacts-nps-programs).

Sincerely,

Michael Shapiro

Michael H. Shapiro
Acting Assistant Administrator

Mon Apr 03 09:20:23 EDT 2017
Hope.Brian@epamail.epa.gov
FW: Joint Industry Letter to EPA Administrator Pruitt regarding Formaldehyde regulation effective date [WARNING: SPF validation failed]
To: CMS.OEX@epamail.epa.gov

DRF

From: Joe O'Donnell [mailto:joe@iwpawood.org]
Sent: Friday, March 31, 2017 2:16 PM
To: Pruitt, Scott <Pruitt.Scott@epa.gov>
Cc: Winchester, Erik <Winchester.Erik@epa.gov>; Cindy Squires <cindy@iwpawood.org>
Subject: Joint Industry Letter to EPA Administrator Pruitt regarding Formaldehyde regulation effective date [WARNING: SPF validation failed]

Please find attached a joint industry letter concerning the effective date of EPA's Formaldehyde Emissions Standards for Composite Wood Products Final Rule.

If you have any questions please do not hesitate to contact me.

Sincerely,

Joe O'Donnell

Senior Manager, Government & Public Relations

International Wood Products Association

4214 King Street

Alexandria, Virginia 22302

Phone: (703) 820-6696

E-mail: joe@iwpawood.org

March 31, 2017

The Honorable Scott Pruitt
Administrator
U.S. Environmental Protection Agency
William Jefferson Clinton Building
1200 Pennsylvania Avenue, NW
Mail Code: 1101A
Washington, DC 20460

Dear Administrator Pruitt:

We appreciate and thank the Environmental Protection Agency for taking a close look at recently promulgated regulations. While we are pleased in particular that EPA is taking time to review and has therefore delayed the effective date of the Formaldehyde Emissions Standards for Composite Wood Products Final Rule, 81. Fed. Reg. 889674 (Dec. 12, 2017) and 82 Fed. Reg. 14324 (Mar. 20, 2016), we are deeply concerned that if the final rule goes into effect in its current form this delay in the effective date - without also amending all the internal implementation dates - will have an adverse effect on regulated industries.

If the Formaldehyde Composite Wood rule goes into effect as currently slated on May 22, 2017, EPA will have reduced the time available for Third-Party Certifiers (TPCs), panel manufacturers, fabricators, importers, distributors and retailers to obtain compliance by the mandated date of December 12, 2017, creating a substantially increased regulatory burden. Importantly, EPA in its March 20, 2017 final rule further delaying the effective date, has changed the effective date of the rule, but has *not* revised any of the implementation dates for all other provisions of the rule.

Under this rule, EPA must first recognize Product and Laboratory Accreditation Bodies, only then can a Third-Party Certifier apply for and be recognized by EPA. Panel manufacturers must have an EPA-recognized Third-Party Certifier certify its production processes and only when that task is complete can it be approved to manufacture EPA / TSCA compliant wood composite panels. Covered products must be compliant and labeled by December 12, 2017 to be sold in the U.S. In turn, fabricators, importers, distributors and retailers must wait until these steps are complete to be able to supply compliant products to the marketplace. All of this action cannot begin until the rule is in effect.

We strongly urge EPA to amend the internal implementation dates so that all of the rule's mandatory dates for compliance reflect *at a minimum* the lead times in the original final rule.

For example, under the regulation as finalized on December 12, 2016, Third-Party Certifiers (TPCs) were first going to be able to apply to EPA for recognition on February 10, 2017 -- the effective date of the regulation. As you know, this effective date was delayed by 60 days in accordance with White House Chief of Staff Reince Priebus' January 20th Memorandum for the Heads of Executive Departments and Agencies concerning Regulatory Freeze Pending Review. EPA's March 20th Further Delay of Effective Dates for Five Final Regulations Published by the Environmental Protection Agency Between December 12, 2016 and January 17, 2017 will now delay that effective date until May 22, 2017. This shortens the timeline for TPC's recognition substantially and puts tremendous pressure on EPA to process these applications quickly.

Also under the regulation, beginning December 12, 2017, one year after the regulation's original effective date, all covered wood products must be labeled as TSCA compliant. While we initially communicated our concerns about this tight one-year timeframe to EPA staff, the two delays have eliminated four months before the process can begin. We are concerned that the shrinking timeframe combined with limited staffing at EPA to process applications, finite TPC capacity, and the large number of composite wood product producers that must be visited will make it nearly impossible for U.S. businesses to bring their supply chains into compliance.

While at a minimum EPA should restore the lead times included in the original final rule, we believe a further 12 month extension is warranted.

The most recent delay prohibiting Accrediting Bodies (ABs) and TPCs from submitting applications to the agency for review and approval limits fabricators, importers, and distributors from sourcing compliant platforms used to produce laminated products. These laminated products are used as component parts of finished goods, i.e. furniture, wood flooring, cabinetry, and countless other consumer goods. The most recent delay in the effective date, combined with the 3-months anticipated for the agency to issue a direct final rule, severely limits the ability of the supply chain to source compliant composite wood products and truncates the compliance by possibly 6-months. The most workable solution would be for EPA to tie the rule's compliance timeline to the final effective date published in the Federal Register following EPA's latest review of the regulation and grant a 12-month extension to allow the various compliance milestones to be met and ensure the adequate supply of certified composite wood products throughout the supply chain.

For your review, we have also attached a document we have prepared outlining additional concerns about this regulation and its impact on U.S. businesses. We are hopeful that these additional concerns will also be taken into account as your staff reviews this rule.

Thank you for your attention to this important matter. We look forward to working closely with you and your staff to address this important issue that will make compliance nearly impossible for U.S. businesses. We welcome a meeting to discuss further these issues.

Sincerely,

American Home Furnishings Alliance
Kitchen Cabinet Manufacturers Association
International Wood Products Association
Recreational Vehicle Industry Association
National Retail Federation
Retail Industry Leaders Association

Regulation: Formaldehyde Emission Standards for Composite Wood Products (40 CFR Part 770, Published December 12, 2016) (81 FR 89674)

Agencies involved: Environmental Protection Agency, Customs and Border Protection

We at the American Home Furnishings Alliance, the Kitchen Cabinet Manufacturers Association, the International Wood Products Associations, the Recreational Vehicle Industry Association, the National Retail Federation, and the Retail Industry Leaders Association urge the Trump Administration to substantially improve or eliminate the EPA's Formaldehyde Emissions Standards for Composite Wood Products regulation. This new regulation will severely disrupt the supply chain for U.S. businesses manufacturing and selling products that include composite wood products such as furniture, cabinetry, wood flooring, recreational vehicles and many others consumer goods. The challenges associated with complying with this misguided regulation will lead to higher prices for U.S. consumers and the loss of good paying American jobs.

Our Associations are particularly concerned about the following provisions:

Effective Date and Compliance Timeline: The regulation as finalized on December 12, 2016, was originally set to become effective on February 10, 2017, and there are subsequent compliance milestones explicitly stated in the regulation. This effective date was delayed by 60 days in accordance with White House Chief of Staff Reince Priebus' January 20th Memorandum for the Heads of Executive Departments and Agencies concerning Regulatory Freeze Pending Review. On March 20th, EPA delayed the effective date until May 22, 2017. This shortens the timeline for Third-Party Certifier (TPC) recognition substantially and puts tremendous pressure on EPA to process these applications quickly. We are deeply concerned that if the final rule goes into effect in its current form with this delay in the effective date - without also amending all the internal implementation dates - it will have an adverse effect on regulated industries.

If this rule goes into effect as currently proposed on May 22, 2017, EPA will have reduced the time available for TPCs, panel manufacturers, fabricators, importers, distributors and retailers to obtain compliance by the mandated date of December 12, 2017, creating a substantially increased regulatory burden. Under this rule, EPA must first recognize Product and Laboratory Accreditation Bodies, only then can a TPC apply for and be recognized by EPA. Panel manufacturers must have an EPA-recognized TPC certify its production processes and only when that task is complete can it be approved to manufacture EPA / TSCA compliant wood composite panels. Covered products must be compliant and labeled by December 12, 2017 to be sold in the U.S. In turn, fabricators, importers, distributors and retailers must wait until these steps are complete to be able to supply compliant products to the marketplace. All of this action cannot begin until the rule is in effect. <u>We strongly urge EPA to amend the internal implementation dates so that all of the rule's mandatory dates for compliance reflect *at a minimum* the lead times in the original final rule.</u>

Also under the regulation, beginning December 12, 2017, one year after the regulation's original effective date, all covered wood products must be labeled as TSCA compliant. While we initially communicated our concerns about this tight one-year timeframe to EPA staff, the two delays have eliminated four months before the process can begin. We are concerned that the shrinking timeframe combined with limited staffing at EPA to process applications, finite TPC capacity, and the large number of composite wood product producers that must be visited will make it nearly impossible for U.S. businesses to bring their supply chains into compliance.

While at a minimum EPA should restore the lead times included in the original final rule, we believe a further 12 month extension is warranted. The most recent delay prohibiting Accrediting Bodies (ABs) and TPCs from submitting applications to the agency for review and approval limits fabricators, importers, and distributors from sourcing compliant platforms used to produce laminated products. These laminated products are used as component parts of finished goods, i.e. furniture, wood flooring, cabinetry, and countless other consumer goods. The most recent delay in the effective date, combined with the 3-months anticipated for the agency to issue a direct final rule, severely limits the ability of the supply chain to source compliant composite wood products and truncates the compliance by possibly 6-months. The most workable solution would be for EPA to tie the rule's compliance timeline to the final effective date published in the Federal Register following EPA's latest review of the regulation and grant a 12-month extension to allow the various compliance milestones to be met and ensure the adequate supply of certified composite wood products throughout the supply chain.

Non-Complying Lots: This provision, 40 C.F.R. § 770.20(f), applies to a fabricator who receives notification from a panel producer that panels it received were part of a lot that failed an emissions test. The provision arguably requires the fabricator to notify its customers to which it may have shipped finished products containing component parts made from those panels. The fabricator's notification must inform its customers that those finished products must be isolated; cannot be further distributed; and must either be recalled or treated and retested. This non-complying lots provision appears to be designed with panels and a short supply chain in mind. But it makes no sense when applied to finished goods that may or may not contain component parts from those panels, for several reasons.

First, by the time the fabricator receives the panel producer's notification, the panels almost certainly no longer exist as panels. Instead, the fabricator will almost certainly have cut up the affected panels it received into component parts, incorporated those component parts into finished goods, and shipped those finished goods. Second, the affected panels are untraceable once they are incorporated into finished goods. A fabricator does not track which panels go into which finished goods. Thus, it is infeasible to trace which customers received finished goods made from the affected panels. Third, in the fabrication process the panels are covered with veneers or other coatings. This means that it is no longer feasible to test the panels accurately for compliance with the emissions limits. Fourth, the fabricator's notification is very likely to be completely unnecessary, because by the time the customer receives its notification, the affected panels will probably have aged to the point that they now meet the emissions limits.

This dilemma for fabricators was not addressed in the proposed rule, which did not propose to require fabricators to notify their customers. Instead, it proposed to require panel producers to store panels until test results confirmed compliance. The final rule dropped that requirement, however, and instead required fabricator notifications. This means that the implications of a fabricator notification requirement were not subjected to notice and comment or even extensive consideration by EPA.

Early Compliance with Labeling Requirement: We respectfully request that EPA allow for the voluntary truthful labeling of compliant products prior to December 12, 2017. While at first glance it may appear that the final rule will require a rather simple change over to new *TSCA Title VI Compliant* labels, in fact the precipitate change in labeling – prohibited on December 11, 2017 and required on December 12, 2017 – would cause untold confusion in the marketplace and unnecessary burdens for panel producers, fabricators, distributors and retailers who seek to roll-out new TSCA-compliant SKUs and manage their inventories to address potential seasonal disruptions, while voluntarily and legitimately complying with the new regulation *prior to* the effective date.

There is no statutory requirement for the regulation's early labeling prohibition. The statute directs EPA to promulgate regulations regarding labeling, but addresses timing of the labeling in the following language:

> ***(B) IMPLEMENTING REGULATIONS – the regulations promulgated under this subsection shall – (II) not require any labeling or testing of composite wood products or finished goods containing regulated composite wood products manufactured before the designated date of manufacturer.***

The statutory language is very logical. Regulated entities should not be required to label before the underlying regulations take effect. However, the statutory prohibition on the EPA not requiring such labeling has morphed into a regulatory prohibition on manufacturers from labeling. This was not contemplated by the Congress and is not supported by a close reading of the Statute.

Import Certification: This regulation marks the first time EPA has applied the import certification requirements of TSCA to "articles."[i] Until now articles containing regulated chemicals have generally been exempt from TSCA. This unprecedented shift results in costly double regulation for composite wood product imports, which are already subject to the formaldehyde emission standards and the associated, labeling, testing, Third Party Certification, chain-of-custody, recordkeeping, and reporting requirements. This additional burden is unnecessary and provides no added public safety benefit.

When this regulation was being developed, EPA's weak justification was that import certifications are a potential "reminder" to importers. With every single imported shipment already required to meet labeling and documentation requirements, there is *no* justification for the conclusion that importers need such a reminder.

EPA also refers to import certification as a "compliance monitoring tool" -- this negates the fact that typically this tool is only used for bulk chemicals and mixtures of toxic chemicals that are *not* independently subject to other compliance monitoring. In contrast, composite wood products are engaged in significant compliance monitoring, Third Party Certification, labeling and reporting. In addition, EPA has never before applied import certification requirements to articles and should not have made such a major change to this well-established policy without a dedicated review.

Under this regulation, importers (or their authorized agents) must certify either that each shipment is subject to TSCA and complies with all applicable rules and orders thereunder (positive certification), or that the chemical shipment is not subject to TSCA (negative certification). This statement must be on or attached to a commercial invoice or entry document belonging to the imported shipment. This requires costly coordination with importing agents and brokers, revision of international forms and documents, the submission of additional paperwork, adjustments to internal processes, and training – all on top of the already substantial requirements of the broader Formaldehyde Emission Standards for Composite Wood Products regulation. In addition, CBP is now required to review a flood of new import certifications. For those products exempted under the rule it is not clear if they would also be forced to do a negative certification. That additional requirement could snare scores of companies otherwise exempted from the rule. Such a result will only lead to more confusion, unnecessary paperwork, and costly analysis for each entry.

Laminated Products Exemption: EPA disregarded their legislative mandate to evaluate laminated products by ignoring available and published data suggesting that finished furniture dramatically reduces the emission profile of laminated products used as component parts of finished goods. In the final rule, EPA gave no credit or recognition to the value added process of finished furniture. It should be noted that EPA has discretion to exempt laminated products based on published, available, and relevant information asserting such an exemption is justified. Industry stakeholders submitted to the docket data that suggest an exemption is warranted and should be included in the final rule.

---

[i] [i] TSCA defines "article" as "a manufactured item (1) which is formed to a specific shape or design during manufacture, (2) which has end-use function(s) depending in whole or in part upon its shape or design during end use, and (3) which has either no change of chemical composition during its end use or only those changes of composition that have no commercial purpose separate from that of an article, and that results from a chemical reaction that occurs upon end use of other chemical substances, mixtures, or articles." "Articles" that contain chemical substances which are not intended to be removed and have no separate commercial purpose have until now been generally exempt from TSCA.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

JUN 09 2017

OFFICE OF CHEMICAL SAFETY
AND POLLUTION PREVENTION

Joe O'Donnell
Senior Manager, Government & Public Relations
International Wood Products Association
4214 King Street
Alexandria, Va. 22302

Dear Mr. O'Donnell:

Thank you for your March 31, 2017 letter to the U.S. Environmental Protection Agency, regarding your concerns related to the final rule to implement the Formaldehyde Standards for Composite Wood Products Act (Title VI of the Toxic Substances Control Act or TSCA Title VI), and how the effective date and internal implementation deadlines for the rule could potentially affect stakeholders.

We appreciate the suggestions that you and other stakeholders have made regarding this final rule. The EPA recently made the following changes to this rule in response to stakeholder comments and will continue to consider the comments you shared in your letter. The EPA on May 24, 2017, issued a direct final rule (82 FR 23735) to extend the compliance dates in the final Formaldehyde Emission Standards for Composite Wood Products, published in the Federal Register December 12, 2016. Compliance dates would be extended for: (1) formaldehyde emission standards, recordkeeping, and labeling provisions until March 22, 2018; (2) import certification provisions until March 22, 2019; and (3) laminated product producer provisions until March 22, 2024. Note that laminated product producers would still be required to comply with applicable fabricator provisions beginning March 22, 2018. Additionally, the direct final rule would extend the California Air Resources Board Third-Party Certifiers transitional period until March 22, 2019.

To save time in the event that the EPA receives an adverse comment on the direct final rule and must publish a proposal, the EPA also published a companion Notice of Proposed Rulemaking (82 FR 23769) for the action to extend the compliance dates. If the EPA receives no adverse comment on the direct final rule or proposed rule, then the agency will take no further action on the proposed rule and the direct final rule will become effective. If the EPA receives relevant, adverse comment, then the agency will withdraw the direct final rule and proceed with the proposed rule through the normal rulemaking process.

In the near future, the agency plans to issue a direct final rule to remove 40 CFR 770.45(f) to allow early labeling of compliant composite wood products and finished goods as soon as compliance can be achieved. This will reduce the compliance burden for panel producers, fabricators, distributors and retailers who want to roll out compliant inventory prior to the rule's compliance date. Another future direct final rule will update several voluntary consensus standards referenced in the final rule.

Again, thank you for your letter. If you have further questions, please contact Erik Winchester of my staff at winchester.erik@epa.gov or (202) 564-6450.

Sincerely,

Wendy Cleland-Hamnett
Acting Assistant Administrator

The Administrator

Washington, D. C. 20460

March 30, 2017

Ed Frank
Director of Policy Communications
National Cattlemen's Beef Association
1275 Pennsylvania Avenue NW, Suite 801
Washington DC 20004

Ed,

Thank you for helping coordinate the Cattlemen's event. I was blessed to be included and to share with the group. It was a great event!

Please let me know if I may be of help in the future.

All the best,

Scott

E. Scott Pruitt

Wonderful event and thanks for invite!

The Administrator

Washington, D. C. 20460

March 30, 2017

Craig Uden, President
National Cattlemen's Beef Association
1275 Pennsylvania Avenue NW, Suite 801
Washington DC 20004

Craig,

Thank you for the kind introduction today at the Cattlemen's event. What a great group! I was blessed to be part of it.

I look forward to continuing our work together. Please keep me abreast of any concerns the NCBA may have.

All the best,

Scott

E. Scott Pruitt

Very much enjoyed my time today!

The Administrator

Washington, D. C. 20460

March 30, 2017

Scott Yager
Environmental Policy
National Cattlemen's Beef Association
1275 Pennsylvania Avenue NW, Suite 801
Washington DC 20004

Scott,

Thank you for meeting with me and for your assistance in inviting me to speak at the Cattlemen's event. I appreciate the discussions we had and hope you will let me know if I may be of help in the future.

All the best,

Scott

E. Scott Pruitt

Wonderful event
and thanks for
invite!

UNITED STATES
ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

THE ADMINISTRATOR

Dear Mr. Secretary —

It was a pleasure to meet you today and have the opportunity to commence a dialogue between our respective offices... I look forward to continuing the discussion and hopefully reconnecting in Germany later this year. Respectfully yours,

Scott Fabius

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Federal Ministry
for the Environment, Nature Conservation,
Building and Nuclear Safety

Jochen Flasbarth
State Secretary
Federal Ministry for the Environment, Nature Conservation,
Building and Nuclear Safety

Stresemannstraße 128-130 / 10117 Berlin
POSTAL ADDRESS 11055 Berlin / Germany
TELEPHONE + 49 3018 305-2020
FAX + 49 3018 305-2046
E-MAIL flasbarthj@bmub.bund.de

UNITED STATES
ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

OFFICE OF
THE ADMINISTRATOR

Dear Stephen —

I very much enjoyed our time together and the opportunity to discuss various policy matters... Truly, your insight and counsel were much appreciated and I look forward to the next opportunity to visit!

Respectfully yours,

Scott

Address.

Rt. Hon. Stephen J. Harper
c/o Harper + Associates
850 2nd St. SW
15th Floor
Calgary, Alberta
Canada T2P 0R8

HARPER & ASSOCIATES

STEPHEN J. HARPER
CHAIRMAN
sjh@stephenharper.ca
(403) 608-9287

March 29, 2017

Ken,

It was great seeing you today! I enjoyed catching up and the fellowship. Truly, your words blessed and encouraged me – thank you!

Until the next time

Scott

Always great to see you!

Address envelope to Ken Cuccinelli

[redacted]

for the copy to Exec Sec. Office be sure to add info to the copy

UNITED STATES
ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

MAR 3 1 2017

THE ADMINISTRATOR

Dear Kerry —

Great to meet you today...
I very much enjoyed the discussion and look forward to the next opportunity.

Sincerely,

Pat

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UNITED STATES
ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

THE ADMINISTRATOR

Dear Kerry —

Great to meet you today...
I very much enjoyed the discussion and look forward to the next opportunity.

Sincerely,

Pat

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WASTE MANAGEMENT
Carter Lee "Kerry" Kelly
Senior Director
Federal Affairs

701 Pennsylvania Avenue NW
Suite 590
Washington, DC 20004
202 639 1218 • 571 377 9202 Mobile
kkelly5@wm.com

UNITED STATES
ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

MAR 3 1 2017

THE ADMINISTRATOR

Dear Sue —

Great to meet you today...
I very much enjoyed the
discussion and look forward
to the next opportunity!

Sincerely,

Scott

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UNITED STATES
ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

THE ADMINISTRATOR

Dear Sue —

Great to meet you today...
I very much enjoyed the discussion and look forward to the next opportunity!

Sincerely,
Scott

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WASTE MANAGEMENT

Sue M. Briggum, Ph.D., J.D.
Vice President, Federal Public Affairs

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The Administrator

Washington, D. C. 20460

March 30, 2017

PSO Hall
EPA Security Officer

PSO Hall,

Thank you for your assistance processing the visitors from the Oklahoma Farm Bureau yesterday. You showed professionalism and remarkable patience which was appreciated by the group.

Keep up the excellent job!

All the best,

E. Scott Pruitt

Thank you for all your help!

The Administrator

Washington, D. C. 20460

March 30, 2017

PSO Thurston
EPA Security Officer

PSO Thurston,

Thank you for your assistance processing the visitors from the Oklahoma Farm Bureau yesterday. You showed professionalism and remarkable patience which was appreciated by the group.

Keep up the excellent job!

All the best,

Scott

E. Scott Pruitt

Thank you for all your help!

The Administrator

Washington, D. C. 20460

March 30, 2017

Sergeant Walker
EPA Security Officer

Sergeant Walker,

Thank you for your assistance processing the visitors from the Oklahoma Farm Bureau yesterday. You showed professionalism and remarkable patience which was appreciated by the group.

Keep up the excellent job!

All the best,

Scott

E. Scott Pruitt

Thank you for all your help!

The Administrator

Washington, D. C. 20460
March 30, 2017

PSO Green
EPA Security Officer

PSO Green,

Thank you for your assistance processing the visitors from the Oklahoma Farm Bureau yesterday. You showed professionalism and remarkable patience which was appreciated by the group.

Keep up the excellent job!

All the best,

E. Scott Pruitt

Thank you for all your help!

The Administrator

Washington, D. C. 20460

March 30, 2017

PSO Shengelgn
EPA Security Officer

PSO Shengelgn,

Thank you for your assistance processing the visitors from the Oklahoma Farm Bureau yesterday. You showed professionalism and remarkable patience which was appreciated by the group.

Keep up the excellent job!

All the best,

Scott

E. Scott Pruitt

Thank you for all your help!

The Administrator

Washington, D. C. 20460
March 30, 2017

PSO Sullivan
EPA Security Officer

PSO Sullivan,

Thank you for your assistance processing the visitors from the Oklahoma Farm Bureau yesterday. You showed professionalism and remarkable patience which was appreciated by the group.

Keep up the excellent job!

All the best,

Scott

E. Scott Pruitt

Thank you for all your help!

17 MAR 2017

Dear Environmental Protection Agent,

Salutations. My name is Jerrold Thomas Greene, III. [redacted] (b) (6) I am an inmate at River North Correctional Center in Independence, Virginia. I'm writing because I feel morally obligated to bring to light an outrageous policy being implimented by the Virginia Department of Corrections.

Though I am not much of an "eco-warrior", the enclosed policy change of Virginia's mail for prisoners seems to be both environmentally unsound and can be seen as a gross misallocation of funds. (I didn't know who else to write. Please forward up your chain of command if able and willing). This new policy affects my mail (no pictures and only three pages?!), affects the environment (photocopy EVERY piece of prisoner mail daily?!), and affects the taxpayer (costs of photocopies, etc.).

I understand the need to crack down on the drug problem in the prison system, but the new policy is ridiculous. (Let me point out that I "live clean" - refusing drugs and alcohol - and have never received a drug charge. Why let this policy affect me?).

I hope you find this information helpful in your mission in helping our planet live a little more green. Please write me back and let me know if you intend to investigate or just let the situation resolve or - hopefully not - that you intend not to do anything at all. I trust in your integrity, duty, professionalism, and discretion.

Thank you for your time and consideration.

Respectfully,

[redacted] (b) (6)

RECEIVED
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* ENCLOSURE

COMMONWEALTH of VIRGINIA

DEPARTMENT OF CORRECTIONS
RIVER NORTH CORRECTIONAL CENTER

Barry Kanode
WARDEN

329 Dellbrook Lane
Independence, VA 24348

March 13, 2017

Offender Population
River North Correctional Center

Over the past year, facility staff have discovered a substantial amount of contraband entering DOC facilities through the facility visiting room and the facility mailroom. A significant portion of this contraband has been drugs. Due to the increasing amount of contraband entering our facilities and in order to ensure a high level of safety and security for all Department of Corrections (DOC) staff, visitors and offenders, it is essential that the Department implement additional security measures aimed at detecting and eliminating contraband in all DOC facilities. Therefore in response to this growing issue, the following changes will be implemented.

Visitation (Effective April 22, 2017)

1. Offenders will be permitted a minimum of one hour and a maximum of four hours per visiting day with visitors on those days designated for the offender to visit. On a case-by-case basis and as approved by the Facility Unit Head or their designee, offenders may request approval in advance for an extended visit based on special circumstance or need, such as infrequent visits and extreme travel distance.
2. Vending machines located in the visiting area for offenders and their visitors will be restricted to selling beverages, candy bars, granola bars, and crackers (non-bag).

Offender Visitation Searches (Effective April 22, 2017)

1. **All Security Level 2 and above male Institutions, Fluvanna Correctional Center for Women and Virginia Correctional Center for Women**. All offenders will be strip searched prior to a contact visit. After the strip search has been conducted, offenders will be required to change into a state issue jumpsuit that zips up the back, a pair of state issue socks, and state issue canvas shoes. Male offenders will also be required to change into state issue undergarments (briefs and undershirt).
2. Visitors who need to use the restroom during visitation will continue to exit the visiting area and access the restrooms designated for visitor use. Any visitor who returns to the visiting area will be required to comply with the search requirements of Operating Procedure 445.1, *Employee, Visitor, and Offender Searches* and Operating Procedure 851.1, *Visiting Privileges*. Priority should be given to these visitors for re-entry. Minor visitors who need to use the restroom during visitation must be accompanied by their adult parent or legal guardian.
3. Offenders who need to use the restroom during visitation shall be processed from the visiting room but will no longer be returned to the housing unit to access the restroom. Offenders will be required to exit the visiting room and be escorted to a separate location where they will be strip searched prior to and after use of the restroom. The offender will be allowed to return to the visitation area after the strip search has been completed. Offenders will only be permitted to exit one time during the visit.
4. At the conclusion of visitation, the state issue jumpsuits, undergarments, socks and shoes will be collected from the offenders and appropriately laundered, prior to being re-issued to other offenders for use during visitation.

→ **Incoming Offender Correspondence (Effective April 17, 2017)**

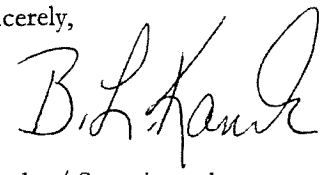
1. **All Security Level 2 and above Institutions.** All incoming offender general correspondence to include the envelope at Security Level 2 and above Institutions will photocopied in the institutional mailroom and a maximum of three black and white photocopied pages front and back will be provided to the offender.
   - The original envelope, letter and all enclosed contents will be shredded in the institutional mailroom. Exceptions to this requirement include but are not limited to official legal, government and court ordered documents such as military records (i.e. DD214), Court documents (i.e. divorce decrees, name change orders), etc. Before any action is taken on these documents, facility management staff must be consulted. Personal Identification Documents will continue to be forwarded to the facility Records Office for processing.
   - Offenders will be limited to receiving a maximum of three, 8 ½ X 11, black and white photocopied pages front and back to include the photocopy of the envelope. Each item in the envelope i.e., photograph, newspaper clipping, drawing, each side of a letter, etc. will be considered one photocopy.
   - Enclosed items (photographs, greeting cards, newspaper articles, etc.) will not be manipulated to print multiple items on a single photocopied page. Items that exceed the established size limitation will not be manipulated to fit on a single or multiple 8 ½ X 11 photocopy pages.
   - The entire correspondence and all enclosed items that exceed the established photocopy or size limit will be returned to the sender with the *Notice of Unauthorized Correspondence* 803_F2 advising the sender of the reason for the return.
2. Individuals will still be permitted to send offenders secure messages, photographs, and other attachments through the JPay system as is currently authorized. Additionally, offender pictures during visitation will still be permitted in accordance with Operating Procedure 801.6, *Offender Services*
3. Incoming legal correspondence and special purpose correspondence will be processed in accordance with the current procedural requirements as provided in Operating Procedure 803.1, *Offender Correspondence.*

Drug Use Sanctions and Restrictions

1. In accordance with Operating Procedure 861.1, *Offender Discipline, Institutions*, any offender who pleads guilty or is convicted of a disciplinary offense for possession of drugs or has tested positive for drug use will be subject to specific visiting restrictions as follows:
   - First Conviction: Non-contact visits with immediate family only for six months
   - Second Conviction: Non-contact visits with immediate family only for one year
   - Third Conviction: Non-contact visits with immediate family only for two years
   - Fourth Conviction and any additional convictions: Non-contact visits with immediate family only for five years
2. These additional visiting restrictions shall be imposed for offenders who are convicted of a singular or multiple offenses within a 10 year period of a 122a, 122b, 122c, 122d, 122e, 122f, or a 198a, 198b, 198c to these offenses.
3. Visiting restrictions will run concurrent with any visiting restriction imposed under the *Enhanced Sanctions* section of this operating procedure.
4. If an additional conviction occurs while the offender is still under enhanced sanctions and/ or visiting restriction for a previous conviction, the appropriate enhanced sanctions/ restriction will be imposed from the date of the latest conviction. The offender will not be required to complete the previous enhanced sanctions/ restriction before the new one is imposed.
5. Recently a new disciplinary offense code, 122g "Transfer of funds in relation to drug activity", was added and we are working with JPay to require users to provide a legitimate name when sending secure messages and funds to offenders. Additional restrictions to offender media devices are under review.

Offenders are encouraged to notify their family members and friends of the above procedural changes and to address their questions and concerns with facility staff prior to the implementation effective date.

Sincerely,



Warden/ Superintendent

JERROLD THOMAS GREENE, III. [redacted] (b)(6)

RIVER [redacted] (b)(6)

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WASHINGTON, DC 20460

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Mon Apr 03 13:08:59 EDT 2017
Hope.Brian@epamail.epa.gov
FW: Puerto Rico Limpio "Environmental Crisis"
To: CMS.OEX@epamail.epa.gov

DRF

From: Hiram J. Torres Montalvo [mailto:hjtorres@hiramjose.com]
Sent: Monday, April 03, 2017 11:22 AM
To: Pruitt, Scott <Pruitt.Scott@epa.gov>
Subject: Re: Puerto Rico Limpio "Environmental Crisis"

Administrator Scott Pruitt
Office of the Administrator
United States Environmental Protection Agency 1200 Pennsylvania Avenue, NW,
Washington, DC 20460

Dear Administrator Pruitt,

On behalf of Puerto Rico Limpio, I am writing you today to ask for your help in closing Puerto Rico's toxic government-owned landfills. As you are aware, more than 70% Puerto Rico's landfills are in violation of federal and local laws. This is a direct threat to the health of Puerto Ricans, especially more than 20 low-income communities across the Commonwealth that have to live near these toxic dumps.

Sincerely,

Lcdo. Hiram J. Torres Montalvo

PR Limpio

PMB 136 La Cumbre
273 Sierra Morena
San Juan, PR 00926-5542 Tel: 787.904-6336

CONFIDENTIALITY NOTE: This electronic communication contains information belonging to the Attorney Hiram J. Torres Montalvo and is confidential and/or legally privileged. The information is intended only for the use of the individual or entity addressed above. If you are not the intended recipient, you are hereby notified that any disclosure, copying, distribution or the taking of any action in reliance on the contents of this communication is strictly prohibited. Please note that any views or opinions presented in this communication are solely those of the author and do not necessarily represent those of the firm. The recipient is responsible for checking this email and any attachments for the presence of viruses. The firm does not accept any liability for any damage caused by any virus transmitted.

April 3, 2017

Administrator Scott Pruitt
Office of the Administrator
United States Environmental Protection Agency
1200 Pennsylvania Avenue, NW,
Washington, DC 20460

Dear Administrator Pruitt,

I am writing you today to ask for your help in bringing an end to a decade-long crisis on the Island of Puerto Rico. Over 70% of Puerto Rico's municipal landfills violate federal law. The EPA has documented that these landfills pose, "an imminent and substantial threat to health and the environment."

Over the last year, my organization, Puerto Rico Limpio, have documented firsthand how urgent this crisis has become. Trash is being dumped outside of unlined cells, no use of leachate controls, and some non-compliant sites are expanding into residential communities. As I write to you, a crisis in Candelaria, at the Toa Baja municipal landfill is unfolding. The landfill, which has already been determined to be an open dump in violation of federal law, is expanding. The operator is illegally dumping trash on a sloped hill that is forcing toxic sludge into the homes of nearby residents, resulting in health risks from rashes to asphyxiation. To date, no one from the EPA or Puerto Rican Government has bothered to visit these homes or stop this violation of civil rights. This is criminal neglect.

Worse, the EPA is well aware of this crisis in Puerto Rico, including what is going on in Toa Baja, and has chosen to look the other way. The Obama Administration spent the last 8 years choosing to not enforce the laws that could have brought closure to this crisis. Even after persistent communication with then-EPA administrator Gina McCarthy and former Region 2 administrator Judith Enck, no enforcement action was taken.

This crisis has been document by the Congressional Task Force on Economic Growth in Puerto Rico's December report, by Members of the Federal Oversight Board on Puerto Rico and by yourself when addressing a question on this crisis as part of your confirmation hearings.

Administrator Pruitt, the laws governing solid waste management are not new, they have been in use for almost 30 years. We urge you to use existing legal authority under Resource

Conservation and Recovery Act (RCRA) section 7003 and existing budgets such as the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) to close these sites immediately, and put locks on the gates.

I hope your administration can see the situation is dire and in need of your immediate attention. This is an opportunity to right the wrongs of the past Administration.

Sincerely,

HIRAM J. TORRES MONTALVO
Co-Founder

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 2
290 BROADWAY
NEW YORK, NY 10007-1866

APR 20 2017

Mr. Hiram J. Torres-Montalvo
Puerto Rico Limpio
PMB 136 LaCumbre
273 Sierra Morena
San Juan, PR 00926-5542

Dear Mr. Torres:

This is in response to your April 3, 2017, letter to the U.S. Environmental Protection Agency Administrator Scott Pruitt, regarding municipal solid waste disposal in the Commonwealth of Puerto Rico. You raised similar issues in your September 1, 2016, letter to former Administrator Gina McCarthy, to which EPA responded on November 22, 2016 (copy enclosed).

Your most recent letter raises concerns regarding what you characterize as "criminal neglect" on the part of both EPA and the Puerto Rico government with respect to the Toa Baja Municipal Solid Waste Landfill, and asserts that EPA has "looked the other way" from this landfill and from what you term a "decade-long crisis" regarding the continued operation of non-compliant solid waste landfills in Puerto Rico. Your letter further states that "no enforcement action" was taken over the past eight years and urges EPA to use existing legal authorities and budgets to immediately close all of the non-compliant landfills operating in the Commonwealth.

Let me assure you again that EPA has not been looking the other way. Although solid waste is primarily a matter of state or, in this case, territorial responsibility, EPA has actively used its civil and administrative authorities to address this very challenging and complicated issue in Puerto Rico. EPA has taken one or more actions against 13 of the 29 operating solid waste landfills in Puerto Rico. Since 2007, EPA has issued 15 Administrative Orders under the imminent and substantial endangerment provision of the Resource Conservation and Recovery Act to require closure of landfills. We have also entered into a Clean Air Act Judicial Consent Decree, to require improved operations and scheduled closure of another landfill. Just this month, we issued an Administrative Order to the Toa Alta Municipal Solid Waste Landfill and, with the Department of Justice, we lodged a proposed Civil Judicial Consent Decree regarding the solid waste landfill owned and operated by the Municipality of Santa Isabel.

The Toa Baja Landfill is subject to a 2012 EPA Amended Order on Consent, under which the landfill is scheduled to permanently cease receiving waste by January 1, 2018, and to permanently close by January 1, 2019. The landfill no longer operates as an open dump, as waste disposal in the old, unlined cell ceased in 2015. The EPA visited the landfill in November 2016, and we did observe waste disposal

in the new, lined landfill cell, but we did not observe any recent illegal expansion of the landfill (*i.e.*, beyond that already addressed in the Order on Consent). We are, however, concerned with the current situation you describe at the landfill, involving illegal expansion and dumping of trash on a hillside, and request that you provide us with any information you may have which documents these conditions.

We share your concern in this matter and hope that this information will give you a better understanding of EPA's efforts. Please contact Mr. Leonard Grossman, Senior Enforcement Team Leader, RCRA Compliance Branch, EPA Region 2 at (212) 637-4039 or grossman.lenny@epa.gov to provide any supporting documentation regarding the Toa Baja Landfill or if you have any additional questions.

Sincerely,

Catherine R. McCabe

Catherine R. McCabe
Acting Regional Administrator

Enclosure

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 2
290 BROADWAY
NEW YORK, NY 10007-1866

NOV 2 2 2016

Mr. Hiram J. Torres-Montalvo
Puerto Rico Limpio
PMB 136 LaCumbre
273 Sierra Morena
San Juan, PR 00926-5542

Dear Mr. Torres:

This letter is in response to your September 1, 2016, letter to U.S. Environmental Protection Agency (EPA) Administrator Gina McCarthy regarding municipal solid waste disposal in the Commonwealth of Puerto Rico. I can assure you that the EPA shares your concern that municipal solid waste landfills in Puerto Rico comply with protective operating and closure requirements.

The EPA continues to work on problems posed by municipal solid waste landfills in Puerto Rico. The EPA has issued administrative orders and entered into a consent decree that together address twelve of the landfills, and we are overseeing the implementation of these requirements. The most recent of the orders were issued in September 2016 and dealt with the landfills in the Municipalities of Arroyo and Cayey. Copies of these orders and the consent decree are available at: https://www.epa.gov/pr/puerto-rico-landfill-consent-orders-and-consent-decrees.

In general, these orders and consent decree require operational improvements at the landfills, the permanent cessation by a date certain of the receipt of waste at the landfills, preparation of proper landfill closure plans, and full implementation of those closure plans according to schedules approved by the EPA. The time period allowed for closure takes into account the financial constraints of the municipalities. Four of the twelve landfills have already either permanently closed, achieved interim closure, or permanently ceased waste acceptance, and a fifth landfill is now accepting limited amounts of waste. The EPA continues to investigate the landfills on the island, and where necessary, will take legal action. Thus, the agency has acted and will continue to act to protect public health and the environment from adverse impacts from the municipal solid waste landfills in Puerto Rico. A fact sheet summarizing the EPA's work to address Puerto Rico landfills is enclosed.

As background, in the 1980's, 69 landfills operated in Puerto Rico. By the end of the 1990's, 37 of those landfills were closed. Two additional landfills closed in the last 10 years, while two recently ceased receiving waste and are undergoing closure. One new, fully lined landfill opened in 2016. Of the remaining 29 operating landfills, 19 of these continued to place waste in unlined waste cells.

Several of the administrative orders the EPA has issued in recent years also provide that certain landfills may build new, compliant waste disposal cells to ensure that there is adequate space for future municipal solid waste disposal. There are now 10 landfills operating fully-lined disposal cells in the Commonwealth, providing protective, affordable, solid waste disposal capacity to many of the financially burdened municipalities. Further, all of the EPA's recent orders require that the landfills

develop and implement, if feasible, photovoltaic and gas-to-energy systems that will help provide affordable electricity to surrounding communities. While photovoltaic systems have been proposed, they have yet to be funded; however, gas-to-energy systems are now operational at two of the landfills covered by the EPA orders. Further, all but one of the EPA's orders requires the municipalities to implement comprehensive recycling and composting programs.

The EPA has also worked to get mosquito control plans in place for all Puerto Rico landfills. Beginning in April 2016, the EPA sent letters to the landfills under an agency order, requiring them to submit and immediately implement mosquito control plans. The EPA expects to include such a requirement in any future orders as well, relating to Puerto Rico landfills. These plans are especially important to help prevent Zika transmission on the island. To date, 15 landfills have put such plans in place. More recently, letters requesting that plans be developed, submitted to the Puerto Rico Environmental Quality Board (EQB), and implemented, have been sent to all the operating landfills not under an agency order. The EPA is also working to help EQB and the Puerto Rico Solid Waste Management Authority address scrap tire piles in the Commonwealth, which are not only a fire hazard, but also pose a risk of harboring mosquitoes that may transmit the Zika virus and other diseases.

With respect to your suggestion that the EPA withdraw its approval of EQB's solid waste permitting program, two important facts should be kept in mind: 1) even if the agency did withdraw approval of the program, that would not result in the EPA having the authority to issue municipal solid waste landfill permits in Puerto Rico and to run Puerto Rico's solid waste program. The Resource Conservation and Recovery Act (RCRA), 42 U.S.C. § 6901, *et seq.*, does not give the agency that authority. Rather, we would need EQB to continue to run a permit program for solid waste management facilities. This is the framework contemplated under RCRA. 2) Irrespective of whether solid waste program approval is withdrawn, the EPA retains its authority under Section 7003 of RCRA to require the abatement of imminent and substantial endangerments, as we have done at many of the landfills in Puerto Rico.

In summary, the EPA Region 2 has prioritized numerous actions to reduce threats to health and the environment posed by Puerto Rico landfills, improve their operations and require their proper closure, and we continue to do so.

If you have questions or would like to discuss this matter further, please contact Mr. Leonard Grossman, Section Chief, RCRA Compliance Branch, EPA Region 2 at (212) 637-4039 or grossman.lenny@epa.gov.

Thank you.

Sincerely,

Judith A. Enck

Judith A. Enck
Regional Administrator

EPA's Work to Address Puerto Rico Landfills

September 2016

Improving solid waste management and addressing landfill problems in Puerto Rico is important. There are approximately 29 operating landfills in Puerto Rico, the majority of which are beyond capacity. EPA began its direct involvement to address these landfills in 2002, and continues to work closely with the Puerto Rico Environmental Quality Board (EQB).

In Puerto Rico, EPA has focused on four things: 1) closure of open dumps (*i.e.*, long-term, non-complying landfills) to protect human health and the environment; 2) implementing recycling; 3) greenhouse gas reductions via landfill gas collection, control, and energy recovery; and, 4) improving operations in existing landfills.

To date, the EPA has legal agreements to close 12 landfills, and the EPA is continuing to assess landfills and develop legal agreements where appropriate.

Puerto Rico Landfill Consent Orders and Consent Decree - Closure Status

Landfill	Closure Status	Recycling & Composting Program Required	New Cell Construction
Aguadilla	Closed April 2010	No	No
Arecibo (Consent Decree)	After reaching final capacity (circa 2020)	Yes	No
Arroyo	Permanent waste receipt cessation required June 2019	Yes	No
Cayey	Permanent waste receipt cessation required January 2018	Yes	Under consideration
Florida	Overdue - permanent waste receipt cessation required June 2016	Yes	No
Isabela	June 2020 (only limited waste now being received)	Yes	Planned
Juncos	Permanent waste receipt cessation required December 2014 – Extended	Yes	Under construction
Lajas	December 2017	Yes	Planned
Moca	After reaching final capacity (circa 2019)	Yes	Planned
Santa Isabel	Interim closure completed September 2014	Yes	No
Toa Baja	Permanent waste receipt cessation September 2014 (achieved September 2015) and closure thereafter per closure plan schedule (pending)	Yes	Operational
Vega Baja	Permanent waste receipt cessation July 2013 (achieved July 2015) and closure thereafter per closure plan schedule (pending)	Yes	Operational

The EQB received federal approval from EPA in 1994, indicating that its solid waste compliance and enforcement program adequately reflected federal landfill criteria. Accordingly, EQB has primary responsibility for regulating solid waste landfills in the Commonwealth, and federal landfill criteria governing solid waste are not directly enforceable by EPA in Puerto Rico. Only EQB has permitting and solid waste enforcement authority over the landfills. EPA utilizes its enforcement authority under the Resource Conservation and Recovery Act (RCRA), as well as other federal statutes, to require that substantive actions be taken to address serious environmental and health risks. EPA used its RCRA Section 7003 Imminent and Substantial Endangerment Authority in the Puerto Rico open dump Consent Orders.

EPA has also worked extensively with EQB on the revision of its solid waste management regulations, in order to restore consistency with the minimum federal requirements. For example, EQB recently adopted a resolution with management standards for coal combustion residuals and approved a new biomedical waste regulation. In addition, EQB is in the process of developing amendments to its non-hazardous solid waste management regulations and an expanded regulatory composting program.

It is not practical to immediately close most landfills in Puerto Rico. The EPA and EQB approach has been to first close those that pose the greatest threat to the environment and to people's health. Regarding EPA's enforcement agreements, EPA has ordered landfills that have reached capacity to stop receiving waste and properly close. Other landfills that have not yet reached capacity are allowed to continue to accept waste, as long as they are in compliance with environmental regulations. EPA's Orders provide that certain landfills may build new, compliant waste disposal cells to ensure that there is adequate space for municipal solid waste to be disposed of on the island. There are now 10 landfills operating compliant disposal cells. Under all of EPA's Consent Orders and a Consent Decree, the open dumps are required to stop receiving waste and properly close as quickly as technically and economically feasible.

The EPA's Consent Orders and the Consent Decree go above and beyond requiring proper closure. Comprehensive recycling and composting provisions are included in 10 of the 11 EPA Consent Orders and in the Consent Decree. Other required environmental and engineering controls include groundwater monitoring, leachate (seepage) and stormwater (runoff) controls, and landfill gas monitoring and control.

The EPA has taken action to encourage and cultivate higher recycling rates in municipalities across the Commonwealth. In 2010, EPA helped establish the Puerto Rico Recycling Partnership (PRRP) to promote reuse, recycling, and clean composting throughout the Commonwealth. EPA has also worked with businesses and not for profit institutions to reduce the amount of waste generated and increase recycling through other EPA programs such as WasteWise and the Food Recovery Challenge, and has worked with EQB and the Puerto Rico Solid Waste Management Authority (SWMA) on materials management and planning.

The EPA has worked to get mosquito control plans in place for all Puerto Rico landfills. EPA sent letters to the landfills under EPA order, beginning in April 2016, requiring them to submit and immediately implement mosquito control plans, and made the plans a requirement for future orders. This is especially important to help prevent Zika transmission on the island. To date, seven landfills have already put such plans in place. More recently, letters requesting that plans be developed and submitted to EQB have been sent to all the operating landfills not under EPA order.

The budget crisis in Puerto Rico makes it more difficult for municipalities to properly address landfills. The central government of Puerto Rico faces a budget crisis which extends to the municipalities, which have always had limited funds to implement the environmental and engineering controls required to improve, and ultimately close, the landfills. This problem is further compounded by EQB having previously exempted municipalities from the requirement to set aside funds for closure, and the dwindling resources made available to EQB by the central government to carry out their solid waste compliance and enforcement programs.

The EPA will continue to work to address issues at landfills in Puerto Rico. EPA continues to actively assess the status of the remaining open dumps, and intends to issue further orders on a priority basis. Moreover, EPA will continue to work with EQB to both coordinate on solid waste enforcement and to oversee implementation and rebuilding of their approved solid waste program. EPA will continue to: 1) encourage the Puerto Rico government to provide ongoing funding to help the municipalities perform environmentally safe landfill operations and closure; 2) encourage the Puerto Rico government to work with the Puerto Rico legislature to develop programs for closure funding to municipalities; 3) encourage EQB and SWMA to implement a new island-wide revised solid waste program; and, 4) encourage SWMA to work with municipalities to implement recycling and composting programs.

For More Information

EPA Contacts:

Leonard Grossman and Carl Plössl
Division of Enforcement & Compliance Assistance
EPA Region 2
Grossman.Lenny@epa.gov; Plossl.Carl@epa.gov
(212) 637-4039/4088

John Martin
Public Affairs Division
EPA Region 2
Martin.JohnJ@epa.gov
(212) 637-3662

Puerto Rico EQB:
Nilda del Mar Sánchez Santiago
Director, Land Pollution Control
NildaSanchez@jca.pr.gov (787) 767-8056

Puerto Rico Solid Waste Management Authority (ADS):
Ms. Maritere Padilla Rodríguez, Esq.
Acting Director for Planning, Operations and Engineering
mpadilla@ads.pr.gov
(787) 765-7575 ext. 4670/4671/4613

Mon Apr 03 13:00:34 EDT 2017
Hope.Brian@epamail.epa.gov
FW: Aluminum Water Quality Criteria Revisions
To: CMS.OEX@epamail.epa.gov

DRF

From: Curt Wells [mailto:cwells@aluminum.org]
Sent: Monday, April 03, 2017 11:57 AM
To: Pruitt, Scott <Pruitt.Scott@epa.gov>
Subject: Aluminum Water Quality Criteria Revisions

Scott –

Attached please find a letter from the Aluminum Association's Water Workgroup regarding EPA's ongoing activity to update the Aluminum Water Quality Criteria. A hardcopy of this same letter is in the US Mail to you as well.

Thanks.

Curt Wells

Director, Regulatory Affairs

The Aluminum Association

1400 Crystal Drive, Suite 430

Arlington, VA 22202

T 703.358.2976 | **C** 804.385.6351| **F** 703.894.4938

JOIN THE CONVERSATION:

Save the Date: Aluminum Association Spring Meeting March 27-29, 2017

p 703.358.2960
f 703.894.4938
Suite 430
1400 Crystal Drive
Arlington, Virginia 22202
www.aluminum.org

The Aluminum Association

April 3, 2017

Submitted via email and the US Postal Service

Scott Pruitt
Administrator - US Environmental Protection Agency
Mail Code 1101A
William Jefferson Clinton Building
1200 Pennsylvania Avenue, NW
Washington, DC 20460

RE: **Aluminum Water Quality Criteria Revisions**

Dear Scott –

I am writing today to advise you of two initiatives currently underway within the EPA Office of Water that are of significant interest and importance to the Aluminum Association and the broader aluminum manufacturing industry in the US at large.

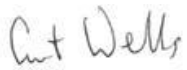
The first of these is an initiative to revise the water quality standards for aluminum. The current standards were implemented in 1988, are only applicable within a narrow pH range, and are not reflective of the current state of the science on aluminum toxicity in water. Recognizing this, EPA has worked to update its database on aluminum toxicity using data developed both by EPA and as supplied by the aluminum industry from testing performed in the US. Based on these new data, the Association is shortly expecting an updated draft Ambient Water Quality Criteria Document to be issued by EPA and noticed in the Federal Register for public comment. As understood by the Association, the new draft criteria document may include the use of a Biotic Ligand Model (BLM) similar in concept to what EPA implemented for copper in 2007 or a simpler Multi-Linear Regression (MLR) model which would yield essentially similar results to the BLM but with less calculation complexity. The Association and the broader aluminum industry await with interest the public notice on the draft criteria and use of these models as we believe that they will be a step forward in modeling the actual impact of aluminum present across varying concentrations in US waterbodies. The benefit derived from the models is that they allow for water quality standards to be set by the States that are protective for different water chemistries across the US.

A second initiative that the industry is engaged with EPA on is the modification of the current analytical test method for aluminum content in water to accurately represent only the bioavailable fraction of the total aluminum present. Present test methods measure either total aluminum in a water sample, including a significant fraction derived from suspended sediments, which is not bioavailable, or the dissolved fraction, which may under-represent the amount actually bioavailable. Developing a bioavailable aluminum test method is an important step in obtaining appropriate data for input into the EPA models and for regulatory compliance in effluent permits. The method development work is being supported by the aluminum industry in consultation with the Office of Water's Health and Ecological Criteria Division and the Office of Water's Test Methods Group.

Both of the initiatives discussed above are being pursued through a collaborative approach between the EPA Office of Water and the Aluminum Association as they achieve mutually beneficial goals in terms of ensuring that current science and representative site-specific data are used in determining the water quality standards for aluminum that are most applicable to the nation's waterways.

The Aluminum Association is supportive of the direction the EPA's Office of Water is going in regards to the aluminum criteria update and we hope the information above is helpful to you in understanding the importance to the aluminum industry of these ongoing efforts. If you have any questions or would like to discuss any part of this information in greater detail, please do not hesitate to contact the chairman of the Association's water workgroup, Denny Wene with Arconic at (812) 204-3480, dennis.wene@arconic.com or me at 703-358-2976, cwells@aluminum.org.

Sincerely,



Curt Wells
Director, Regulatory Affairs
The Aluminum Association

p 703.358.2960
f 703.894.4938
Suite 430
1400 Crystal Drive
Arlington, Virginia 22202
www.aluminum.org

The Aluminum Association

April 3, 2017

Submitted via email and the US Postal Service

Scott Pruitt
Administrator - US Environmental Protection Agency
Mail Code 1101A
William Jefferson Clinton Building
1200 Pennsylvania Avenue, NW
Washington, DC 20460

RECEIVED
2017 APR 12 AM 10: 48
OFFICE OF THE
EXECUTIVE SECRETARIAT

RE: **Aluminum Water Quality Criteria Revisions**

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A second initiative that the industry is engaged with EPA on is the modification of the current analytical test method for aluminum content in water to accurately represent only the bioavailable fraction of the total aluminum present. Present test methods measure either total aluminum in a water sample, including a significant fraction derived from suspended sediments, which is not bioavailable, or the dissolved fraction, which may under-represent the amount actually bioavailable. Developing a bioavailable aluminum test method is an important step in obtaining appropriate data for input into the EPA models and for regulatory compliance in effluent permits. The method development work is being supported by the aluminum industry in consultation with the Office of Water's Health and Ecological Criteria Division and the Office of Water's Test Methods Group.

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The Aluminum Association is supportive of the direction the EPA's Office of Water is going in regards to the aluminum criteria update and we hope the information above is helpful to you in understanding the importance to the aluminum industry of these ongoing efforts. If you have any questions or would like to discuss any part of this information in greater detail, please do not hesitate to contact the chairman of the Association's water workgroup, Denny Wene with Arconic at (812) 204-3480, dennis.wene@arconic.com or me at 703-358-2976, cwells@aluminum.org.

Sincerely,

Curt Wells

Curt Wells
Director, Regulatory Affairs
The Aluminum Association

The Aluminum Association

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Arlington VA 22202

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Scott Pruitt
EPA Administrator
William J. Clinton Bldg
1200 Pennsylvania Ave NW
Washington, DC

20460-

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

APR 13 2017

OFFICE OF WATER

Mr. Curt Wells
Director, Regulatory Affairs
The Aluminum Association
1400 Crystal Drive, Suite 430
Arlington, Virginia 22202

Dear Mr. Wells:

Thank you for your letter to Administrator Pruitt dated April 3, 2017, supporting the initiatives at the U.S. Environmental Protection Agency Office of Water regarding aluminum.

The first initiative is updating the national aluminum criteria recommendations, which states can then choose to adopt into their water quality standards. The EPA greatly appreciates the commitment of the aluminum industry to sharing technical information on aluminum toxicity testing performed in the U.S. and on models to consider the bioavailability of aluminum under different water chemistry conditions. This and other available high quality information are being used to develop scientifically robust draft aluminum criteria recommendations that will reflect the best available science on the bioavailability and toxicity of aluminum under different water chemistry conditions. When finalized after public comment and revision, the updated aluminum criteria will enable states to adopt aluminum water quality standards that are protective of aquatic life under water chemistry conditions present in their states.

The second initiative is engaging with industry to evaluate the current analytical test method for aluminum concentrations in water. We thank you for sharing information on bioavailable aluminum analytical test methods.

We look forward to a continued collaborative approach between the EPA Office of Water and the Aluminum Association in sharing data and information in order to develop updated aluminum criteria and updated aluminum analytical test methods.

Thank you for your support.

Sincerely,

Michael H. Shapiro
Acting Assistant Administrator

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Mr. Thomas Loomis

(b) (6)

FCL2029216

APR 03 2017

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PM
28 MAR
2017

USA FOREVER

Mr Scott Pruitt EPA
1200 Pennsylvania Ave NW
Washington, DC
20460

Personal

Thomas H. Loomis

3/27/2017

RECEIVED
2017 APR -3 PM 1:14
OFFICE OF THE
EXECUTIVE SECRETARIAT

Mr Scott Pruitt EPA,

Dear Sir.

Please end the RIN program imposed by EPA under Obama! It is Killing the small refiners who are really responsible for keeping gas prices low.

We need you to remove this legislation so the little guys can survive.

Thank You

(b) (6)

Scott Pruitt, Administrator
Office of the Administrator
Environmental Protection Agency
1200 Pennsylvania Ave.
Washington D.C 20460 1101A

RECEIVED
2017 APR -3 PM 2:16
OFFICE OF THE
EXECUTIVE SECRETARIAT

Dear Mr. Pruitt,

Earlier this week we observed President Trump address issues of climate change with his recent executive order. We commend him and you for these efforts. One of the requirements of the executive order is to review and re-write the Clean Power Plan (CPP). Our group may be able to provide the EPA with assistance in this capacity and we have included some of our recent efforts to address these changes.

First we noted that the U. S. Government has placed a social cost on carbon of about $37 per ton. We have no idea how this was determined. Stanford University and University of California Berkley argue that the social cost of carbon should be about $220. We find this quite unusual since at this time he quoted market on the NYSE is about $6. (You can observe current price of GRN on the NYSE which is the Global IPath ETN for carbon).

In our package we have provided our recent research completed with the assistance of Sandia National Laboratories, the United States Department of Agriculture Ames National Labs, University of New Mexico Anderson School of Business and others. We have patents pending on our work.

Here is what we think EPA will appreciate. The material we work with is called Leonardite or Humate. This material is sometimes called "weathered coal" or "immature coal". It is an organic material that contains humic and fulvic acids. It lies above deposits of coal reserves in several areas in the USA and worldwide. The mined material is from near surface deposits (usually less than 25 feet deep). The EPA considers this material non-carcinogenic, non-mutagenic and safe for human consumption and the environment. We hope you and your team find this information helpful. We hope the EPA will embrace use of "outside the fence" technologies to address issues of climate change and let markets dictate the optimal price. This could help some coal companies offset their environmental impacts. We believe any efforts to address climate issues must be verifiable and validated. If you have any comments or questions please feel free to call or contact us.

Kind Regards,

Timothy Strosnider
(b) (6)

Sandia National Laboratories

SAND Number : 2012-10401P

U.S. DEPARTMENT OF ENERGY

"Sandia National Laboratories is a multi-program laboratory managed and operated by Sandia Corporation, a wholly owned subsidiary of Lockheed Martin Corporation, for the U.S. Department of Energy's National Nuclear Security Administration under contract DE-AC04-94AL85000."

Discussion and Evaluation of Humate

NMSBA CY2012 Enchantment Organics #10564

November 26, 2012

Humate is often referred to as a mineral or as an industrial mineral. Humate is actually a **naturally occurring, organic substance,** commonly ***associated with coal, lignite, shale, claystone, and mudstones.*** Humate is non-toxic to human health and the environment. This determination is supported by the body of scientific research. Humate is not a mineral, not an industrial mineral, not a rock, and not a stone. Humate is a naturally occurring, organic substance with no definite chemical composition; without a highly ordered atomic (crystalline) structure; and without specific physical properties.

Before a substance can be defined as a mineral, the substance must satisfy the following well-established, long-standing, scientific criteria as taught in our colleges and universities and accepted by the international minerals community:

a) the substance must be naturally occurring;
b) the substance must be inorganic;
c) the substance must have a definite chemical composition;
d) the substance must have a highly ordered atomic (crystalline) structure; and
e) the substance must have specific physical properties.

This definition is supported by the following long-standing, geological organizations and their respective technical publications:

1. U.S. Department of Interior, Bureau of Mines, Dictionary of Mining, Mineral, and related terms, 1968
2. Dana's Manual of Mineralogy, C. S. Hurlbut
3. International Mineralogical Association, Commission on Minerals, Nomenclature, and Classification
4. Nickel-Strunz Classification System
5. McGraw-Hill Encyclopedia of the Geological Sciences, 2nd Ed., 1988
6. Mineralogical Society of America, Handbook of Mineralogy
7. Dictionary of Geological Terms, 1984, American Geological Institute

Humate satisfies only (a) in the above list of scientific criteria, therefore, humate cannot be defined as a mineral. All five requirements must be met to define a substance as a mineral.

Humate is not listed as a mineral in the US Geological Survey Minerals Yearbook or by the US Geological Survey National Minerals Information Center (NMIC), which publishes the Mineral Commodity Summaries, the Minerals Yearbook, and the Mineral Industry Surveys. The USGS does not publish information on humate.

Humate is not an industrial or non-metallic mineral either. Before a substance can be defined as an industrial mineral or a non-metallic mineral, the substance must satisfy the five scientific criteria for a mineral.

The New Mexico Environment Department (NMED) cites the *US Geological Survey Minerals Yearbook – New Mexico* for a reference to humate as a weathered coal and mudstone. This information is provided to the US Geological Survey Yearbook by the New Mexico Bureau of Geology and Mineral Resources in Socorro, specifically Gretchen Hoffman, a recognized New Mexico authority on fossil fuels at the Bureau.

The specific text that NMED cites in the USGS Minerals Yearbooks 2002 through 2008 has been mistranslated and misinterpreted from that which the author had originally intended. The USGS Minerals Yearbook, by year, contains the following text:

2002: *Humates are weathered coal or highly organic mudstone found in coal-bearing sequences.*

2003, 2004 and 2005: *Humates are weathered coal or highly organic mudstone found in coal-bearing sequences.*

2006: *Humate, a weathered coal or highly organic mudstone that is found in coal-bearing sequences, was recovered from five mining facilities in New Mexico during the year.*

2007: *New Mexico has significant deposits of humate, a weathered coal or highly organic mudstone that is found in coal-bearing sequences, predominantly located in the Fruitland and Menefee formations in the eastern San Juan Basin.*

2008: *New Mexico has significant deposits of humate, predominantly in the Fruitland and Menefee formations in the eastern San Juan Basin. Humates are weathered coal or highly organic mudstone found in the coal-bearing sequences.*

The operative words in the quotes are "***highly organic.***" The original text was written to indicate to the reader that humates could be found in ***association*** with mudstone (rocks that have a significant amount of clay or silt) and/or weathered coals, (readily combustible *rocks* containing more than 50% by weight or more than 70% by volume *carbonaceous materia*l, including inherent moisture). Humates are organic substances, not a rock or stone (Hoffman, personal communication, Sept. 2011).

A major source for information on industrial minerals, nomenclature, and classification is the two-volume set "*Industrial Minerals and Rocks*," (Nonmetallics other than Fuels), 5th Edition, Stanley J. Lefond, Ed., Published by the Society of Mining Engineers (SME) of the American Institute of Mining, Metallurgical, and Petroleum Engineers, Inc., New York, New York, 1983. This well recognized authority on industrial minerals and rocks has no listing for humate as an industrial mineral.

The North American Industry Classification System (NAICS) **21231 — Stone Mining and Quarrying** defines "stone" in the following manner: "*Stone is a naturally occurring aggregate of minerals that is typically used in one of two forms—dimension stone and crushed stone. Dimension stone is natural rock that has been quarried for the purpose of obtaining blocks or slabs that meet certain specifications, such as size, shape, color and grain. Dimension stone is primarily used in construction. Crushed stone is serves as a raw material in a variety of products such as concrete.*" A rock is an aggregate of one or more minerals. A

stone is general term for rock that is used in construction, either crushed or cut into shaped blocks.

EPA 40 CFR Part 180, *Humates: Exemption from the Requirement of a Tolerance* (EPA 2003, 2004) addresses many issues relevant to the current issue about humate. Within this document, EPA, on its own initiative, discusses the nature of humate, its occurrence in the environment, its application to growing crops, and its toxicology profile. Excerpts from this document are provided below.

Section III. What action is the Agency taking?: "*Given that the nature of the* ***substances*** *considered [humic acid, sodium salt; humic acid, potassium salt; and humic acid applied to growing crops] are* ***naturally occurring materials****, and ubiquitous in in the environment, but essentially a component of the soil, the Agency believes the application to growing crops to be more appropriate.*"

Section IV. Toxicology Profile: "*EPA has evaluated the available toxicity data and considered its validity, completeness, and reliability as well as the relationship to the results of the studies to human risk. EPA has also considered available information concerning the variability of the sensitivities of major identifiable subgroups of consumers, including infants and children.*"

"*Humate* ***materials*** *or humic* ***substances*** *occur naturally in the environment. They are part of the environment in which we grow our food. The use of the term humus is said to have occurred when Rome was an empire. The term has also been found in 18th century writings. Humic* ***substances*** *are used as soil conditioners to increase the amount of organic matter in the soil: thus increasing the workability of the soil. They are widely regarded as being beneficial to plants*".

"*The formation of humic* ***substances*** *is not completely understood. It is known that humic* ***substances*** *arise during the decay of organic materials, which is the reason that humic* ***substances*** *are often* ***associated with coal, lignite, and mudstones.***"

"*Generally, humic* ***substances*** *can be further subdivided into three categories: humic acid is the major extraction component. With humates being natural* ***substances****, there is some variation in composition of the various* ***materials.***"

"*There is some confusion as to the exact definition of humic acid. According to various information, humic acids are colloids that behave somewhat like clays.*

Humic acids are macro-molecules that are soluble in dilute alkali. They vary from dark brown to black in color. They are amorphous, polymeric ***substances*** *with molecular weights ranging from 5000 to 50,000."*

Section VII. Determination of Safety for U.S. Population, Infants, and Children: "*Humic* ***substances*** *are present in abundance in the soil and in the environment. Humic* ***substances*** *have been used in commercial agriculture for years to condition soils. Based on available information on these chemically related* ***substances****, the Agency believes that humic acid; humic acid, potassium salt; and humic acid, sodium salt are practically non-toxic to mammals. Due to the ubiquitous nature if these* ***naturally occurring materials****, and the high molecular weights of the humic* ***materials****, no chronic or acute effects are expected to occur. There is no available information to indicate that these* ***naturally occurring substances*** *are carcinogenic, mutagenic, or expected to have any effect on the immune or endocrine systems. Because of its abundance in nature and lack of toxicity, the Agency did not use the safety factor analysis in evaluating the risk posed by humate* ***substances*** *and did not apply an additional tenfold safety factor to protect infants and children."*

"Based on the information in the preamble, EPA concludes that there is a reasonable certainty of no harm aggregate exposure to residues of humic acid: humic acid, potassium salt; humic acid, sodium salt. Accordingly, EPA finds that exempting these humate ***materials*** *from a requirement of a tolerance will be safe."*

The Federal Register (EPA) recognizes humate and humic acid as **naturally occurring, organic materials or substances,** commonly ***associated with coal, lignite, and mudstones,*** non-toxic to human health and the environment, exempting these humate ***materials*** from a requirement of a tolerance.

The nomenclature and classification of humate is truly complex and commonly confusing to the layman and professional alike. Consistent communication among geologists, engineers, biologists, chemists, agronomists, and regulators, is difficult owing to lack of uniform meaning and definitions of commonly used terms within each profession.

Humic acids are actually organic colloids and behave somewhat like clays even though they are acids and form true salts. When the cation exchange sites on the

humic molecule are predominantly filled by hydrogen, the material is considered to be an acid and is named accordingly. When the cation exchange sites on the humic molecule are predominantly filled by other than hydrogen, cations such as calcium, sodium, aluminum, iron, the material becomes a salt and is named humate.

Humic acids are extremely complex organic molecules that are formed by the breakdown of organic matter. Their exact molecular structure is indeterminable and they are extremely variable in nature. The average molecular weight of humic acid is between 5000 and 50,000. They have no definite X-ray or electron defraction patterns and are presumably amorphous.

Humate is ubiquitous in the environment and an essential component of the soil. In the purest sense, humate is the salt of humic acid, formed by the breakdown of organic matter. The exact molecular structure is indeterminable and extremely variable in nature.

Humate is comprised of a majority of highly weathered organic compounds including salts of humic, ulmic, and fulvic acids. Humic acid is the organic material which is soluble in sodium hydroxide (NaOH) and then precipitated in concentrated acid (pH=2). Ulmic and fulvic acids are byproducts of this procedure. Since the term humic acid may also refer to the humic, ulmic, and fulvic acids, humate may then also refer collectively to the salts of humate, ulmate, and fulvate.

Humate is principally used as a soil amendment in agriculture, although it is also used for viscosity control in drilling muds, and as a stabilizer in ion-exchange resins in water treatment. Humate is widely regarded as being beneficial to soils and plants. Humate has been produced commercially in New Mexico for many decades.

The commercial value of humate lies with its organic content, properties, and characteristics and not with any inorganic constituents, which are considered contaminants and undesirable. When mining humate, any associated occurrences of limestone, shale, sandstone, or other inorganic substances, if present, are segregated and discarded. Only those humate deposits comprised of at least a majority of organic materials (> 80%) are considered mineable quality humate.

These conclusions concerning the organic content of humate are supported by actual sampling of humate. Attached as Exhibit 1 are analyses of samples of humate mined by Horizon Ag in Cuba, New Mexico. The samples were collected October 28, 2011. The whole rock analyses were conducted by ALS Minerals, 4977 Energy Way, Reno, NV according to method ME-XRF06 for major oxides. These analyses are representative of humate mined by Horizon Ag.

Lithium Borate Fusion

Major element analysis can be performed by either XRF or ICP-AES. A minimum of 2g sample pulp is required. If LOI is not required, a minimum sample quantity of 0.5g is sufficient for ME-ICP06.

ANALYTES (%)								CODE	PRICE PER SAMPLE ($)
SiO_2	0.01-100	MgO	0.01-100	TiO_2	0.01-100	BaO	0.01-100	ME-XRF06	28.35 (Sold only as a complete package)
Al_2O_3	0.01-100	Na_2O	0.01-100	MnO	0.01-100	LOI	0.01-100		
Fe_2O_3	0.01-100	K_2O	0.01-100	P_2O_5	0.01-100				
CaO	0.01-100	Cr_2O_3	0.01-100	SrO	0.01-100			ME-ICP06	28.35

The whole rock analyses performed by ALS Minerals demonstrate that humate is comprised of a mixture of compounds the majority, greater than 80% (and primary composition), of which is comprised of organic material (not inorganic constituents).

Humate, when used as a soil amendment or conditioner, has many useful attributes. These include:

1. An increase in root density
2. An increases in root depth
3. Retention of soil moisture
4. An increases in soil aeration
5. A decreases in soil density
6. Promotes healthy soil

Humans have realized for thousands of years that dark-colored soils with high humus content are more fertile than light-colored soils. It has long been recognized that humic substances have many beneficial effects on soils and consequently on plant growth. Anywhere on the globe where there is soil or water associated with organic matter, humic substances are present. They are the brownish tint often seen in natural streams, the darkness of dark soils and the dark reddish- brown color of weathered, sub-bituminous coal. Humic substances are the most widely distributed

organic products of biosynthesis on the face of the earth, exceeding the amount of carbon contained in all living organisms by approximately one order of magnitude.

Soil organic matter is defined as the total of all naturally occurring organic (carbon based) substances that are found in soils, which have come from living things. The process of changing from recognizable bits and pieces of plants (or animals) to an amorphous, "rotted" dark mass is called **humification. Humus** is defined as the organic matter in soil that is a mixture of partially and totally humified substances. Most humic substances come from the natural process of decaying plant matter. Humic substances make up about 80% of the soil organic matter in dark soils.

Humic substances in soils are the dark brown, fully decomposed (humified) remains of plant or animal organic matter. They are the most chemically active compounds in soils with cation and anion exchange capacities far exceeding clays. They are long lasting critical components of natural soil systems, persisting for hundreds to thousands of years, which can be destroyed in less than fifty years by some agricultural practices.

In conclusion, humic substances are formed by a process called humification. The humification process is chaotic, with innumerable reactions occurring under countless conditions. The process occurs over geological time, therefore younger deposits of humic materials generally have lower concentrations of humic acid.

Humic substances are ubiquitous in the environment and critical components of water and soil ecosystems, which are essential to soil genesis and the global cycling of carbon and nutrients. The interactions among microbes, clays and minerals are dependent upon humic substances. The vast agronomic and environmental importance of these materials is just beginning to be appreciated.

New Mexico humate products may have significant application in amending and conditioning alkali soils, increasing crop production, remediating mining and oil and gas sites, improving forest fire habitat, and as an N-P-K carrier.

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U.S. DEPARTMENT OF ENERGY

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Soil Remediation using Humate as a Prime Soil Conditioner

NMSBA CY2013 Enchantment Organics #10793

November 26, 2013

Humate is ubiquitous in the environment and an essential component of the soil. It is composed of highly weathered organic compounds. Humate, when used as a soil conditioner, has many useful attributes. These include:

1. A decrease in soil bulk density;
2. An increase in soil aeration;
3. An increase in plant root density;
4. An increases in plant root depth;
5. Retention of soil moisture;
6. Enhanced cationic exchange; and
7. An increase in soil health.

Humans have realized for thousands of years that dark-colored soils with high humus content are more fertile than light-colored soils. It has long been recognized that humic substances have many beneficial effects on soils and consequently on plant growth. Anywhere in the world where there is soil or water associated with organic matter, humic substances are present. They are the brownish tint often seen

in natural streams; the richness of dark soils and the dark reddish- brown color of weathered, sub-bituminous coal. Humic substances are the most widely distributed organic products of biosynthesis on the face of the earth, exceeding the amount of carbon contained in all living organisms by approximately one order of magnitude.

Humic substances in soils are the dark brown, fully decomposed (humified) remains of plant or animal organic matter. Humic substances make up about 80% of the soil organic matter in dark soils. They are the most chemically active compounds in soils with cation and anion exchange capacities far exceeding clays. They are long lasting critical components of natural soil systems, persisting for hundreds to thousands of years, but which can be destroyed in less than fifty years by some agricultural practices.

Enchantment Organics is interested in developing and marketing humate as a prime component for conditioning soils in high desert alkaline environments and soils that have been damaged by commercial or industrial businesses. Small businesses do not have the in-house capability to solve soil deficit problems commonly found in high desert alkaline environments or the skills to address commercial and industrial property remediation efforts. Small companies do however have the skills necessary to market these products.

Enchantment Organics has requested that Sandia National Laboratories (SNL) work collaboratively with Enchantment Organics to develop humate products tailored for specific remediation applications such as 1) fire retardants and remediation of land damaged by forest fire; 2) remediation of oil and gas production sites; 3) remediation of mine sites and tailings; and 4) high desert alkaline soils.

Enchantment Organics intends to market these potential products through its network of agricultural product businesses throughout New Mexico. Enchantment Organics will begin to market and distribute the products to the U.S. Forest Service, the U.S. Bureau of Land Management, New Mexico oil and gas companies, the New Mexico mining community, and farm and ranch operators. Enchantment Organics, Horseman's Feed and Supply, and Old Mill Farm and Ranch Supply will use the results to increase awareness within the user community to address soil deficit and remediation problems.

Currently in New Mexico, the humate business is a cottage industry. Very little is known about the beneficial use of this organic material. Remediation strategies for treatment of areas damaged by forest fire, mine and oil and gas operations are growing. Even so, there are no known companies utilizing this natural product for tailored remediation. Much of the affected land is owned by federal, state, or local governments. Enchantment Organics wishes to focus on the following potential markets:

1. Fire retardants and remediation of land damaged by forest fire;
2. Oil and gas production site reclamation;
3. Mining site reclamation; and
4. High desert and alkaline agricultural soils.

1. Fire Retardants and Remediation of Land Damaged by Forest Fire

Forest ecosystems, especially in the southwest U.S., have been seriously impacted by drought and fire. While forest fires are a naturally occurring event, post fire treatments are an ongoing area of study; especially during times of drought. The economic costs of these events measured both in actual economic, but also aesthetic losses are measured in the tens of millions of dollars.

Forest fire retardants applied to wildfires are usually a mixture of water and chemicals designed to wet the area as well as chemically retard a fire's progression through vegetation. Typically the retardant is colored so that the area of application can be easily seen from the air.

Forest fire retardants carry some risk when organisms are exposed to large doses of retardants. Retardants used in firefighting are non-toxic to humans but can be toxic to fish and wildlife by releasing harmful compounds when the retardant is consumed by fire or dropped within 300 feet of bodies of water. The retardant dissolves and releases ammonia, which is toxic to fish. Ammonia, the U.S. Forest Service says, is the most toxic ingredient in long-term fire retardant exposure.

The U.S. Forest Service is the governing agency that conducts research and monitors the effect of fire retardants on forests in the United States. The U.S. Forest Service has been using fire-retardants since the 1950s. In recent decades, the

focus has been on improving formulations to minimize their potential adverse impacts while maintaining or improving their firefighting effectiveness.

The fire retardants used in fighting wild fires consist primarily of ammonium compounds such as ammonium phosphate and ammonium sulfate. These compounds are also used as agricultural fertilizers. When delivered in forested areas, these fertilizers stimulate the growth of beneficial plant species, some of which are rare, endangered, or even invasive.

Fire retardants contains 85% water, 10% fertilizer (ammonia phosphate and/or ammonium sulfate), and 5% minor ingredients (iron oxide for color, clay for thickening). They work by coating woody fuels with moisture. Retardant sells for about $800 / dry ton. A single company supplies these retardants to the U.S. and Canadian governments: ICL Performance Products LP, the St. Louis-based subsidiary of Israel Chemicals Ltd. (ICL). The mixture costs about 70 cents / gallon with air drops usually costing $2 / gallon. Tankers can dump 1,200 gallons during each pass.

Decision-making on wild fires occurs at various levels and requires strategic planning involving the evaluation of risk to responders and the public, natural / cultural values at risk, jurisdictional / property boundaries, and objectives / constraints defined by land and resource management plans. Because of the wide variety of potential circumstances on the ground, the U.S. Forest Service has taken a nationwide, programmatic approach to NEPA analysis for retardant use to address the range of situations in which aerially applied retardant may be needed.

The U.S. Forest Service supports the use of aerially applied fire retardant and implements an adaptive management approach that protects resources and continues to improve the documentation of retardant effects through reporting, monitoring, and application coordination. Aerial retardant drops are not allowed in mapped avoidance areas for threatened, endangered, proposed, candidate or sensitive species or near bodies of water.

Effects on forest soils from the aerial application of fire retardant resemble a fertilizing response. For nutrient-poor soils (sandy, with low organic matter content), the addition of nitrogen and phosphorus improves soil productivity in the short term. For already productive soils (loam, with high organic matter content),

the additional nutrients could have an acidifying effect and reduce soil pH, making plant nutrients more available. An indirect effect of fire retardant application is an increase in vegetative growth and potential change in vegetative community structure and composition. Leaching of nitrogen from fire retardant into streams and water bodies could occur in areas of coarse-textured soils such as sand and gravel.

Enchantment Organics can enhance fire-impacted forest ecosystems, especially in the southwest U.S., by offering humate as an additive to the existing fire retardant formula. Enchantment Organics should contact ICL Performance Products LP, the St. Louis-based subsidiary of Israel Chemicals Ltd. for a consultation and determine if ICL is interested in testing various formulations of fire retardant and humate depending on humic acid content. Enchantment Organics should stress the benefits of humate as outlined above. Humate is non-toxic to humans and animals as well fish and rich in nitrogen (2 to 5%). Humate has no adverse environmental impacts and will not impact retardant firefighting effectiveness. Humate would facilitate forest ecosystem recovery by conditioning fire-impacted soils and stimulate growth of forest ecosystem plant species.

2. Oil and Gas Production Site Reclamation

The typical activities in development of oil and gas locations include removal of vegetative cover, construction of roads, pits, pipelines, drill pads, and other surface disturbances for long-term production of oil and gas. Production can occur over many years if not decades providing long-term remediation opportunity. Once production has been terminated, oil and gas companies are required to reclaim these areas and restore the disturbed surfaces to natural conditions as much as practicable.

Surface soils commonly found in New Mexico oil and gas-producing regions, in general, are alkaline in nature, supporting a narrow range of vegetation. Soils consist of sand or fine silt and clay, providing few nutrients to support diverse, native plant communities. These soils would benefit greatly from the addition of bulk organic matter and nutrients to support a broad diversity of plants. Federal and state governments have defined geographic areas and prescriptive seed mixes to address reclamation of these geographic areas. None, however, require the

addition of amendments or conditioners. These soils would greatly benefit from the addition of amendments or conditioners that would improve soil physiology.

Within the oil and gas producing regions of New Mexico, local environmental companies provide reclamation , seeding, and monitoring activities required by federal and state governments to bring affected lands into multi-use once again. Enchantment Organics can easily engage in constructive dialogue with these local environmental companies, especially in the oil and gas producing regions of New Mexico, by offering humate as an effective soil conditioner for these deficit soils. The market is, no doubt, tightly controlled by the local environmental companies that service the oil and gas companies. Enchantment Organics may need to offer humate as an experimental component of their presently established reclamation activities and demonstrate the effectiveness of humate as a deficit soil conditioner.

3. Mine Sites and Tailings Reclamation

Thousands of acres of surface lands in New Mexico are disturbed annually through various mining applications ranging from industrial materials such as sand, gravel, and coal to base and precious metals such as copper, lead, zinc, silver, and gold. Reclamation of these lands is required by federal, state, and local authorities. Many mine sites and tailings are devoid of overburden or topsoil. These soils tend to be course in texture, composed of sand, cobbles, and boulders. Very little fine soil is available to provide fertile topsoil required for revegetation. Enchantment Organics can easily engage in constructive dialogue with New Mexico mining companies and/or the environmental companies that provide reclamation services by offering humate as an effective soil conditioner for these coarse soils. These soils are in great need of conditioning in order to support vegetative growth. Reclamation of mine and tailings sites cost on the order of $10,000/acre. The addition of humate as a conditioner would not add significant cost to the effort.

4. High Desert and Alkaline Agricultural Soils

Alkaline soils are soils with a pH > 8.5, a poor soil structure and a low infiltration capacity. Often the soil profile has a hard caliche layer at 0.5 to 1 meter in depth. Alkaline soils owe their unfavorable physical / chemical properties mainly to the dominating presence of sodium and calcium carbonate, sodium sulfate, and sodium hydroxide in significant quantity. These salts are mainly produced f[illegible]

chloride in the atmosphere and by limestone ($CaCO_3$) that naturally exists in arid to semi-arid environments. The sodium from these salts enter river / groundwater systems increasing soil water sodicity.

Alkaline soils are difficult to take into agricultural production. Due to the poor soil structure and low infiltration capacity, rain water ponds on the soil surface easily and, in dry periods, cultivation is near impossible without abundant, irrigation and good drainage.

A major problem in alkaline soils is reduced nutrient, and especially micronutrient, availability. Iron deficiency (iron chlorosis) is a very common problem throughout the southwest and is the direct result of high pH soils reducing the availability of iron to plants. The most common symptom of iron deficiency is inter-veinal chlorosis, where leaves turn light green or yellow but leaf veins remain green.

The following measures to lower the pH of highly alkaline soils are often employed to address nutrient, and especially micronutrient, availability:

- Amend the soil with copious organic matter such as humate, peat moss, or sphagnum peat. On average, soils with higher organic matter contents have lower pH. Peat moss and sphagnum peat are highly acidic and will lower soil pH.
- Add pyrite (FeS_2) or elemental sulfur (S, 90 to 99%) annually at a rate of six to 10 pounds per 1000 ft^2 of surface area. Pyrite and elemental sulfur slowly oxidizes in soil to form sulfuric acid. Gypsum ($CaSO_4 \cdot 2H_2O$) can also be applied as a source of sulfur to increase acidity and calcium ions to replace the sodium in the exchange complex.
- Use acidifying fertilizers such as ammonium sulfate and other products with label designations indicating an acidic reaction in the soil. Repeated use these acidifiers will reduce soil pH.
- Use raised beds in a sandy medium amended with humate, peat moss, sphagnum peat or other sources of acidic organic matter. To lower pH, elemental sulfur is inexpensive, although ferrous sulfate and aluminum sulfate are also as beneficial and recommended.

Alkalinity problems are more pronounced in clay soils than in loamy, silty or sandy soils. Clay soils containing swelling clays (montmorillonite and smectite) are more subject to alkalinity problems than non-swelling (illite and kaolinite) clay soils. The reason is that the former types of clay have larger specific surface area i.e., the surface area of the soil particles divided by their volume and higher cation exchange capacity (CEC). Soils in the Rio Grande corridor are predominantly clay soils whereas soils on the east and west mesas are predominantly silty and sandy soils.

Humate, as a prime soil conditioner, addresses most, if not all, of the above cited deficits in high desert and alkaline agricultural soils. By whole rock analysis, humate contains 80% organic material and 20% inorganic material. Humate contains 2 to 5% nitrogen. New Mexico humate also contains gypsum ($CaSO_4$), pyrite (FeS_2), and siderite ($FeCO_3$), sources of calcium, sulfur, and iron. *Enchantment Organics can confidently pursue marketing measures that promote their products as a prime soil conditioner or amendment for deficit, alkaline soils in New Mexico.*

Wherever there is demand for organic material in industrial and/or domestic applications, i.e. a market, this will create a potential business specific to that market. The crucial point is that the market is completely dictated by the needs of the *population* and the performance of the *economy*, and then combined with *material availability and cost*. "Without a market, an industrial material deposit is merely a geological curiosity." Very simply, no market demand = no deposit development = no product sales. Market existence and its performance directly affect demand, and therefore product sales for Enchantment Organics.

The best approach for Enchantment Organics to investigate who or what business is involved in the conditioner or amendment business is to examine existing source-to-market supply chains in New Mexico. Materials of organic nature are mined (surface or near-surface) and undergo processing to refine the raw material into a processed product for sale to the market, then transported from the source to the consuming markets. Transportation costs can amount to 50 to 70% of delivered cost of material to the customer, therefore suppliers and customers need to secure the most cost effective logistics systems.

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Minimizing Fraud in the Carbon Offset Market Using Blockchain Technologies

Brian, P., Dwyer
Curtis, D., Mowry

Prepared by
Sandia National Laboratories
Albuquerque, New Mexico 87185 and Livermore, California 94550

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Minimizing Fraud in the Carbon Offset Market Through Use of Blockchain Technologies

Brian P. Dwyer & Curtis D. Mowry
Department 06912 & 01852
Sandia National Laboratories
P.O. Box 5800
Albuquerque, New Mexico 87185-MS0754

Abstract

Fraud in the Environmental Benefit Credit (EBCs) markets is pervasive. To make matters worse, the cost of creating EBCs is often higher than the market price. A Marginal Abatement Cost Curve (MAC curve or MACC) is a succinct and straightforward tool for presenting carbon emissions abatement options relative to a baseline (typically a business-as-usual pathway). A MAC curve permits an easy to read visualization of various mitigation options or measures organized by a single, understandable metric: economic cost of emissions abatement.

See reference: http://planwashington.org/blog/archive/understanding-carbon-reduction-marginal-abatement-cost-curves/#sthash.CwlTJB7j.dpu

Consequently, a method to create, validate and verify EBCs and their relevance is needed to mitigate fraud.

The EBC market has focused on geologic (fossil fuel) CO_2 sequestration projects which are often over budget and behind schedule, and has failed to capture the "lowest hanging fruit" EBCs – terrestrial sequestration via the agricultural industry. This project reviews a methodology to attain possibly the least costly EBCs by tracking the reduction of inputs required to grow crops. The use of bio-stimulant products such as humate allows a farmer to use less nitrogen without adversely affecting crop yield. Using less nitrogen qualifies for EBCs by reducing nitrous oxide emissions and nitrate runoff from a farmer's field. A blockchain that tracks the bio-stimulant material from source to application provides a link between a tangible (bio-stimulant commodity) and the associated intangible (EBCs) assets. Covert insertion of taggants in the bio-stimulant products creates a unique barcode that allows a

product to be digitally tracked from beginning to end. This process (Blockchain technology) is so robust, logical, and transparent that it will enhance the value of the associated EBCs by mitigating fraud. It provides a real time method for monetizing the benefits of the material.

Substantial amounts of energy and therefore carbon emissions are required to produce, transport, and distribute agricultural inputs including fertilizer and water. Intelligent optimization of the use of agricultural inputs can drive meaningful cost savings both financially and measured in CO2 emissions. Tagging and verification of product application provides a valuable understanding of the dynamics in the water/food energy nexus, a major food security and sustainability issue. As technology in agriculture evolves so to must methods to verify the Enterprise Resource Planning (ERP) potential of innovative solutions. The technology reviewed provides the ability to combine blockchain and taggants ("Taggant Blockchains) as the engine by which to (1) mitigate fraudulent carbon credits; (2) improve food chain security, and (3) monitor and manage sustainability.

The verification of product quality and application is a requirement to validate benefits. Recent upgrades to humic and fulvic quality protocols known as ISO CD 19822 TC134 offers an analytical procedure or a CDFA procedure. This work has been assisted by the Humic Products Trade Association (HPTA) and International Humic Substance Society (IHSS) and by the State of California Department of Food and Agriculture.

In addition, providing proof of application of these products and verification of the correct application of prescriptive humic and bio-stimulant products is required. The use of bio-stimulants is sometimes controversial. The word biostimulant was apparently coined by horticulture specialists for describing substances promoting plant growth without being nutrients, soil improvers, or pesticides. Tracing back the first definition of the word biostimulants identifies a web journal dedicated to turf maintenance professionals, called *Ground Maintenance* (http://grounds-mag.com). In this web journal in 1997, Zhang and Schmidt from the Department of Crop and Soil Environmental Sciences of the Virginia Polytechnic Institute and State University defined biostimulants as *'materials that, in minute quantities, promote plant growth.* By using the words *'minute quantities'* for describing biostimulants, the authors aimed at distinguishing biostimulants from nutrients and soil amendments, which also promote plant growth but are applied in larger quantities. The biostimulants mentioned by this web article are humic acids and seaweed extracts. Later peer-reviewed papers by the same authors on the same or similar research did not necessarily use the term biostimulant. For instance a paper describing the use of humic acis and seaweed extracts for increasing drought tolerance of turfgrass did not use the term biostimulant at all (Zhang and Schmidt, 2000).

Individual sources of humate have unique and verifiable characteristics. Additionally, methods for prescription of sitespecific agricultural inputs in

agricultural fields are available. (See US Patents 734867B2, US 90658633B2.) Finally a method to assure application rate is required through the use of taggants. Sensors using organic solid to liquid phase change nanoparticles of various types and melting temperatures added to the naturally occurring materials provide a barcode. There are a very large number of possible codes with over 100 types of nanoparticles providing a very large number of barcodes and reducing chances of fraud.

The materials can be collected from soil samples of plant material to validate a blockchain of humic and fulvic products. Other non-organic materials are also available as taggants; however, the organic tags are biodegradable and safe in the environment allowing for use during differing application timeliness.

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NOMENCLATURE

ACR	American Carbon Registry
BAU	Business As Usual
CO_2	carbon dioxide
COT	Chain of Title
DOE	Department of Energy
EBC	Environmental Benefit Credit
ERP	Enterprise Resource Planning
EPRI	Electric Power Research Institute
HPTA	Humic Products Trade Association
GHG	greenhouse gas
ID	identification
MSU	Michigan State University
N_2O	nitrous oxide
SNL	Sandia National Laboratories
SOM	soil organic matter
SOC	soil organic carbon
USDA	United States Department of Agriculture
VCS	Verified Carbon Standard

1. INTRODUCTION

Nearly all efforts towards lowering greenhouse gases to date have focused on fossil fuel reduction while neglecting the "lowest hanging fruit" – land use and water use. Relatively new research indicates that improvements in agricultural management and land reclamation practices could significantly reduce greenhouse gas (GHG) emissions. More specifically, the overuse of synthetic nitrogen (N) fertilizers is limiting the soil and biotic pool's ability to sequester carbon and nitrogen. [1] One of the most sensible, low cost methods for attaining GHG emission offsets in the carbon credit markets is through the agricultural arena which also includes efficient applications of water. Replacing a portion of the synthetic N applied to crops with bio-stimulant products such as humate has been shown to improve soil by increasing soil organic matter (SOM). Increasing SOM improves a soil's ability to sequester carbon, lowers the amount of synthetic N fertilizer and water required by crops which decreases nitrous oxide (N_2O) emissions and nitrate runoff from a farmer's field.

A variety of industries can use humate substances to attain carbon, nitrogen and/or water offsets; however, linking this tangible asset – "humate" to the corresponding "intangible" offsets is critical for broad-based acceptance. An ideal way to accomplish this is by using 'blockchain technology'. Blockchain technology will effectively link data associated with the humate (or other commodity) from the mine site, to the processing location, to the application site and then follow the crop to a final end user. This is a Life Cycle Approach (LCA) using a Chain of Title (COT).

Unlike traditional tangible commodities, the advent of 'carbon', 'nitrogen' and 'water' credits or Environmental Benefit Credits (EBCs) has created a new international commodity that is intangible. Like any commodity market, every asset (offset) must be identifiable and trackable to ensure market integrity. The Carbon trading market is one of the the world's fastest growing commodities market [11] as evidenced by the fact that most Fortune 1000 companies have detailed Sustainability Reports. Considering the speed at which these new "intangible asset" markets, especially EBC trading, are growing the potential for fraud is high. Therefore implementation of a digital ledger that cannot be unilaterally altered will reduce the chance of fraud in the markets. This process is known as "Smart Contracting".

Additionally, sustainability is a term numerous companies and other entities have adopted but verification of sustainability protocols is mandatory to connect the term with the appropriate steps validating sustainable protocols. It is a matter of food safety and security. The invention under review is a method to provide these requirements.

Examples of Fraud

In May 2016, a former Deutsche Bank employee was sentenced to three years in jail for his part in a scheme trading carbon emission permits designed to curb global warming but used to fraudulently collect tens of millions of euros of sales tax.

Handing down suspended jail sentences to five other former Deutsche bankers also involved, Judge Martin Bach criticized Germany's largest bank, saying the "failure of all security mechanisms" had allowed the fraud. This is an example of breakdown in the blockchain.

Interpol, in its June 2013 report titled "Guide to Carbon Trading Crime", identified five areas ripe for fraud within the carbon markets:

1. fraudulent manipulation of measurements to claim more carbon credits from a project that were actually obtained;
2. sale of carbon credits that either do not exist or belong to someone else;
3. false or misleading claims with respect to the environmental or financial benefits of carbon market investments;
4. exploitation of weak regulations in the carbon market to commit financial crimes, such as money laundering, securities fraud or tax fraud; and
5. computer hacking/phishing to steal carbon credits and theft of personal information.

A "Life Cycle Approach" (LCA) utilizing a "Chain of Title" (COT) similar to the environmental industry methodology for tracking hazardous waste (cradle to grave) and water samples (chain-of-custody) will minimize the potential for fraud related to GHG offsets derived from the use of humate materials.

2.0 BACKGROUND

Since the Industrial Revolution there has been a significant atmospheric increase in the concentration of GHGs which has led to an increase in the average global surface temperature of 0.6 °C since the late 19th century. The current warming rate of 0.17 °C/decade is greater than the critical rate of 0.1 °C/decade where it is thought that ecosystems cannot adjust. [4]

In essence, anthropogenic changes have moved elements such as carbon and nitrogen between the global pools. Possibly more than any other biologically important element, the global nitrogen cycle has been perturbed by anthropogenic activities. The rate of industrial nitrogen fixation now approximately equals the natural rate, resulting in a two to threefold increase in the total inventory of fixed N on the surface of the Earth through agricultural fertilizer applications. [6] In its inert form, nitrogen is harmless and abundant (78% of earth's atmosphere), but the addition of synthetic nitrogen based fertilizers has the unintended consequence of diminishing soil C and disrupting the beneficial associations between plants and the soil microbial communities (SMC). [10] Cropping practices and the use of nitrogen fertilizers are estimated to cause 78% of the total soil N_2O emissions in the United States [7], promoting emissions having a greenhouse warming potential 310 times that of CO_2. [8, 9]

For years the conventional thinking has been that application of synthetic nitrogen fertilizers improved soil carbon while producing more crops. Research data from the Morrow Plots, the oldest research plots in the country, indicate a decline in soil carbon from the use of synthetic N fertilization. The intensive use of N fertilizers in modern agriculture and land reclamation is increasing C and N in the atmospheric pool, i.e., contributing to global greenhouse gas accumulation.

There are five principal global C pools (Figure 1). The total soil C pool is four times the biotic (trees, etc.) pool and about three times the atmospheric pool. [3] All these pools are inter-connected and elements circulate among them.

Despite a strong inter-dependence between climate and soil quality, the role of soil organic carbon (SOC) dynamics on historic increase in atmospheric CO_2, and its strategic importance in decreasing the future rate of increase of atmospheric CO_2 have only recently been recognized.

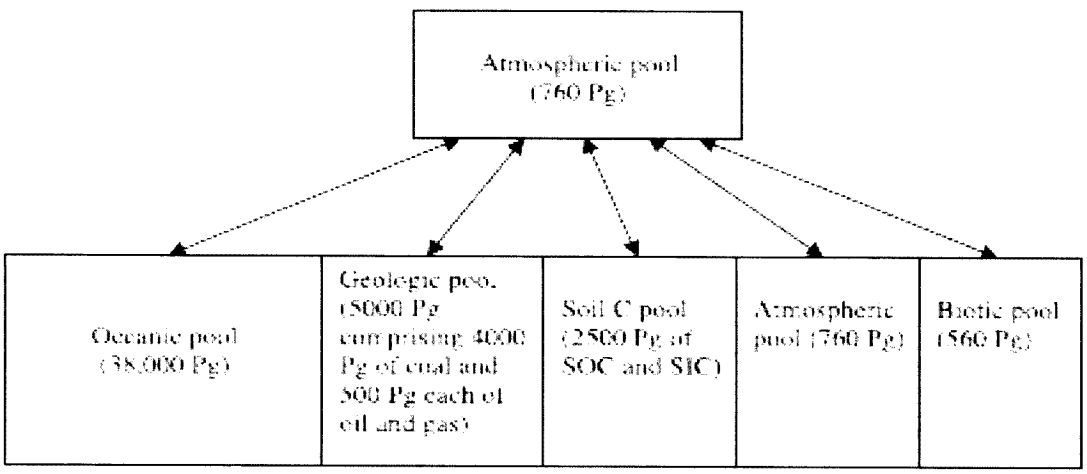


Figure 1. Principal Global Carbon Pools.

3.0 WHAT IS AN ENVIRONMENTAL BENEFIT CREDIT?

An Environmental Benefit Credit (EBC) is an intangible asset obtained by reducing known GHG emissions or water use. The most recognizable credit is Carbon offsets; however, there are other potential credits that can be gained by reducing nitrous oxide emissions, or by saving water. The most common credit - Carbon offsets are credits traded on carbon markets that represent GHG emission reductions generated from a change in management practice. In agriculture, the potential exists for obtaining EBCs in two ways: (1) fixing carbon in agricultural soil; and (2) by lowering nitrous oxide emissions from a farmer's field by reducing the amount of synthetic nitrogen used. EPRI and MSU jointly developed and validated a comprehensive methodology for farmers to capture GHG emission offsets – particularly nitrous oxide. The EPRI-MSU N_2O

Offset protocol is scientifically robust, applicable to a wide range of climates, soils, and crops, transparent and is based upon a standardized approach to additionality and baselines.

The protocol is however has not been widely adopted by farmers because it is not very user friendly. Humic and Fulvic products offer a robust solution based broadly on the EPRI-MSU protocol. By reduction in the application rate of nitrogen used compensated with a prescriptive dose of humic and fulvic material two benefits are derived. First a physical reduction in use of nitrogen and second the input of humic and fulvic materials improving SOC and maintaining crop quality and quantity.

3.1 Carbon Markets

Compliance and Voluntary carbon markets exist in the United States and globally. "Compliance markets" is comprised of the trading of carbon credits and offsetting of carbon emissions by countries that are legally bound to comply with the Kyoto Protocol. Outside of these markets, carbon offset credits can be traded in the 'voluntary carbon market' by any citizen or institution looking to offset their greenhouse gas emissions. [2] Within the carbon markets the responsibility falls on individual companies to trade carbon credits with each other. The intent is to ensure the free market (private sector) determines the least costly emission cuts.

3.1.1 Other Environmental Benefit Markets

Agricultural input prices and crop prices are highly correlated. This leads to volatile price swings in agricultural inputs and crop price markets. Bio-stimulant and carbon offset markets are much less correlated to traditional fertilizer inputs. The use of a bio-stimulant product such as humate effectively acts as a hedge to price volatility of crop inputs. Additional revenues generated from EBCs also helps to buffer agricultural industry risks.

Energy and water usage are inextricably linked; therefore, water savings translate directly into energy savings from conveying less water to a farmer's field. Reduction of N used in the agriculture industry lessens the energy requirement producing the fertilizer, and lowers N_2O emissions and nitrate runoff from a farmer's field.

4.0 EPRI-MSU N_2O OFFSET PROTOCOL

The EPRI-MSU N_2O Offset Protocol provides a methodology for calculating credit for N fertilizer rate reduction. The protocol provides flexibility in achieving N rate reduction. A robust accounting methodology was developed that identifies a baseline N fertilization rate based on farmer's historic data – this is known as the BAU (business as usual) N fertilizer rate. N_2O emissions are calculated for the BAU (baseline) case and also for the project reduced N-rate using one of two methods as shown in Figure 2. The difference is the N_2O emissions that would have been emitted during the project, based on the N rate that would have been used absent the project (BAU).

Figure 2 shows the relationship between fertilizer rate and N_2O emissions. Tier 1 is a linear method calculation and Tier 2 is a non-linear calculation equation. As part of the MSU web-based decision support system a N_2O GHG calculator was developed to allow for quantification of potential N_2O offsets. The calculator makes use of existing USDA and other data; provides comparative CO_2e "costs" of N_2O, soil carbon change, fuel, and fertilizer; and allows for comparison of different scenarios based on crop, tillage, and fertilizer decisions. The calculator is available at www.kbs.msu.edu/ghgcalculator. [12]

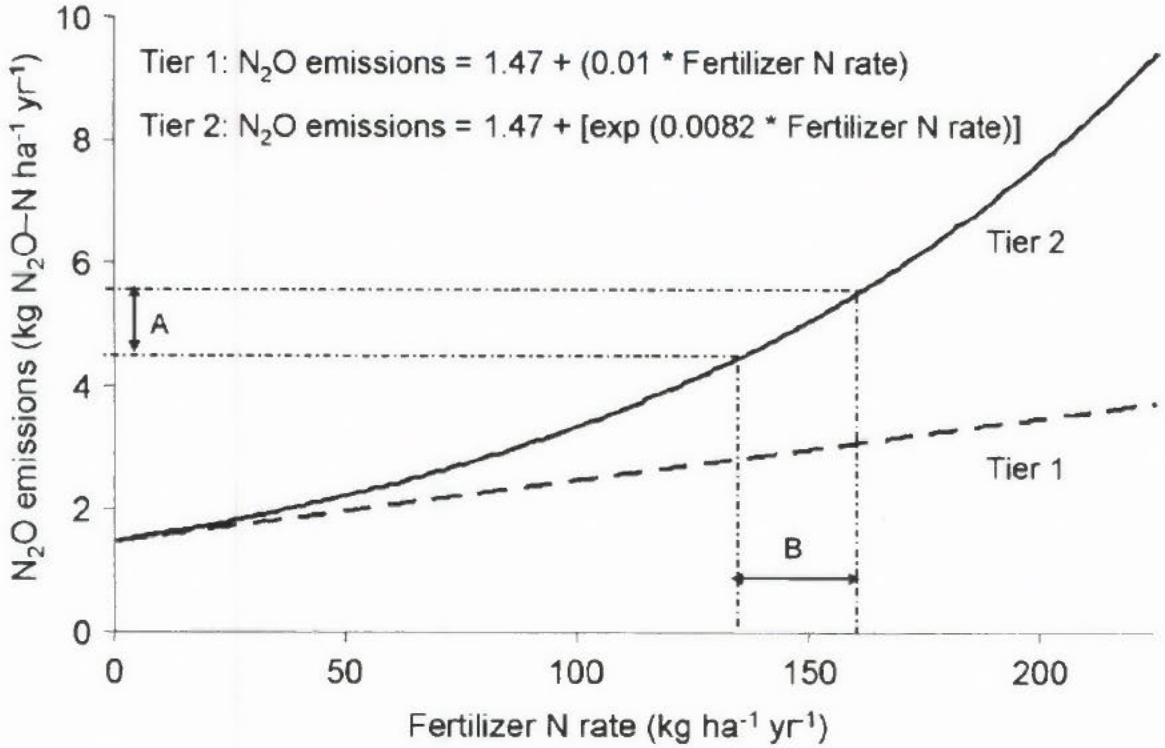


Figure 2. Relationship between N-fertilization rate and N_2O emissions. [12]

Two approaches are available:

Approach 1 (preferred method due to finer spatial resolution) – baseline N rate calculated from:

- Site-specific, farmer N fertilizer management records (require at least five years prior to project period depending on rotation)

Approach 2 (used if farmer records unavailable or unsuitable) – baseline N rate calculated from:

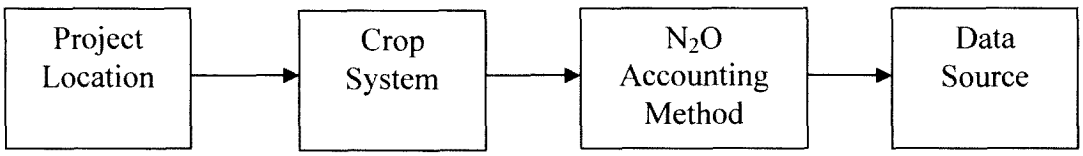
- County-level yield records aggregated by the USDA NASS
- Yield goal equations for determining N fertilizer rate

Reductions in N fertilizer N rate (N_2O emissions), below BAU threshold result in project additionality. Additionality is assessed using a Performance Benchmark. Under both the American Carbon Registry (ACR) and Verified Carbon Standard (VCS), two tests must be passed:

1) Regulatory Surplus
   No mandatory laws or regulations at the local, state, or federal level that requires farmers to reduce N fertilizer rate below BAU rates.
2) Performance Standard
   Exceeds a performance threshold that represents BAU rate
   "Common Practice" threshold used that is identical to calculated N rate baseline value, irrespective of whether Approach 1 or 2 is used.

4.1 EPRI-MSU N_2O OFFSETS PROTOCOL LOGIC

The MSU-EPRI N_2O Offsets protocol is fairly straightforward, transparent, and reasonably flexible without allowing opportunities for gaming the system, scientifically robust, and applies to most crops and geographic locations. In addition, the methodology has and continues to be validated dating back to 2011 via VCS and ACR. However, despite all these positive attributes, the protocol has been modestly used. Considering how busy farmers are this is not too surprising. Expanding the use of this protocol requires expanding the project boundaries. The following is a flowchart of the MSU-EPRI protocol.



Expanding the boundary from the commodity source to the product end user will greatly expand the potential project beneficiaries. In the environmental industry a hazardous waste material is tracked from "cradle to grave", and similarly in water sampling a 'chain of custody' accompanies all water samples from collection to an end user receiving data results. In a heavily regulated industry this ensures integrity of the process. This same logic should apply to GHG offsets using a 'chain of title' to ensure the offsets are legitimate. A 'chain of title' will link the tangible asset (humate or other raw commodity) to the generated intangible asset (GHG offsets); thereby, improving the value or ability to monetize the asset.

An effective LCA will link the tangible asset – humate to the intangible asset – offset; enhancing the value of the asset due to increased market confidence in process validity and fraud

deterrence. For example, an asset management/tracking system that attaches an identification number (ID) to a unit of humate beginning a COT that geographically identifies where the humate originated (the mine), the characteristics of that humate unit (sample analysis), the movement, the use (purpose and location), the linkage to any corresponding offset (carbon, nitrogen, and/or water) and the final disposition or retirement.

4.1.1 TRACKING TAGGANTS

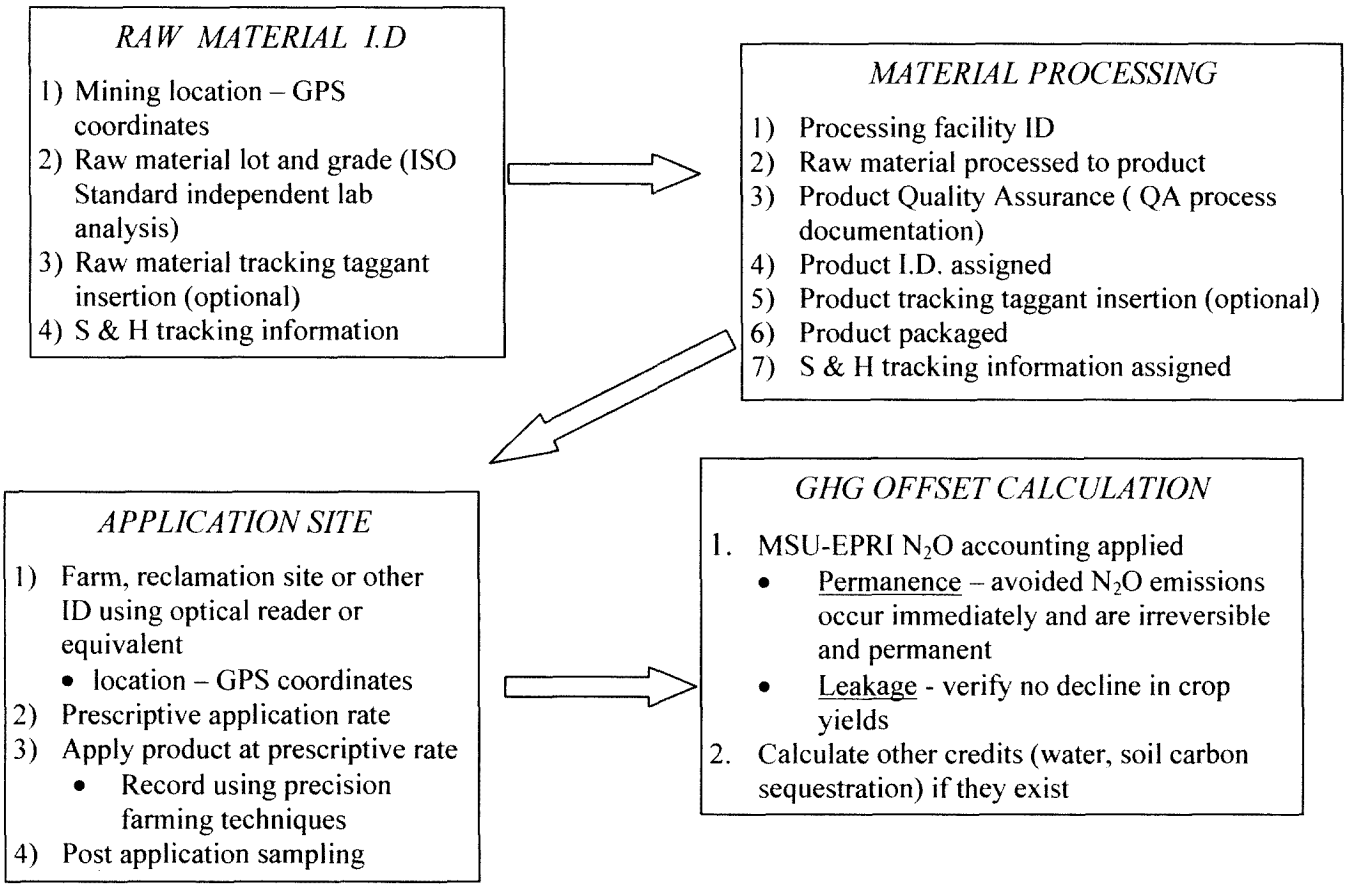
A key step to the COT methodology is the insertion of a taggant that provides a unique digital signature and validates the additionality component for the material. Taggants can be inserted at the optimal point in the product life cycle. Embedded taggant(s) allow a material such as humate to be readily tracked from mining to application. In addition, considering that modern farming now uses technologies such as precision application where materials are applied at a prescriptive rate, the taggant(s) can be measured during application facilitating quantitative record keeping of where and exactly how much of a tagged material was applied in an agricultural plot. This step secures the connection between the tangible (commodity material) and the intangible (GHG offset).

Nanoparticles can be covertly embedded in a commodity material such as humate in such a way as to provide a unique digital barcode. This technology provides a transformative solution to verify corrective applications of prescriptive doses of materials under variable rate applications. Taggant nanoparticles can be quantified during application and/or verified by field sampling. The unique characteristics (size, shape, density, fluorescence, thermal melting point, etc.) of the nanoparticles allow field sampling to be conducted on site providing field verification of application rates and location of materials immediately.

Figure 3 is a flowchart showing the LCA for a mined product such as humate that can be linked to a GHG offset. The critical component for the LCA is the digital signature which follows the tangible asset (ex. raw commodity) through processing, transportation, packaging, application and finally to the linkage with the intangible associated asset (GHG offset). The digital securitization of GHG offsets associated with changes in agricultural practice will greatly expand the project beneficiaries beyond the MSU-EPRI protocol in two ways:

- by minimizing the potential for fraud; and
- by providing a transparent and trackable method to provide monetary value to all project participants.

Figure 3. Life Cycle Approach Flowchart Allowing for Blockchain Application.



5.0 CONCLUSIONS

Genuine carbon standards have been set up with the intention of providing assurances to buyers that the emissions reductions generated by a particular project are indeed real, quantifiable and additional.

Credible standards are a requirement in such practices to provide high quality, independently verified assessments of the emission reductions produced by a project. There are registries such as the Gold Standard and Verifiable Carbon Registry that take efforts to assure that projects meet robust and stringent methodology requirements for sustainable development in the local area. However, none of these registries provide an accurate Chain of Title or accurate Life Cycle Approach to the offsets which has opened the door to fraud in the voluntary markets. COT technologies and blockchains can close that door and provide additional environmental benefits simultaneously.

The Compliance Markets are more robust but the method of tagging the project intentions with the project verifiable results are lacking. Further, the expense associated with creation of a carbon equivalent offset is not well understood at this time. The price discover element has been addressed by the current project. Humic products are an inexpensive alternative to the extent their additionality can be verified.

Humate based products have been used for many years and the science regarding quality of products has advanced over the years culminating in recent ISO standards. These standards are currently under review by Humate Products Trade Association and others including the USDA. Field test trials have proven the concept of additionality on a variety of crops worldwide in accordance with the EPRI-MSU protocols. Add to that newly developed nanomaterials having unique characteristics for material tracking - the validation of agricultural field application quantities are now assured.

To verify the purchase of high quality carbon offsets and EBCs, it is imperative that companies pursue offsets that have been subjected to rigorous third party monitoring, reporting and verification procedures. It is also useful to source EBCs from a reputable offset supplier who can offer transparency in terms of the projects, pricing and retirement of the carbon credits. The LCA/COT process developed by Lone Tree Technologies provides a transparent, logical method for real time tracking of usage of an agricultural product such as humate. It also provides digital record keeping for nitrogen, water and/or other agricultural inputs (reductions) justifying the concept of "additionality". This COT process enhances the validity and value of the link between the tangible (humate or other) asset and the intangible offset (carbon, water, etc.) asset.

This process could also apply to food security and safety issues as well as a means of COT parties monetizing the value of the benefits derived along the chain.

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Humate as a Carbon Offset Mechanism

Brian P. Dwyer

Prepared by
Sandia National Laboratories
Albuquerque, New Mexico 87185 and Livermore, California 94550

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Humate as a Carbon Offset Mechanism

Brian P. Dwyer
Geotechnology & Engineering Department
Sandia National Laboratories
P.O. Box 5800
Albuquerque, New Mexico 87185-0706

Abstract

The progressive drought in New Mexico has led farmers to consider crops that use less water yet maintain potential profit margins. Sunflower, a crop traditionally grown from Kansas to North Dakota, has recently been shown to be profitable in West Texas. The majority of sunflower is grown under dryland conditions due to its drought tolerance and deep root system. Sunflower was investigated as a new crop alternative for NM growers. Two organic, non-GMO seed varieties selected for the NM climate were planted at seven different farms across the state. Results from five of the farms were evaluated for biomass yield, oil yield, and oil characteristics. Results show promise for sunflower as a viable alternative for NM farmers to rotate into their crops.

ACKNOWLEDGEMENTS

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HUMATE AS A CARBON OFFSET MECHANISM

INTRODUCTION

The purpose of this report is to assess the feasibility of using a New Mexico mined product – "humate" to help reduce global warming.

To understand how to reduce Global Climate Change, we must understand what is causing our climate to warm. The International Panel on Climate Change (IPCC) has determined based on volumes of scientific data that a portion of global warming is caused by anthropogenic sources. More specifically, human activities over the last 150 years are responsible for almost all of the increase in greenhouse gases in the atmosphere. Greenhouse gases trap heat and make the planet warmer. [9]

In order to begin reducing the atmospheric warming due to anthropogenic greenhouse gases, the source and warming effect of the relevant gases must be well understood. Then strategies to lower greenhouse gases can progress.

Greenhouse Gases

Global-warming potential (GWP) is a relative measure of how much heat a greenhouse gas traps in the atmosphere.[1] Most people think of carbon dioxide (CO_2) as the sole cause of global warming; however, there are several other important greenhouse gases requiring a greater societal awareness. The greenhouse gases of concern are shown in Figure 1 and include:

1. Carbon dioxide (CO_2);
2. Methane (CH_4);
3. Nitrous Oxide (N_2O); and
4. Fluorinated gases (hydrofuorocarbons, perfluorocarbons, and sulfur hexafluoride).

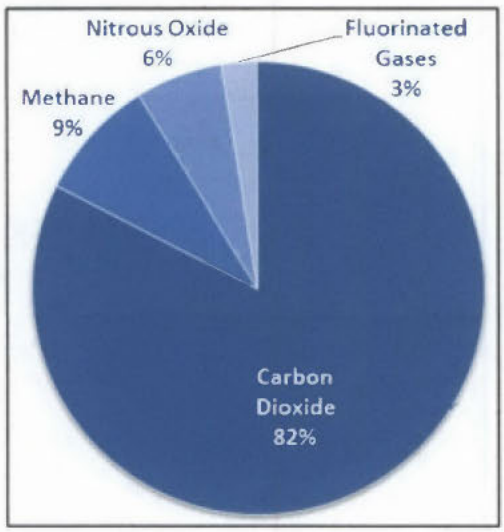

Figure 1. Total United States Emissions in 2012 = 6,526 Million Metric Tons of CO_2 equivalent.

GWP is a simplified index based upon radiative properties that can be used to estimate the potential future impacts of emissions of different gases upon the climate system in a relative sense. GWP is based on a number of factors, including the radiative efficiency (infrared-absorbing ability) of each gas relative to that of carbon dioxide, as well as the decay rate of each gas (the amount removed from the atmosphere over a given number of years) relative to that of carbon dioxide.[2]

The Intergovernmental Panel on Climate Change (IPCC) provides the generally accepted values for GWP. An exact definition of how GWP is calculated is found in the IPCC's 2001 Third Assessment Report [3].

Since all GWP calculations are a comparison to CO_2 which is non-linear, all GWP values are affected. Assuming otherwise will lead to lower GWPs for other gases than a more detailed approach would. Essentially what this means is that CO_2 has less and less effect on radiative absorption as it's concentration rises; whereas, more powerful greenhouse gases like methane and nitrous oxide have significant impact as their atmospheric levels rise.

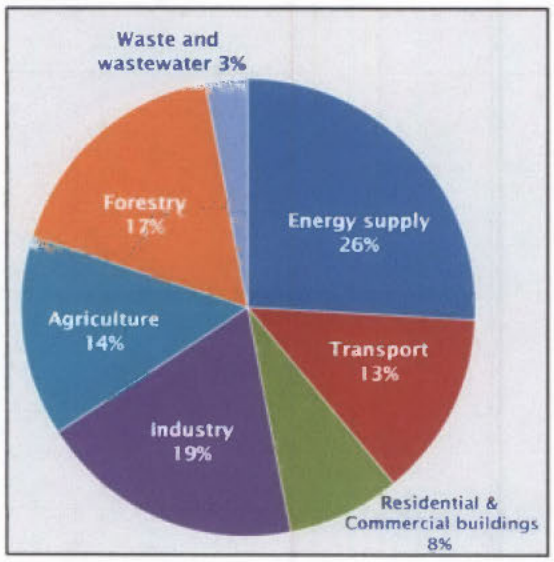

Figure 2. Global Greenhouse Gas Emissions by Source. [8]

To date the vast majority of effort and consideration regarding greenhouse gas reduction has neglected the agriculture and forestry portions. As shown in Figure 2, these account for 31% of greenhouse gas emissions nationwide. Despite a strong inter-dependence between climate and soil quality [13], the role of soil organic carbon (SOC) dynamics on historic increase in atmospheric CO_2, and its strategic importance in decreasing the future rate of increase of atmospheric CO_2 are not widely recognized. This study is focused on the potential for lowering greenhouse gas emissions by improving soil conditions using humate amendments.

BACKGROUND

Until the 1950s, more C was emitted into the atmosphere from the land use change and soil cultivation than from fossil fuel combustion. Whereas the exact magnitude of the historic loss of SOC may be debatable, it is important to realize that the process of SOC depletion can be reversed. Further, improvements in quality and quantity of the SOC pool can increase biomass/agronomic production, enhance water quality, reduce sedimentation of reservoirs and waterways, and mitigate risks of global warming. [14]

There are five principal global C pools. The oceanic pool is the largest, followed by the geologic, pedologic (soil), biotic and the atmospheric pool (Figure 3). All these pools are inter-connected and C circulates among them. Note that the total soil C pool is four times the biotic (trees, etc.) pool and about three times the atmospheric pool. [14]

Nearly all efforts towards lowering greenhouse gases to date have focused on fossil fuels (the Geologic pool) while neglecting the "lowest hanging fruit" – land use (soil and biotic pools). New research indicates that improvements in agricultural management and land

reclamation practices could significantly reduce greenhouse gas emissions. More specifically, the overuse of synthetic nitrogen (N) fertilizers are limiting the soil and biotic pool's ability to sequester carbon and nitrogen.

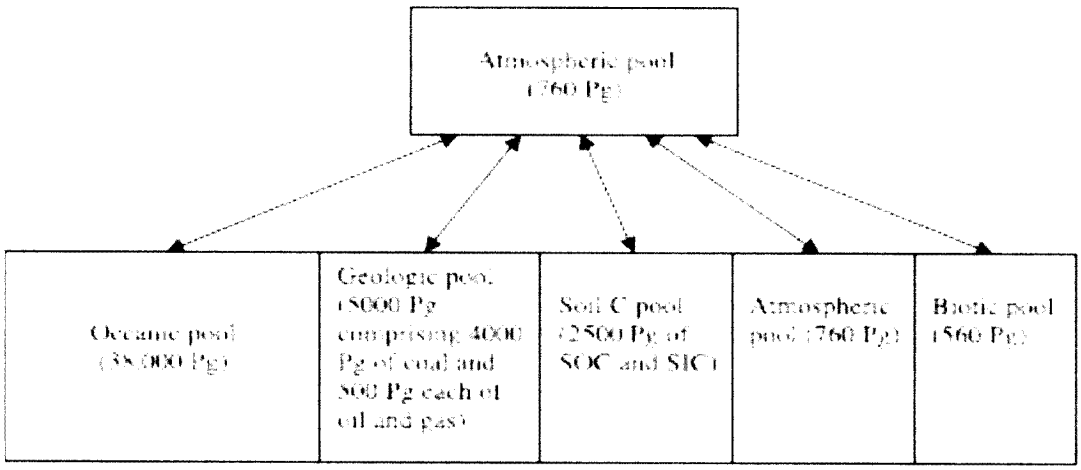

Figure 3. Principal Global Carbon Pools.

Inter-connection Between Nitrogen and Carbon Global Cycles

Possibly more than any other biologically important element, the global nitrogen cycle has been perturbed by anthropogenic activities. The rate of industrial nitrogen fixation now approximately equals the natural rate, resulting in a two- to threefold increase in the total inventory of fixed N on the surface of the Earth through agricultural fertilizer applications. [15]

For years the conventional thinking has been that application of synthetic nitrogen fertilizers improved soil carbon while producing more crops. Research data from the Morrow Pits, the oldest research plots in the country, indicate a decline in soil carbon from the use of synthetic N fertilization. The intensive use of N fertilizers in modern agriculture and land reclamation is increasing C and N in the atmospheric pool, i.e., contributing to global greenhouse gas accumulation

"The public does not yet know much about nitrogen, but in many ways it is as big an issue as carbon, and due to the interactions of nitrogen and carbon, makes the challenge of providing food and energy to the world's peoples without harming the global environment a tremendous challenge. We are accumulating reactive nitrogen in the environment at alarming rates, and this may prove to be as serious as putting carbon dioxide in the atmosphere" says University of Virginia environmental sciences professor James Galloway. In its inert form, nitrogen is harmless and abundant (78% of earth's atmosphere), but the addition of synthetic nitrogen based fertilizers has the unintended consequence of diminishing soil C and disrupting the beneficial associations between plants and the soil microbial communities (SMC). [16] Cropping practices and the use of nitrogen fertilizers are estimated to cause 78% of the total soil N_2O emissions in the United States [17], promoting emissions having a greenhouse warming potential 298 times that of CO_2. [18]

In essence, the use of "reactive" synthetic N fertilizers such as urea is disrupting the SMC causing a cascade of negative effects. First organic matter dissipates, the soil's ability to store organic nitrogen and carbon declines, N and C now enter the environment as CO_2 and N_2O. The loss of organic matter makes soil more prone to compaction (increasing runoff and erosion); lowers the soil water holding capacity making it more reliant on irrigation and finally dissipates the soil's ability to store nutrients (specifically N) fertilizer thus creating a viscious cycle requiring more addtions of synthetic N to keep yields up.

LOW HANGING FRUIT

Soil is the largest reservoir of actively cycling C on earth and has the potential to mitigate CO_2 emissions from the atmosphere as SOC. [19] Using soil to reduce atmospheric CO_2 is an attractive option since SOC balances, compared to other global pools, can respond quickly to changes in agricultural management. [20]

Numerous studies worldwide (Iowa State University

CAN CHANGES TO CURRENT FERTILIZER N PRACTICES REDUCE GLOBAL CLIMATE CHANGE?

HUMATE

The EPA Federal Register lists humate as a naturally occurring organic substance typically associated with coal deposits, that is non-toxic to human health and the environment and subsequently has been exempted from EPA requirement of a tolerance.

Humic acid is a principal component of humic substances, which are the major organic constituents of soil (humus), peat, coal, many upland streams, dystrophic lakes, and ocean water.[10] It is produced by biodegradation of dead organic matter. It is not a single acid; rather, it is a complex mixture of many different acids containing carboxyl and phenolate groups so that the mixture behaves functionally as a dibasic acid or, occasionally, as a tribasic acid. Humic acids can form complexes with ions that are commonly found in the environment creating humic colloids. Humic and fulvic acids (fulvic acids are humic acids of lower molecular weight and higher oxygen content than other humic acids) are commonly used as a soil supplement in agriculture, and less commonly as a human nutritional supplement. As a nutrition supplement, fulvic acid can be found in a liquid form as a component of mineral colloids. Fulvic acids are poly-electrolytes and are unique colloids that diffuse easily through membranes whereas all other colloids do not.[11]

Humic substances are formed by the microbial degradation of dead plant matter, such as lignin. They are very resistant to further biodegradation. [12]

Importance of Time Horizon

GWP of a gas depends on the timespan over which the potential is calculated. Table 1 below compares the GWP of N_2O, CH_4, and a few fluorinated gases to CO_2. Carbon dioxide has a 100 year -GWP of 1 (it is the baseline to which all other greenhouse gases are compared). What is important to notice is a gas which is quickly removed from the atmosphere may have a large initial effect but over time it becomes less important; and conversely, a gas that decays very slowly becomes more important as time goes. For example, N_2O is 298 more potent than CO_2 over a 100-year horizon.

GWP values and lifetimes from 2013 IPCC AR5 p.714 (with climate-carbon feedbacks) [4]	Lifetime (years)	GWP time horizon	
		20 years	100 years
Carbon Dioxide (CO_2)	50-200		1
Methane (CH_4)	12.4	86	34
HFC-134a (hydrofluorocarbon)	13.4	3790	1550
CFC-11 (chlorofluorocarbon)	45.0	7020	5350
Nitrous Oxide (N_2O)	121.0	268	298
Carbon tetrafluoride (CF_4)	50,000	4950	7350

Table 1. Global Warming Potential of Select Greenhouse Gases.

Source of Common Greenhouse Gases

The primary sources of greenhouse gas emissions in the United States are:

- Electricity production (32% of 2012 greenhouse gas emissions) - Electricity production generates the largest share of greenhouse gas emissions. Over 70% of our electricity comes from burning fossil fuels, mostly coal and natural gas.[6]
- Transportation (28% of 2012 greenhouse gas emissions) - Greenhouse gas emissions from transportation primarily come from burning fossil fuel for our cars, trucks, ships, trains, and planes. Over 90% of the fuel used for transportation is petroleum based, which includes gasoline and diesel.[7]
- Industry (20% of 2012 greenhouse gas emissions) - Greenhouse gas emissions from industry primarily come from burning fossil fuels for energy as well as greenhouse gas emissions from certain chemical reactions necessary to produce goods from raw materials.
- Commercial and Residential (10% of 2012 greenhouse gas emissions) - Greenhouse gas emissions from businesses and homes arise primarily from fossil fuels burned for heat, the use of certain products that contain greenhouse gases, and the handling of waste.
- Agriculture (10% of 2012 greenhouse gas emissions) - Greenhouse gas emissions from agriculture come from livestock such as cows, agricultural soils, and rice production.
- Land Use and Forestry (offset of 15% of 2012 greenhouse gas emissions) - Land areas can act as a sink (absorbing CO_2 from the atmosphere) or a source of greenhouse gas emissions. In the United States, since 1990, managed forests and other lands have absorbed more CO_2 from the atmosphere than they emit. [5]

Carbon Credit Exchange Requirements

Can Humate Reduce GH Gases?

Mechanism

Should Humate Qualify for CO2 Offset Credits?

Nitrous oxide

Emissions calculations methodologies for direct and indirect emissions of N_2O from nitrogen fertilization of agricultural soils and from runoff of fertilizer and manure applied to soils have been revised to align more completely with methods in the 2006 IPCC guidelines. Most notably, the revised IPCC methodology, which accounts for nitrogen in below-ground crop residues but omits biological fixation of nitrogen, has been implemented for the 2009 inventory.

Emissions resulting from manure that is directly deposited on lands by grazing or pasture-raised animals have been transferred from the manure management category to the agricultural soils category, and new sources of indirect emissions from soil leaching and volatization have been included in nitrogen fertilization of soils.

The specificity of direct and indirect emissions from manure management has been improved by implementing State-level calculation of swine emissions and updating the waste management system distributions for dairy cattle and swine to annually variable State-level values.

N_2O emission factors for passenger cars and light-duty vehicles have been revised to the values published in the 2006 IPCC guidelines, resulting in a significant decline in calculated emissions from this source category from 1990 to 2008.

Emissions estimates for 2007 and 2008 have been corrected to account for the 2006 closing of the smallest adipic acid plant in the United States, which was the only remaining plant that did not use abatement technology. Also, the N_2O emission factor for adipic acid production has been revised to the value published in the 2006 IPCC guidelines.

For the first time in this report, N_2O emissions from composting are included in the inventory.

SUMMARY

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The pedologic or soil C pool comprises two components: SOC and the soil inorganic carbon (SIC) pool. The SIC is especially important in soils of the dry regions. The SOC concentration ranges from a low in soils of the arid regions to high in soils of the temperate regions, and extremely high in organic or peat soils. Two important notes from Figure 3 are: (a) how large the soil C pool is; and (b) each of the C pools are inter-connected through the atmospheric pool where greenhouse gases are trapped. Again referring back to Figure 2, 31% of global greenhouse emissions are related to the soil and biotic C pools.

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Humate as a Carbon Offset Mechanism

Brian P. Dwyer

Prepared by
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Albuquerque, New Mexico 87185 and Livermore, California 94550

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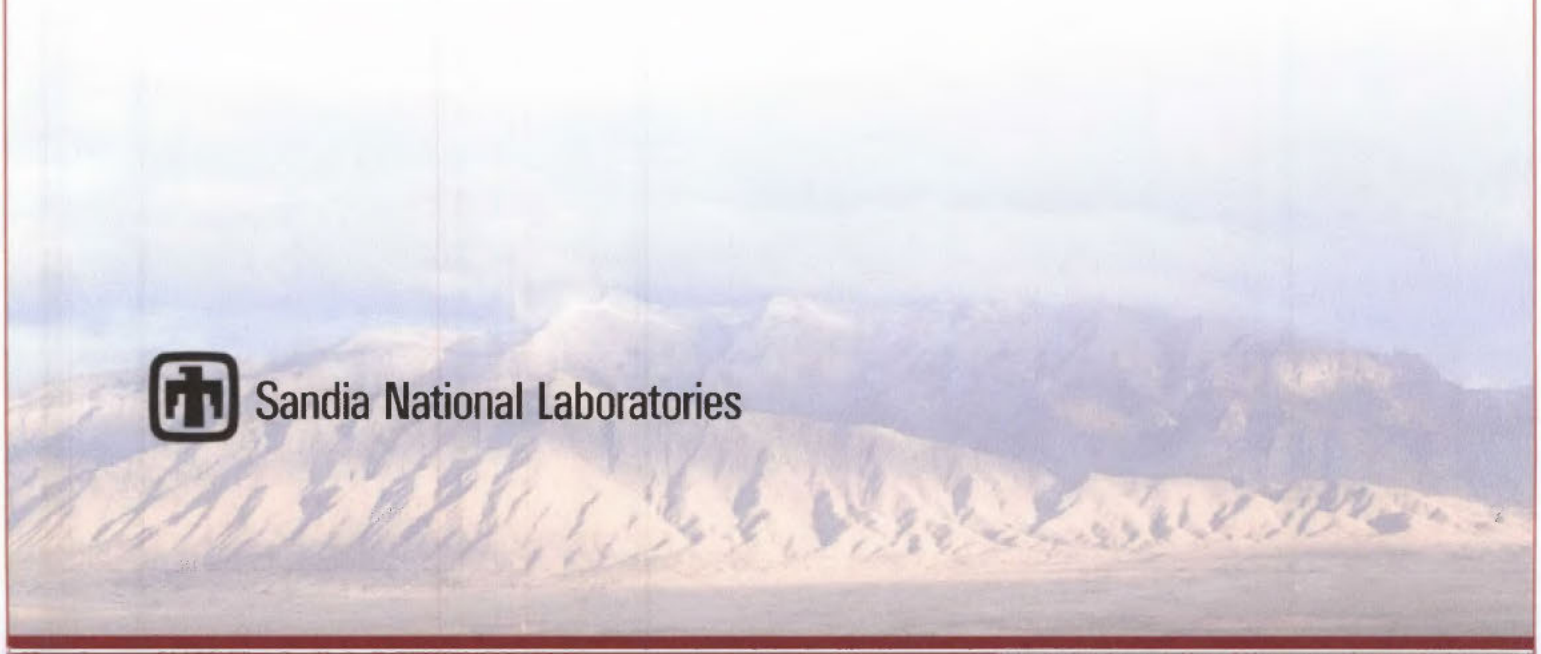

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Humate as a Carbon Offset Mechanism

Brian P. Dwyer
Geotechnology & Engineering Department
Sandia National Laboratories
P.O. Box 5800
Albuquerque, New Mexico 87185-0706

Abstract

The progressive drought in New Mexico has led farmers to consider crops that use less water yet maintain potential profit margins. Sunflower, a crop traditionally grown from Kansas to North Dakota, has recently been shown to be profitable in West Texas. The majority of sunflower is grown under dryland conditions due to its drought tolerance and deep root system. Sunflower was investigated as a new crop alternative for NM growers. Two organic, non-GMO seed varieties selected for the NM climate were planted at seven different farms across the state. Results from five of the farms were evaluated for biomass yield, oil yield, and oil characteristics. Results show promise for sunflower as a viable alternative for NM farmers to rotate into their crops.

ACKNOWLEDGEMENTS

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HUMATE AS A CARBON OFFSET MECHANISM

INTRODUCTION

The purpose of this report is to assess the feasibility of using a New Mexico mined product – "humate" to help reduce global warming.

To understand how to reduce Global Climate Change, we must understand what is causing our climate to warm. The International Panel on Climate Change (IPCC) has determined based on volumes of scientific data that a portion of global warming is caused by anthropogenic sources. More specifically, human activities over the last 150 years are responsible for almost all of the increase in greenhouse gases in the atmosphere. Greenhouse gases trap heat and make the planet warmer. [9]

In order to begin reducing the atmospheric warming due to anthropogenic greenhouse gases, the source and warming effect of the relevant gases must be well understood. Then strategies to lower greenhouse gases can progress.

Greenhouse Gases

Global-warming potential (GWP) is a relative measure of how much heat a greenhouse gas traps in the atmosphere.[1] Most people think of carbon dioxide (CO_2) as the sole cause of global warming; however, there are several other important greenhouse gases requiring a greater societal awareness. The greenhouse gases of concern are shown in Figure 1 and include:

1. Carbon dioxide (CO_2);
2. Methane (CH_4);
3. Nitrous Oxide (N_2O); and
4. Fluorinated gases (hydrofuorocarbons, perfluorocarbons, and sulfur hexafluoride).

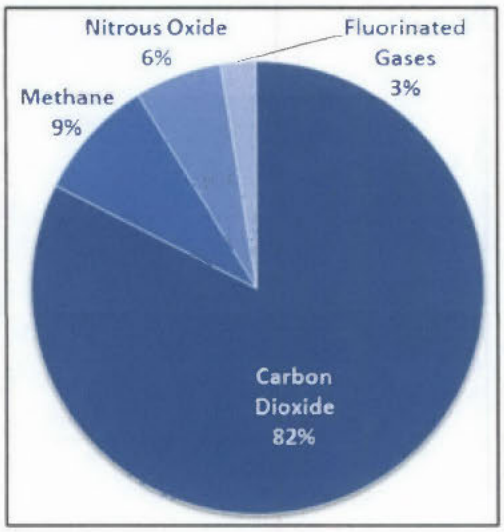

Figure 1. Total United States Emissions in 2012 = 6,526 Million Metric Tons of CO_2 equivalent.

GWP is a simplified index based upon radiative properties that can be used to estimate the potential future impacts of emissions of different gases upon the climate system in a relative sense. GWP is based on a number of factors, including the radiative efficiency (infrared-absorbing ability) of each gas relative to that of carbon dioxide, as well as the decay rate of each gas (the amount removed from the atmosphere over a given number of years) relative to that of carbon dioxide.[2]

The Intergovernmental Panel on Climate Change (IPCC) provides the generally accepted values for GWP. An exact definition of how GWP is calculated is found in the IPCC's 2001 Third Assessment Report [3].

Since all GWP calculations are a comparison to CO_2 which is non-linear, all GWP values are affected. Assuming otherwise will lead to lower GWPs for other gases than a more detailed approach would. Essentially what this means is that CO_2 has less and less effect on radiative absorption as it's concentration rises; whereas, more powerful greenhouse gases like methane and nitrous oxide have significant impact as their atmospheric levels rise.

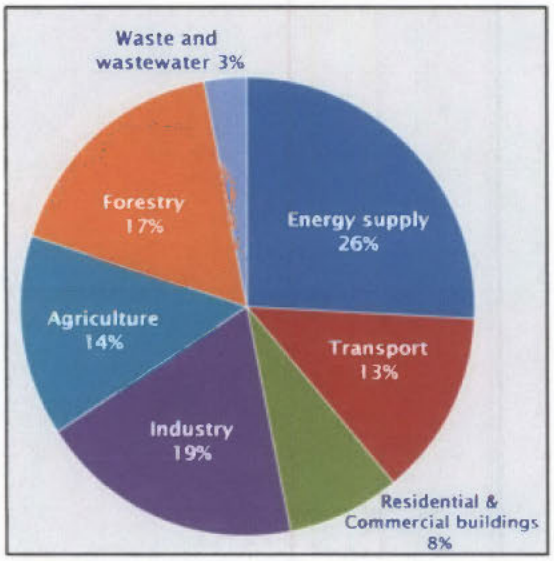

Figure 2. Global Greenhouse Gas Emissions by Source. [8]

To date the vast majority of effort and consideration regarding greenhouse gas reduction has neglected the agriculture and forestry portions. As shown in Figure 2, these account for 31% of greenhouse gas emissions nationwide. Despite a strong inter-dependence between climate and soil quality [13], the role of soil organic carbon (SOC) dynamics on historic increase in atmospheric CO_2, and its strategic importance in decreasing the future rate of increase of atmospheric CO_2 are not widely recognized. This study is focused on the potential for lowering greenhouse gas emissions by improving soil conditions using humate amendments.

BACKGROUND

Until the 1950s, more C was emitted into the atmosphere from the land use change and soil cultivation than from fossil fuel combustion. Whereas the exact magnitude of the historic loss of SOC may be debatable, it is important to realize that the process of SOC depletion can be reversed. Further, improvements in quality and quantity of the SOC pool can increase biomass/agronomic production, enhance water quality, reduce sedimentation of reservoirs and waterways, and mitigate risks of global warming. [14]

There are five principal global C pools. The oceanic pool is the largest, followed by the geologic, pedologic (soil), biotic and the atmospheric pool (Figure 3). All these pools are inter-connected and C circulates among them. Note that the total soil C pool is four times the biotic (trees, etc.) pool and about three times the atmospheric pool. [14]

Nearly all efforts towards lowering greenhouse gases to date have focused on fossil fuels (the Geologic pool) while neglecting the "lowest hanging fruit" – land use (soil and biotic pools). New research indicates that improvements in agricultural management and land

reclamation practices could significantly reduce greenhouse gas emissions. More specifically, the overuse of synthetic nitrogen (N) fertilizers are limiting the soil and biotic pool's ability to sequester carbon and nitrogen.

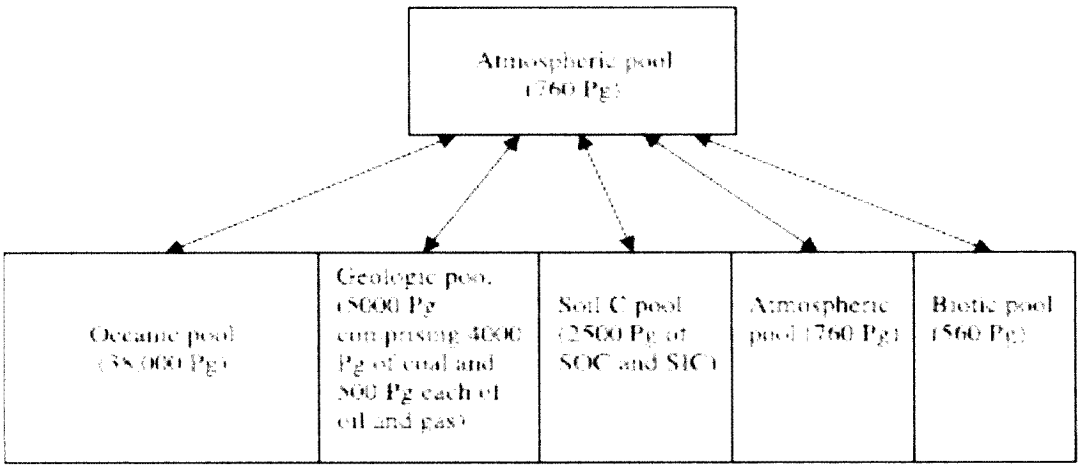

Figure 3. Principal Global Carbon Pools.

Inter-connection Between Nitrogen and Carbon Global Cycles

Possibly more than any other biologically important element, the global nitrogen cycle has been perturbed by anthropogenic activities. The rate of industrial nitrogen fixation now approximately equals the natural rate, resulting in a two- to threefold increase in the total inventory of fixed N on the surface of the Earth through agricultural fertilizer applications. [15]

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		20 years	100 years
Carbon Dioxide (CO_2)	50-200		1
Methane (CH_4)	12.4	86	34
HFC-134a (hydrofluorocarbon)	13.4	3790	1550
CFC-11 (chlorofluorocarbon)	45.0	7020	5350
Nitrous Oxide (N_2O)	121.0	268	298
Carbon tetrafluoride (CF_4)	50,000	4950	7350

Table 1. Global Warming Potential of Select Greenhouse Gases.

Source of Common Greenhouse Gases

The primary sources of greenhouse gas emissions in the United States are:

- Electricity production (32% of 2012 greenhouse gas emissions) - Electricity production generates the largest share of greenhouse gas emissions. Over 70% of our electricity comes from burning fossil fuels, mostly coal and natural gas.[6]
- Transportation (28% of 2012 greenhouse gas emissions) - Greenhouse gas emissions from transportation primarily come from burning fossil fuel for our cars, trucks, ships, trains, and planes. Over 90% of the fuel used for transportation is petroleum based, which includes gasoline and diesel.[7]
- Industry (20% of 2012 greenhouse gas emissions) - Greenhouse gas emissions from industry primarily come from burning fossil fuels for energy as well as greenhouse gas emissions from certain chemical reactions necessary to produce goods from raw materials.
- Commercial and Residential (10% of 2012 greenhouse gas emissions) - Greenhouse gas emissions from businesses and homes arise primarily from fossil fuels burned for heat, the use of certain products that contain greenhouse gases, and the handling of waste.
- Agriculture (10% of 2012 greenhouse gas emissions) - Greenhouse gas emissions from agriculture come from livestock such as cows, agricultural soils, and rice production.
- Land Use and Forestry (offset of 15% of 2012 greenhouse gas emissions) - Land areas can act as a sink (absorbing CO_2 from the atmosphere) or a source of greenhouse gas emissions. In the United States, since 1990, managed forests and other lands have absorbed more CO_2 from the atmosphere than they emit. [5]

Carbon Credit Exchange Requirements

Can Humate Reduce GH Gases?

Mechanism

Should Humate Qualify for CO2 Offset Credits?

Nitrous oxide

Emissions calculations methodologies for direct and indirect emissions of N_2O from nitrogen fertilization of agricultural soils and from runoff of fertilizer and manure applied to soils have been revised to align more completely with methods in the 2006 IPCC guidelines. Most notably, the revised IPCC methodology, which accounts for nitrogen in below-ground crop residues but omits biological fixation of nitrogen, has been implemented for the 2009 inventory.

Emissions resulting from manure that is directly deposited on lands by grazing or pasture-raised animals have been transferred from the manure management category to the agricultural soils category, and new sources of indirect emissions from soil leaching and volatization have been included in nitrogen fertilization of soils.

The specificity of direct and indirect emissions from manure management has been improved by implementing State-level calculation of swine emissions and updating the waste management system distributions for dairy cattle and swine to annually variable State-level values.

N_2O emission factors for passenger cars and light-duty vehicles have been revised to the values published in the 2006 IPCC guidelines, resulting in a significant decline in calculated emissions from this source category from 1990 to 2008.

Emissions estimates for 2007 and 2008 have been corrected to account for the 2006 closing of the smallest adipic acid plant in the United States, which was the only remaining plant that did not use abatement technology. Also, the N_2O emission factor for adipic acid production has been revised to the value published in the 2006 IPCC guidelines.

For the first time in this report, N_2O emissions from composting are included in the inventory.

SUMMARY

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The pedologic or soil C pool comprises two components: SOC and the soil inorganic carbon (SIC) pool. The SIC is especially important in soils of the dry regions. The SOC concentration ranges from a low in soils of the arid regions to high in soils of the temperate regions, and extremely high in organic or peat soils. Two important notes from Figure 3 are: (a) how large the soil C pool is; and (b) each of the C pools are inter-connected through the atmospheric pool where greenhouse gases are trapped. Again referring back to Figure 2, 31% of global greenhouse emissions are related to the soil and biotic C pools.

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Humate's Role in Terrestrial Greenhouse Gas and Water Reduction

Brian P. Dwyer

Prepared by
Sandia National Laboratories
Albuquerque, New Mexico 87185 and Livermore, California 94550

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Humate's Role in Terrestrial Greenhouse Gas and Water Reduction

Brian P. Dwyer
Geotechnology & Engineering Department
Sandia National Laboratories
P.O. Box 5800
Albuquerque, New Mexico 87185-0706

Abstract

The Intergovernmental Panel on Climate Change (IPCC) has determined that greenhouse gases (GHGs) released from human activity are responsible for a portion of global warming, and if GHG levels are not lowered soon the results will be catastrophic for mankind. Most people think carbon dioxide (CO_2) is the sole culprit; consequently, nearly all efforts at lowering GHG emissions have focused on the fossil fuel industry (carbon), when in fact other GHGs will become more important in the future. Nitrous Oxide (N_2O), a GHG that has approximately 300 times more global warming potential than CO_2, accounts for 6% of the GHG emissions in the United States, equivalent to 41 million passenger vehicles annually. Seventy five percent of N_2O emissions come from the use of synthetic nitrogen (N) fertilizer in the agriculture sector. Recent studies on N-fertilizer usage have confirmed that the relationship between N_2O emission and fertilizer use is not linear as previously thought, but instead is exponential when excess fertilizer is used. Overuse of synthetic N-fertilizer causes a cascade effect where excess N speeds up the decomposition of organic matter and soil humus which in turn destroys the soil biodiversity. The resulting soil structure physically changes becoming less efficient at storing nutrients, water and air; thus requiring more fertilizer and irrigation creating a vicious destructive cycle.

During the last fifteen years, numerous studies have shown that changes in soil management practices, specifically amending soil with organic and humate materials can reverse soil damage and actually improve a farmer's or land reclamation company's balance sheet. Profitability improves in two ways: (1) lower operating costs resulting from lower input costs (water and fertilizer); and (2) increased revenue by participation in emerging GHG offsets markets (nitrogen and carbon), and Water quality trading markets.

In a practice known as offsetting, businesses can pay to outsource emissions reductions (GHG abatement) when it is more cost–effective or technologically feasible than doing so in-house. At present, the market for these offsets is voluntary, driven by corporation's desire to become "carbon neutral"; however, regulatory requirements for participation are in the works. This

concept of offsetting to provide a market for global GHG abatement is rapidly developing providing tremendous opportunity for low cost abatement. Soil restoration is internationally recognized as one of the lowest cost GHG abatement opportunities available. Abatement opportunities exist for both the companies creating (selling) or purchasing the credit offsets. For example, a coal company that once viewed humate as a waste product of the coal extraction process can now reduce their own GHG footprint by selling humate as a valuable soil amendment to farmer's who simultaneously use it to reduce their GHG footprints, create GHG offsets and Water reduction/quality credits.

ACKNOWLEDGEMENTS

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INTRODUCTION

The purpose of this report is to assess the feasibility of using a New Mexico mined product – "humate" to help reduce global warming.

To understand how to reduce Global Climate Change, we must understand what is causing our climate to warm. The Intergovernmental Panel on Climate Change (IPCC) has determined based on volumes of scientific data that a portion of global warming is caused by anthropogenic sources. More specifically, human activities over the last 150 years are responsible for almost all of the increase in greenhouse gases in the atmosphere. Greenhouse gases trap heat and make the planet warmer. [9]

In order to begin reducing the atmospheric warming due to anthropogenic greenhouse gases, the source and warming effect of the relevant gases must be well understood. Then strategies to lower greenhouse gases can progress.

Greenhouse Gases

Global-warming potential (GWP) is a relative measure of how much heat a greenhouse gas traps in the atmosphere. [1] Most people think of carbon dioxide (CO_2) as the sole cause of global warming; however, there are several other important greenhouse gases requiring a greater societal awareness. The greenhouse gases of concern are shown in Figure 1 and include:

1. Carbon dioxide (CO_2);
2. Methane (CH_4);
3. Nitrous Oxide (N_2O); and
4. Fluorinated gases (hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride).

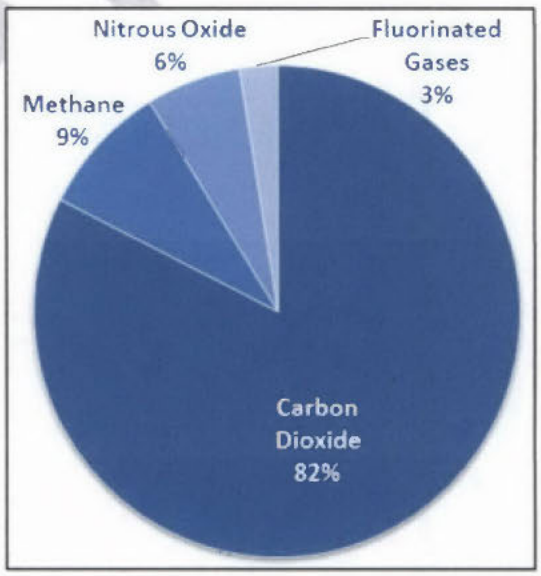

Figure 1 Total United States Emissions in 2012 = 6,526 Million Metric Tons of CO_2 equivalent

GWP is a simplified index based upon radiative properties that can be used to estimate the potential future impacts of emissions of different gases upon the climate system in a relative sense. GWP is based on a number of factors, including the radiative efficiency (infrared-absorbing ability) of each gas relative to that of carbon dioxide, as well as the decay rate of each gas (the amount removed from the atmosphere over a given number of years) relative to that of carbon dioxide. [2]

The Intergovernmental Panel on Climate Change provides the generally accepted values for GWP. An exact definition of how GWP is calculated is found in the IPCC's 2001 Third Assessment Report [3].

Since all GWP calculations are a comparison to CO_2 which is non-linear, all GWP values are affected. Assuming otherwise will lead to lower GWPs for other gases than a more detailed

approach would. Essentially what this means is that CO_2 has less and less effect on radiative absorption as it's concentration rises; whereas, more powerful greenhouse gases like methane and nitrous oxide have significant impact as their atmospheric levels rise.

Importance of Time Horizon

GWP of a gas depends on the timespan over which the potential is calculated. Table 1 below compares the GWP of N_2O, CH_4, and a few fluorinated gases to CO_2. Carbon dioxide has a 100 year -GWP of 1 (it is the baseline to which all other greenhouse gases are compared). What is important to notice is a gas which is quickly removed from the atmosphere may have a large initial effect but over time it becomes less important; and conversely, a gas that decays very slowly becomes more important as time goes. For example, N_2O is 298 more potent than CO_2 over a 100-year horizon.

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Carbon tetrafluoride (CF_4)	50,000	4950	7350

To date the vast majority of effort and consideration regarding greenhouse gas reduction has neglected the agriculture and forestry portions. As shown in Figure 2, these account for 31% of greenhouse gas emissions nationwide. Despite a strong inter-dependence between climate and soil quality [13], the role of soil organic carbon (SOC) dynamics on historic increase in atmospheric CO_2, and its strategic importance in decreasing the future rate of increase of atmospheric CO_2 are not widely recognized. This study is focused on the potential for lowering greenhouse gas emissions by improving soil conditions using humate amendments.

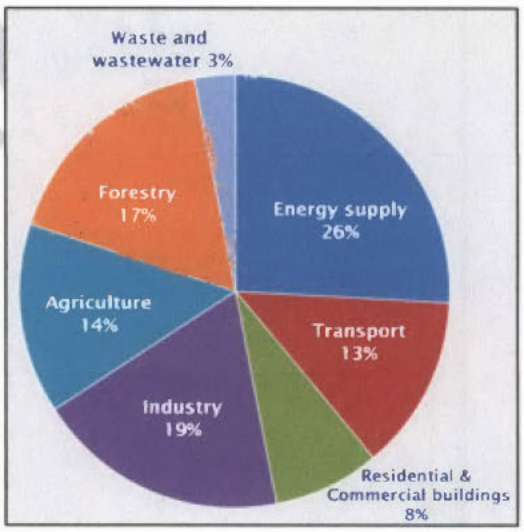

Figure 2 Global Greenhouse Gas Emissions by Source. [8]

BACKGROUND

Until the 1950s, more C was emitted into the atmosphere from the land use change and soil cultivation than from fossil fuel combustion. Whereas the exact magnitude of the historic loss of SOC may be debatable, it is important to realize that the process of SOC depletion can be reversed. Further, improvements in quality and quantity of the SOC pool can increase biomass/agronomic production, enhance water quality, reduce sedimentation of reservoirs and waterways, and mitigate risks of global warming. [14]

There are five principal global C pools. The oceanic pool is the largest, followed by the geologic, pedologic (soil), biotic and the atmospheric pool (Figure 3). All these pools are inter-connected and C circulates among them. Note that the total soil C pool is four times the biotic (trees, etc.) pool and about three times the atmospheric pool. [14]

Nearly all efforts towards lowering greenhouse gases to date have focused on fossil fuels (the Geologic pool) while neglecting the "lowest hanging fruit" – land use (soil and biotic pools). New research indicates that improvements in agricultural management and land reclamation practices could significantly reduce greenhouse gas emissions. More specifically, the overuse of synthetic nitrogen (N) fertilizers is limiting the soil and biotic pool's ability to sequester carbon and nitrogen.

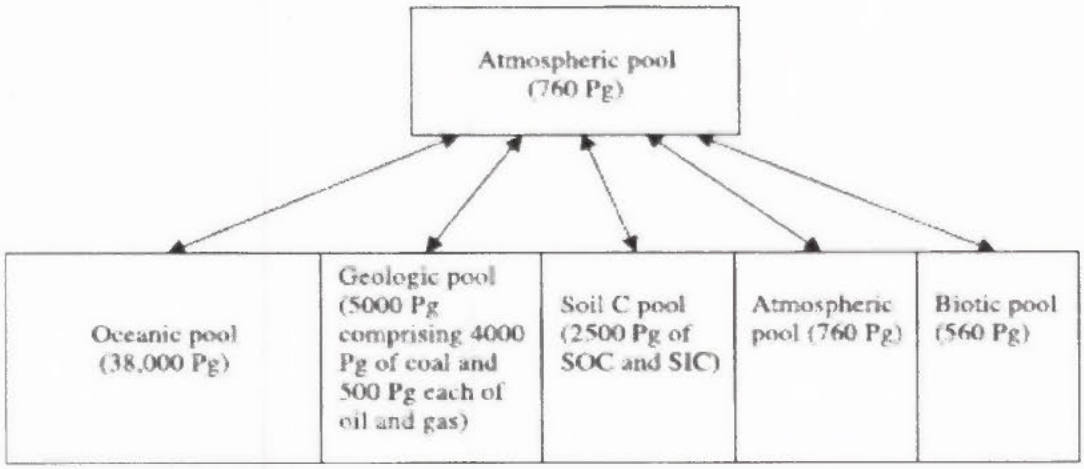

Figure 3 Principal Global Carbon Pools.

Inter-connection Between Nitrogen and Carbon Global Cycles

Possibly more than any other biologically important element, the global nitrogen cycle has been perturbed by anthropogenic activities. The rate of industrial nitrogen fixation now approximately equals the natural rate, resulting in a two- to threefold increase in the total inventory of fixed N on the surface of the Earth through agricultural fertilizer applications. [15]

For years the conventional thinking has been that application of synthetic nitrogen fertilizers improved soil carbon while producing more crops. Research data from the Morrow Pits, the oldest research plots in the country, indicate a decline in soil carbon from the use of synthetic N fertilization. The intensive use of N fertilizers in modern agriculture and land reclamation is increasing C and N in the atmospheric pool, i.e., contributing to global greenhouse gas accumulation.

"The public does not yet know much about nitrogen, but in many ways it is as big an issue as carbon, and due to the interactions of nitrogen and carbon, makes the challenge of providing food and energy to the world's peoples without harming the global environment a tremendous challenge. We are accumulating reactive nitrogen in the environment at alarming rates, and this may prove to be as serious as putting carbon dioxide in the atmosphere" says University of Virginia environmental sciences professor James Galloway. In its inert form, nitrogen is harmless and abundant (78% of earth's atmosphere), but the addition of synthetic nitrogen based fertilizers has the unintended consequence of diminishing soil C and disrupting the beneficial associations between plants and the soil microbial communities (SMC). [16] Cropping practices and the use of nitrogen fertilizers are estimated to cause 78% of the total soil N_2O emissions in the United States [17], promoting emissions having a greenhouse warming potential 310 times that of CO_2. [18, 25]

LOW HANGING FRUIT

Soil is the largest reservoir of actively cycling C on earth and has the potential to mitigate CO_2 emissions from the atmosphere as SOC.[19] Using soil to reduce atmospheric CO_2 is an attractive option since SOC balances, compared to other global pools, can respond quickly to changes in agricultural management. [20] The same can be said for soil's ability to reduce N.

Numerous public and private sector studies worldwide concur that improvements to SOM result in sequestration of N and C greenhouse gases.

The common theme among the field scale data is that synthetic (reactive) nitrogen, especially when overused as is common practice, degrades soil by the destruction of the soil biodiversity. The Morrow plots located on the University of Illinois' Urbana-Champaign campus comprise the world's oldest experimental site under continuous corn cultivation were first planted in 1876. Mulvaney and his collaborators concluded, a "net decline occurred in soil [carbon] despite increasingly massive residue [carbon] incorporation."[21] **In other words, synthetic nitrogen broke down organic matter faster than plant residue could create it**. The findings are published in "The Myth of Nitrogen Fertilization for Soil Carbon Sequestration" Similar evidence is common in the scientific literature; however, perhaps because of the short-term nature of the modern agriculture industry the overuse of N fertilizer still occurs.

Soil Degradation Mechanism

The addition of synthetic nitrogen in such an easily assimilable (reactive) form stimulates microorganisms to search for organic matter needed for energy and building of microbial tissue. The overuse of synthetic nitrogen causes a "nitrogen cascade" resulting in imbalances in the natural ecosystem by disrupting the SMC. Excess N speeds up the decomposition of organic matter and humus, physically changing the soil structure. The resulting soil has less pore space and less sponge like qualities; therefore, becomes less efficient at storing nutrients, water and air. More fertilizer and irrigation is needed. Figure 4 portrays the progression of impacts from over use of synthetic N fertilizers.

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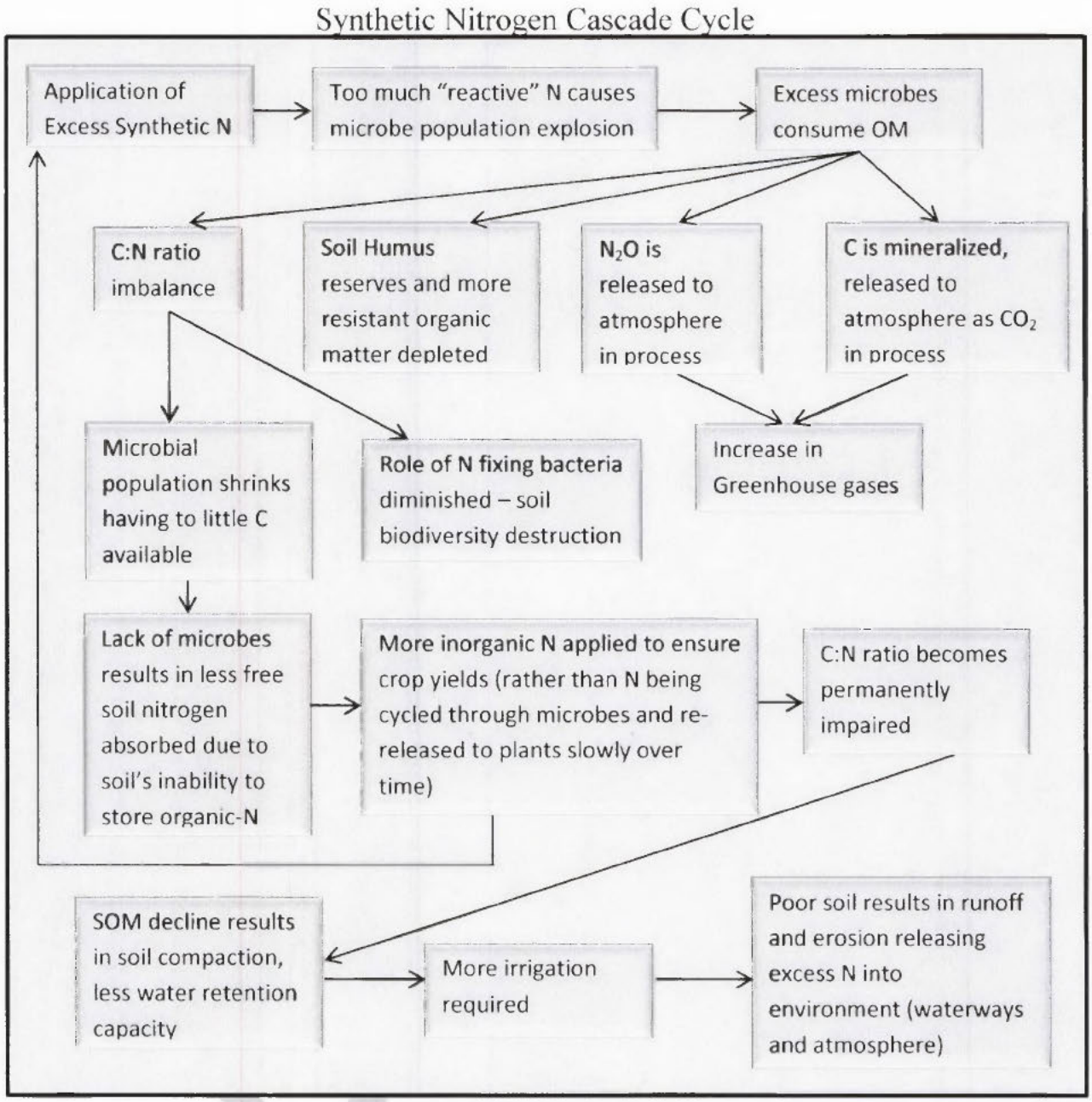

Figure 4 Flowchart Showing Synthetic Nitrogen Cascade Cycle.

BREAKING THE NITROGEN CYCLE

Lowering Greenhouse Gas Emissions By Changes in Agricultural Practices

The exact magnitude of the historic loss of SOC loss due to land use changes is debatable; however, it is important to realize that the process of SOC depletion can be reversed. [20]

A considerable part of the depleted SOC pool can be restored through conversion of marginal lands into restorative land uses, adoption of conservation tillage with cover crops and crop

residue mulch, nutrient cycling including the use of compost and manure, and other system of sustainable management of soil and water resources. [14] The global potential of SOC sequestration through these practices is 0.9 ± 0.3 Pg C/year, which may offset one-fourth to one-third of the annual increase in atmospheric CO_2 estimated at 3.3 Pg C/year. [14]

"Farmers already manage fertilizer, but are often reluctant to further reduce its use because they fear doing so will curb crop yields". Evidence now exists that changes in crop management can curb greenhouse gas emissions while simultaneously maintaining crop yields. [22]

Numerous studies have confirmed this relationship; however, research collected from a joint venture between Michigan State University (MSU) and EPRI (Electrical Power Research Institute) has gone as far as to quantify the link between fertilizer and GHG emission. This study concluded that the relationship between the amount of fertilizer and production of greenhouse gas is not always linear as previously thought. Phil Robertson of Michigan State University led three years of scientific research and more than three years of methodology development by EPRI and MSU. The study concluded that when farmers apply larger amounts of fertilizer than initially tested, the relationship (fertilizer and GHG emission) appears exponential. "Most of the original field experiments Phil says, didn't look at microbial gas conversion with excess fertilizer, far more than crops need. In such situations, the crops take up as much nitrogen as they can, and the rest goes to soil microbes."[23]

Robertson and his colleagues re-analyzed more than 200 experiments across 84 locations worldwide to see if their findings held up on a global scale. The analysis confirmed that excess fertilizer can exponentially boost the emissions of microbes. Scientific findings are reported in the June 9 *Proceedings of the National Academy of Sciences*. [24] Consequently, MSU-EPRI developed a methodology, with the intention of allowing farmers to participate in the emerging carbon credit market, by creating GHG offsets, which can be traded on the carbon markets. The MSU-EPRI methodology, called Methodology for Quantifying Nitrous Oxide (N_2O) Emissions Reductions from Reduced Use of Nitrogen Fertilizer on Agricultural Crops, has been approved by the American Carbon Registry and the Verified Carbon Standard.

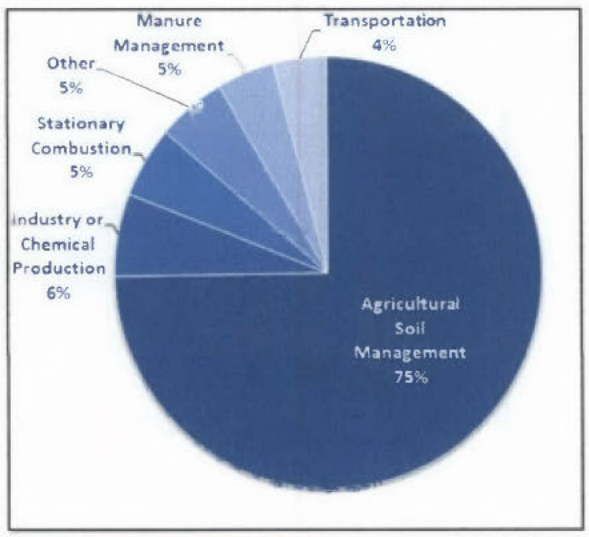

Figure 5 U.S. Nitrous Oxide Emissions, By Source [25]

Nitrogen fertilizers represent one of the largest sources of GHG emissions from agricultural production as shown in Figure 5. **In 2012, N_2O emissions from cropland soils in the United States were approximately 195 million metric tons of CO_2 – equivalent (CO_2e) according to the U.S. Environmental Protection Agency's 2014 National Greenhouse Gas Inventory. This is equivalent to 41 million passenger vehicles annually**. This affirms the potential positive impact that changes in agricultural practices, and more specifically to N-fertilizer use can have – "Lowest Hanging Fruit" analogy again.

The science that underlies this new offsets methodology is a result of two decades of research conducted by MSU at the Kellogg Biological Station Long-Term Ecological Research (KBS LTER) site, and on scientific data developed by MSU through on-farm field testing conducted over a three-year period (2008 – 2010) in collaboration with EPRI. At the KBS

Site - and on commercial farm fields across Michigan - KBS LTER scientists conducted experiments on N_2O emissions from fields that received varying amounts of nitrogen fertilizer.

By closely tracking N_2O emissions, crop yields and other ecosystem responses to fertilizers, MSU researchers discovered that N_2O emissions increase exponentially with increasing

nitrogen fertilizer use. **In collaboration with EPRI, MSU researchers also successfully demonstrated that N_2O emissions in row-crop production can be substantially reduced by using less nitrogen fertilizer with no related reduction in crop yield**. In other words, adding a small amount of fertilizer above the amount needed for optimal crop growth creates much more N_2O than otherwise would have been produced. The more excess nitrogen there is available, the greater the additional rate of N_2O production. Quantifying this exponential relationship provides a novel and powerful way for farmers to quantify and generate carbon credits by reducing fertilizer use while maintaining crop productivity.

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AGRICULTURE INDUSTRY CHANGES TO REDUCE GREENHOUSE GAS

The Challenge – Farmers Realization & Acceptance That Excess N-fertilizer is Bad for Long Term Profits

For decades the agricultural industry has had a culture that more fertilizer is better for profits. Since N fertilizer typically has been relatively inexpensive in comparison to other farm costs and remains low relative to corn prices [38], application at rates in excess of plant needs is common as farmers hedge against a perceived risk of insufficient N ([39]. Soil management activities, primarily N fertilizer application, account for about 69% of total N_2O emissions in the US. Annual emissions of N_2O from US cropland soils equaled 150 Tg CO_2e in 2009.[29] It is well understood that the primary GHG/environmental concern related to N fertilizer use in cropping systems is the atmospheric emission of N_2O because it is such a potent GHG. Nitrous oxide is produced in the soil predominantly by the microbial processes of nitrification and denitrification. Factors that control these two processes – available carbon, inorganic nitrogen, and oxygen as affected by soil moisture, porosity, and aggregate structure – regulate production of N_2O.[27] The transition to an optimal use of N fertilizer is a clear path to GHG reductions.

Reducing Synthetic N Fertilizer Use

The advent of nitrogen GHG credit programs such as the Delta Institute's Nitrogen Credit Program (NCP) [26] can generate additional revenue for a farmer adopting a "4R" nutrient stewardship strategy reducing total N fertilizer applied to their crops. Transitioning agricultural soils and pre-reclamation sites nationwide from their present state (low SOM) to a more natural condition where organic matter and humus is sufficient requires soil amendments to restore the SMC. Addition of soil amendments and N fertilizer optimization are the key elements; however, additional management practices that will assist with lowering emissions of N_2O from cropped soils include crop type, tillage, residue management, and irrigation.[28]

How Soil Amendments Can Help Reduce N

Prospective agricultural plots and pre-reclamation sites considering GHG credit programs should begin by having soil samples analyzed to provide insight into what soil amendments are needed to support reducing N fertilizer rates. Inorganic and organic amendments are available, each having a specific purpose. Generally, there are at least four factors to consider in selecting a soil amendment:

1. how long the amendment will last in the soil,
2. soil texture,
3. soil salinity and plant sensitivities to salts, and
4. salt content and pH of the amendment.[30]

Which Soil Amendments Are Best?

For the purposes of reducing GHG, long lasting organic amendments that restore soil biodiversity are preferred because they slow down the decomposition and enable organic matter to persist and build up in soils. [31] Organic soil amendments can restore the proper C:N ratio

and soil microbial communities (SMC) improving a soil's fertility, tilth, nutrient and water retention capability, cation exchange capacity (CEC), and long term storage of stable, bioavailable forms of C and N. Many organic amendments contain plant nutrients and act as organic fertilizers. Organic matter also is an important energy source for bacteria, fungi and earthworms that live in the soil. The soil's organic matter also contains dead organisms, plant matter and other organic materials in various phases of decomposition. Humus, the dark-colored organic material in the final stages of decomposition, is relatively stable. Both organic matter and humus serve as a reservoir of plant nutrients; they also help to build soil structure and provide other benefits. [32]

Organic Matter

Topsoil is the farmer's capital. In order to sustain that capital resource, the soil organic matter and humus if lost must be recovered and maintained. The objectives of this balancing act entail slowing the speed of organic matter decomposition, while increasing the supply of organic matter and soil humus.

Organic matter and humus are terms that describe somewhat different but related things. Organic matter refers to the organic fraction of the soil that is composed of both living organisms and once-living residues in various stages of decomposition. The addition of organic matter and humate will provide a pathway to reducing synthetic N-fertilizer by improving soil quality in the following ways:

1. rapid decomposition of crop residues;
2. granulation of soil into water stable aggregates;
3. decreased crusting and clodding;
4. improved internal drainage;
5. better water infiltration;
6. and increased water and nutrient holding capacity.

Improvements in a soil's physical structure facilitates easier tillage, increased soil water storage capacity, reduced erosion, better formation and harvesting of root crops, and deeper, more prolific plant root systems. Improvements in nutrient cycling also reduce the fertilizer bill.

To achieve an increase of soil organic matter, additions must be higher than removals. Eliminating excess N-fertilizer will dramatically improve the soil's long term organic content and stability. Over a given year, under average conditions, 60 to 70 percent of the carbon contained in organic residues added to soil is lost as carbon dioxide [34]. Five to ten percent is assimilated into the organisms that decomposed the organic residues and the rest becomes "new" humus. It takes decades for new humus to develop into stable humus which imparts the nutrient holding characteristics humus is known for [34]. The end result of adding a ton of residue would be 400 to 700 pounds of new humus. With a 7-inch depth of topsoil over an acre weighing 2 million pounds, you can see that building organic matter is a slow process. One percent organic matter weighs 20,000 pounds.

Ultimately, building organic matter and humus levels in managed soils such as agricultural plots or mine reclamation sites requires providing a steady food source – organic material, and a

humate source. **Organic material is ideally provided by plants growing on the soil**, or when necessary from animal manure or other imported organic materials. **Humate is best provided by importing a high quality humate material**. As the soil becomes rich in SOM and humus the soil will feed the plants and less synthetic N-fertilizer is required.

Humate

The EPA Federal Register lists humate as a naturally occurring organic substance typically associated with coal deposits, that is non-toxic to human health and the environment and subsequently has been exempted from EPA requirement of a tolerance. Humate is the generic name for soil humic substances. Humates are biological sources of humic and fulvic acids, carbon rich molecules with related chemical structures and different active components. Humic and fulvic acids (fulvic acids are humic acids of lower molecular weight and higher oxygen content than other humic acids) are commonly used as a soil supplement in agriculture. Humic acid is a principal component of humic substances, which are the major organic constituents of soil (humus).

Humus is a portion of soil's organic matter formed by the microbial degradation of dead plant matter and are very resistant to further biodegradation. [12] Further decomposition of humus occurs very slowly in both agricultural and natural settings. In natural systems, a balance is reached between the amount of humus formation and the amount of humus decay.[33] In combination with with soil minerals soil humus can persist in the soil for several hundred years. [44]

Humic substances have the incredible function of recycling the carbon containing structural components of plant and animals – through the soil and air – and back into the living plant. Man became distracted from the importance of this natural cycle – "organic compound cycling" when it was discovered that soluble acidic based N-P-K "fertilizers" could stimulate plant growth. Large industrial concerns took advantage of this discovery to market industrially processed "synthetic fertilizers". The continued use of these acidic fertilizers in the absence of adequate humic substance (in the soil) has caused many serious sociological and ecological problems. Man needs to reconsider his approach to fertilization techniques by giving higher priority to soil humus. [44]

Humic substances play such a vital role in soil fertility and plant nutrition that they are recognized by most soil scientists and agronomists as the most important component of a healthy fertile soil. [44] Humus along with organic matter provides the elements necessary for symbiotic microorganism relationships which is ground zero for a healthy soil. Humic and fulvic acids improve plants ability to uptake and receive more nutrients increasing root vitality. More specifically, humic acid has numerous potential benefits to a soil including:

- high cation exchange capacity (CEC) providing the ability to chelate micronutrients increasing their bio-availability (the cation exchange capacity (CEC) of commercially produced humic acid is in the range of 500 to 600 milliequivalents (me) per 100 grams. This is about five times greater than the CEC of good quality peat moss and twice as high as the CEC of soil humus); [36]
- reduce toxicity from metals, pesticides, herbicides, and other agro-chemicals;

- bind clay and sandy soil with organic matter together in the soil which increases soil structure and water-holding capacity;
- stimulates microbial activity which is responsible for the continued development of humus in the soil as it continues to break down matter that is not fully decomposed. [35]

It is more feasible to stabilize and maintain the humus present before it is lost than to try to increase it. The value of humus is not fully realized until it is severely depleted [34]. The agriculture and land reclamation industries know this all too well as much of this soil is low in organic matter and humus. Building stable humus is a slow and long-term process. **The application of organic material in conjunction with humate to poor soils can speed the process of reclaiming the soil by increasing SOM and humus.**

When amending a soil with humate, just as with organic material, it is important to note that there are significant variations in quality, primarily depending on the source. Table 2 compares basic qualitative characteristics of high vs. low quality humate. In agriculture, stimulation of each cell produces more energy from the plant and higher yield. The process starts with soil microbes, then plant root cells and eventually the entire plant. Considering this process, the best humate is one that is high in biological activity, fulvic/humic acids, silicic acids and also high in oxygen in the phenolic and quinoid groups.

High Quality Humic Acid	Low Quality Humic Acid
derived from leonardite	derived from coal, brown coal, compost, manure or peat
potassium hydroxide	aluminum hydroxide, sodium hydroxide, other alkalines
no heavy metals	heavy metals - lead, arsenic, mercury
organic certification	not organically certified
low usage rates indicate strength	high usage rates indicate weakness
fairly priced	you get what you pay for

Table 2 Humic acid general characteristics based on quality.

Where does Humate Come From?

Humate quality is a function of geographic location, origin material, and degree of decomposition. Humate reserves in the Southwest are said to be of superior quality because of their location in the dry, arid desert region where rain did not leach out any of its nutrients and vital humic acids.

Figure 6 Leonardite - Humate layer in geologic strata.

Humates exist in many soil types, and can be extracted from manure or peat but are only commercially available in concentrated geologic deposits as the overburden on coal deposits (Figure 6).

Average Content of Humic and Fulvic Acids Found in Various Source Materials

SOURCE	% Humic Acids	% Fulvic Acids
Leonardite	40	85
Black Peat	10	40
Brown Coal	10	30
Dung	5	15
Compost	2	5
Soil	1	5
Sludge	1	5
Coal	0	1

Table 3 Average Content of Humic and Fulvic Acids found in various source materials. [37]

Humic acid extracted from manure or peat is not as effective in absorbing micronutrients as humic acid originating from Leonardite. The term Leonardite has become synonymous with humate mined products. Dr. Leonard from the University of North Dakota is credited with identifying one of the first humate deposits in the Dakotas. High quality humate deposits have up to 40% humic acid and 85% fulvic acid making them the best choice for improving a soil

lacking SOM and humus. (Table 3) Humate based products retain the characteristics and analyses of the parent material; therefore, an ideal humate selection for soil improvement should have both high humic and fulvic acid levels.

In the past, coal companies have viewed humate overburden as a waste byproduct of their coal mining operations; however, with increased knowledge and awareness of the benefits for soil and environmental reclamation, humate has become a potential revenue source for coal companies.

Additional Benefits of Organic and Humate Soil Amendments

Numerous long term studies have shown that restoring SOM and humus results in increased crop yields despite using less water and fertilizer. Additional benefits that are less obvious and tangible are the reductions in GHG related emissions from an agricultural or reclamation site. Improvement in SOM and humus result in more efficient nutrient storage and uptake with less water. This translates into less N_2O emissions, fewer nitrates in the water sheds, and more C stored in the soil. These previously less tangible benefits were always talked about as qualitative benefits; however, recent efforts to curb GHG emissions along with improvements in GHG monitoring equipment have provided the driver to correlate changes in fertilizer practices with reduction in GHG emissions.

AGRICULTURAL AND LAND RECLAMATION INDUSTRY CHANGES TO INCREASE PROFITS

Changes in soil management practices – specifically the addition of organic and humate materials to improve soil quality – are now recognized as profitable efforts. Five new revenue or cost cutting measurable options are becoming a reality for the agricultural crop production industry as well as industries required to reclaim land as part of their business operations (mining, oil & gas, and forestry). The five options include:

1. Fertilizer reduction;
2. Nitrogen Offsets Credit;
3. Water reduction;
4. Water Quality Trading; and
5. Carbon Offsets Credit.

The options can be categorized as direct or indirect. Direct options can be defined as those that result in a decrease in operating costs (fertilizer or water usage). Indirect costs are those that increase revenue by attaining Offsets credit having a marketable value (nitrogen and carbon credits) based on GHG reduction. The GHG Offsets Credit market exists but is in a relatively early stage of development.

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Fertilizer Reduction and Nitrogen Offsets Credit

Nitrogen offset credits are attained by reducing fertilizer usage and thus the two potential profit mechanisms are interdependent. The near-term benefits from reduction of fertilizer use for crops or reclamation sites are three-fold:

i. direct cost savings from lower fertilizer costs;
ii. additional revenue from Nitrogen Offsets Credit associated with fertilizer reduction; and
iii. reduced environmental impacts from less N_2O emissions, less nitrate leaching into the watershed.

MSU and EPRI completed a comprehensive study evaluating the work of others as well as their own primary research regarding the correlation between crop production, N fertilizer rate, and N_2O emissions. The data clearly shows that N fertilizer rate is the most robust, single-factor proxy for estimating N_2O emissions. [43] By closely tracking N_2O emissions, crop yields and other ecosystem responses to fertilizers, MSU researchers discovered that N_2O emissions increase exponentially (not linearly as previously thought) with increasing nitrogen fertilizer use (Figure 7). In collaboration with EPRI, MSU researchers also successfully demonstrated that N_2O emissions in row-crop production can be substantially reduced by using less nitrogen fertilizer with no related reduction in crop yield. In other words, adding a small amount of fertilizer above the amount needed for optimal crop growth creates much more N_2O than otherwise would have been produced (Figure 8). The more excess nitrogen there is available, the greater the additional rate of N_2O production. Quantifying this exponential relationship provides a novel and powerful way for farmers to quantify and generate carbon credits by reducing fertilizer use while maintaining crop productivity. [42]

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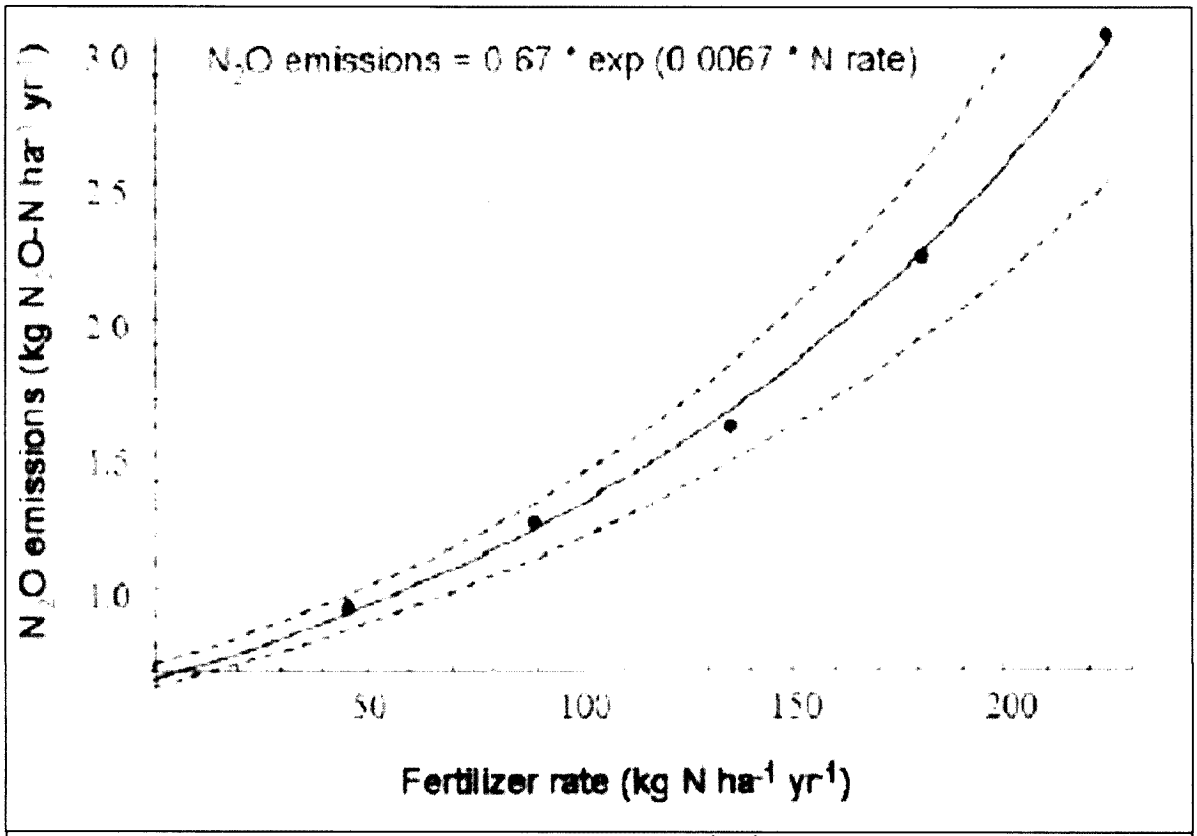

Figure 7 Best-fit line between annual N_2O emissions (kg N_2O-N ha^{-1} yr^{-1}) and N fertilizer rate (kg N ha^{-1} yr^{-1}) for five commercial corn fields in Michigan (solid line). [41]

In successive meta–analyses of available field data, primarily from temperate studies, simple ratios have been developed to relate the amount of N fertilizer applied to croplands to subsequent emissions of N_2O. [41] The current global mean value for fertilizer-induced N_2O emissions (synthetic and manure) – derived from over 1,000 agricultural field studies – is ~0.9% or 0.009. [40] In short, for every 100 kg of N fertilizer applied, 0.9 kg of N in the form of N_2O-N is assumed to be emitted directly into the atmosphere. [41]

MSU and EPRI developed an N2O offsets accounting "protocol" or "methodology." It is the only offsets methodology in the world today published in a peer- reviewed scientific journal. The MSU-EPRI N2O Offsets Protocol is based on the empirical relationship observed in regionally-based studies of the relationship between fertilizer nitrogen rate and N2O emissions. This relationship provided the basis for the development of a transparent, scientifically robust offsets protocol that can be used by developers of agricultural offset projects to create exchangeable GHG emission reduction credits for U.S. carbon cap-and-trade markets. By combining the N2O emissions predicted using the MSU-EPRI N2O Offsets Protocol with a recently developed approach for applying economically optimized nitrogen input rates to corn, called the maximum return to nitrogen (MRTN), the protocol provides the basis for incentivizing N2O reductions without adversely affecting crop yields. The protocol uses an Intergovernmental Panel on Climate Change "Tier 2" approach based on a regional N2O emissions factor that was derived from eight site years' worth of N2O emissions data measured from field studies conducted at KBS and on commercial farms in Michigan. Tier 2 emissions factors can also be

used to credit practices other than fertilizer rate reduction that reduce N2O emissions. While nitrogen fertilizer rate is the best predictor of N2O flux, a reduction in rate can also reflect the effects of for example, adopting improved fertilizer timing and placement, and the use of nitrification inhibitors. [42]

Water Reduction & Water Quality Trading

Improved soil quality due to the addition of organic matter and humate in agricultural and reclamation activities can improve a company's profitability in two ways:

a) direct savings from lower water usage;

b) attaining Water quality credits (for improved water quality on and off site – less environmental impact on adjoining property owners).

Quantifying the water cost savings associated with improved SOM and soil humus should be calculated on a site-specific basis due to geographic regional variation in soil characteristics, climate, and water requirements/availability/cost.

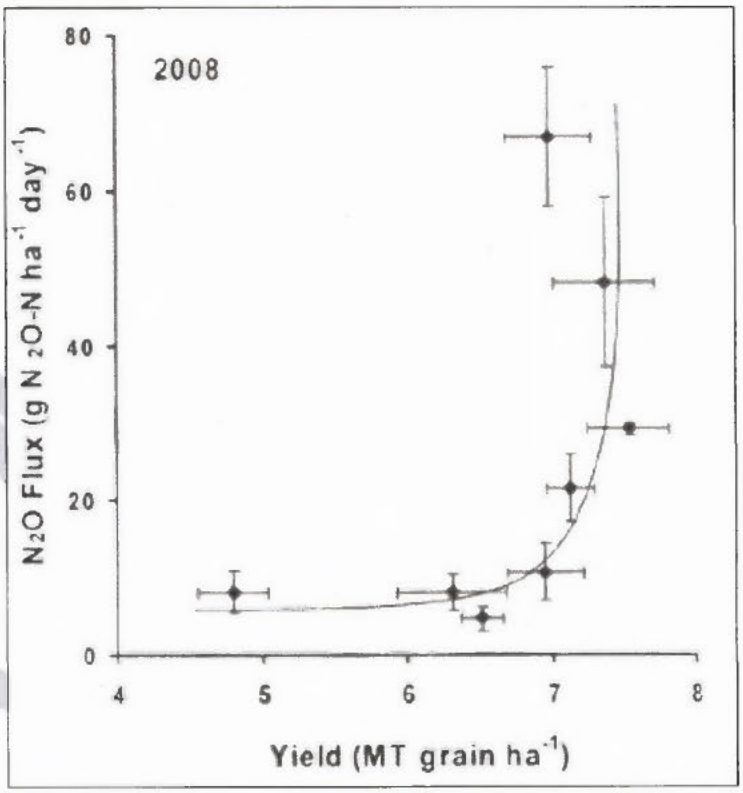

Figure 8 N_2O flux (g N_2O-N ha^{-1} day^{-1}) as a function of yield (metric tons grain per hectare) in corn within a three year corn-soybean-winter wheat rotation. [41

Water quality trading is a market-based approach that pairs buyers of water quality credits with the people generating these credits through conservation and stewardship to achieve the best results for the least cost. Water quality trading provides another potential source of funding for farmers and rangers for implementing and maintaining conservation practices for agronomic, economic, and environmental and health benefits. For example, a downstream wastewater treatment plant needs to reduce the amount of pollutants it discharges to meet its NPDES permit requirements. Instead of spending huge amounts of money to upgrade or install new equipment on-site, it could fund less expensive agricultural conservation practice(s) upstream and achieve better quality of pollution control. [47] The US Environmental Protection Agency (EPA), US Department of Agriculture (USDA) and The National Resources Conservation Service (NRCS) are working together to implement and continue development of the Water quality trading and nitrogen credit programs.

Field Study Evaluating Humate Effects on Water Usage

A three year large scale field trial conducted by West Stanislaus Resource Conservation District Mobile Irrigation Lab (California) under the direction of Bill Powers [45] evaluated among other things the effect of humate applied to crop soil. The study measured irrigation responses due to the application of humate (at varying application rates (lbs./acre)) vs. a control (no humate). Parameters investigated included: water infiltration depth, % water run-off, % increase in infiltration, soil aggregation/dispersion, water holding capacity of a sandy soil and water usage. Figure 9 shows a 20% increase in water infiltration in humate treated soil vs no treatment. Figure 10 shows a decrease of 5.5% in water run-off, likely due to the increased water infiltration. Figure 11 shows the improvement in soil water retention as a function of humate application rate. Figure 12 compares the amount of water applied over the three year experimental cycle. It is evident that water savings continued to increase every year.

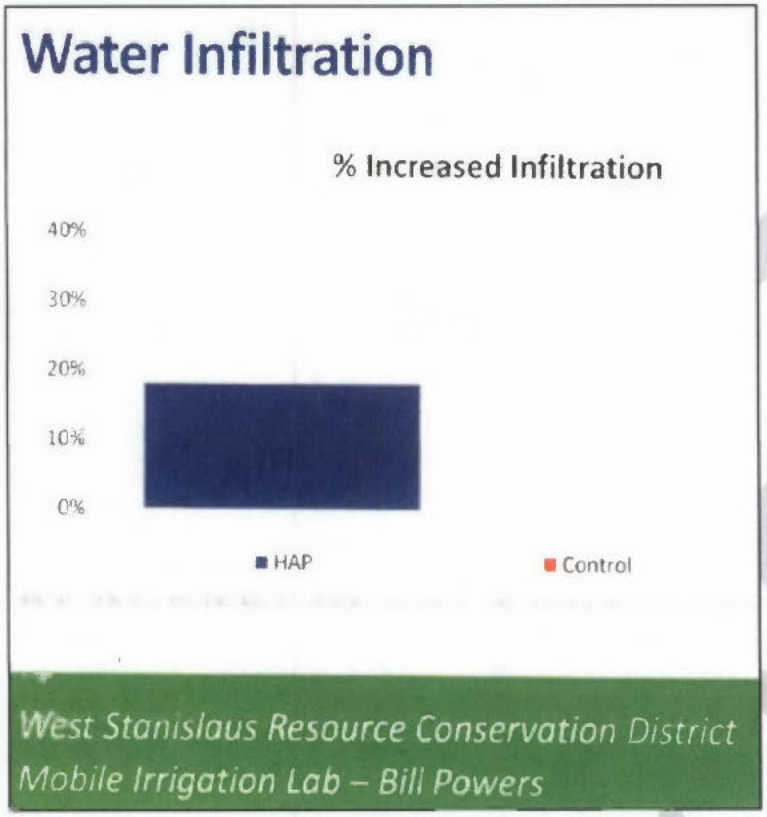

Figure 9 Humate addition effect on water infiltration. [45]

Figure 13 exhibits the total (cumulative for three year experiment) decrease in water and fertilizer usage. Note that potassium (K) applied remained constant - this was because the humate was applied as Potassium-humate. The graph also shows an increase in crop yield.

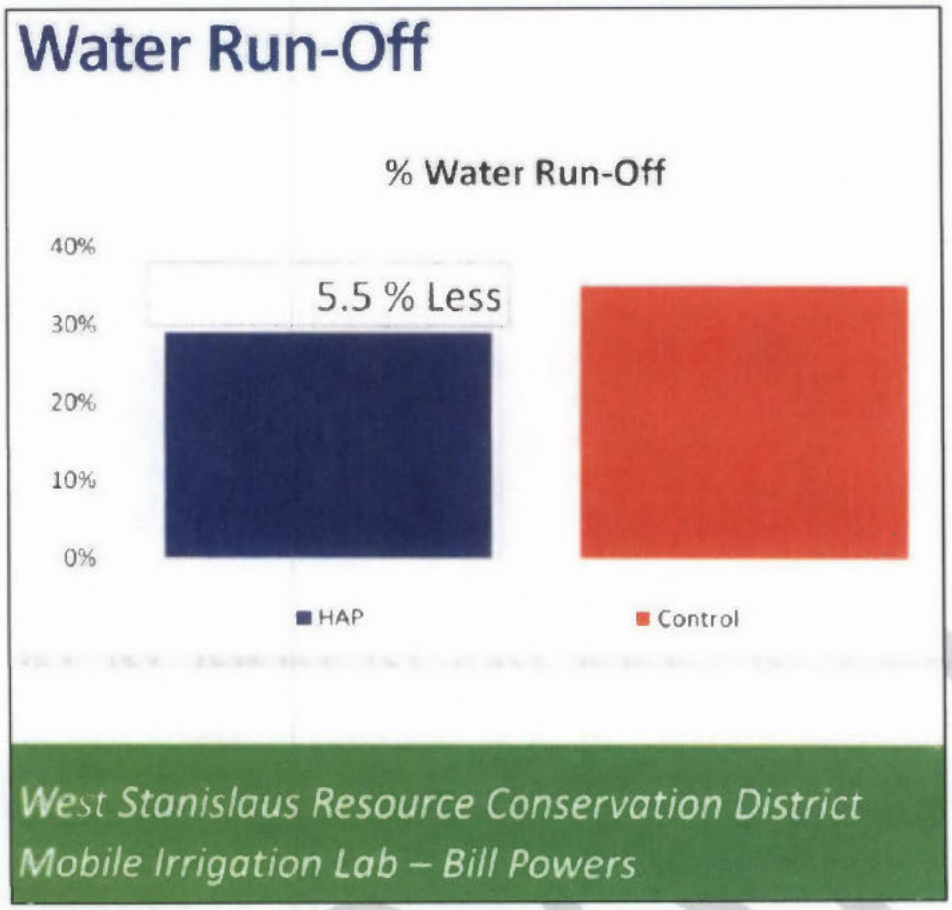

Figure 10 Humate addition effect on water run-off. [45]

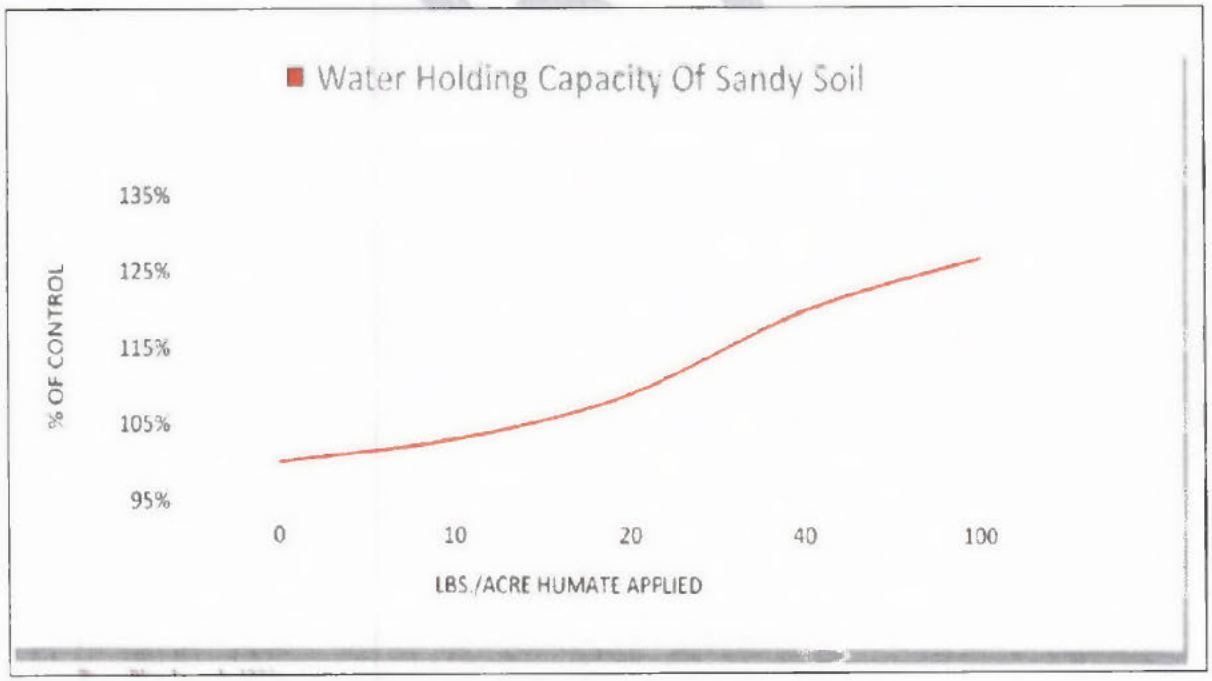

Figure 11 Humate Application Rate vs. Soil Water Holding Capacity for Sandy Soil. [45]

The only variable in this three year experiment was the addition of humate; consequently, the changes can be attributed to the improvement in the soil properties due to the humate. Along these lines, the experimental authors noted that they observed significant improvement in the soil agglomeration. Horizon Ag-Products, one of the 16 experimental participants, determined that application of humate at a rate of 40-100 lbs./acre was effective at increasing soil water retention capacity. Optimal application rates are site specific. They also stated that humate is beneficial whether applied alone or as a blended fertilizer/humate product.

Many other researchers have also evaluated the benefits of humate and published the results. The consensus among the various data is that humate improves soil fertility in many different ways which subsequently improves crop yields and reduces input costs.

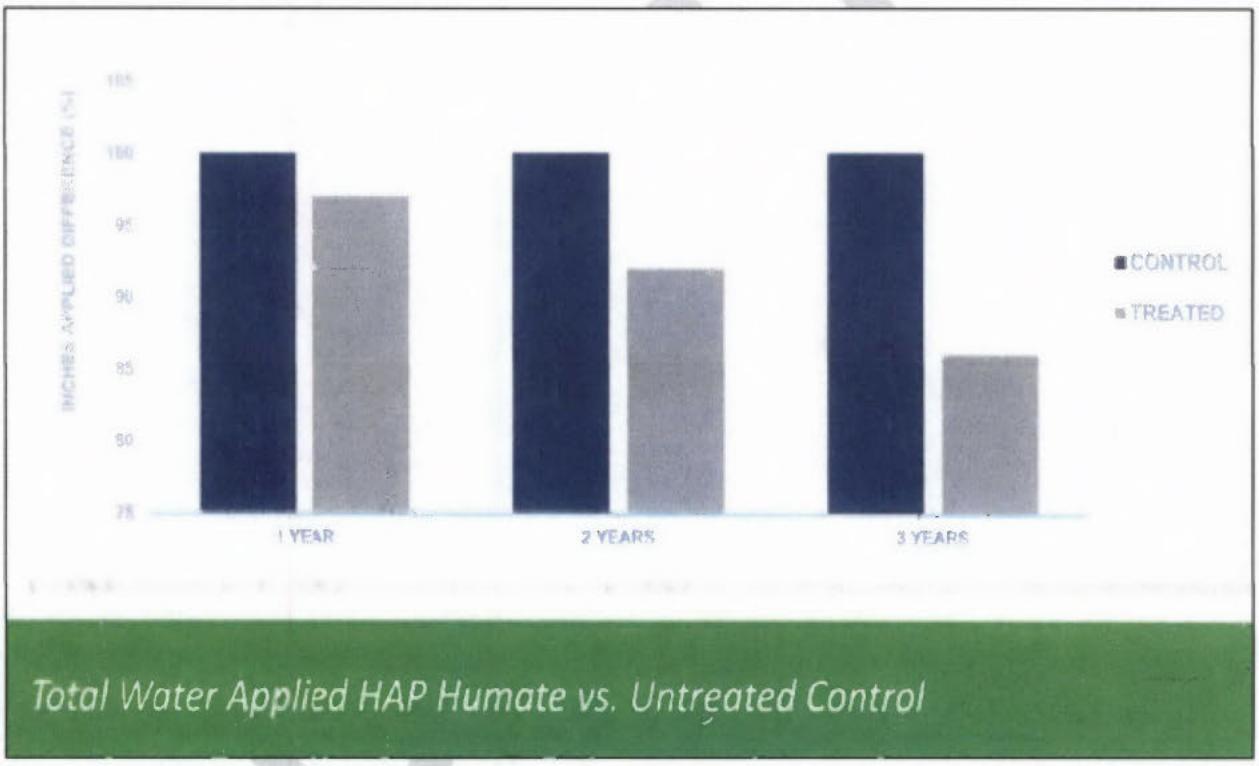

Figure 12 Total Water (inches) Applied – Control vs. Humate treated soil. [45]

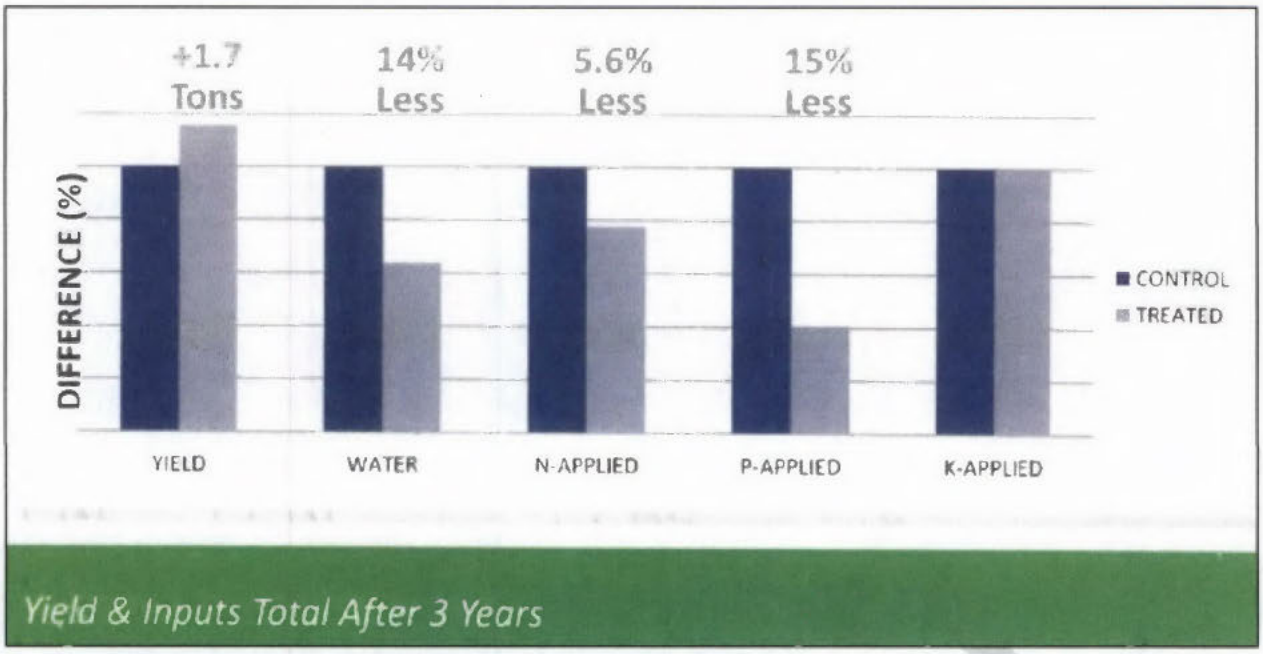

Figure 13 Total Crop Yield, Water Usage, and N,P,K Fertilizer Usage - Control vs. Humate treated soil. [45]

Carbon Offsets Credit

Improved soil quality can qualify for Carbon Offsets by reducing the CO_2 emissions from an agriculture plot or land reclamation site and also by sequestering carbon in the soil. The Carbon trading market is the most developed of the GHG offsets credit markets; however, it is rapidly developing providing great opportunities for those who can lower their carbon footprint.

HOW DOES CARBON OFFSETTING WORK?

Offsetting one tonne of carbon with a carbon credit means there will be one less tonne of carbon dioxide in the atmosphere than there would otherwise have been. [48] By purchasing carbon credits to offset their emissions, businesses contribute essential finance to renewable energy, forest protection and reforestation projects around the world that would not otherwise be financially viable. These projects play an important role in the mitigation of climate change.

Carbon offsetting works by purchasing carbon credits which are sold in metric tonnes of carbon dioxide equivalent (tonnes CO 2e). Projects which sell carbon credits range from wind farms which displace fossil fuel, to household device projects which reduce fuel requirements for cookstoves and boiling water in low-income households, to forest protection/reclamation, to methane capture from landfill gas, to agriculture land use changes, to reforestation for small-hold farmers and run-of-river hydro power and geothermal energy. Every carbon credit that is generated by a project has a unique identification number allowing it to be tracked from cradle to credit issuance. When a business purchases carbon credits to offset its emissions, those carbon credits are retired through third-party registries. The retirement of the carbon credit ensures a business can claim that emission reduction and the credit cannot be sold to anyone else.

ECONOMICS OF GREENHOUSE GAS REDUCTION

The latest report from the Intergovernmental Panel on Climate Change notes that there is a 95% to 100% probability that human activities are responsible for the emissions of heat-trapping Greenhouse Gasses (GHG) which raise global temperatures. [47] There is also a firmly established consensus that limiting GHG emissions is essential to decrease future risks of global warming. The details of the GHG reduction levels and associated risks are debatable; however, it is widely accepted that the global community will have to adopt a carbon budget which effectively limits the amount of ongoing GHG emissions into the atmosphere to preserve a meaningful chance of avoiding the most catastrophic effects of climate change. [49]

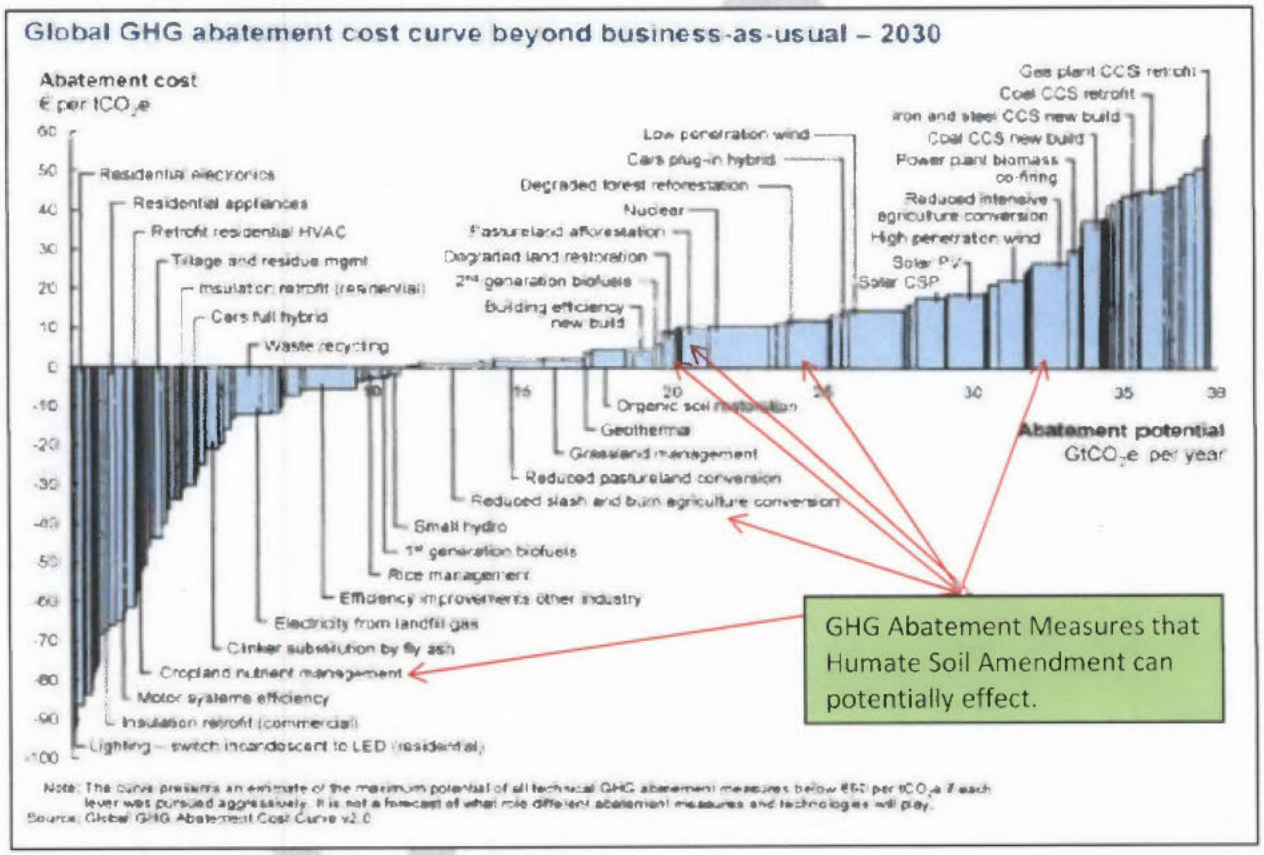

Figure 14 Global GHG Abatement Cost Curve – 2030. {50}

There are many pathways to lower GHG emissions, but at what cost? McKinsey & Company has gone as far as to provide a quantitative basis for cost discussions. McKinsey & Company, supported by ten leading companies and organizations across the world, has developed a global greenhouse gas abatement data base. The abatement data base is comprised of an in-depth evaluation of the potential, and the costs, of more than 200 greenhouse gas abatement opportunities across 10 sectors and 21 world regions, and in a 2030 time perspective. [50] The full report can be downloaded at www.mdkinsey.com/globalGHGcostcurve.

Figure 14 is a greenhouse gas abatement cost curve developed by McKinsey & Company that provides a quantitative method for interested parties (policy makers, regulators, public and private companies) to evaluate the relative costs of various GHG abatement opportunities. The vertical scale represents the cost of GHG abatement in Euros per tCO_2e. One vertical unit represents the cost of avoiding 1 tonne of CO_2e by 2030. The curve also provides information about potential volume of abatement for each GHG abatement measure (shown by bar width).

The abatement opportunities in the period between now and 2030 fall into four categories: energy efficiency, low-carbon energy supply, terrestrial carbon (forestry and agriculture) and behavioral change (Figure 15).

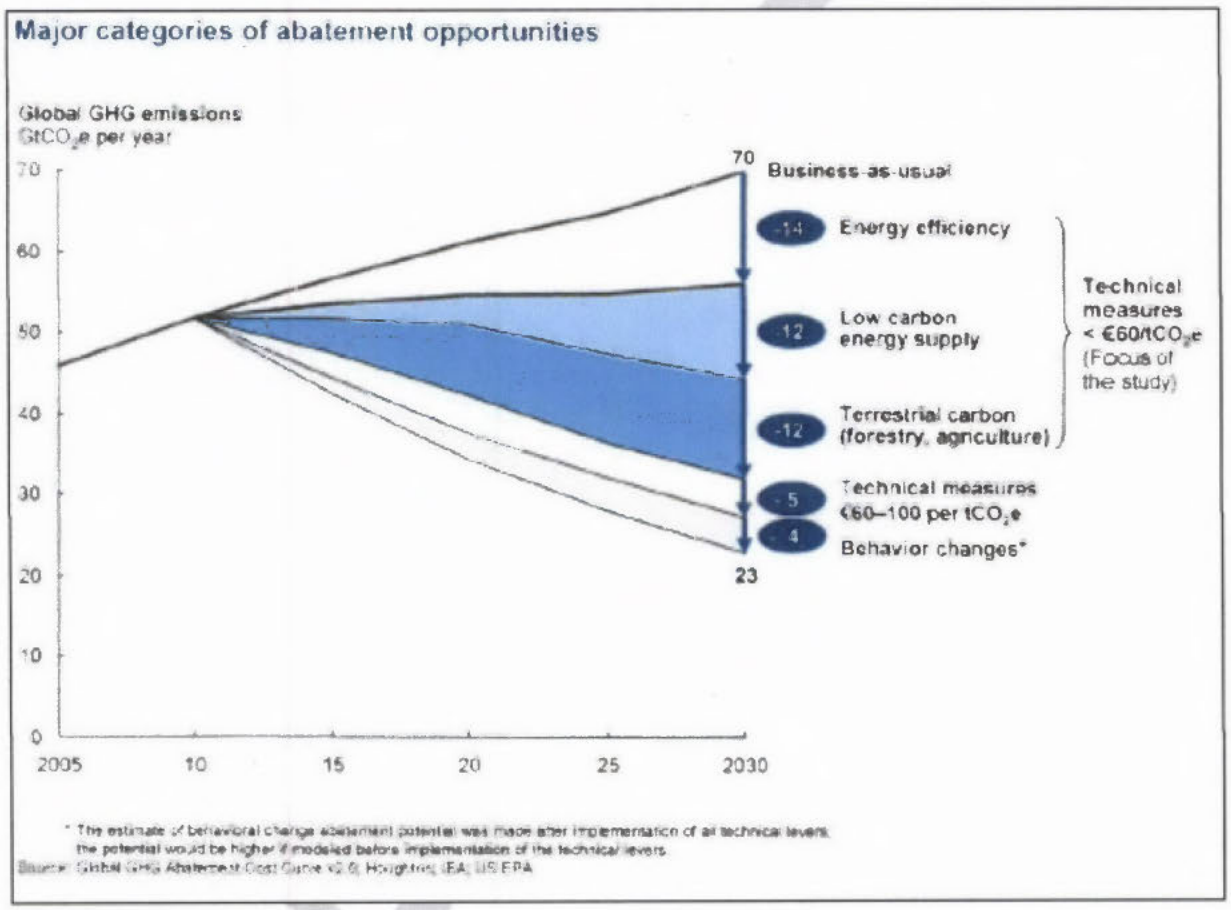

Figure 15 Abatement Opportunity Categories. [50]

The humate soil amendment abatement opportunities are indicated with red arrows (Figure 14). Soil enrichment using humate materials falls into the terrestrial carbon category (Figure 15). Generally the estimated abatement costs associated with humate soil amendment are relatively low cost for each ton of CO_2 reduction; however, when considering capital intensity (capital required to implement the abatement opportunity) and abatement cost agricultural related abatement opportunities are some of the lowest cost. In Figure 16 the vertical axis exhibits

abatement costs and the horizontal axis shows capital intensity cost. Forestry opportunities also have relatively low abatement and capital intensity cost.

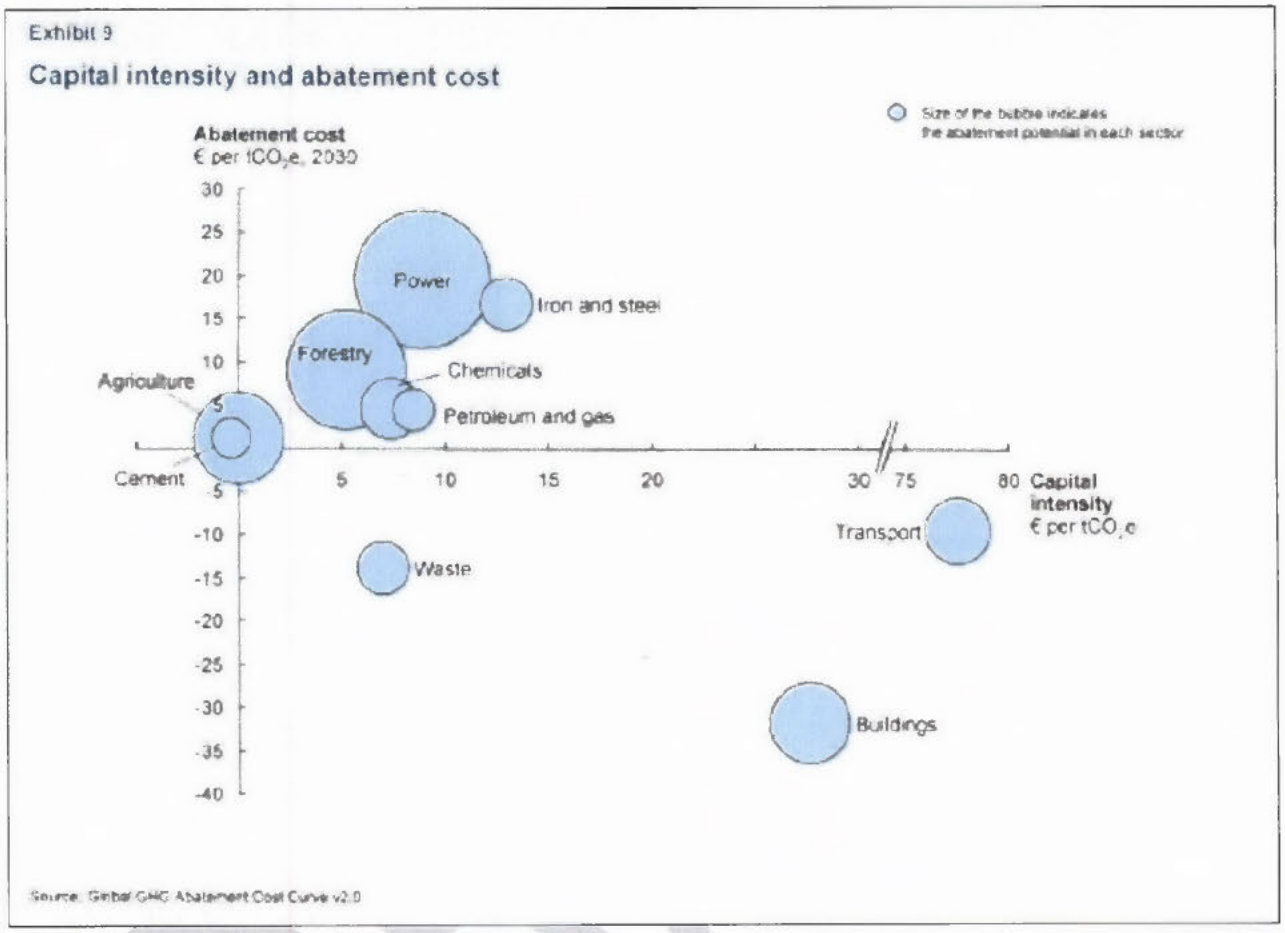

Figure 16 Capital and Abatement Opportunity Costs. [50]

Comparison of the abatement and capital investment costs indicate that implementation will likely be very different across sectors. Regulatory policy changes and implementation within and across national borders is critical to the success of future GHG.

HUMATE GHG VERIFICATION

Unlike traditional tangible commodities, the advent of "carbon", "nitrogen" and "water" credits or offsets has created a new international commodity that is intangible. Like any commodity market, every asset (offset) must be identifiable, and trackable to ensure market integrity. The Carbon trading market is the world's fastest growing commodities market. [51] Considering the speed at which these new "intangible asset" markets, especially carbon trading are growing the potential for fraud is high.

Interpol, in its June 2013 report titled "Guide to Carbon Trading Crime", identified five areas ripe for fraud within the carbon markets:

1. fraudulent manipulation of measurements to claim more carbon credits from a project that were actually obtained;
2. sale of carbon credits that either do not exist or belong to someone else;
3. false or misleading claims with respect to the environmental or financial benefits of carbon market investments;
4. exploitation of weak regulations in the carbon market to commit financial crimes, such as money laundering, securities fraud or tax fraud; and
5. computer hacking/phishing to steal carbon credits and theft of personal imformation.

A variety of industries can use humate substances to attain carbon, nitrogen and/or water offsets, consequently, linking this tangible asset – "humate" to the corresponding "intangible" offsets is critical. A "Life Cycle Approach" (LCA) similar to the environmental industry methods for tracking hazardous waste (cradle to grave) and water samples (Chain-of-custody) will minimize the potential for fraud related to GHG reduction via humate.

An effective LCA will link the tangible asset – humate to the intangible asset – offset; enhancing the value of the asset due to increased market confidence in process validity and fraud deterrence. For example, an asset management/tracking system that attaches an identification number (ID) to a unit of humate beginning a "Chain-of-Title" that geographically identifies where the humate originated, the characteristics of that humate unit (sample analysis), the movement, the use (purpose and location), the linkage to any corresponding offset (carbon, nitrogen, and/or water) and the final disposition.

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OFFICE OF THE
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To: The Administrator of the Environmental Protection Agency
From: E. Freya Williams
Date: 3/29/17

Re: Trump Power

Dear Mr. Pruitt,

Energy is the backbone of the American economy and as Mr. Trump's Executive Order on March 28, 2017 made clear, you plan to make energy a priority of the Trump administration. We applaud your efforts to put our country's coal miners back to work and your focus on creating good-paying American jobs.

But there's one more opportunity you're missing.

A businessman as shrewd Mr. Trump must surely have noticed the huge opportunity for US economic growth and job creation presented by America's fastest-growing power sector: wind and solar.

It cannot have escaped your attention that:

- In 2015, solar employment grew 12 times faster than the overall US workforce, with American jobs in solar overtaking those in oil and natural gas.
- Today, the American solar workforce is nearly three times the size of the American coal mining workforce.
- States like Texas, Florida and Ohio are in the top 10 states for solar jobs, and the rustbelt states like PA and Wisconsin that swung the election for Mr. Trump already see some of the employment action. They could see much more.
- Not to mention the adjacent industries, like electric vehicles. Tesla has made Elon Musk a multi-billionaire and he's currently building the biggest factory in the world in Nevada, which will create thousands of American manufacturing jobs and reinvigorating the US auto industry.

Simply put, today our homegrown solar and wind sectors support thousands of American families with good-paying, healthy jobs. Let's put Americans back to work in these jobs, not jobs that make them sick and put them in danger.

Some people believe that sustainability is the enemy of profitability. They are wrong. Last year, 17 companies made more than $150 Billion dollars from environmentally and socially responsible business. Their stock has outperformed that of their conventional counterparts by 11.7% every year over the past 5 years. And more companies are joining them all the time. You can read more in my book *Green Giants*. I'm sending it to you.

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E hello@wearefuterra.com

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NEW YORK:
524 Broadway, 11th Fl
New York, NY
10012
hey@wearefuterra.com

STOCKHOLM:
Stora Nygatan 45
1 tr Stockholm
1127
hej@wearefuterra.com

SAN FRANCISCO:
156 2nd Street
San Francisco,
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This new American power sector is another such multi-billion dollar opportunity.

The energy sector needs a make over. And Mr. Trump is the man for the job. The Trump administration has the chance to establish America as the world's clean energy super power.

Enter Trump Power. Here's your three-step plan:

1) Prioritize energy made right here at home, by American families, on the rooftops and in the backyards of American homes. It's the ultimate in energy independence. It's all-**American Power**. Or "Trump Power", if you like.

2) Set an **ambitious job creation plan** in motion, connecting communities in the rust belt to new, good paying Trump Power wind and solar jobs. Energy efficiency can help too, saving American families money while putting workers in communities across the nation to work.

3) Set a moonshot vision to galvanize the nation: **America will "Trump" China** to become number one in wind and solar by 2020.

With Trump Power, you will make America's energy sector great again. You can contact us at hey@wearefuterra.com to discuss more.

Forget "drill baby drill". It's time for "shine baby shine". It's time for Trump Power. The future's bright.

Yours,

E Freya Williams
CEO, Futerra North America

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E hello@wearefuterra.com

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NEW YORK:
524 Broadway, 11th Fl
New York, NY
10012

hey@wearefuterra.com

STOCKHOLM:
Stora Nygatan 45
1 tr Stockholm
1127

hej@wearefuterra.com

SAN FRANCISCO:
156 2nd Street
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E. FREYA WILLIAMS

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HOW SMART COMPANIES TURN SUSTAINABILITY INTO BILLION-DOLLAR BUSINESSES

To Mr. Pruitt,

The next

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BUSINESS / ENVIRONMENT

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What do billion-dollar organizations like Tesla Motors, Trader Joe's, Chipotle, Toyota, Unilever, and General Electric have in common? They have all succeeded—amazingly—at building phenomenally successful businesses while selling products and services designed to help us live happier, healthier, more environmentally conscious lives.

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"The debate is over. Business can contribute to the greatest challenges facing society, and deliver profitable growth while doing so. Indeed, it must. This book provides important evidence that it can be done. It should be required reading for any business leader wishing to lead companies that will prosper for the long-term."

— **Kees Kruythoff, President, Unilever North America**

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2017 APR -3 PM 2: 16

OFFICE OF THE
EXECUTIVE SECRETARIAT

March 30 2017

The Honorable Scott Pruitt
EPA Administrator
Washington DC

Dear Mr. Pruitt:

I have written your office and many other state and national officials concerning a completely crazy event which is occurring at the EPA, which is effect tax revenue of West Virginia.

Let me recap. I personally placed an order for a new 2017 Mercedes GLS350 (diesel) in January 2016. The car was completed in May 2016 and out of the blue the EPA placed a hold on all Mercedes diesel cars. Thus my car has been setting at the location it was manufactured since May of 2016.....(EPA JAIL).

My local Mercedes dealer had advised me they have no idea when the cars will be released.

Today I was told that the EPA was requiring that nearly 700 brand new Mercedes diesels to be CRUSHED....yes ....destroyed. This is simply INSANE.

This goes way beyond one person wanting the car I purchased to be delivered. It is effecting the economy of my local community , state and hundreds of dealerships across the nation.

Stop a moment and think. With my local dealer, they advised they lost approximately 23 sales of diesel cars in 2016 alone. If you calculate the cost of the cars, and then calculate what each community would receive in B&O taxes, and what each state was loosing in sales tax and licensing fees; and what counties loose on property tax.....the cost is staggering.

I calculated that my state lost about $400,000 in tax revenue just from this ONE dealership because of lost sales. Now multiply that by the hundreds of dealers across the country. The tax revenue is in the millions.

I recently received a letter from the EPA in Michigan, which stated that they had no idea when the cars would be approved, as it was a pre production model. This is a complete lie. The 2017 GLS is the same car as the 2016 GL ...they only changed the name plate to reflect GLS. The engine in this car is the same engine in my 2015 Mercedes.

(b) (6)

Again, this is more than just obtaining the car I ordered and want.

It is simply inexcusable that over a period of the past 14 months, the EPA can not approve a car. Secondly, to require that nearly 700 cars be DESTROYED in or near Vance Alabama is absurd. Lastly, as all governments struggle for money, the lost revenue to cities, counties, and states is staggering.

I would urge that someone intervene and get this problem solved sooner than later.

I have made numerous contacts since December 2016 with little results.

Sincerely,

Rick Modesitt

CC
Scott Pruitt, EPA Administator
US Senator Shelley Moore Capito
WV Attorney General Patrick Morrisey
WV Governor Jim Justice
Alabama Governor Robert Bentley

Rick Modesitt

[redacted] (b) (6)

Scott Pruitt
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JAN 2 2018

OFFICE OF
AIR AND RADIATION

Mr. Rick Modesitt
(b) (6)

Dear Mr. Modesitt,

Your letters to U.S. Environmental Protection Agency Administrator Pruitt and other members of the Administration team have been forwarded to me for response. As you previously heard from the EPA staff at the National Vehicle and Fuel Emissions Laboratory in Ann Arbor, Michigan EPA does not normally comment on pre-production vehicles as doing so could release Confidential Business Information (CBI); for example, the future marketing plans of automakers.

However, now that the 2017 Model Year has passed, I can share that Mercedes did not submit an application for certification for the 2017 Model Year GLS350 diesel vehicle. There was no EPA hold or other action on this model year vehicle as there was no request for certification for EPA to act upon. All 2017 model year certification applications to EPA for Mercedes vehicles were approved many months ago and no 2017 applications were denied. This includes the 2017 Model Year Mercedes Sprinter diesel vehicle which was certified by EPA nearly a year ago. Manufacturers occasionally indicate in their inventory systems that the vehicles are being "held" pending EPA approval. This does not indicate an action by EPA but rather an action by the manufacturer to hold the product until they seek and receive EPA approval. And again, as described above, no such approval was sought by Mercedes for the 2017 GLS350 diesel.

It would be inappropriate for me to speculate on the engineering, business and marketing decisions that Mercedes makes with regard to their U.S. products, but I can assure you that a lack of EPA action is not among the reasons for Mercedes' decisions in this regard. I am sorry that EPA could not be more direct with you in our earlier correspondence, but we take very seriously our obligations to protect potential CBI. The willful release of such confidential information can lead to criminal sanctions against EPA employees.

Sincerely,

Christopher Grundler, Director
Office of Transportation and Air Quality

Rick Modesitt

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2017 APR -3 PM 2:16

OFFICE OF THE
EXECUTIVE SECRETARIAT

MARCH 20 2017

MR. BYRON BUNKER, DIRECTOR
EPA
2565 Plymouth Road
Ann Arbor MICH 48105-2498

Dear Mr. Bunker:

Thank you for your response dated March 15th concerning my complaint that the EPA was holding up deliveries (now for over a year) on 2017 GLS 350 diesel.

As my previous letter stated, I ordered my new car Jan 2016. It has been built and has been setting on a lot in Alabama since May 2016. This issue, in my humble opinion is much more than the over 1 year delay in receiving a car. It also has serious financial implications of local communities and states.

My local dealership indicated it effect 23 car sales in 2016. Thus, not only did the dealership loose on sales, the local city lost on thousands of dollars in B&O taxes, and the State of West Virginia lost approximately $400,000 in sales fees and licensing fees . If you multiply this loss across the state and across the country .....the tax revenue and business revenue loss is staggering.

Additionally, your refer to the GLS 350 diesel as a preproduction model.....which it is not.
The GLS is the same car as the GL 350. In fact, I believe, the engine in my 2015 GL 350 diesel is the very same engine as in the new nameplate GLS 350 diesel.

I would think that over the course of a year + that vehicles could be approved. I am hopeful the EPA will soon release these vehicles for delivery.

Sincerely,

Rick Modesitt

CC Scott Pruitt
EPA Administrator
1200 Pennsylvania Ave, NW
Washington DC 20460

(b) (6) [redacted]

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
NATIONAL VEHICLE AND FUEL EMISSIONS LABORATORY
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OFFICE OF
AIR AND RADIATION

March 15, 2017

Mr. Rick Modesitt
(b) (6) t
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Dear Mr. Modesitt:

Thank you for your February 11, 2017 letter to EPA Administrator Scott Pruitt regarding the Mercedes 2017 model year GLS 350 diesel. Please understand, EPA doesn't confirm the status of preproduction vehicles until manufacturers introduce them into commerce to respect any potential confidential business information. It is true that diesel vehicles are getting extra scrutiny and that has extended the certification process longer than normal. In general, manufacturers have been supportive of this additional testing and have adjusted their timing to account for the additional test duration.

While we understand your frustration and concerns, we are not able to directly respond to them in the context of a specific vehicle make or model. I can assure you that we take seriously our obligations for timely actions and responsibilities to ensure that vehicles comply with their emission standards.

Thank you again for your letter.

Sincerely,

Byron J. Bunker, Director
Compliance Division
Office of Transportation and Air Quality

Rick Modesitt

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WASHINGTON, D.C. 20460

JAN 2 2018

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Mr. Rick Modesitt
(b) (6)

Dear Mr. Modesitt,

Your letters to U.S. Environmental Protection Agency Administrator Pruitt and other members of the Administration team have been forwarded to me for response. As you previously heard from the EPA staff at the National Vehicle and Fuel Emissions Laboratory in Ann Arbor, Michigan EPA does not normally comment on pre-production vehicles as doing so could release Confidential Business Information (CBI); for example, the future marketing plans of automakers.

However, now that the 2017 Model Year has passed, I can share that Mercedes did not submit an application for certification for the 2017 Model Year GLS350 diesel vehicle. There was no EPA hold or other action on this model year vehicle as there was no request for certification for EPA to act upon. All 2017 model year certification applications to EPA for Mercedes vehicles were approved many months ago and no 2017 applications were denied. This includes the 2017 Model Year Mercedes Sprinter diesel vehicle which was certified by EPA nearly a year ago. Manufacturers occasionally indicate in their inventory systems that the vehicles are being "held" pending EPA approval. This does not indicate an action by EPA but rather an action by the manufacturer to hold the product until they seek and receive EPA approval. And again, as described above, no such approval was sought by Mercedes for the 2017 GLS350 diesel.

It would be inappropriate for me to speculate on the engineering, business and marketing decisions that Mercedes makes with regard to their U.S. products, but I can assure you that a lack of EPA action is not among the reasons for Mercedes' decisions in this regard. I am sorry that EPA could not be more direct with you in our earlier correspondence, but we take very seriously our obligations to protect potential CBI. The willful release of such confidential information can lead to criminal sanctions against EPA employees.

Sincerely,

Christopher Grundler, Director
Office of Transportation and Air Quality

March 26, 2017

RECEIVED
2017 APR -3 PM 2:16
OFFICE OF THE
EXECUTIVE SECRETARIAT

Administrator Scott Pruitt
Environmental Protection Agency
1200 Pennsylvania Avenue, N.W.
Washington, DC 20460

Re: Previous letter

Dear Administrator Scott Pruitt

I copied you on a letter to President Trump regarding an environmental issue. I was hopeful you would respond to the letter. I have attached the original letter and its attachments.

This is a serious problem and I would appreciate your support.

Sincerely

Steve Gamelin

Steven Gamelin, [redacted] (b) (6)

February 20, 2017

President Donald Trump
1600 Pennsylvania Avenue NW
Washington D.C. 20500

Re: EPA needs to reevaluate their policies regarding releases of produce within our communities

Dear President Trump,

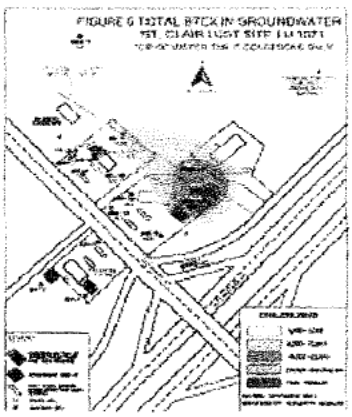
I want to start by thanking you for running for president. What you did—the obstacles you overcame—is to be admires. You are the right person for the job. Thanks.

The reason I am writing you is... the EPA is out of touch with the expectations of the American people. While they're out harassing farmers they're ignoring a more critical issue... the contaminating of soil within our communities.

One: Big oil companies are operating their service stations in hazardous chemicals. In my case... Sinclair Oil Company (neighboring property) closed their service station in 2006, removed the underground storage tanks (UST) in 2007, and reported, "A total of 999.48 tons of petroleum impacted granular backfill and native soils was excavated from the gasoline UST cavity, along product piping, and around dispenser island locations during closure activities. Excavated material was properly disposed of offsite." Since the initial release of product occurred in the late 70's or early 80's, it appears the EPA allowed them to operate in contaminate soil for over 30 years.

When I challenged the Missouri Department of Natural Resources (MDNR) regarding this practice they replied, "The Missouri Risk-Based Corrective Action Process for Petroleum Storage Tanks (MRBCA) allows for contaminated material to be left at a site as long as it is demonstrated that it does not pose an unacceptable risk to human health or the environment." I am stunned the EPA allows big oil companies to operate in contaminated soil. And, when I asked the MDNR for the report demonstrating the contaminated soil "does not pose an unacceptable risk to human health or the environment"... the MDNR was unresponsive. The EPA is not protecting the environment, and the MDNR is not complying with the law.

Two: Big oil companies do not aggressively pursue and contain releases of hazardous chemicals. On 3.6.04, "A release of diesel fuel was discovered at the Sinclair site... Inventory reconciliation estimated that approximately 450 gallons were missing." But the diesel fuel was not missing... "Review of the recent data indicates that distillate concentrations have increased in all the wells since the diesel release. Distillate concentrations in monitoring well MW-2 have increased by almost 300% and over 100% in monitoring well MW-3... Review of this data clearly indicates that distillate impacted ground water has migrated from Sinclair and has impacted the former Amoco property. The chemistry data also indicates the concentrations of diesel rang organics are still increasing."



This is not an isolated incident. The EPA does not require big oil companies to aggressively pursue and contain releases of hazardous chemicals, or NOTIFY a neighbor that their property has been

contaminated. It would appear there are thousands of citizens who have NOT BEEN NOTIFIED THAT THEIR PROPERTY HAS BEEN CONTAMINATED. This is a deliberate attempt by the big oil companies—with the cooperation of the EPA—to avoid liability.

Three: Our government has actually passed laws that transfer responsibility from big oil companies to impacted property owners (the "forgotten man"). They contaminated our property... and when I expressed our dissatisfaction and concern I was told, "The Department would also like to make you aware that on January 1, 2018, based on 319.131 9(3) of the Missouri Revised Statutes, you may become, as the property owner, the responsible party for corrective action." THIS IS UNBELIEVABLE... states are passing laws making citizens responsible for the negligence of big oil companies. Where's the EPA?

Four: EPA/MDNR refuses to hold BP/Amoco accountable for the contaminated soil in the UST cavity. When AMOCO closed their service station they did not remove the contaminated soil from the UST cavity. When I asked the MDNR to make it part of the Corrective Action Plan (CAP) they said, "The removal of UST and contaminated soil is considered part of the tank closure process as documented in the MRBCA guidance document (Section 4). The information the Department has indicates that the tanks on your property have been removed. If you feel this information is incorrect, you may want to hire an environmental consultant."

The EPA and MDNR are missing the point. The objective of a CAP should be to restore a property to its original condition, and—when in doubt—the EPA/MDNR should require the responsible party prove they addressed all aspects of restoring the property. In this particular case, I sent the MDNR the bill AMOCO paid and it states, "Removed and junked three (3) 10,000 gallon underground tanks, backfilled and cleaned up as per bid." Note, the bill clearly indicates they backfilled the cavity without removing or disposing of the contaminated soil. The MDNR should not put the burden on me to prove BP/AMOCO is misrepresenting the facts, they should be holding them accountable.

Five: EPA/MDNR and big oil companies are being less than truthful with the American people and stockholders. Imagine the EPA and MDNR justifying their policies in front of the American people. No one would find their policies and procedures acceptable.

And, imagine BP/AMOCO and Sinclair justifying their company's disregard for the environment in front of their customers and stockholders. Their customers would be outraged to learn they contaminated a local community's drinking water (Sinclair had 25' of hazardous chemicals floating on the water table below their property), and their stockholders would flee like rats from a sinking ship because of their failure to disclose the contingent liability associated with their negligence for hundreds of sites across the nation (and they may be in violation of SEC regulations).

Six: Scientific community is for sale. The scientific reports submitted by BP/AMOCO to the MDNR proclaim innocence and point an accusing finger at Sinclair. The reports from Sinclair accuse AMOCO. The only accurate environmental report is the one by MDNR which found two "plumes", one under each property. Environmental scientists act more like attorneys defending their client, than scientists seeking the truth (and they're in violation of their code of ethics).

The "AIPG Code of Ethics for Geologists" states, "A Member shall not be relieved of an ethical responsibility by virtue of his or her employment..." and goes on to say, "Members should be accurate, truthful, and candid in all communications with the public."

The "NSPE Code of Ethics for Engineers" states, "Engineering is an important and learned profession. As members of this profession, engineers are expected to exhibit the highest standards of honesty and integrity. Engineering has a direct and vital impact on the quality of life for all people. Accordingly, the services provided by engineers require honesty, impartiality, fairness, and equity, and must be dedicated to the protection of the public health, safety, and welfare. Engineers must perform under a standard of professional behavior that requires adherence to the highest principles of ethical conduct."

The Code of Ethics applies to all scientists... those working for the big oil companies, EPA, MDNR, and environmental consulting firms. They should be truthful and working together to address our environmental concerns. They should not be ignoring issues to avoid accountability.

Seven: Big oil companies don't have insurance: There's an inconsistency in the way our government deals with the insurance requirements of big oil companies and its citizens. Government requires its citizens (most of which don't have a history of accidents) to carry auto insurance, while our government allows big oil companies (who have a history of accidents) to operate without liability insurance. I know, I know, big oil companies probably claim to be self-insured, but the test is really very simple... do they send adjusters out to assess the damage, and compensate impacted property owners. There's a difference between being "self-insured" and hiring a large staff of attorneys to intimidate injured parties.

My wife & I and the American people need your help. This isn't funny. When a big oil company contaminates a property it becomes virtually unsellable... and the laws protect the big oil companies. My neighbors (they're black) didn't do a thing wrong. A big oil company leased the property next door, had a release of hazardous chemicals, didn't tell anyone, packed up and left town. What are they to do? They wanted to sell and move a long time ago. They can't. Their property is contaminated. Meanwhile, the big oil companies are giving their executives bonus based on company profits while ignoring contingent liabilities.

We want the EPA to hold big oil companies accountable. BP/Amoco should be required to remove the contaminated soil from the old UST cavity. And BP/Amoco and Sinclair should notify their insurance carrier and compensated all damaged parties for their losses... without a hassle... without attorneys.

Thanks for listening.

Sincerely

Steve Gamelin

Cc: Governor Eric Greitens, 100 Madison Street, Jefferson City, MO 65101
Administrator Scott Pruitt, EPA, 1200 Pennsylvania Avenue, N.W., Washington, DC 20460
Environmental Protection Agency, 11201 Renner Blvd., Lenexa, KS 66219

Steven Gamelin, (b) (6)

Crawford Hydrology Lab. The results of the laboratory analysis indicated that fluorescein dye was detected in the water sample which was in contact with the product. Fluorescein dye can persist in the environment for years, so it is quite possible that the fluorescein dye detected in MWS-5 is the result of the 1991 dye tracer test, which indicates migration of free phase petroleum from the former Amoco UST pit to MWS-5. This emerald green discoloration resulting from the fluorescein dye trace is still evident in the product samples collected from monitoring well MWS-5 today.

The gasoline/diesel USTs and the fuel oil UST were removed in May 2007 (MACTEC, 2007a). The USTs were constructed from heavy-gauge single-wall steel with cathodic protection. The product dispensing piping system was constructed of single-wall steel between the tank pit and the fuel islands, and was a combination of single-wall fiberglass and steel within the system of fuel islands. Inspections of the USTs indicated that no other holes or cracks were visible in any of the USTs. A total of 999.48 tons of petroleum impacted granular backfill and native soils was excavated from the gasoline UST cavity, along product piping, and around dispenser island locations during closure activities. Excavated material was properly disposed of offsite. At a separate UST heating oil tank location there was no evidence of petroleum impact observed in the backfill surrounding the heating oil tank during removal.

Following UST closure activities, product recovery efforts commenced in November 2007 on monitoring wells MWS-4 and MWS-5. Twenty-eight product recovery events have been conducted on the two wells from November 2007 to June 2012. Prior to initiating product recovery, initial measurements of depth to groundwater and product were obtained and recorded. Product recovery was performed by manually evacuating the wells using a bailer and rope. Product (and water) removed was placed in a plastic, five-gallon pail, and then transferred to 55-gallon steel drums and staged on site for subsequent disposal.

MACTEC installed an additional monitoring well on the former Sinclair station property in July 2010 (MWS-17). The well is located to the east of the former UST cavity and east of the former monitoring well MWS-14 (abandoned prior to the start of UST removal activities in April 2007). The monitoring well was installed as a part of site characterization activities, which commenced on July 7, 2010. Prior to well installation, the location for monitoring well MWS-17 was cored in order to determine lithology. Upon completion of the cored borehole and prior to the reaming out of the borehole in preparation for well installation, LNAPL was measured initially in the borehole on July 14, 2010, at a thickness of 12.83 feet and again on July 19, 2010, at a thickness of 12.65 ft. On July 19, 2010, Illini Environmental, Inc. (Illini) was contracted to provide a vacuum truck, which facilitated the removal of 72 gallons of LNAPL.

in monitoring wells MW-2, MW-3 and MW-6. Delta returned to the site on April 25, 2006 to obtain current ground water chemistry data and analyzed the ground water samples for BTEX, MTBE, TPH OA-2 and TPH DRO for an accurate comparison of distillate data before and after the diesel release. Review of the recent data indicates that distillate concentrations have increased in all the wells since the diesel release. Distillate concentrations in monitoring well MW-2 have increased by almost 300% and over 100% in monitoring well MW-3. Please recall that Amoco has not operated in over 26 years. Review of this data clearly indicates that distillate impacted ground water has migrated from Sinclair and has impacted the former Amoco property. The chemistry data also indicates the concentrations of diesel range organics are still increasing.

5. Regional Aquifer Ground Water Levels and Mechanism for Shallow Impact

One of the persistent questions at this location that have been difficult to answer is how could MTBE in gasoline released from the Sinclair site make its way into the shallow wells MW-4 and MW-5 at the Amoco site. To answer this question we have conducted an intensive review of historical site data and have obtained additional information regarding the mechanism for petroleum impacted ground water to migrate from Sinclair and impact the shallow wells on the former Amoco property.

Monitoring well MW-5 was installed on the former Amoco property on May 3, 1990 in or very near the former tank basin. The boring log for MW-5 states that pea gravel with some clay fill was encountered from 5 feet to 15 feet below ground surface (bgs). Clay with chert was observed from 15 feet to 17 feet bgs. The well was installed to a depth of 13 ft bgs. Monitoring well MW-4 was installed at the former location of a dispenser island. The soil boring log indicated that bedrock was encountered at 20 feet bgs. Soil boring logs are contained in Appendix C. Four additional soil borings (SB-1 through SB-4) were drilled May 2-3, 1990 and bedrock was encountered at depths ranging from 1.5 feet to 4.5 feet bgs. As the depth to bedrock throughout the site has been observed to be very shallow, bedrock had to be removed in the area of monitoring well MW-4 and MW-5 in order to install Amoco's USTs and dispenser islands. It is very likely that bedrock at the soil-bedrock interface was fractured during the UST system installation.

Monitoring well MW-5 was destroyed in 1998 but depth to water measurements were 4.96 feet and 7.05 feet bgs in the well during its existence. Monitoring well MW-4 (installed at 20 feet bgs) has exhibited depth to water measurements ranging from 16.70 feet to 19.34 feet bgs. Monitoring well MW-4 has been dry during the gauging events since 2003. Amoco attempted to install shallow wells in 4 other locations (SB-1 through SB-4) but, as stated above, bedrock was encountered at 1.5 feet to 4.5 feet bgs. The water observed in monitoring well MW-5 was water trapped in the backfill and was artificially "high". Monitoring well MW-4 has had minimal amounts of water. As ground water has only been observed in wells installed in the former tank pit and a former dispenser island and the depth to ground water in the two wells varies by approximately 10 feet, it is evident that shallow ground water observed in these wells is not indicative of a true water table or even a hydrologic connection between the two shallow wells.

The ground water gauging event conducted on October 21, 1998 recorded ground water levels significantly higher than any prior or subsequent measurements. In fact, water levels recorded in the deep monitoring wells that intersect the regional aquifer (MW-1, MW-2, and MW-3) were approximately 50-60 feet higher than those measured during any other gauging events. Precipitation records for Union, Missouri (which is approximately 10 miles north of St. Clair) were obtained from the University Of Missouri – Missouri Climate Center. The precipitation records indicated that Union, Missouri received 1.8 inches of rain from October 17-19, 1998, only two days prior to the gauging event that measured the high water levels. Further review of precipitation data found that Union, Missouri received 5.6 inches of rain from May 10-17, 1990. It should be noted that the first ground water samples were collected at the

STATE OF MISSOURI

DEPARTMENT OF NATURAL RESOURCES

JUL 2 2 2014

Mr. Steven Gamelin

(b) (6)

RE: June 23 and July 2 request for records and information regarding Sinclair Retail Station #24053 & Amoco Station #18816, Missouri State Highway 47 and I-44, St. Clair, Franklin County, **ST0012980, R0004624 & ST0008848, R0001571**

Mr. Gamelin,

The Department has received your requests for information on June 23, 2014 and July 2, 2014. The Department appreciates your continued interest in remediation of both your property and the adjacent Sinclair property.

The June 23, 2014 request asks for copies of several policies and procedures that the Department has in regards to the remediation of releases and requirements of consultants. You also request a copy of the Department's mission statement; and Department policies on the public's right to question the responsible party after a release of product which crossed the property line and impacted that citizen.

The Department's guidance document (incorporated in regulation by reference), can be found http://www.dnr.mo.gov/env/hwp/docs/tanks-final-guidance2013.pdf. Regarding your request that the Department advise you as to the identification or interpretation of statutes and regulations on which it relies. The Department must decline to do so because the Department does not render legal advice to the public, particularly in regards to matters that may be protected from disclosure by the attorney-client privilege or the work product doctrine.

The Department's mission statement can be found at http://www.dnr.mo.gov/aboutus.htm.

The Department does not have a specific policy on the public's right to question a responsible party. However, we have been copying you on all correspondence and made our files open to you for review in order to provide you with information on the remediation of both sites. We have also asked the responsible parties to engage in the issues with you and provide you copies of reports. You may want to contact an attorney regarding this matter.

In the July 2, 2014 information request, you inquire as to whether or not any of the parties have responded to the Department regarding the April 24, 2014 letter sent to them to contact you regarding access to your property. The Department has not received a formal response to the

Department's April 24, 2014 letter. The Department was not expecting Amoco and Sinclair to respond to the Department. The expectation in the April 24, 2014 letter was that they would contact you directly to discuss access to your property.

Any questions you have about the letter you received from Mr. Smith of BP Amoco should be directed to Mr. Smith. The Department has talked with Mr. Smith and he has expressed a desire to move the remediation forward, but without access to your property he is unable to do so. Any access agreement between you and Amoco is private business between the two of you. Of course, access will be required before the remediation project may begin.

The Department would also like to make you aware that on January 1, 2018, based on 319.131 9(3) of the Missouri Revised Statutes, you may become, as the property owner, the responsible party for corrective action. You may want to contact an attorney in this matter.

The Department would again like to urge you to allow access to Amoco and Sinclair so that they may continue their remedial programs. Otherwise the remediation approach used in this cleanup may be forced to exclude your property.

Regarding your questions in your letter to Steve Lang dated July 02, 2014 the Department would like to offer the following information:

Question 1: Amoco's Underground Storage Tanks (USTs)

The Missouri Risk-Based Corrective Action Process for Petroleum Storage Tanks (MRBCA) allows for contaminated material to be left at a site as long as it is demonstrated that it does not pose an unacceptable risk to human health or the environment.

The removal of UST and contaminated soil is considered part of the tank closure process as documented in the MRBCA guidance document (Section 4). The information the Department has indicates that the tanks on your property have been removed. If you feel this information is incorrect, you may want to hire an environmental consultant.

Question 2: Release of diesel fuel

The diesel release is being addressed with the same system that the gasoline release is being addressed by the remediating parties under the Departments oversight of the remediation. However, since access to your property has not been given, it is unclear how successful this will be on your property.

Question 3: Hydraulic pumping

We are unaware of any laws, policies, or procedures regarding "hydraulic pumping". The Department uses a risk-based process that evaluates the movement of contamination in

groundwater. The contamination in the groundwater poses a risk to future drinking water wells in the area of the contamination. At this time, corrective action is being performed. Corrective action will continue until there is no further unacceptable risk in the areas of accessible contamination. Hydraulic pumping in this context refers to free product movement through the subsurface geology as influenced by groundwater fluctuations. The approved corrective action is addressing free product in two ways. One is the use of a computer controlled skimmer pump that automatically adjusts itself to recover the free product within a well as groundwater elevations fluctuate. The other method is the extraction of air from the bedrock formation by applying a vacuum to the well that volatilizes free product within the bedrock formation and removes it in the vapor phase.

Question 4: Study area

Corrective Actions Plans (CAPs) are site specific documents that are reviewed by the Tanks Sections Professional Engineer. They are required to show that the proposed corrective action can reasonably reduce risks to acceptable levels as documented in the site specific risk assessment. To date a formal CAP has not been approved for this site. The reason for this is that Sinclair is actively pursuing Activity Use Limitations (AULs) for groundwater as necessary. The implementation of these AULs will significantly change the site specific risk assessment and will change the corrective action goals. Only then can a CAP be finalized.

The release area will be evaluated with the data that can be collected. If property owners do not allow access for data to be collected and do not participate in the process, then it is not possible to evaluate the study area as a site wide whole.

Question 5: Contaminated soil

At the time of the release, there was no requirement for the removal of contaminated soil or for closure of the USTs. Currently, the MRBCA process allows for contaminated soil to remain at a site if it is demonstrated that it does not pose an unacceptable risk to human health or the environment. Soil remediation may be necessary before the site is closed. However, since the site does not have a finalized CAP, it is unclear if soil remediation will be necessary.

I hope that this information addresses many of the questions that you have. The entire file for this release is available to you for review by requesting it through the following website http://www.dnr.mo.gov/sunshinerequests.htm.

The Department does not maintain a compendium of scientific studies on fate and transport of petroleum chemicals, free product recovery technologies, or other related petroleum topics. Rather, Department staff access the latest available science on an as needed basis when carrying out our regulatory responsibilities. Such studies are accessed through various sources such as professional and technical organizations and scholarly journals; many of these studies are

available via the internet. You may want to consider hiring a consultant to meet your information needs.

Sincerely,

MISSOURI DEPARTMENT OF NATURAL RESOURCES

Ken Koon, Chief
Tanks Section

KK: sw

c: Jim Smith, Atlantic Richfield Company
Mr. Paul Conrad, Sinclair Marketing Inc.
Dale Markley, R.G., AMEC Environment & Infrastructure Inc.
Ms. Addie Mette, Antea Group
Petroleum Storage Tank Insurance Fund
Mr. Glen Young, Division of Geology and Land Survey

ANGELO COLAGROSSI CONSTRUCTION CO., INC.

1018 APPALACHIAN TRAIL
CHESTERFIELD, MO. 63017
532-3437

AMOCO OIL COMPANY
Mr. Earl Matthews
11000 Linpage Place
St. Louis, Mo. 63132

80-135
INVOICE № 2955

DATE 7-10-80

P. O. #097804

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I-44 & Hwy 47
St. Louis, Mo.

Surplus Property

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Steven Gamelin
(b) (6)

Administrator Scott Pruitt
Environmental Protection Agency
1200 Pennsylvania Avenue, N.W.
Washington, DC 20460

APR - 3 2017

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Department: 1101A

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PETITION

To: Environmental Protection Agency

Each year, under the EPA's purview, hundreds of thousands of animals are killed to test chemicals. Not only do animals suffer terribly during the testing, but animal tests have well-known scientific flaws — they are slow and expensive, hampering our ability to detect and restrict the most dangerous chemicals. Plus, differences between species mean that the results of animal tests may not be applicable to humans. **I urge you to make 21st Century Toxicity Testing a reality: update your regulations and policies to require non-animal test methods today.**

Sincerely,

3-27-17

Kent D Laubhan

(b) (6)

Kent Laubhan
[redacted] (b) (6)

OKLAHOMA CITY OK 730
27 MAR 2017 PM 7 L

APR 03 2017

DIRECTOR SCOTT PRUITT
ENVIRONMENTAL PROTECTION AGENCY
1200 PENNSYLVANIA AVE, N.W., 1101A
WASHINGTON, DC 20460

FCL2032410

20460-

RECEIVED

2017 APR -3 PM 1:14

OFFICE OF THE
EXECUTIVE SECRETARIAT

Dear Sir:

You cannot imagine how happy I am that you have appointed the Administrator of the EPA. I will be 84 years old this April and for the last 30 years the EPA + state of Ga + Cherokee County have been telling me what I can do on the property I purchased in 1965.

There was no EPA when I purchased this property, therefore, they should not be allowed to devalue it after the fact. However, If they want my remaining property I will be glad to sell it to them for what I received for the adjoining parcel, but they should not be allowed to take it by restricting what I can do with it.

I also own another piece of property that needs to have dirt removed from it before it

can be used. I offered to give the dirt away just to get rid of it. I was told the best way to remove the dirt was to get a surface mining permit?? This took approximately 11 months and cost $45,000 plus a $25,000 fee to the EPA. By the time I got all this done the person wanting the 5000 dump loads of dirt got it someplace else.

I apologize for the length of this letter but it's hard to explain the situation without some background information.

The EPA also mandated the use of ethyl alcohol in gasoline which ruined countless pieces of lawn equipment and older car engines.

I do not believe the EPA can be fixed. The best thing for this Country is to <u>abolish it completely</u>. This would enable our country to grow and prosper again.

When I heard your views on issues such as atmospheric warming + etc. I was absolutely

thrilled. Please do not let the environmental whackos win!!

Sincerely,

Joseph C. Long III

(b) (6)

[redacted]

P.S.

I was born in [redacted] (b) (6) so I'm an Okie also. If there is anything I can do just let me know.

(b) (6)

Joe

Joseph Lamp

[redacted]

(b) (6)

FCL 2033582

APR 03 2017

WOODSTOCK POST OFFICE
MAR 28 2017

Administrator Scott Pruitt
Office of Administrator
Environmental Protection Agency
1200 Pennsylvania Ave. N.W.
Washington, D.C.
20460

Att: Administrator Pruitt

22 March 2017

RECEIVED

2017 APR -3 PM 1:12

OFFICE OF THE
EXECUTIVE SECRETARIAT

Environmental Protection Agency
Ariel Rios Building
1200 Pennsylvania Ave., NW
Washington, DC 20460

To Whom It May Concern:

Recently I read an article entitled "Contaminated Water": Water Pollution in Vietnam and Agent Orange. It was also my understanding that the National Environmental Agency in Singapore was responsible for issues in Vietnam and I will be sending them a copy of this correspondence.

First I wanted to contact your agency to see if I could gather any valuable information from your Agency in regards to water supply and contamination studies if any done by your agency on behalf of the Department of Defense or the Department of the Army in regards to Vietnam.

Reasoning for the above is I was station in the Central Highlands at a Base called Camp Radcliff, An Khe, home of the 1st Air Cavalry during the period 1966 and 1967. This area received heavy spraying of Herbicides including the deadly Agent Orange that was found to be contaminated with the deadly TCDD toxin after spraying was done. The spraying took place between 1962 and 1971 as part of Operation Ranch Hand. Details of what happened and is still happening to the people of Vietnam and to the Military Men and Women that served over there need not be explained for obvious reasons.

I am interested in the Camp Radcliff area and where the water supply came from, there was a fresh water stream just outside of camp but it was unknown about any underground water supply. My interest is that I developed Squmous Cell Carcinoma Base of the Tongue Cancer and it is my belief that the herbicides that were sprayed in the area contaminated the water supply in and around the camp.

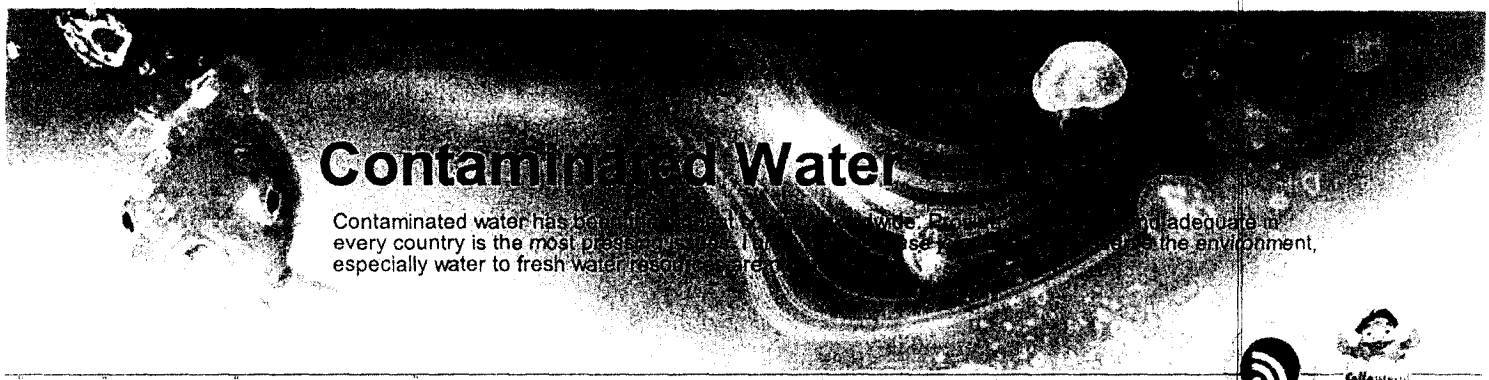
Would your opinion be that the fresh & ground water "could have" been contaminated from the early spraying started in 1962? We all know that the TCDD levels in the soil and waters were 100 times higher than levels considered safe by the (US) EPA.

I would appreciate any assistance that you can send my way, in form of correspondence, or other agencies that I may contact.

Thank you:

Bruce Hill

(b) (6)



water pollution in vietnam and Agent Orange

Duong Thi Thu

The National Environmental Agency, a branch of the Ministry of Science, Technology, and Environment, is responsible for environmental issues in Vietnam.
At the provincial level, the Departments of Science, Technology, and the Environment bear responsibility. Non-governmental organizations, particularly the Institute of Ecological Economics, also play a role. Urbanization, planning, industrialization, and intensive farming are having a negative impact on Vietnam's environment. These factors have led to air pollution, water pollution, and noise pollution, particularly in urban and industrial centers like Ho Chi Minh City and Hanoi. The most serious problem is waste treatment. Land use pressures have led to significant environmental problems, including severe deforestation, soil erosion, sedimentation of rivers, flooding in the deltas, declining fish yields, and pollution of the coastal and marine environment. The use of Agent Orange by the U.S. military in the Second Indochina War, or Vietnam War, (1954– 75) has had a lingering effect on Vietnam in the form of persistent environmental contamination that has increased the incidence of various diseases and birth defects.

Agent Orange is the code name for one of the herbicides and defoliants used by the U.S. military as part of its herbicidal warfare program, Operation Ranch Hand, during the Vietnam War from 1961 to 1971.
A 50:50 mixture of 2,4,5-T and 2,4-D, it was manufactured for the U.S. Department of Defense primarily by Monsanto Corporation and Dow Chemical. The herbicides used to produce Agent Orange were later discovered to be contaminated with TCDD, an extremely toxic dioxin compound. It was given its name from the color of the orange-striped 55 US gallons (210 L) barrels in which it was shipped, and was by far the most widely used of the so-called "Rainbow Herbicides".
During the Vietnam war, between 1962 and 1971, the United States military sprayed 20,000,000 US gallons (80,000,000 L) of chemical herbicides and defoliants in Vietnam, eastern Laos and parts of Cambodia, as part of Operation Ranch Hand. The program's goal was to defoliate forested and rural land, depriving guerrillas of cover; another goal was to induce forced draft urbanization, destroying the ability of peasants to support themselves in the countryside, and forcing them to flee to the U.S. dominated cities, thus depriving the guerrillas of their rural support base and food supply.
Air Force records show that at least 6,542 spraying missions took place over the course of Operation Ranch Hand. By 1971, 12 percent of the total area of South Vietnam had

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been sprayed with defoliating chemicals, which were often applied at rates that were 13 times as high as the legal USDA limit.In South Vietnam alone, an estimated 10 million hectares of agricultural land were ultimately destroyed. In some areas TCDD concentrations in soil and water were hundreds of times greater than the levels considered "safe" by the U.S. Environmental Protection Agency. Overall, more than 20% of South Vietnam's forests were sprayed at least once over a nine year period.

The US began to target food crops in October 1962, primarily using Agent Blue. In 1965, 42 percent of all herbicide spraying was dedicated to food crops. Rural-to-urban migration rates dramatically increased in South Vietnam, as peasants escaped the destruction and famine in the countryside by fleeing to the U.S.-dominated cities. The urban population in South Vietnam more than tripled: from 2.8 million people in 1958, to 8 million by 1971. The rapid flow of people led to a fast-paced and uncontrolled urbanization; an estimated 1.5 million people were living in Saigon slums, while many South Vietnamese elites and U.S. personnel lived in luxury.

According to Vietnamese Ministry of Foreign Affairs, 4.8 million Vietnamese people were exposed to Agent Orange, resulting in 400,000 people being killed or maimed, and 500,000 children born with birth defects.

U.S. Army Huey helicopter spraying Agent Orange over Vietnamese agricultural land

Agent Orange by the U.S. war has caused environmental pollution, especially water environments in Vietnam and their impact on the people of Vietnam:

Beaches
water pollution in vietnam and Agent Orange
water pollution in India
Life's a contaminated Beach in the U.S
USGS Study Finds Drinking Water Contaminated, but ...
World's Cheapest Water Purifier: Tata Swach
Water Outlook
Environmental History of Water
Why Contaminated Water ?

About Me

Duong Thi Thu

My name is Nguyen Thi Nhung. I am a citizen of Vietnam. I was born into a poor family in a poor rural area of the country. Here, I witnessed the difficulties and the rise of the people here. Food deprivation on the scene, what to wear and especially water pollution. So clean water is becoming scarce. water pollution due to various reasons and mainly due to human causes. So I urge you in the country and the world I once again take a hand to protect the environment and water resource protection. Let's build a global society green, clean and beautiful.

View my complete profile

Followers

Bruce Hill

[redacted] (b) (6)

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24 MAR 2017 PM 8 L

APR 03 2017

Environmental Protection Agency
Ariel Rios Building
1200 Pennsylvania Ave., NW
Washington, DC 20460

FCL2030807

20460-

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

APR 10 2017

OFFICE OF WATER

Mr. Bruce Hill
(b) (6)

Dear Mr. Hill.

Thank you for your inquiry to the U.S. Environmental Protection Agency regarding water supply and contamination studies done by the EPA on behalf of the Department of Defense or the Department of the Army in Vietnam.

We have checked with staff who lead our drinking water monitoring efforts and we are not aware of any such monitoring having been performed.

Again, thank you for your letter; we recommend that if you have not already done so, contact the DOD.

Sincerely,

Stephanie Flaharty
Office of Ground Water and Drinking Water

Administrator Scott Pruitt

17 March 2017

Environmental Protection Agency

Office of the Administrator 1101A

1200 Pennsylvania Avenue NW

Wasgington DC 20460

RECEIVED
2017 APR -3 PM 1:20
OFFICE OF THE
EXECUTIVE SECRETARIAT

Dear Mr. Pruitt:

Please get together with Missouri State Senator Wayne Wallingford, Missouri State Senator Schatz, Missouri State Representative Rick Francis, Missouri Governor Greitens, US Representative Jason Smith, US Senators Blunt and McCaskill, and President Trump, to fix the regulatory problem of Thorium in Rare-Earths minerals that cause mining companies to discard rare-earths that could create high-tech manufacturing jobs in Madison and surrounding southeastern Missouri counties. **Read the enclosed newspaper article for details**. For much more information on the Thorium and Rare-Earths problem, go to www.legendminerals.com, then to SUPPORTING RESEARCH, then to Rare Earths in Review – A Decade of Decline & Deception

Mineral exploration now starting in southeastern Missouri could result in byproduct production of rare-earths and thorium. Rare-earths are required for manufacture of many electronic, magnetic and specialty alloy items, including advanced military weapons. Thorium is slowly replacing uranium in nuclear reactors that generate electricity and power ships.

Missouri needs legislation authorizing creation of a **RARE-EARTHS COPERATIVE** and **THORIUM CORPORATION** as discussed in the newspaper article. Then Missouri needs federal legislators to adopt the same policy nationally. You can help.

Right now, these valuable natural resources are wasted in these United States. China moved in to fill the manufacturing gap. That is why most electronic items such as cellular telephones come from factories in China

and not factories in these United States.

Turnaround will be slow but possible. We must reverse the paranoid bureaucratic restriction on low-level radioactive materials such as thorium to begin the economic recovery process.

Please discuss this with Missouri's state and federal elected officials. If exploration discovers new ore deposits, and byproduct rare-earths and thorium are produced, Missouri, and the 8th Congressional District in particular, will benefit, but only if those materials are actually **USED** and not thrown into a mine dump because of inappropriate, outdated laws.

William Jud, Exploration Manager

[redacted] (b) (6)

[redacted]

[redacted]

telephone 5[redacted] (b) (6) [redacted] (b) (6) [redacted]

www.legendminerals.com

Exploration in Madison County for large, undiscovered ore deposits

JACOB SCOTT
573-783-3366

Mining has been an important economic force in the history of Madison County and the surrounding area. While it may seem the sun has set on mining in the region, there's a small chance it could rise again, but with different economic potential.

Much study has been done on the geology of southeast Missouri over time, and for different purposes. What seems to most interest researchers and investors is that the region shares characteristics with other mineral-rich areas around the world, such as South Australia where a large deposit of ore called the Olympic Dam is located.

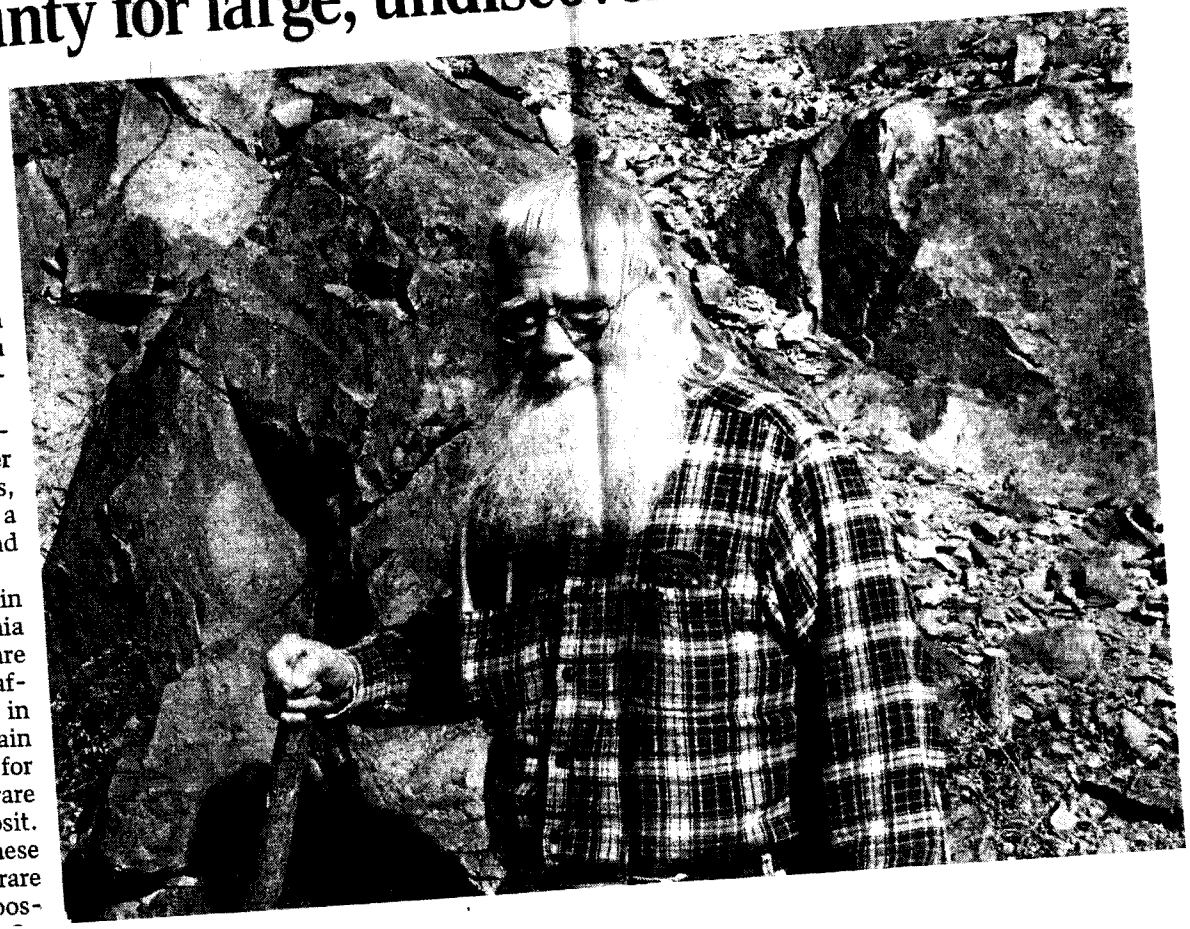
The Olympic Dam is a deposit containing iron-oxide, copper and gold, referred to as an IOCG-type deposit. Usually, these types of deposits also contain other materials that don't justify a mining operation on their own, but can be lucrative byproducts of iron or copper mining.

cur in abundance—enough for an economic mineral deposit."

"They're used in all kinds of high-tech industries," McCafferty continued. "Wind turbines use neodymium, in particular, to make magnets. The rare earths have these particular characteristics that make them robust in terms of using them in certain applications for military and high-tech industries."

The Mountain Pass Mine in California, once the largest producer of rare earths in the United States, filed for bankruptcy in 2015 as a result of foreign competition and domestic regulation.

"In the United States, Mountain Pass on the border of California and Nevada was our largest rare earth element deposit," McCafferty said. "And that is found in a carbonatite deposit. Mountain Pass had been up and running for many years and producing rare earth elements from that deposit. And then, over time, the Chinese took over—and they mined rare earth elements out of clay depos-



One type of byproduct that can be produced in such an operation is a group of elements called rare earth elements, which have a wide array of applications.

Legend Minerals, a startup mine company with a field office in Fredericktown is currently performing explorations in the region with the hopes of discovering a large deposit of the same type as the Olympic Dam deposit in South Australia which has so much in common with the geology here in Southeast Missouri.

Exploration Manager Bill Jud said the area holds promise because of how natural forces have or have not affected the area over time.

"The production at the Olympic Dam Mine in South Australia is from the upper part (of the deposit) where you have a lot of replacement activity in the rocks," Jud said. "Not from the lower part. The Pea Ridge Mine and that area of Missouri would be from the lower part, which also has a lot of potential, but the entire upper section has eroded off."

Jud said Madison County and surrounding areas in particular have potential to hold some strong deposits that haven't been worn away over time.

"Now as you go from the Pea Ridge Mine (in Sullivan, Missouri) south, down to Southeast Missouri, the erosion has removed less and less and less material, and its, so it's a lot less expensive. So, basically, Mountain Pass is out of business because of that competition."

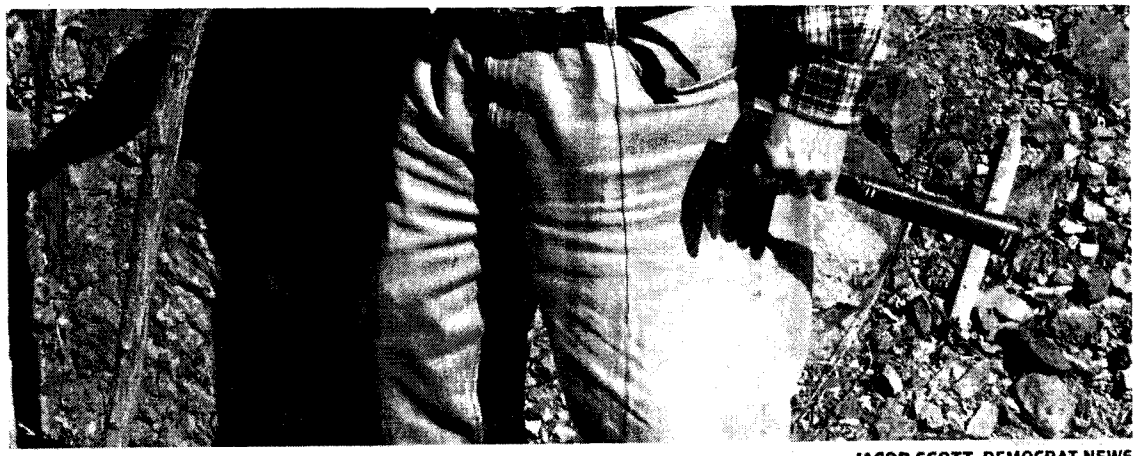
"So you find rare earth elements in a lot of different kinds of geology," McCafferty said. "You find them in these clay deposits, you find them in these carbonatites, which are igneous rocks. You find them in iron deposits, and that's what you have there in Southeast Missouri."

Jud said the primary reason that the United States is not successful producer of REE's is not one of supply or location, but of legislation. One of the nails in the coffin of the California Mountain Pass Mine was a pipeline break that resulted in the dumping of liquid containing thorium and uranium in the Mojave Desert.

"They throw up their arms and scream, 'Radioactivity! The world's going to end!'" Jud said. "And they take this down to ridiculous levels. Below the levels of radiation on Elephant Rocks, by quite a bit."

The restrictions come from the Nuclear Regulatory Commission and the International Atomic Energy Agency, and Jud said they lump highly radioactive materials with less dangerous ones like thorium.

"The building blocks in the (Madison County) Courthouse would probably qualify as being a radioactive hazard, but of course



JACOB SCOTT, DEMOCRAT NEWS

Legends Minerals Exploration Manager Bill Jud believes there could be a large ore body in Madison County or the surrounding area capable of sustaining a mining operation and possibly contributing to the United States' energy independence.

rare earth byproducts.

Kennedy owned the Pea Ridge Mine from 2006 to 2011, during which time he became aware of the mine's potential rare earth deposits, as well as the legislative and economic hurdles that stand in the way of the United States having a rare earth industry to compete with China's.

Kennedy has spoken to Defense officials at the Pentagon and the White House, has spoken at numerous thorium and nuclear energy conventions and has assisted in writing books on the topic. Kennedy is now the president of ThREE Consulting, a St. Louis company dedicated to providing a way for the United States to cre-

stitutional mandate to sort out the problem of American rare earth independence.

To that end, Kennedy is working on legislation which would allow the formation of what he describes as an old-fashioned farming cooperative, in which multiple entities front the cost for the extraction and production of rare earths in the U.S., and then a new, separate corporation would be solely responsible for the handling and storage of American thorium and creating a "value chain," which entails creating a viable long-term cycle of extraction, refining and production of value-added products that rely on the materials.

In a technical presentation he

of an iron or copper mine in the Parkland that one day also produces rare earths may be a long shot, it's nothing out of the realm of possibility.

"This is an exploration project, and most exploration projects fail," he said. "It's just the nature of exploration. Some of them succeed, and the ones that succeed, combine with agriculture to support all of civilization. You need mines to build things and you need agriculture to feed the miners."

"It's not a 'get rich quick scheme' by any means," he added. "If everything goes well, and we actually make a discovery, we're looking at fifteen, twenty, twenty-five years in the future. But

when you get down to this area, the super-structure is still there and the sub-structure is still there. So if there's anything here at all, it's still here. It wasn't taken away by erosion half a billion years ago."

Jud said his hope for the region is to discover an IOCG-type deposit similar to the Olympic Dam deposit in South Australia. If such a deposit is indeed in the area, Jud said the mine would most likely produce iron or copper, but could produce other valuable minerals as byproducts, like rare earth elements, if they're present—in the same manner that China, the rare earth leaders of the world do.

"In China's case, they're not really mining rare earths," Jud said. "They're mining iron and the rare earths just come along as a rider. And we'll likely do the same thing here. I don't think we'll have any rare earth mines in Missouri—we'll be mining something else and the rare earths will just come with it. Like gold—there won't be any gold mines in Missouri, but there might be enough to serve as a byproduct."

Anne McCafferty, a geophysicist with the United States Geological Survey, said rare earth elements are not called "rare" because of how often they occur, but in what magnitude.

"What we like to say around here is that rare earth elements are not rare," McCafferty said. "But what is rare is that they oc-

they're not," Jud said. "And a lot of the land area around Pilot Knob and Ironton—pretty highly radioactive and a lot of radon gas and things like this."

Because of the regulations on extracting and storing materials like thorium, many mines dump material containing rare earths with the rest of their waste products, despite the high value of such material.

Jud said that James Kennedy, former owner of the Pea Ridge Mine in Sullivan, Mo., had the idea of creating a corporation with the express purpose of extracting and storing radioactive materials like thorium.

"So it's Jim Kennedy's suggestion to set up a thorium corporation," Jud said. "The mines can mine the stuff. They can refine it. And in the process of separating rare earths from each other you end up with thorium and uranium. Well, just give the thorium and uranium to the thorium corporation, and they can very competently take care of the problem. They will know what to do with it, and they can be safe about it and so forth."

Concentrations of rare earth elements have been discovered in geological structures called breccia pipes as near as Sullivan, Mo., in the Pea Ridge Mine. The mine produced iron for years, but was also known to have potential for

ate its own rare earth value chain.

"This is not a new problem," Kennedy said. "This is a problem that goes back to at least the 90's."

Kennedy said the problem began in 1980 when new mining regulations were introduced in the U.S. that applied uranium regulations to all mining, deeming any radioactive material "source material," or material capable of being used as a nuclear fuel.

This caused the mining costs of operations who produced primarily iron or titanium and also rare earths as a byproduct to skyrocket. Meanwhile, Chinese operations took the opportunity to invest heavily in their rare earth production operations and soon had total control of the market.

This, Kennedy said, is why many companies are transplanting their operations to China. Rare earths are used for a variety of products, and some have military value as well as commercial.

Kennedy said that a government report from February of 2016 stated the United States' inventory of "smart weapons," which rely heavily on rare earths, was practically at zero.

"So if China had blockaded us in February of 2016, the war would have been over by now," Kennedy said. "Because we didn't have the resources or the weaponry."

For this reason, Kennedy says the U.S. government has a con-

gave at the Society of Mining, Metallurgy and Exploration (SME) Conference in Denver, Kennedy explained that while the business of mining rare earths is a $3 billion worldwide industry, it supports a $7 trillion product industry.

Kennedy said he's been working on this problem for eight years now, but is having difficulty finding people in the government willing to see the problem or to do anything about it. He said the Trump administration seems very interested in correcting the problem, but only time will tell. As of now, Kennedy is part of a small group working to get legislation in the hands of government officials.

"There are two people working on this right now," Kennedy said. "Myself and my partner."

Jud said the aim for those interested in the future of America's rare earth industry is to make others aware of the issue and to provide information.

"So the goal right now is to get some interest going and some legislative action going to get rid of this restriction on low-level radioactive materials," Jud said. "Everybody's afraid you're going to take it and make a bomb out of it. Well, you cannot make a bomb out of thorium. You can't. Thorium is a fertile material, but it's not fissionable. It will not make a bomb."

Jud added that while the idea

once it gets started, it'll be like the lead mines. They'll go and they'll go and they'll go. The lead mines have been productive economic things for 125 years, and they're still producing."

Jud said if there is indeed a sizable discovery of a deposit that can also produce a good amount of rare earths, the mine itself would only be part of the benefit to the area.

"The final step that we have—if, of course, we actually discover something—is to bring in the high-tech industries that use that kind of stuff," Jud said. "And instead of just having the usual mix of industry that we have (in the area), we can bring in the ones that do the electronics and the LED lightbulbs and the alloys for jet engines and so on."

Despite the low chance of success, Jud said the end result would be worth the effort to explore the area for a rich deposit.

"It's a low probability item," Jud said. "We expect to fail, based on industry standards. Most prospects fail. They just do. But occasionally you get a success, and when you get a success, then you have something that's really valuable and supports the local community."

Jacob Scott is a reporter for the Democrat News. He can be reached at 573-783-3366 or jscott@democratnewsonline.com

Eric K. Davis, D.O.
Corinna DeFrancesco, APRN-BC FNP

Jud

[redacted] (b) (6)

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USA FOREVER

US Environmental Protection Agency
Administrator Scott Pruitt
Office Of The Administrator 1101A
1200 Pennsylvania Avenue NW
WASHINGTON DC 20460

APR 03 2017

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20460-

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 7
11201 Renner Boulevard
Lenexa, Kansas 66219

APR 18 2017

OFFICE OF THE
REGIONAL ADMINISTRATOR

Mr. William Jud, Exploration Manager
Legend Minerals LLC
(b) (6)

Dear Mr. Jud:

Thank you for your letter to the U.S. Environmental Protection Agency Administrator, Scott Pruitt, on March 17, 2017. Your letter was forwarded to our Region 7 office in Lenexa, Kansas for a response.

As mentioned in the letter, you are wanting new legislation to ease restrictions on the management of mining wastes containing thorium. Such legislation is up to the members of Congress, of which you identified several members. Unfortunately, as an executive agency, the EPA has very limited ability in affecting new legislation.

In addition, as pointed out in the article enclosed with your letter, the controlling federal regulations appear to involve the Nuclear Regulatory Commission and the International Atomic Energy Agency. We will forward your letter to those agencies as it may be more helpful for you to contact those agencies.

Thank you for your interest.

Sincerely,

Karen A. Flournoy
for Edward H. Chu
Acting Regional Administrator

Printed on Recycled Paper

Tony Tetsuwari

5522 Lake Michigan Dr• Fairfield, Ohio 45014

March 2017

To –
EPA Administrator Scott Pruitt

CC –
Public Distribution

Dear EPA Administrator Scott Pruitt:

Please be advised the EPA has been approving of falsified public cancer risk reports for 20 years, with no end in sight. And I have been complaining to the EPA for 10 years now with nothing but lies for responses. As a citizen, I feel strongly about this.

So, why wasn't radium part of the Public Cancer Risk Studies at the *Home of the Largest Source of Radium in the Free World*? If you can't answer this question, then may I suggest it's time to 'Drain-The-Swamp.'

Sincerely,

Tony Tetsuwari

RECEIVED
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OFFICE OF THE
EXECUTIVE SECRETARIAT

Tony Tetsuwari

March 2017

To –
Ohio Governor John Kasich

CC –
Public Distribution

Dear Governor John Kasich:

Ohio EPA is unable to explain why all the different types of long-lived radioactivity discovered in the Fernald site Baseline Risk Assessment aren't included in the 'Incremental Lifetime Cancer Risk' (ILCR) calculations. Therefore, I was hoping you would take my public safety question.

Why wasn't radium part of the Public Cancer Risk Studies at the *Home of the Largest Source of Radium in the Free World*?

Sincerely,

Tony Tetsuwari

Tony Tetsuwari
[redacted]

March 2017

To –
Ohio Inspector General

CC –
Public Distribution

Dear Sirs:

I have been complaining to the Inspector General's Office [for years] in regards to misconduct at the Fernald site, but your Office doesn't seem concerned about any misconduct.

Does your Office have any concerns the current Fernald site public cancer risk report is falsified? Does your Office have any concerns the public cancer risk reports for the past 20 years have been falsified? Or does your Office have any concerns that future public cancer risk reports will be falsified there?

Please find attached a 'public flyer' that documents Fernald site falsified public cancer risk studies. I just wanted to be able to publicly report the Ohio Inspector General's Office was in possession of evidence of falsified cancer risk studies while a campaign to falsify cancer risk studies was ongoing.

So, why wasn't radium part of the Public Cancer Risk Studies at the *Home of the Largest Source of Radium in the Free World*?

Sincerely,

Tony Tetsuwari

Tony Tetsuwari
(b) (6)

March 2017

To –
Ohio Attorney General

CC –
Public Distribution

Dear Sirs:

I have been complaining to the Attorney General's Office [for years] in regards to misconduct at the Fernald site, but your Office doesn't seem concerned about any misconduct.

Does your Office have any concerns the current Fernald site public cancer risk report is falsified? Does your Office have any concerns the public cancer risk reports for the past 20 years have been falsified? Or does your Office have any concerns that future public cancer risk reports will be falsified there?

Please find attached a 'public flyer' that documents Fernald site falsified public cancer risk studies. I just wanted to be able to publicly report the Ohio Attorney General's Office was in possession of evidence of falsified cancer risk studies while a campaign to falsify cancer risk studies was ongoing.

So, why wasn't radium part of the Public Cancer Risk Studies at the *Home of the Largest Source of Radium in the Free World*?

Sincerely,

Tony Tetsuwari

Tony Tetsuwari

March 2017

To –
Douglas Ballotti, US EPA Region 5
Margaret Guerriero, US EPA Region 5

CC –
Public Distribution

Dear Region 5 Officials:

I wanted to verify the records speak for themselves. The records show Region 5 was aware of the Boehner letter which documented radioactivity has been in the groundwater at Fernald all along. The records show Region 5 reviewed and approved the Fernald site Fourth CERCLA Five-Year Review that did not include this radioactivity in the Incremental Lifetime Cancer Risk (ILCR) calculations. And the records show this public safety report, which includes falsified cancer risk calculations, still has Region 5's stamp of approval on it.

In all due respect, public cancer risk studies have been falsified at Fernald for over twenty years – do you really want to be the last ones holding the bag on this one? Where's my 'Mea Culpa' to get you off the 'Coverup' list?

So, why wasn't radium part of the Public Cancer Risk Studies at the *Home of the Largest Source of Radium in the Free World*?

Sincerely,

Tony Tetsuwari

Tony Tetsuwari

March 2017

To –
Mr. Kaplan, EPA Regional Council

CC –
Public Distribution

Dear Mr. Kaplan:

After the Boehner letter, when you knew the groundwater at Fernald had been contaminated all along – why didn't you settle then? Instead, your Office lied to a private citizen in order to coverup EPA perjury and now your Office has its fingerprints all over a falsified public cancer risk study.

From the Boehner letter, you knew the contamination has been there all along and Region 5 reviewed and approved the Fernald site Fourth CERCLA Five-Year Review that didn't include this radioactivity [that you knew was there all along] in the public cancer risk calculations, but Region 5 approved this falsified report anyway.

Really, would you allow the EPA stamp of approval to remain on a public safety report that you know is falsified just to coverup EPA perjury? Really!

What is your supervisors name, title, and contact information?

So, why wasn't radium part of the Public Cancer Risk Studies at the *Home of the Largest Source of Radium in the Free World*?

Sincerely,

Tony Tetsuwari

Tony Tetsuwari

(b) (6)

March 2017

To –
US EPA Office of Inspector General

CC –
Public Distribution

Dear Sirs:

I wanted to file a complaint against five EPA Region 5 Officials (to be named later), please see attached. After ten years of nothing but lies from the EPA, please forgive me for wanting to make this complaint public.

Please find attached a 'public flyer' that documents Fernald site falsified public cancer risk studies. I just wanted to be able to publicly report the US EPA Office of Inspector General was in possession of evidence of falsified cancer risk studies while a campaign to falsify cancer risk studies was ongoing.

So, why wasn't radium part of the Public Cancer Risk Studies at the *Home of the Largest Source of Radium in the Free World*?

Sincerely,

Tony Tetsuwari

US EPA
OFFICE OF INSPECTOR GENERAL
REGION 5 COMPLAINTS
MARCH 2017

1) For five years (2009 – 2014), the Regional Counsel's Office defended controversial Region 5 testimony (James Saric) in a whistleblower lawsuit to the affect it was impossible for the groundwater at an old atomic weapons plant to be contaminated with radioactivity (*no need to test the water*). This was Region 5's position until Speaker Boehner intervened and the EPA replied the groundwater there had always been contaminated – throughout the Superfund Cleanup Project (i.e., Boehner letter).

   After the Boehner letter, the Regional Counsel's Office stopped being counselor's defending controversial testimony and became partisans in an active perjury coverup that concealed radioactivity in the environment from the public and the court.

2) When the Regional Counsel's Office was confronted with the Saric testimony and Boehner letter contradictions, they replied by directly lying to a private citizen in furtherance of an active perjury complaint coverup.

3) During the next scheduled Public Safety Report after the Boehner letter (Fernald site Fourth CERCLA Five-Year Review), the radium type radioactivity from the Baseline Risk Assessment was still not included in the Incremental Lifetime Cancer Risk calculations.

   After the Boehner letter, the Regulators stopped being Regulators and became partisans in knowingly and willfully approving of falsified Public Cancer Risk studies.

4) Mr. Saric's EPA testimony in the whistleblower lawsuit was knowingly and willfully false in order to conceal radioactivity in the environment from the public and the court.

Fernald Site Baseline Risk Assessment –

Lots of radium here,
but no radium in the Public Cancer Risk Assessments.

So,
Why wasn't radium part of the Public Cancer Risk Studies at the
Home of the Largest Source of Radium in the Free World?

LEGEND:

1E-8 CONCENTRATION CONTOUR (ppb)

BEDROCK

NOTE:

MAXIMUM CONCENTRATION = 1.61E-5 ppb

SCALE 0 625 1250 2500 FEET

DRAFT

STATE PLANAR COORDINATE SYSTEM 1927

P0116/SA102961.DGN

FIGURE F.3.7-5. CONCENTRATIONS OF RADIUM-226 IN THE GREAT MIAMI AQUIFER AT 1000 YEARS (FEMP AND FENCELINE MAXIMUM)

Table H.IV.1–17
Summary of Risk Quantitation (radionuclides)
Target Receptor: Off–Property Farm Resident (Adult)
Via Ingestion of Drinking Water

Risk Equation = Cw X EF X ED X FI X IR

IR	Ingestion rate of groundwater (RAGS, 1989)	2 l/day
EF	Exposure frequency	350 days/year
ED	Exposure duration	70 Year
FI	Fractional Intake for radionuclides	1 (Unitless)
Cw	Concentration of radionuclides in groundwater	(see table below)

Cs_{137+1d}	NA	pCi/l
Ra_{226+8d}	NA	pCi/l
Rn_{222}	NA	pCi/l
Sr_{90+1d}	6.50E−01	pCi/l
Tc_{99}	2.24E+01	pCi/l
Th_{228+7d}	NA	pCi/l
$Th_{232+10d}$	NA	pCi/l
U_{234}	NA	pCi/l
$U_{235/236}$	1.77E−01	pCi/l
U_{238+2d}	2.17E+00	pCi/l

Radionuclides	CDI (pCi)	CSF $(pCi)^{-1}$	ILCR (unitless)
Cs_{137+1d}	NA	2.80E−11	NA
Ra_{226+8d}	NA	7.80E−10	NA
Rn_{222}	NA	1.40E−12	NA
Sr_{90+1d}	3.19E+04	3.60E−11	1.15E−06
Tc_{99}	1.10E+06	1.30E−12	1.43E−06
Th_{228+7d}	NA	5.50E−11	NA
$Th_{232+10d}$	NA	1.70E−10	NA
U_{234}	NA	1.60E−11	NA
$U_{235/236}$	8.67E+03	1.60E−11	1.39E−07
[illegible]	[illegible]	[illegible]	[illegible]

Fernald Site Public Cancer Risk Assessment –

No radium here,
but lots of radium in the Baseline Risk Assessment.

So,
Why wasn't radium part of the Public Cancer Risk Studies at the
Home of the Largest Source of Radium in the Free World?

WHY WASN'T RADIUM PART OF THE PUBLIC CANCER RISK STUDIES

AT THE

HOME OF THE LARGEST SOURCE OF RADIUM IN THE FREE WORLD?

By Tony Tetsuwari
March 2017

Preface

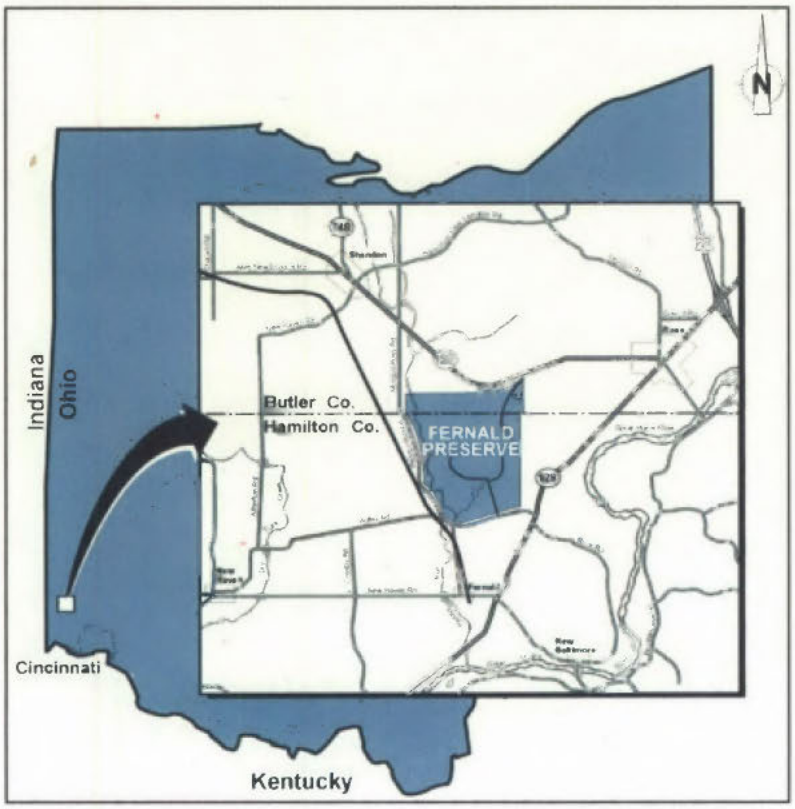
On the Cover, shaded areas represent glacial groundwater deposits. The bold outline represents the Great Miami Aquifer, created from glacial groundwater deposits, with the dot representing the Fernald site impacted area – approximately 7.5 square miles (not to scale).

* * *

The Back Cover can also be used as a flyer that boils down thousands of pages of evidence into a two-page proof of falsified Cancer Risk Studies.

* * *

The Fernald Site located approximately 17 miles northwest of Cincinnati, was part of the Department of Energy (DOE) national defense complex producing high purity uranium metals from the '50's through 1989. At that time, the mission changed to environmental restoration under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), better known as Superfund.



* * *

The Fernald Story

Though one can look to many dates in the Twentieth Century as being the actual start of the Cold War, August 2, 1945 is arguably the most precise as it was on this day that the Potsdam Conference concluded its business and post-World War II Europe was born. Churchill, Truman, and Stalin had completed their plans for carving-up of the continent; a statement of aims of the occupation of Germany was issued; war reparations to the Soviet Union from their zone of occupation in Germany had been agreed to; and Truman told Stalin of a devastating new weapon that would soon be used to bring Japan to its knees and end the war in the Pacific. Four days later, Hiroshima was reduced to ashes and the nuclear arms race that was the epicenter of the Cold War was well underway.

Within a year, the United States government created the Atomic Energy Commission (AEC) to oversee the development and production of a nuclear arsenal, which over the next 46 years would force the Soviets to compete to the point of bankruptcy and their ultimate demise as a political union. The cost in dollars would run into the hundreds of billions – the cost to the environment and to the people of southwest Ohio may never be totaled in any tangible way.

In 1951, the AEC needed a place to process uranium for America's nuclear arsenal. Under a shroud of secrecy that would last for decades, they chose a 1,050 acre site near the rural community of Ross, Ohio, approximately 17 miles northwest of Cincinnati. Named the Feed Materials Production Center (FMPC). It began to produce high-grade uranium just seven months later.

The Fernald site was built in secrecy reminiscent of the Manhattan Project, to combine three uranium-processing operations into one facility. The greater Cincinnati area was chosen because of its skilled workforce and ample water supply (i.e., Great Miami Aquifer).

Feed Materials Production Center (circa 1988)

* * *

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* * *

List of Acronyms

CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CDC	Center for Disease Control and Prevention
CRARE	Comprehensive Response Action Risk Evaluation
GEMS	Geospatial Environmental Mapping System
FRESH	Fernald Residents for Environmental Safety and Health
ILCR	Incremental Lifetime Cancer Risk
IRRA	Interim Residual Risk Assessment
Ohio EPA	Ohio Environmental Protection Agency
US DOE	United States Department of Energy
US EPA	United States Environmental Protection Agency

* * *

11 radium-226 contamination in the silos-footprint area,
12 that existed?
13 A. I can specifically remember that
14 140-something number in Paddy's Run. But the rest,
15 since they are all generated as a map, I do not
16 remember a single number. I -- I -- I remember it as
17 an average, each -- in each lift.
18 Q. Is --
19 A. But that -- that 140 I remember
20 specifically because we -- we collect that as one
21 individual sample early on by ourselves, so I remember
22 that specifically.
23 Q. Is it clear to you that there were no
24 readings that -- that were greater than 140?
25 A. I cannot say that, because the -- the
0085
1 mapping of that reading is kind of a small-area
2 average. Every -- every spot has a viewing kind of
3 area. So it's an area average and then put together as
4 a map.
5 So it showed a pattern. And that
6 pattern matched what we expected in terms of what
7 portion of the footprint may have a higher
8 concentration than others.
9 Q. Do you -- do you have an understanding,
10 just based on your knowledge of the WAC and the RODs
11 and the contract, as to what the limit was for a
12 contaminated soil to go into the OSDF?
13 A. Yes.
14 Q. What was it?
15 A. For uranium is 1,000, roughly
16 1,000-milligram per kilogram. For tecnesium-99 was 30
17 picocurie per gram. And those two are usually the
18 driver for WAC.
19 And then we have the TCLP limit to make
20 sure the soil we want to send into OSDF is not
21 characteristic waste. And there's no specific limit on
22 radium-contaminated soil, so there's no radium
23 concentration limit for WAC.
24 Q. Why is that?
25 A. Because radium is not mobile after you
0086
1 put it into the OSDF. It's not a soluble type of
2 chemical, compared to uranium and tecnesium-99. So it
3 is not radially mobile in a liquid phase. That's --
4 that's why.
5 And we also have a time frame for 1,000
6 years. Our requirement is to protect the underlying
7 groundwater, not to exceed drinking water criteria in
8 1,000 years.

J.D. Chiou, PhD, PE, 2008

Introduction

The United States Department of Energy (DOE) is the owner of the Fernald site, built from the Manhattan Project lessons learned, where three uranium-processing operations were combined into one facility. Fernald produced high purity uranium metals for national defense (atomic weapons) from the 50's through 1989, at which point the mission changed to environmental restoration.

The most hazardous waste at Fernald was the By-Product waste and the most hazardous By-Product waste was radium-226. DOE had described the Fernald site as the "Home of the largest source of radium-bearing waste in the free world."

DOE's Cleanup Contractor gave sworn testimony in a whistleblower lawsuit in regards to radium-226 contamination at the site:

- *"The radium contamination was site-wide..."*
- *"Because everybody know the soil was contaminated, even before we put any shovel on the ground..."*
- *"And we also already have data that show the soil underneath those silos was already contaminated [with radium-226]."*
- *"And how far down did this contamination migrate? At least 30 feet..."*
- *"...also we already know [the off-site] soil was contaminated all the way to Paddy's Run [Creek]."*
- *"And we – back in '92, '93, we also know the creek [Paddy's Run Creek] just to the west of it is already contaminated."*
- *"...[radium-226 was] identified in the creek itself, it – it can be far offsite already over the years."*
- *"...then perched water carry [radium-226] on the western direction."*
- *"[radium-226] ...then further out into Paddy's Run. And even farther out to the west? Yes, right."*
- *"...the whole waste management operation was not a ideal situation."*

J.D. Chiou, PhD, PE, 2008

And then this court spokesperson reversed his testimony.

- *"...radium is not mobile."*

J.D. Chiou, PhD, PE, 2008

* * *

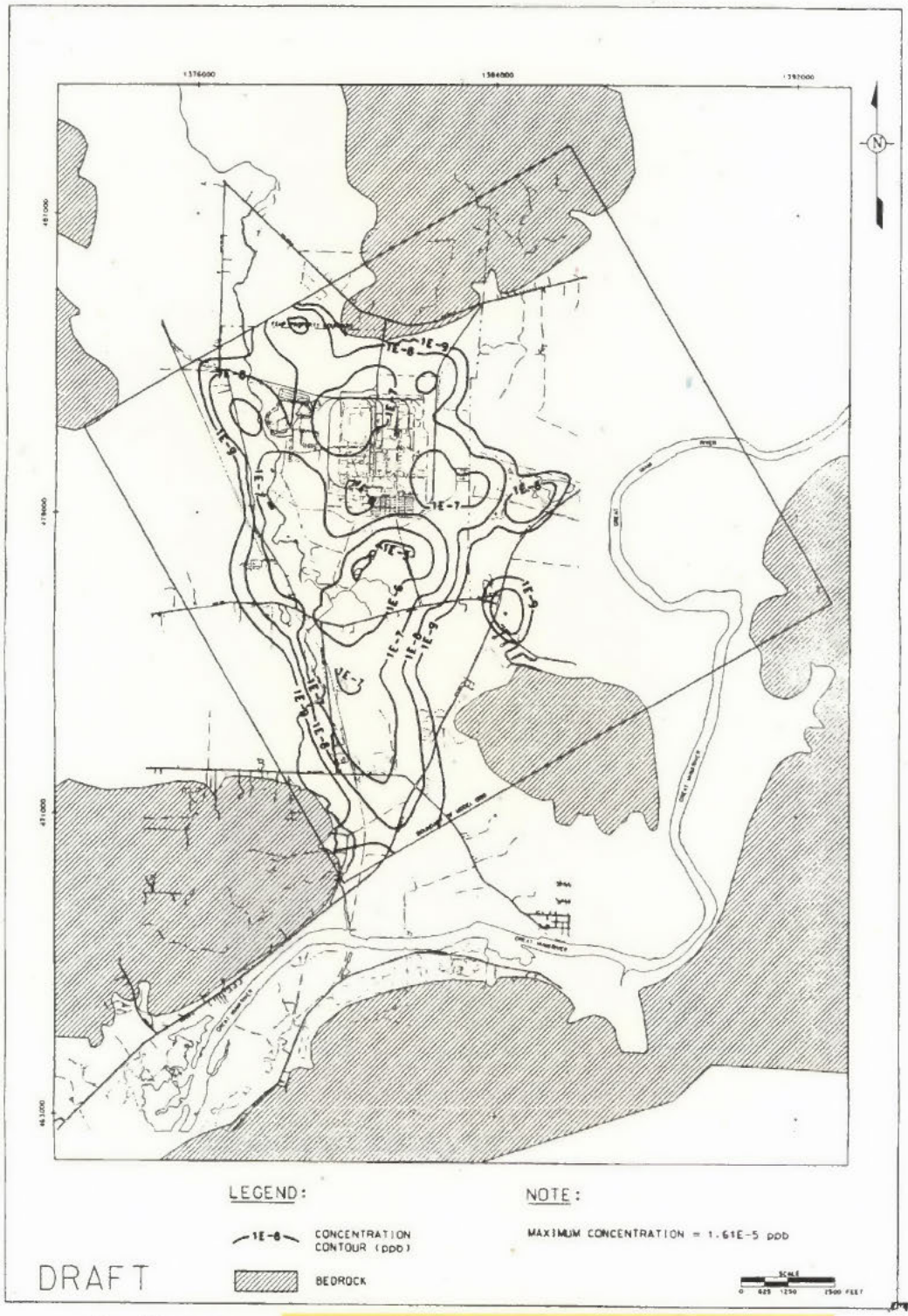

FIGURE F.3.7-5. CONCENTRATIONS OF RADIUM-226 IN THE GREAT MIAMI AQUIFER AT 1000 YEARS (FEMP AND FENCELINE MAXIMUM)

001145

F-6161

US EPA Position 1

DOE and its cleanup contractor performed the environmental restoration at the Fernald site with the Ohio Environmental Protection Agency (Ohio EPA) and the United States Environmental Protection Agency (US EPA) providing regulatory oversight of the cleanup project. At all times, the US EPA had the final say on regulatory compliance issues.

The cleanup project was conducted in accordance with CERCLA regulations, better known as Superfund, which required a Remedial Investigation and Feasibility Study. The Remedial Investigation determined exactly how contaminated the site was (*was a cleanup project even warranted*) and the Feasibility Study determined which cleanup method was best to use (*how much would it cost*).

DOE, DOE's cleanup contractor, Ohio EPA, and US EPA all agreed on the following:

- All radioactivity at or near the former atomic weapons plant was from Fernald operations (*not from the local diary farm, etc.*) and it was the governments responsibility to cleanup this contamination.

- Radium-226 contamination was in the sole source drinking water supply (*Great Miami Aquifer*) above the Safe Drinking Water standards (*radium-226 was soluble*).

- Radium-226 contamination would continue spreading through the drinking water supply in concentrations above the Safe Drinking Water standards for in excess of 1000-years (*radium-226 was mobile*).

Therefore, US EPA's first position on radium groundwater contamination was that billions of dollars of cleanup funds were warranted because radium-226 had made the drinking water unsafe to drink. Eventually, 4.4 billion dollars were appropriated and spent cleaning up the Fernald site.

* * *

19 Q. Okay. And the WAC itself doesn't have a
20 Waste Acceptance Criteria for radium, correct?
21 A. Correct.
22 Q. So there were essentially no limits on
23 radium going into the OSDF; that's part of the soil
24 that's been contaminated?
0135
1 MR. HUGHES: Objection to form,
2 mischaracterizes, leading, lacks foundation.
3 THE WITNESS: The -- there was no WAC for
4 radium because it wasn't found to be, you know,
5 going to be a groundwater contributor which is a
6 driver.
7 BY MR. WHITAKER:
8 Q. Right. Uranium is soluble and can't
9 transport itself?
10 A. Correct.
11 Q. Radium wasn't soluble, doesn't transport?
12 A. Yes.
13 Q. Okay. And with respect to the questions
14 that you were asked on the additional contamination
15 that would have occurred as a result of dust
16 suppression, if any, whatever it may have been,
17 there was no effort by OS -- by US EPA to prohibit
18 any of that material from going into the OSDF, was
19 there?
20 A. Again, I don't think we measured the --
21 you know, as the documents show, we did dust
22 suppression control. There was -- I don't think we
23 focused on -- I don't recall any focus on material
24 or that kind of -- you know, that approach, that
0136
1 activity going on.
2 Q. That dust material, whatever it may be,
3 wasn't viewed to be the so-called contents of the
4 silos, was it?
5 MR. HUGHES: Objection to form, argumentative,
6 leading.
7 THE WITNESS: I mean, I don't recall ever
8 trying to characterize what that dust material was,
9 you know, whether it was from concrete debris or
10 whether it was from inside the silos. Regardless,
11 it was -- all the dust suppression controls were to
12 keep, you know, keep any emissions down, you know,
13 from the monitors and, you know, to keep dust down
14 in general. And it was a health and safety measure
15 as much as anything else.
16 BY MR. WHITAKER:
17 Q. Sure. And the soil on which this
18 additional contamination was deposited ultimately

James Saric, 2009

US EPA Position 2

With radium type radioactivity confirmed in the drinking water supply, the cleanup project was legally required to demonstrate compliance with the Safe Drinking Water standards. But with computer modeling predicting the radium groundwater concentrations would persist over the legal limits in excess of 1000-years, made for a challenging cleanup goal.

When the cleanup project progressed from Remedial Investigation and Feasibility Study into the actual remediation, the US EPA reversed its position.

The new position was – it was impossible for the groundwater to be contaminated with radium, because radium was neither soluble nor mobile (*Transport*) and posed no threat to the drinking water supply (*i.e., not a driver*). Therefore the cleanup project was no longer required to demonstrate compliance with the Safe Drinking Water standards.

While reversing their position on solubility and mobility allowed the cleanup project to dodge testing the water, nonetheless there still remained radioactivity in the environment. This set the stage for open-ended falsifications of public health reports, in particular: Cancer Risk Studies.

The US EPA's second position, in regards to their regulatory oversight role, was DOE was no longer required to test the groundwater for radium or include radium groundwater contamination in their Comprehensive Cancer Risk Studies.

Table 1
Whistleblower Testimony – Radium Mobility (Transport)

Organization	Witness	Testimony	Type Testimony
DOE's Cleanup Contractor	J.D. Chiou	"...radium is not mobile..."	False
US EPA	James Saric	"radium...doesn't transport? Yes."	False

- *"...[radium] it can be far offsite already over the years."*

J.D. Chiou, PhD, PE, 2008

* * *

TABLE E.2-16
SUMMARY STATISTICS FOR FEMP SOUTH PLUME B TYPE 2 WELLS

PARAMETER	UNITS	FILTERING	FREQUENCY OF DETECTION(1)	FREQUENCY OF DETECTION ABOVE BACKGROUND(2)	MEDIAN(3)	RANGE OF DETECTED RESULTS	RANGE OF NON-DETECT RESULTS	BACKGROUND(4)
URANIUM-238	pCi/L	FIL	32/40	21/40	2.7	.3 - 84.8	.2 - 1	0.9
URANIUM-238	pCi/L	UNF	30/42	25/42	1.8	.4 - 111	.2 - .5	0.64
URANIUM, TOTAL	ug/L	FIL	40/41	34/41	5.6	.2 - 350	.1 - 1	0.8
URANIUM, TOTAL	ug/L	UNF	50/51	43/51	8	.2 - 332	.1 - .1	1.2
URANIUM-234	pCi/L	FIL	31/40	22/40	2.6	.4 - 84.4	.2 - 1	0.9
URANIUM-234	pCi/L	UNF	32/42	24/42	2	.3 - 110	.4 - .4	0.8
THORIUM-230	pCi/L	FIL	5/39	5/39	-	.3 - 1.62	.2 - 1	0.29
THORIUM-230	pCi/L	UNF	20/43	4/43	-	.281 - 1.8	.2 - 1	0.89
RADIUM-226	pCi/L	FIL	4/40	0/40	-	1.1 - 1.5	.6 - 1	1.9
RADIUM-226	pCi/L	UNF	10/43	0/43	-	1.1 - 14.9	.6 - 2	105
URANIUM-235/236	pCi/L	FIL	13/40	13/40	-	.5 - 8	.1 - 1	ND
URANIUM-235/236	pCi/L	UNF	15/42	15/42	-	.22 - 5.54	.1 - 1	0.094
THORIUM-232	pCi/L	FIL	5/39	5/39	-	.3 - 2.7	.2 - 1	0.3
THORIUM-232	pCi/L	UNF	4/43	4/43	-	.3 - 2.7	.2 - 1	0.23
THORIUM, TOTAL	ug/L	FIL	9/22	2/22	-	.912 - 7.296	.92 - 13	2.8
THORIUM, TOTAL	ug/L	UNF	9/31	6/31	-	.912 - 24.6242	.5 - 9.1	0.97
RADIUM-228	pCi/L	FIL	0/40	0/40	-		1.3 - 3	ND
RADIUM-228	pCi/L	UNF	4/43	2/43	-	3.1 - 4.4	1.2 - 3.3	3.6
THORIUM-228	pCi/L	FIL	4/39	2/39	-	.3 - 2.35	.1 - 1	0.4
THORIUM-228	pCi/L	UNF	6/43	2/43	-	.3 - 1.7	.1 - 1	0.77
NEPTUNIUM-237	pCi/L	FIL	1/16	1/16	-	2.5 - 2.5	.5 - 1.1	0.12
NEPTUNIUM-237	pCi/L	UNF	0/28	0/28	-		.5 - 1	ND
PLUTONIUM-239/240	pCi/L	FIL	0/23	0/23	-		.5 - 1	0.042
PLUTONIUM-239/240	pCi/L	UNF	1/36	1/36	-	1.4 - 1.4	.5 - 1	0.05
PLUTONIUM-238	pCi/L	FIL	0/23	0/23	-		.5 - 1	ND
PLUTONIUM-238	pCi/L	UNF	0/36	0/36	-		.5 - 1	0.048
STRONTIUM-90	pCi/L	FIL	2/23	2/23	-	1.4 - 5.69	.5 - 6.98	ND
STRONTIUM-90	pCi/L	UNF	2/36	2/36	-	1.4 - 17.4	.5 - 5	ND
TECHNETIUM-99	pCi/L	FIL	4/25	4/25	-	19.2 - 24.6	12 - 30	ND
TECHNETIUM-99	pCi/L	UNF	4/36	4/36	-	17.8 - 24.1	13.5 - 30	ND
RUTHENIUM-106	pCi/L	FIL	0/17	0/17	-		150 - 150	ND
RUTHENIUM-106	pCi/L	UNF	0/29	0/29	-		150 - 150	ND
CESIUM-137	pCi/L	FIL	0/23	0/23	-		4 - 20	ND
CESIUM-137	pCi/L	UNF	0/36	0/36	-		4 - 20	ND
GROSS ALPHA	pCi/L	FIL	24/39	24/39	6.4	2.3 - 420	.7 - 9.4	NA
GROSS ALPHA	pCi/L	UNF	29/42	29/42	11.7	1.9 - 196	3.1 - 620	NA
GROSS BETA	pCi/L	FIL	35/39	35/39	10.7	.6 - 268	2.6 - 5.7	NA
GROSS BETA	pCi/L	UNF	37/42	37/42	14.9	5.4 - 744	5.2 - 6	NA
RADIUM, TOTAL	pCi/L	UNF	4/4	4/4	1	1 - 2.36		NA
URANIUM-235	pCi/L	UNF	2/2	2/2	2.01	.027 - 4		NA
URANIUM-236	pCi/L	UNF	1/2	1/2	0.5	1 - 1	.001 - .001	NA
ALUMINUM	mg/L	FIL	7/40	1/40	-	.0161 - 1.07	0 - .258	0.175
ALUMINUM	mg/L	UNF	29/38	16/38	0.126	.025 - 92	.014 - .5	0.225
ANTIMONY	mg/L	FIL	0/39	0/39	-			
ANTIMONY	mg/L	UNF	0/38	0/38	-		.0011 - .045	ND
ARSENIC	mg/L	FIL	5/40	0/40	-	.0023 - .0439	.001 - .006	0.26
ARSENIC	mg/L	UNF	13/39	6/39	-	.001 - .35	.001 - .006	0.0294
BARIUM	mg/L	FIL	39/40	0/40	0.0456	.0203 - .111	.003 - .003	0.669
BARIUM	mg/L	UNF	36/39	1/39	0.0591	.0246 - 8.69	.2 - .2	0.768
BERYLLIUM	mg/L	FIL	0/39	0/39	-		.001 - .005	0.0022
BERYLLIUM	mg/L	UNF	1/38	1/38	-	.0015 - .0015	.001 - .01	ND
CADMIUM	mg/L	FIL	3/40	1/40	-	.003 - .0138	.002 - .005	0.006
CADMIUM	mg/L	UNF	2/39	0/39	-	.0038 - .0053	.001 - .0104	0.0135

Falsified Data

With the new Fernald site position 'it was impossible for the water to be contaminated,' old groundwater data needed to be adjusted (falsified), along with a justification to stop any further testing. The justification to stop testing was radium was not soluble and therefore it was impossible to contaminate the water. And combined with radium is not mobile, made it where radium posed no threat to the groundwater.

With all environmental data, a background subtraction is used to determine the net amount of the measured contamination. In Table E.2-16 from the Remedial Investigation (page 8), it can be seen that the background value of 1.5 was replaced with a value of 105. Giving the false impression the detected value was below background. While this may seem like a minor error, this pattern was repeated where all radium-226 groundwater results became non-detectable results – all the data had been falsified in one way or another. And this was combined with deleting data from the database to make it appear radium posed no threat to the groundwater.

Table E.2-16 represented the drinking water supply (South Plume) and with the false background value of 105 made the Public Cancer Risk Rate for drinking this water at less than 1 additional cancer case out of a population of 100,000 residents/ receptors (1:100,000). By substituting in the actual background value of 1.5, the public cancer risk rate becomes 1 additional cancer case out of a population of 1,776 (1:1776) – not in the acceptable risk rate. Refer to Table 4 (page 19) for more information on Incremental Lifetime Cancer Risk (ILCR).

* * *

Radium-226

Radium-226 behaves chemically like radium-228 but is otherwise unrelated to it. Radium-226 is a progeny of uranium-238 and as such can be found at the FEMP as a constituent in raffinate that remains after the extraction of uranium. Radium-226 also occurs naturally in perched groundwater.

Radium-226 in unfiltered samples has a 95th percentile background value of 0.90 pCi/L and background values that range from 0.14 to 0.90 pCi/L (Table E.0-1). Radium-226 in filtered samples has a 95th percentile background value of 0.90 pCi/L. Radium-226 was detected in only one filtered sample collected to determine background.

Radium-226 was detected in unfiltered samples at above-background concentrations in 86 of 195 wells (44 percent) and had a maximum concentration of 35.8 pCi/L (Table E.1-1). Radium-226 was detected in filtered samples at above-background concentrations in 21 of 152 wells (14 percent) and had a maximum concentration of 16.6 pCi/L. Thus, radium-226 was detected less frequently in filtered samples relative to unfiltered samples. This observation is consistent with trends seen in most of the other radiological and inorganic parameters.

Plates E-13 and E-14 are isoconcentration maps of radium-226 concentrations in unfiltered and filtered perched groundwater samples, respectively, based on the 1993 data set. Broad areas are observed where wells displayed concentrations above background. The largest area encompasses an expanse beneath Plant 2/3, Plant 8, and part of Plant 1. Additionally, the adjacent area below the laboratory and pilot plant have above-background concentrations. The highest concentration in these areas is 16.6 pCi/L from an isolated detection in a filtered sample from Well 1182. While most of the southwest quadrant of the production area shows concentrations only slightly above background in unfiltered samples, two focal areas are observed where concentrations exceed 5 pCi/L. Well 1179 near the metal dissolver building (2D) showed a concentration of 6.4 pCi/L and wells in the vicinity of the hot raffinate building showed concentrations as high as 5.8 pCi/L. Radium-226 may have entered the subsurface as a dissolved component of acid solutions or waste water that was spilled on floors or leaked from sumps and below-grade piping.

Another large area where radium-226 is observed above background in unfiltered samples from multiple adjacent wells, is in the vicinity of Plant 6, where the maximum concentration was detected in Well 1152. Contamination in this area may have been released to the perched groundwater via

Missing Data

The Fernald site environmental database, owned by DOE, is missing radium groundwater data. From the Remedial Investigation, we can see a description of the missing samples. For example, Page E.1-5 (previous page) identifies 86 of 195 wells tested were contaminated with radium-226. And the maximum contamination level measured was 7 times the legal limit. One of the missing radium-228 samples was measured at 44 times the legal limit.

To put this in proper perspective, it would take 8,500 years for the maximum radium-226 sample measured to decay down to natural background levels. But the Regulators (Ohio EPA and US EPA) had no concerns that contamination that could persist for thousands of years were missing (deleted) from the database.

The following, current or former, Ohio EPA officials responded to complaints of missing, deleted, or falsified environmental data with 'there's no data in the database that concerns us':

- *Bonnie Buthker*
- *Tim Kern*
- *Heather Lauer*
- *Scott Nally*
- *Erica Wiggins*

The US EPA response was even more blunt – we don't care about data:

- *"As to your concerns about data reported in the Geospatial Environmental Mapping System (GEMS), GEMS is a DOE database. You should direct your concerns about that database to DOE."*

Brian Barwick, 2012

* * *

21 maximum that any -- that soil -- the maximum
22 concentration of a particular contaminant that could --
23 would be allowed into the disposal cell. And they were
24 based on modeling that was done to be protective of
25 the -- the aquifer on the site, so --
0031
1 Q. Okay. And if you'll look at the next
2 page, 9-34 and then 9-35, you'll find that there's a
3 listing, I believe, of those Waste Acceptance Criteria.
4 Correct?
5 A. That is correct. This is the
6 concentration-based Waste Acceptance Criteria. There
7 are also visual criteria and size cite, but these were
8 the concentration-based criteria.
9 Q. Okay. And with respect to
10 radionuclides, I note that with respect to radium there
11 is no Waste Acceptance Criteria; is that correct?
12 MR. RICE: Objection.
13 A. There's no radium listed with a Waste
14 Acceptance Criteria; that is correct.
15 Q. And what was the understanding with
16 respect to materials that contained radium, not
17 including, obviously, the contents of the silos?
18 A. As my memory best serves me, the way
19 that we did this was we looked at everything that had
20 been detected on the site, and then they did a modeling
21 based on the design of the disposal facilities, nonma--
22 manmade components, and evaluated the potential for
23 those to migrate to groundwater, and based on the
24 insolubility of radium --
25 As I remember it, that was the driver
0032
1 in -- in that case.
2 -- that it wouldn't reach the aquifer,
3 it couldn't make it there just due to insolubility.
4 Q. Okay. Obviously with respect to uranium
5 there were Waste Acceptance Criteria, correct?
6 A. That's correct. It's much more mobile
7 than the ra-- the radium is in -- in water, and -- and
8 it has a couple different forms at Fernald that would
9 affect mobility as well, but the -- the uranium that --
10 yeah, there is a standard for uranium. And you can
11 tell -- and you can see that the tech-99 standard's
12 much lower than that, because it's much more soluble
13 than uranium.
14 Q. All right.
15 (Discussion off the stenographic record.)
16 VIDEOGRAPHER: We're back on the record.
17 You may begin.
18 (Defendant's Exhibit 6.)

Thomas Schneider, 2009

Ohio EPA Position 2

Ohio EPA's second position, in regards to their regulatory oversight role, was DOE was no longer required to test the groundwater for radium or include radium groundwater contamination in their Comprehensive Cancer Risk Studies, because radium was nether soluble nor mobile and therefore posed no threat to the groundwater.

Table 2
Whistleblower Testimony – Aquifer Never Contaminated

Organization	Witness	Testimony	Type Testimony
DOE's Cleanup Contractor	J.D. Chiou	"[radium]...never detected in the aquifer..."	False
DOE's Cleanup Contractor	J.D. Chiou	"I want to emphasize we did not have detection of radium in the aquifer."	False
Ohio EPA	Thomas Schneider	"...[radium] wouldn't reach the aquifer..."	False
Ohio EPA	Thomas Schneider	"...[radium] couldn't make it there [aquifer]..."	False
US EPA	James Saric	"...wasn't found to be...a groundwater contributor..."	False

- *"While there is radium in the groundwater..."*

The Boehner Letter, 2014

* * *

8 things. In -- in leaching, are -- was the concern that
9 it was migrating into and through the concrete?
10 A. Yes, sir.
11 Q. And the underlying sole-source aquifer,
12 would that be the -- the Greater Miami Aquifer?
13 A. Yes, sir.
14 Q. That -- my understanding is that runs
15 under the Fernald site. Correct?
16 A. Majority of the site, yes, sir.
17 Q. Based on your experience, if radium gets
18 into the aquifer, is there -- are you aware of a
19 technology for removing radium from the water in the
20 aquifer?
21 A. Can't say for certainty if there is a
22 technology that has been developed to remove radium.
23 Q. In the Ohio lawsuit that you were
24 involved with, they were concerned with uranium,
25 correct?
0087
1 A. Correct.
2 Q. And that was concerned also with uranium
3 getting into the aquifer?
4 A. Correct.
5 Q. And how was that dealt with?
6 A. I'm sorry. Dealt with in what fashion?
7 Q. Yeah, I'm sorry. That -- that was a --
8 a lousy question. Let me try again.
9 Was there a technology that could be
10 employed in removing uranium from the aquifer?
11 A. Yes, there is.
12 Q. Okay. And was that employed?
13 A. Ion exchange, yes, sir. Ion exchange
14 process.
15 Q. Okay. In the course of the development
16 of the ion exchange process that you've just described
17 for us with respect to uranium, was there any, to your
18 knowledge, discussion about removal of radium or were
19 you simply focused on uranium?
20 A. The primary constituent of concern in
21 the aquifer was uranium, because radium is not soluble.
22 Q. It is not soluble, but nevertheless its
23 particles can travel in the hydrology of the soil,
24 correct?
25 A. There's that possibility, if you had
0088
1 larger channels within the soil solum.
2 Q. The -- the final remediation level for
3 the Fernald site with respect to radium was 1.7
4 picocuries per gram; is that right?
5 A. If that's what the Waste Acceptance

Johnny Reising, 2009

DOE Position 2

They were no longer required to test the groundwater for radium or include radium groundwater contamination in their Comprehensive Cancer Risk Studies, because radium was nether soluble nor mobile and therefore posed no threat to the groundwater.

Table 3
Whistleblower Testimony - Solubility

Organization	Witness	Testimony	Type Testimony
US DOE	Johnny Reising	"...radium is not soluble."	False
DOE's Cleanup Contractor	J.D. Chiou	"...not a soluble type..."	False
Ohio EPA	Thomas Schneider	"...based on the insolubility of radium –"	False
Ohio EPA	Thomas Schneider	"...just due to insolubility."	False
US EPA	James Saric	"Radium wasn't soluble? Yes."	False

- *"Concentrations of Radium-226 in the Great Miami Aquifer at 1000 Years"*

Remedial Investigation, DOE 2004

* * *

10 Q. Ion exchange?
11 A. Yes. And that's a standard treatment
12 process for uranium. And like I say, the treatment
13 plant, the capacity we had at Fernald was the largest
14 in the world.
15 Q. Now, what about radium; if a large
16 quantity of radium makes it into the aquifer, what
17 technology do you use to clean that up?
18 A. I want to emphasize we did not have
19 detection of radium in the aquifer. What we treat was
20 the silo process water, and it's a different type of
21 ion exchange. And I am not an expert in the water
22 treatment, but it's a specific chemical process that
23 can take radium out of the liquid phase.
24 Q. Is that technology available at Fernald?
25 A. Yes. I mentioned that many time
0043
1 already, because they implement it and are required to
2 do it for the silo project before that wastewater can
3 go to the regular water treatment plant at Fernald.
4 It's a two-stage treatment system for silo project.
5 Q. Now, if the aquifer were polluted with,
6 say, uranium, would the ion exchange technology make it
7 drinkable?
8 A. Yes.
9 Q. What about radium; if the aquifer were
10 to be polluted with radium, would the technology
11 available for radium make it drinkable?
12 A. I don't have personal knowledge on that,
13 but what we had at Fernald was treated enough to be
14 below the discharge criteria, which get into Great
15 Miami River, which is based on drinking water criteria.
16 But it took two stage of treatment to reach that point.
17 And based on that knowledge that our
18 discharge criteria need to be drinking water criteria,
19 I would answer your question yes, although I don't know
20 specifically what's the concentration coming out from
21 that pretreatment.
22 But after it goes through the second
23 treatment stage, it reach the drinking water criteria,
24 and that's the only reason that water can go through
25 our outflow lining to Great Miami River.
0044
1 Q. What are the relevant drinking water
2 criteria?
3 A. We talk about that earlier. Promulgated
4 requirement by USEPA.
5 Q. Clean Water Act?
6 A. Under Clean Water Act. That's their
7 regulatory authority to develop those drinking water

J.D. Chiou, PhD, PE, 2009

DOE Cleanup Contractor's Position 2

They were no longer required to test the groundwater for radium or include radium groundwater contamination in their Comprehensive Cancer Risk Studies, because radium was nether soluble nor mobile and therefore posed no threat to the groundwater.

* * *

since the late 1950s, and a variety of studies and analyses have been conducted from that time to the present day (Eye 1961, Dove and Norris 1951, Hartsock 1960, Spieker and Norris 1962). Recent reports describe the measured contamination levels in groundwater, primarily to the south and southwest of the FMPC that have resulted from infiltration of water bearing uranium to the aquifer (GeoTrans 1985, ASI-IT 1990). Uranium contamination of groundwater outside the FMPC has been known since late 1981, when the first samples of water from private wells were analyzed. The significant offsite uranium contamination in groundwater is south of the site, and is now called the "South Plume." There are additional known areas of groundwater contamination on the FMPC site, but only the South Plume area extends outside the site boundary. Since this dose reconstruction project is concerned with past doses to people around the site, the groundwater contamination under consideration here is limited to the South Plume. Figure 14 shows the estimated area of the South Plume contamination, as of 1991. Also shown are the locations of the private wells sampled by the FMPC monitoring program.

In our Task 4 report (Killough et al. 1993), we examined the potential importance of the groundwater contamination for doses to people around the FMPC. It was shown that only three of the private wells monitored, numbers 12, 15, and 17, have had measured uranium concentrations above the range of background. Although well 26 is within the area of groundwater contamination, it is installed deeper in the aquifer, and the uranium concentrations are at background levels. We concluded that because of the limited area of the South Plume, only a small number of people would have potentially received radiation doses from contaminated groundwater. Toward the main objective of this project, the determination of the feasibility of an epidemiological study, doses to these people would be less significant to the collective population dose than doses through other pathways. For this reason, we further concluded that a detailed assessment of the groundwater transport of radionuclides, and detailed assessments of doses to individuals potentially exposed through groundwater pathways, are not warranted. For other project objectives, it is still important to estimate potential doses through the groundwater pathway, so instead we use simple methods to estimate concentrations of uranium in the three contaminated wells. **Appendix M** contains details of our groundwater assessments.

Potential Sources of Groundwater Contamination

The status of groundwater contamination in the vicinity of the FMPC has been investigated. Appendix M describes a special study that was conducted to determine the primary transport pathway for uranium deposited on soil around the FMPC. The study compared uranium migration due to infiltration, surface soil erosion, and surface water runoff. Results of the study show that uranium deposited on soils is primarily transported by infiltration and that soil erosion transports the least amount of uranium. There are two potential sources of groundwater contamination originating on the FMPC site (see Figure 14): (1) historical releases of uranium-contaminated water to Paddy's Run and to the Storm Sewer Outfall Ditch (SSOD), and (2) possible releases from the solid and liquid waste pits in the waste storage area.

Of these two potential sources, the principal source of uranium contamination in the South Plume has been determined to be the historical releases to Paddy's Run and the SSOD (DOE 1990). The bottom sediments of Paddy's Run and the SSOD are very permeable

CDC Fernald Dosimetry Reconstruction Project, 1995

CDC Adopts Position 2

As residents of the local community near Fernald started becoming ill from drinking tainted well water, they first complained to DOE, with no success, then to their Congressman. Congress eventually tasked the Centers for Disease Control and Prevention (CDC) to commission a public health study for the Fernald residents.

The CDC reviewed all available site emissions and census data and performed a Dose Reconstruction Project (circa 1994), which included a Cancer Risk Study based on the public doses from Fernald emissions.

The problem was DOE, DOE's Cleanup Contractor, Ohio EPA, and the US EPA had all taken the position radium groundwater contamination was impossible. This combined with a scrubbing of the database to remove all evidence of radium groundwater contamination left the Dose Reconstruction Project with a zero public dose, which converted into virtually no Cancer Risk from radium contamination of the drinking water supply.

- *"...detailed assessments of doses to individuals potentially exposed through the groundwater pathways, are not warranted."*

The Fernald Dosimetry Reconstruction Project, CDC, 1995

DOE settled the Fernald Residents for Environmental Safety and Health (FRESH) lawsuit for 68 million dollars, but a detailed dose assessment wasn't warranted, according to the CDC.

Albeit the CDC Public Health Report was unknowingly false, it was false nonetheless. All following Cancer Risk Studies at the Fernald were performed by DOE and DOE's Cleanup Contractor and reviewed and approved by Ohio EPA and US EPA. The differences being all the following Cancer Risk Studies were willfully false.

* * *

6772

Table H.IV.1–17
Summary of Risk Quantitation (radionuclides)
Target Receptor: Off–Property Farm Resident (Adult)
Via Ingestion of Drinking Water

Risk Equation = Cw X EF X ED X FI X IR

IR	Ingestion rate of groundwater (RAGS, 1989)	2 l/day
EF	Exposure frequency	350 days/year
ED	Exposure duration	70 Year
FI	Fractional Intake for radionuclides	1 (Unitless)
Cw	Concentration of radionuclides in groundwater	(see table below)

Cs_{137+1d}	NA	pCi/l
Ra_{226+8d}	NA	pCi/l
Rn_{222}	NA	pCi/l
Sr_{90+1d}	6.50E–01	pCi/l
Tc_{99}	2.24E+01	pCi/l
Th_{228+7d}	NA	pCi/l
$Th_{232+10d}$	NA	pCi/l
U_{234}	NA	pCi/l
$U_{235,236}$	1.77E–01	pCi/l
U_{238+2d}	2.17E+00	pCi/l

Radionuclides	CDI (pCi)	CSF $(pCi)^{-1}$	ILCR (unitless)
Cs_{137+1d}	NA	2.80E–11	NA
Ra_{226+8d}	NA	7.80E–10	NA
Rn_{222}	NA	1.40E–12	NA
Sr_{90+1d}	3.19E+04	3.60E–11	1.15E–06
Tc_{99}	1.10E+06	1.30E–12	1.43E–06
Th_{228+7d}	NA	5.50E–11	NA
$Th_{232+10d}$	NA	1.70E–10	NA
U_{234}	NA	1.60E–11	NA
$U_{235,236}$	8.67E+03	1.60E–11	1.39E–07
U_{238+2d}	1.06E+05	2.00E–11	2.13E–06
ILCR Summation	=		4.84E–06

000350

Falsified Cancer Risk Studies

All Fernald site Cancer Risk Studies excluded radium groundwater contamination, and each Study reported an Incremental Lifetime Cancer Risk (ILCR) of 1 out of 100,000 incremental cancer cases (1:100,000), defined as the Acceptable CERCLA Risk Range, or Not Reported, or Not Warranted.

By looking at the timeline, there was a three-year overlap period (i.e., 1994 – 1997) for public harm and falsified ILCR reports.

Table 4
Incremental Lifetime Cancer Risk
(Radium-226 Ingestion Pathway)

Public Cancer Risk Studies	ILCR Reported	ILCR Drinking Water Supply	ILCR Great Miami Aquifer	Comments
CDC[1] 1994/1995	1:100,000	1:1776	1:731	Falsified (False Data)
CRARE[2] DOE, 1995	1:100,000	1:1776	1:731	Falsified
1st Five-Year Review DOE 2001	1:100,000	NA	1:731	Falsified
2nd Five-Year Review DOE, 2006	1:100,000	NA	1:731	Falsified
IRRA[3] DOE, 2007	1:100,000	NA	1:731	Falsified
3rd Five-Year Review DOE, 2011	1:100,000	NA	1:731	Falsified
4th Five-Year Review DOE, 2016	1:100,000	NA	1:731	Falsified

1 Fernald Dosimetry Reconstruction Project, CDC, 1994/1995
2 Comprehensive Response Action Risk Evaluation (CRARE), DOE, 1995
3 Interim Residual Risk Assessment (IRRA), DOE, 2007

* * *

23 A. It's kind of the range of samples that
24 were in there.
25 Q. And with respect to Silo 1, there were
0152
1 between -- as far as radium's concerned, there was
2 between 2,630 curies and 3,210 curies, correct?
3 A. It appears to be what the results were,
4 yes, sir.
5 Q. All right. And Silo 2, between 1,140
6 curies and 1,530 curies?
7 A. Correct, sir.
8 Q. Do you know how these numbers were
9 arrived at?
10 A. I think it was done by doing physical
11 sampling inside of the silos, but I'm not sure.
12 Q. Do you agree that these silos contained
13 the largest concentration of radium-bearing waste at
14 the Fernald site?
15 A. Yes, sir.
16 Q. By far?
17 A. Yes, sir.
18 Q. And I don't know if you know this or
19 not. Was -- was the concentration of radium-bearing
20 waste in these two silos the largest concentration in
21 the United States?
22 A. I've read that, yes, sir.
23 Q. Okay. Do you have any question -- any
24 reason to doubt that?
25 A. I don't doubt the scientific people that
0153
1 made that ascertation, no, sir.
2 Q. There are other elements here, or
3 constituents, I guess, listed in -- beside radium. And
4 you indicated to me that radium is insoluble; is that
5 right?
6 A. The concern -- radium -- I cannot say
7 that radium is insoluble.
8 Q. Okay. I'm just trying --
9 A. It has very low solubility.
10 Q. Okay. I'm -- and I'm -- I'm just trying

Johnny Reising, 2009

DOE Position 3

To Recap –

- DOE Position 1 was the groundwater was contaminated with radium above the legal limits and computer modeling predicted the radium-226 concentrations in the Great Miami Aquifer would persist over the legal limits after one thousands years of decay and dispersion.

- DOE Position 2 was that it was unnecessary to test the water for radium or include radium groundwater contamination in Public Cancer Risk Studies because it was impossible for the water to be contaminated insomuch that radium was not soluble or mobile in the environment.

During DOE's court deposition in the whistleblower lawsuit, DOE hedges its Position 2. Radium is not really insoluble – it's not really impossible for the groundwater to be contaminated with radium. Radium is somewhat soluble, it's somewhat possible for the groundwater to be contaminated, but we don't care – still not going to perform radium groundwater testing or include radium groundwater contamination in any Cancer Risk Studies.

In short, DOE refuses to test the water or include radium in the Cancer Risk Studies, without any justification. And for the first time there is a split in the big four, where DOE's Cleanup Contractor, Ohio EPA and US EPA still insist its impossible for the groundwater to be contaminated with radium.

* * *

11 Q. 80 feet in diameter?
12 A. The --
13 Q. 30 feet high?
14 A. Yeah.
15 Q. When were the berms put there, do you
16 know?
17 A. I don't know the exact time, but it
18 probably was in the '70s or -- or even earlier. I'm
19 just guessing there.
20 Q. Do you know why? Do you know why the
21 berms were put in?
22 A. Radiation level too high. And the
23 concrete is porous material, as you know. So if you
24 look at Silos 3 and Silo 4, which was empty, you can
25 see the -- kind of a -- a stain of liquid came out from
0035
1 the inside.
2 And so to protect the dry radiation and
3 also to reduce rainwater to go in and come out and --
4 and just to protect the people around it. And we -- we
5 have a big fence around it to -- to keep people away,
6 also.
7 Q. Was there any maintenance plan in place
8 to check for cracks or areas of leakage from the silos?
9 A. Yeah. After we put the berm around it,
10 the only thing we can check is from the top. And the
11 radon concentration was too high at one point, so we
12 actually put bentonite in there to seal it. And
13 that -- that was in the early '90s. So we did that
14 to -- to cap the -- the top to make sure the radon just
15 does -- doesn't come out at a high concentration.
16 Q. So -- so the radon, of course, is a --
17 is a gas --
18 A. Uh-huh.
19 Q. -- that's a daughter product of --
20 A. Radium decay, right.
21 Q. -- radium-226?
22 A. Uh-huh.
23 Q. And that -- and that escaped through an
24 air pathway up -- up at the top?
25 A. Yes.
0036
1 Q. What about other types of leakage, say,
2 of -- of the contents themselves leaking out of -- of
3 the concrete?
4 A. Right. Yeah.
5 Q. Was there any evidence of that?
6 A. Yes. I mentioned just visually looking
7 at Silos 3 and Silo 4, which are not barrier by berm
8 like 1 and 2, you can see the evidence of that. And

J.D. Chiou, PhD, PE, 2008

US Federal Court Rules No Limit Radon Emissions

Just from the title of this section, it's hard to image the court coming to this ruling without a long parade of witnesses, mostly trusted government officials, willing to lie to the court without batting an eye. From Tables 1 through 3, we can see a dozen counts of perjury. When you add false testimony from the air pathway, stack emissions etc., the whole whistleblower case becomes an embarrassment to the American justice system – *"A Lie Too Big To Fail."*

The lawsuit focused on environmental restoration services not rendered and illegal dumping. Part of the cleanup project was excavating three million cubic yards of contaminated soils and burying in an onsite disposal facility – basically, digging up contamination from one hole and burying it in another hole. This in itself wasn't bad, but the really hot (radioactive) waste was "categorically" banned from onsite burial.

The really hot waste, known by different names over the years (i.e.: Hot Raffinate, By-Product Waste, Silos Content Materials, Radium-Bearing Waste, etc.) included radium-226. Radium-226, in addition to be being three million times more radioactive per gram than uranium-238, decays by emitting a colorless, odorless radioactive gas known as radon-222.

The court dismissed the illegal dumping complaint of burying "categorically" excluded radon-generating waste onsite because there were no limits for burying the "categorically" excluded radon-generating waste onsite!

It's safe to say that a Superfund cleanup project that allows or approves of unlimited radioactive emissions is unprecedented and it's safe to say that unlimited radon emissions without requiring radon monitoring is reckless and jeopardizes the credibility and public trust of the court.

* * *

JOHN A. BOEHNER
SPEAKER
OHIO
H-232 U.S. CAPITOL BUILDING
WASHINGTON, D.C. 20515
(202) 225-0600

Congress of the United States
House of Representatives

WASHINGTON OFFICE:
1011 LONGWORTH HOUSE OFFICE BUILDING
WASHINGTON, DC 20515-3508
(202) 225-6205
DISTRICT OFFICES:
7989 CINCINNATI-DAYTON ROAD, SUITE B
WEST CHESTER, OH 45069
(513) 779-5400
12 SOUTH PLUM STREET, 2ND FLOOR
TROY, OH 45373
(937) 339-1524
78 EAST HIGH STREET, 2ND FLOOR
SPRINGFIELD, OH 45502
DISTRICT TOLL FREE NUMBER
1-800-582-1001

April 17, 2014

Mr. Philip A. Tetsuwari
[redacted]

Dear Tony:

Thank you for contacting me regarding your issues with the Environmental Protection Services and Fernald. I appreciate the opportunity to have been of service. In response to your request, I hope the enclosed information proves helpful. The agency also shared the following:

[redacted]

[redacted]

[redacted] While there is radium in the groundwater, [redacted]

US EPA Position 3

It's the US EPA's turn to buckle.

After the Fernald Superfund Cleanup Project was declared a success, with the exception of the groundwater pathway, and after the whistleblower lawsuit was dismissed due to the ruling there were no limits for burying radon-generating waste onsite, the whistleblower complained to his local Congressman, at that time, Speaker Boehner.

Speaker Boehner queried the US EPA on his behalf and the EPA replied, with a lot of smoke and mirrors (redacted portions), that the groundwater at Fernald was not only contaminated, but has been contaminated with radium since the production era (*circa 1981, Fernald Dosimetry Reconstruction Project, CDC 1995*).

The Speaker Boehner letter is the smoking gun, an admission, which proves twenty-three years worth of Public Cancer Risk Studies are false. The Boehner letter is also significant for two reasons – for what it says and what it doesn't say:

- What it says – the groundwater is contaminated and has been contaminated since the production era (*30+ years*).

- What it doesn't say –

  * A 30-year contamination event survived twenty years worth of Superfund *pump and treat* efforts. Making this long-lived radioactivity persistent.

  * This contamination event was covered-up during a Superfund cleanup project, making twenty years worth of CERCLA validations, verifications, certification, etc. false.

  * This contamination event was covered-up in a whistleblower lawsuit, making all the expert witness testimony false, and

  * This admission makes all future Cancer Risk Studies, that exclude radium, knowingly and willfully false.

* * *

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 5
77 WEST JACKSON BOULEVARD
CHICAGO, IL 60604-3590

REPLY TO THE ATTENTION OF C-14J

August 6, 2014

Mr. Tony Tetsuwari
[redacted]

Re: Your July 22, 2014 Letter

Dear Mr. Tetsuwari:

This is in reply to your letter of July 22, 2014 to Robert Kaplan. During his deposition, James Saric agreed that the Waste Acceptance Criteria ("WAC") for the On-Site Disposal Facility ("OSDF") located at the Department of Energy's Fernald site included a limit for uranium but not for radium. He also explained that WAC limits were established or excluded based on the potential mobility of various constituents that were placed in the OSDF. His deposition answers are consistent with that explanation. Further, he was not asked about radium contamination released from other sources into groundwater at Fernald.

In the future we intend to let the record speak for itself and will respond to your correspondence only in the event we find that we need more information concerning your conclusions and allegations.

Sincerely,

Brian Barwick
Assistant Regional Counsel

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US EPA Position 4

Now the EPA's back is against the wall.

The whistleblower writes the EPA's Regional Counsel's Office and ask them to explain the discrepancy between the court testimony and the Boehner letter – the groundwater can't be both contaminated and not contaminated at the same time.

The EPA's response was short: *it was someone else's contamination.* The 30 plus years worth of radium groundwater contamination at the old atomic weapons plant, known as the *Home of the Largest Source of Radium in the Free World*, was not from Fernald, but some other source. The EPA didn't specify whether this contamination was from the local dairy farm or any other source in the rural farming community, but simply "other sources."

In short, this was nothing more than: *'My dog ate my homework lie.'*

This is significant because it reflects a fundamental shift in the way the Regional Counsel's Office has been handling the Fernald Site complaints. For the past ten years, the Regional Counsel's would address complaints by clinging to the old lies of the past – *it's impossible for the water to be contaminated because radium is not soluble.*

After the Boehner letter, they could no longer claim it was impossible for the water to be contaminated, so they started new lies. They can no longer claim they were unaware that Public Cancer Risk Studies performed after the Boehner Letter weren't falsified. Making them knowing and willful active partisans in the cover-up.

* * *

UW EH&S - Radioactive Decay Calculator 2/2/17, 8:55 PM

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Select an Isotope

Help!

Plutonium 238
Plutonium 239
Plutonium 240
Plutonium 242
Radium 226
Rubidium 82
Rubidium 86
Ruthenium 103
Ruthenium 106
Scandium 46

Ra-226	1600	y
Isotope	Half-life	Days/ Months/ Years

Radioactive Decay

$A=A_o e^{-(0.693t/T_{1/2})}$

Initial activity (A_o)

Decay time (t)

Time units h d y

Calculate

Final activity (A)

Timed Decay

$t = -(T_{1/2}/0.693) * \ln(A/A_o)$

Initial activity (A_o) 20

Final activity (A) 1.5

Calculate

Decay time (t) 5979.146508 y

Unit Converter

Activity 1

kBq MBq uCi mCi

Activity 2

kBq MBq uCi mCi

Find the difference between two dates.

mm/dd/yyyy Date 1

mm/dd/yyyy Date 2

Calculate

Days

Add or subtract a number of days to a date.

mm/dd/yyyy Date 1

Days

Calculate

Date 2

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https://www.ehs.washington.edu/rso/calculator/activity_calc.shtm Page 1 of 2

Fernald's Dirty Little Trick

The US EPA informed Speaker Boehner the groundwater was not only contaminated with radium, but has been contaminated for 30 plus years and the Remedial Investigation Baseline Risk Assessment computer modeling predicted the radium groundwater concentrations will persist over the legal limit for 1000 plus years – arguably a historic contamination event.

So, with two decades of Superfund regulatory oversight and the scrutiny of a whistleblower lawsuit, how in the world did these Fernald officials get away with covering up a historic contamination for so long?

Simple, they raised the cleanup goals above the contamination levels. That way they could report they met all their goals without having to address the historic contamination event. And in the whistleblower lawsuit, they constantly defaulted to the standard answer the cleanup goals were approved by the regulators – Ohio EPA and US EPA, making it all legal.

Radium-226 has a radioactive decay-half-life of 1,600 years. If you have a 1000-year contamination event, just make your cleanup goals where contamination can persist above the legal limits for 3,200 years and you've met all your goals. This is exactly what happened at Fernald. The regulatory approved cleanup goals allow radium-226 radioactivity to remain above the legal limits for 3,200 years.

While that little trick may have worked for an arbitrary cleanup goal, a predetermined choice of what to cleanup or not, it does not work for Cancer Risk Studies.

Biological harm from ionizing radiation is accumulative. Any radiation above natural background levels contributes to biological harm and can be quantified in terms of risk – Cancer Risk.

The Fernald site Superfund cleanup project regulatory approved radium groundwater cleanup goals allow radioactivity to persist above natural backgrounds levels for 5,980 years. And carving 6,000 years worth of radioactivity out of your Public Cancer Risk Studies is simply criminal. Therefore, cleanup goals do not apply to ILCR calculations.

* * *

those reported in the third Five-Year Review Report. Therefore, the risk assumptions remain valid for the OU5 post-remedial conditions. Attachment 17 provides additional detail regarding risk calculations using the updated CSFs, RfDs, and exposure factors.

6.2.1 Human Health Risks and Remedial Design

In the OU5 Baseline Risk Assessment (Appendix A of the OU5 RI Report), risk was calculated for a series of modeled human receptors representing a variety of possible land uses (DOE 1995b). The risk to the modeled receptor had to be less than 1×10^{-4} for the ILCR and less than 1 for the hazard index (HI) to ensure that the selected remedy was protective of human health and the environment. The OU5 Baseline Risk Assessment considered all radionuclides and chemicals that passed a preliminary screening for their presence or absence onsite (Tables A.4-1 and A.4-3 of the OU5 RI Report [DOE 1995b]).

In Appendix H of the FS Report for OU5, the CRARE was performed for the remedial alternatives to evaluate the risk imposed on target receptors from contaminants remaining under post-remediation conditions (DOE 1995e). The target receptors evaluated in the CRARE supported the OU5 selected remedies of (1) undeveloped-park user, (2) off-property farm adult, and (3) off-property farm child. Calculated post-remediation risks to these receptors were evaluated using projected residual concentrations of constituents of concern (the projected residual concentrations became the OU5 ROD FRLs for soil, sediment, surface water, and groundwater). The human health risk to these receptors met the CERCLA upper-bound limit of less than 1×10^{-4} for ILCR and less than 1 for HI.

After the 2006 completion of the OU5 soil remedy, the IRRA was prepared to assess the risk to onsite receptors by post-remediation (i.e., actual residual) contaminant concentrations in air, soil, and surface-water media within eight exposure zones that the Fernald site comprises (DOE 2007). Exposure pathways for the receptors included inhalation of air and particulates, dermal contact with soil and surface water, ingestion of soil and surface water, and external radiation. Receptors, exposure parameters, RfDs, and CSFs were updated relative to values presented in the CRARE. The IRRA report evaluated the receptor risk due to exposure to measured post-remediation contaminant concentrations in air, soil, and surface water on the site, whereas the CRARE evaluated risk using the OU5 Remedial Investigation data set, background data, and air models to estimate post-remediation contaminant concentrations in air, soil, and surface-water media. Target receptors in the CRARE were selected for the onsite undeveloped park and offsite farm land-use scenarios. However, the IRRA calculations presented only the receptors for the onsite undeveloped park, as groundwater remediation is ongoing, and the evaluation of the offsite farm scenario is dependent on the groundwater pathway for ingestion of water by humans and livestock and irrigation of crops. This condition remains valid for the site, and the offsite farm scenario is not evaluated in this report. Groundwater and food pathways for the offsite receptors will be covered in the final risk assessment report submitted to the regulatory agencies after aquifer remediation is complete.

6.2.2 Cancer Slope Factors (CSFs)

CSFs are published values that specify a cancer morbidity value (risk) to a receptor for a given quantity of contaminant intake, referred to as an ILCR. The resulting value determines whether post-remediation concentrations of contaminants will result in a cancer risk that is in compliance with CERCLA guidance (i.e., ILCR of less than 1×10^{-4}). EPA publishes CSFs for most

Summary

There are thousands of pages of evidence in the old whistleblower lawsuit, but just from the records in this report we know the following:

- We know the radium contamination at Fernald was site wide, could be far offsite already over the years, and contamination of the Great Miami Aquifer will persist over the legal limits for 1000-years.

- We know the radium groundwater cleanup goals were raised where it was acceptable for radium to persist over the legal limits for 3,200 years and the GEMS database was scrubbed.

- From US EPA Position 3, we know the EPA informed Speaker Boehner the groundwater at Fernald had always been contaminated – throughout the cleanup project

- We know the radioactivity three million times more radioactive per gram than uranium-238 has never been included in any public Cancer Risk Studies, making them all false.

- And we know the current Public Cancer Risk Study performed after the Boehner Letter, that doesn't include radioactivity that has been there all along, has been falsified and US EPA Region 5 approved this report anyway.

* * *

Tony Tetsuwari
[redacted]

March 2017

To –
Ohio Governor John Kasich

CC –
Public Distribution

Dear Governor John Kasich:

Ohio EPA is unable to explain why all the different types of long-lived radioactivity discovered in the Fernald site Baseline Risk Assessment aren't included in the 'Incremental Lifetime Cancer Risk' (ILCR) calculations. Therefore, I was hoping you would take my public safety question.

Why wasn't radium part of the Public Cancer Risk Studies at the *Home of the Largest Source of Radium in the Free World?*

Sincerely,

Tony Tetsuwari

Conclusions

The Boehner letter was the smoking gun, but the public 'Incremental Lifetime Cancer Risk' calculations are still being falsified. The Boehner letter just confirms they knew all along what I was trying to prove was true – making them partisans.

US EPA
OFFICE OF INSPECTOR GENERAL
REGION 5 COMPLAINTS
MARCH 2017

1) For five years (2009 – 2014), the Regional Counsel's Office defended controversial Region 5 testimony (James Saric) in a whistleblower lawsuit to the affect it was impossible for the groundwater at an old atomic weapons plant to be contaminated with radioactivity (*no need to test the water*). This was Region 5's position until Speaker Boehner intervened and the EPA replied the groundwater there had always been contaminated – throughout the Superfund Cleanup Project (i.e., Boehner letter).

   After the Boehner letter, the Regional Counsel's Office stopped being counselor's defending controversial testimony and became partisans in an active perjury coverup that concealed radioactivity in the environment from the public and the court.

2) When the Regional Counsel's Office was confronted with the Saric testimony and Boehner letter contradictions, they replied by directly lying to a private citizen in furtherance of an active perjury complaint coverup.

3) During the next scheduled Public Safety Report after the Boehner letter (Fernald site Fourth CERCLA Five-Year Review), the radium type radioactivity from the Baseline Risk Assessment was still not included in the Incremental Lifetime Cancer Risk calculations.

   After the Boehner letter, the Regulators stopped being Regulators and became partisans in knowingly and willfully approving of falsified Public Cancer Risk studies.

4) Mr. Saric's EPA testimony in the whistleblower lawsuit was knowingly and willfully false in order to conceal radioactivity in the environment from the public and the court.

* * *

Table H.IV.1-17
Summary of Risk Quantitation (radionuclides)
Target Receptor: Off-Property Farm Resident (Adult)
Via Ingestion of Drinking Water

Risk Equation = Cw X EF X ED X FI X IR

IR	Ingestion rate of groundwater (RAGS, 1989)	2 l/day
EF	Exposure frequency	350 days/year
ED	Exposure duration	70 Year
FI	Fractional Intake for radionuclides	1 (Unitless)
Cw	Concentration of radionuclides in groundwater	(see table below)

Cs_{137+1d}	NA	pCi/l
Ra_{226+8d}	NA	pCi/l
Rn_{222}	NA	pCi/l
Sr_{90+1d}	6.50E-01	pCi/l
Tc_{99}	2.24E+01	pCi/l
Th_{228+7d}	NA	pCi/l
$Th_{232+10d}$	NA	pCi/l
U_{234}	NA	pCi/l
$U_{235/236}$	1.77E-01	pCi/l
U_{238+2d}	2.17E+00	pCi/l

Radionuclides	CDI (pCi)	CSF $(pCi)^{-1}$	ILCR (unitless)
Cs_{137+1d}	NA	2.80E-11	NA
Ra_{226+8d}	NA	7.80E-10	NA
Rn_{222}	NA	1.40E-12	NA
Sr_{90+1d}	3.19E+04	3.60E-11	1.15E-06
Tc_{99}	1.10E+06	1.30E-12	1.43E-06
Th_{228+7d}	NA	5.50E-11	NA
$Th_{232+10d}$	NA	1.70E-10	NA
U_{234}	NA	1.60E-11	NA
$U_{235/236}$	8.67E+03	1.60E-11	1.39E-07
[illegible]	[illegible]	[illegible]	[illegible]

Fernald Site Public Cancer Risk Assessment –

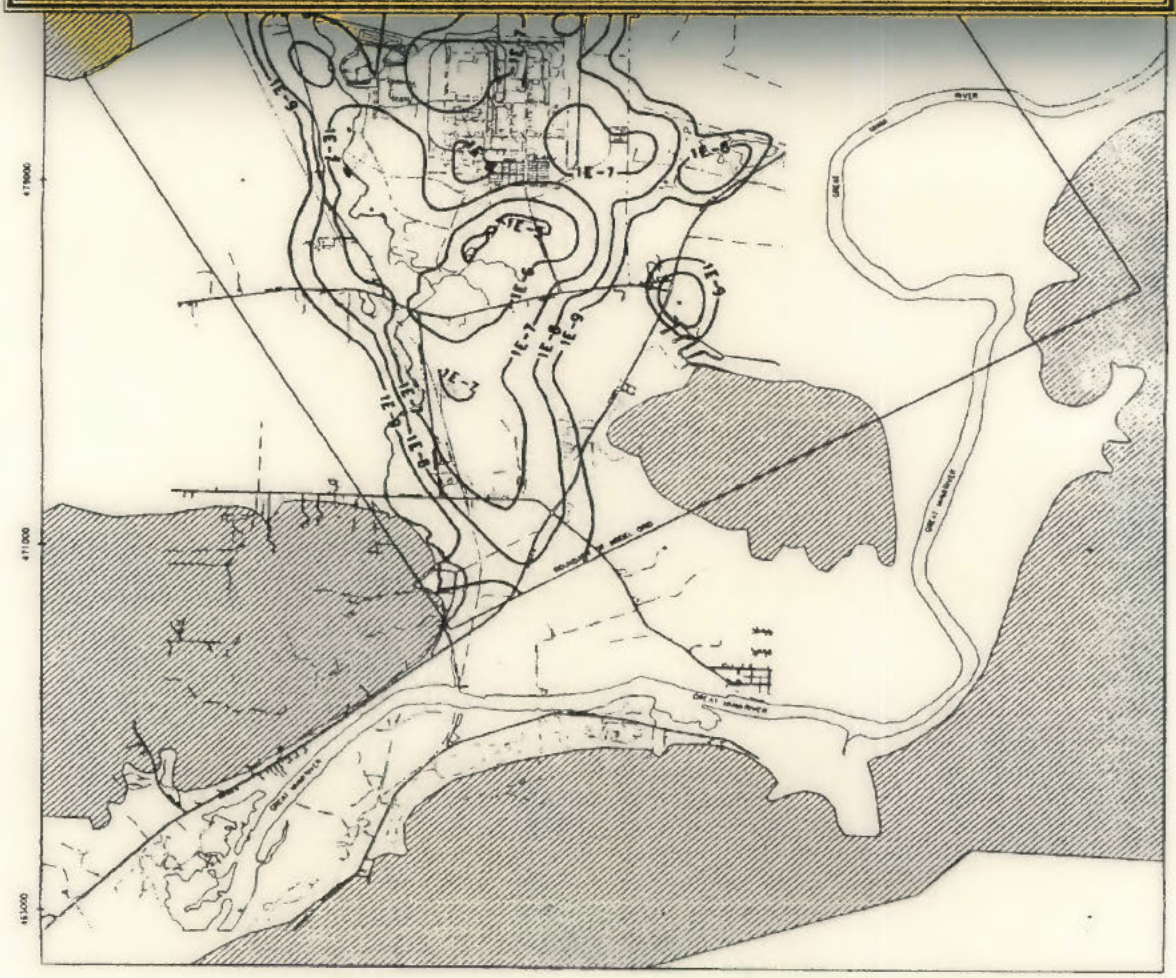
No radium here,
but lots of radium in the Baseline Risk Assessment.

So,
Why wasn't radium part of the Public Cancer Risk Studies at the
Home of the Largest Source of Radium in the Free World?

Fernald Site Baseline Risk Assessment –

Lots of radium here,
but no radium in the Public Cancer Risk Assessments.

So,
Why wasn't radium part of the Public Cancer Risk Studies at the
Home of the Largest Source of Radium in the Free World?



LEGEND:

1E-8 CONCENTRATION CONTOUR (DDD)

BEDROCK

NOTE:

MAXIMUM CONCENTRATION = 1.61E-5 DDD

SCALE 0 625 1250 2500 FEET

DRAFT

STATE PLANAR COORDINATE SYSTEM 1927

P0116/SAX02961.DGN

FIGURE F.3.7-5. CONCENTRATIONS OF RADIUM-226 IN THE GREAT MIAMI AQUIFER AT 1000 YEARS (FEMP AND FENCELINE MAXIMUM)

Tony Tetsuwan
22 Lake Michigan Dr
Fairfield, OH 45014

Cincinn
WED 2

Scott Pruitt
EPA Administrator
EPA Mail code 1101A
1200 Pennsylvania Avenue, N.W.
Washington, DC 20460

This mail was received damaged by the EPA Mail Center. Please contact the sender regarding the contents.

APR 03 2017

FCF20271148

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 5
77 WEST JACKSON BOULEVARD
CHICAGO, IL 60604-3590

FEB 24 2017

REPLY TO THE ATTENTION OF:

S-6J

Mr. Tony Tetsuwari
(b) (6)

Dear Mr. Tetsuwari:

Thank you for your February 6, 2017 letter regarding the Feed Materials Production Center Superfund Site. As stated in response to your previous letters, U.S. Environmental Protection Agency intends to let the record speak for itself. EPA will respond to your correspondence only in the event that more information is found concerning your conclusions and allegations.

Sincerely,

for Margaret M. Guerriero
Acting Director
Superfund Division

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Scott Pruitt

I am writing today to ask for assistance in the protection of my home and property. I live in Libby Montana, an EPA Superfund site that seems to be out of control. In trying to finish this project, the local administration seems to be more interested in blaming and punishing local residents than actually helping them. The behavior seems to be even more egregious than the previous behavior exhibited through out the 15 year project, and if left unchecked it will not result in making the area safer, but will result in the unnecessary destruction and devaluation of properties located in the Libby Montana area.

There are lots of stories from the residents here, but let me explain my interactions with the local administration as an example. My wife and I bought a home in Libby Montana in the spring of 2010. We were informed after the purchase that a study by the EPA had been done on the property prior to our ownership and that there was contamination that needed remediation. At that time, any visible vermiculite was considered contamination that warranted a clean up of the property. We were told that further sampling was needed. We agreed, and also consented to activity based collections to help identify problems and assist in the risk assessment document they were preparing. We were promised the results of the tests by the fall of that year. We did not receive them, which we would learn was the norm for their promises. In 2011 we were presented with a plan to strip mine all the land surrounding our home, and to clean dust the original study found inside of the house several years earlier, while occupied by the previous owner. We protested.

First we stated the obvious, that the house had been thoroughly dusted and cleaned in the years since the original study was done. Second, we questioned the determination that every section of our property needed to be strip mined. Several areas of our property, mainly the driveway and surrounding yard were contaminated with heavy concentrations of vermiculite. We agreed that those areas needed to be remediated. But large portions of our property were found to contain only trace amounts of vermiculite. We asked for studies that showed that those trace amounts, buried in soil, under verdant growth, that EPA's own website considers inert and harmless, would need the same strip mining as the driveway. We got nothing. Instead, we were approached by several representatives of the cleanup company who hoped to change our minds. When that didn't work, several members of my family who were working for the cleanup company were approached and advised to convince us to go along with the proposed plan. When that didn't work, we were approached by Mike Cirian, and after several meetings came to an agreement for them to strip mine all heavy, moderate and light contaminated areas, but the areas with trace amounts of contamination were to be left alone in lieu of further studies and

sampling. We would also receive a letter stating that our property had been remediated. Of course, we never received that letter.

Once the cleanup of our property was done, we received and heard nothing from anyone until 2016, when we received a certified letter stating that since they had not been able to get in contact with us, and that our property was considered to be contaminated. This seem strange to us, since they obviously knew that we still occupied the same property, our mail still came to the property, our phone number had not changed, and for the last 5 years, we thought the matter was settled. We contacted the local office and were informed that further sampling was needed on our property. There was a new 30 point sampling that replaced the previous 10 point sampling. We were informed at that time, that only our front lawn and flower beds were of any concern, all other property was considered OK. We agreed, and sampling was conducted and the findings were promised to be compiled and sent to us by fall. Of course that never happened.

In January of this year, we received another certified letter again stating that we could not be reached and that our property was considered to be contaminated. Again strange since we obviously still occupied the property, our mail obviously still came there, and our phone number was still the same. But, we again, visited the local office and were told someone would be in contact with us. Several days later, we talked with a Heidi Robertson who stated she had a plan for further strip mining of our property. We asked to see this plan, and it was mailed to us several days later. Upon review of this plan, we saw that sections of our front lawn were scheduled for strip mining, as well as sections of our back and side yards even though we were told they were fine, and even though they were never subjected to the new 30 point sampling like the front yard. We protested. We asked to see the data used to arrive at this decision, and after a couple of weeks of waiting, and a letter from us to Heidi asking what was taking so long, we received an email with links to bulk information concerning the risk in Libby in general. While informative, it did little to show us the property pertinent data that was used to arrive at the decision to strip mine our property. When asked for pertinent data, Heidi said she would find out what was available and get back to us as soon as possible. Several weeks later, and after another letter to Heidi from us, we were advised that Heidi would no longer be talking to us, and that someone else would be in contact. Mike Cirian then contacted us by email and directed us to Deborah McKean, who when questioned, stated that the formulas used in the Risk Assessment document could not be used on individual properties. Which seems strange to me since the data gathered in activity based collection from my property was used to help create the formulas. She also stated that "*Since that cleanup decision has been finalized for residential yards, without the completion of an investigation and any resultant recommended cleanup, your property cannot be given a determination of no further action.*", which I took to mean that it is now too late to change their decision. Funny, since for over 5 years we were under the impression that everything was fine with our property. We received no communications after the initial remediation, and only now, after the cleanup decisions have been finalized are we informed of the decisions.

This seems to again to be the norm for how things are done here. Decisions are made with minimal data backing it up, and the residents of Libby are just supposed to bend

over and take it. And when we ask for a more in depth look at the supporting data, we are told it is long and complicated, and doesn't factor into their decisions anyway. We are told that properties are slated for cleanup by a percentage system, that Mike Cirian states. "*I'm not sure that I would have anything that would explain our 25% rule that doesn't include many documents and studies*" After 15 years of cleanup at Libby Montana, he is "*not sure*" he can explain the way properties are slated for cleanup. You would think that after this long, when the cleanup work is almost over, they would be able to explain the way things are done. Of course, for a project that only just completed a comprehensive plan and a risk assessment, after over a decade of cleanup work, I suppose that is totally acceptable to them. But it is not acceptable to us.

To be clear, we are not arguing the need to cleanup heavily or even light contamination. What we are concerned about is only what is labeled as "*trace*" amounts of contaminate. This vague term is used to justify devaluing properties by strip mining all top soil and replacing it with sterile dirt that is unable to sustain growth without extreme attention. Even though the Risk Assessment document they compiled clearly states that the PLM-VE method used determine whether contaminate is present is, "*Unlike traditional chemistry methods, the PLM-VE method is inherently subjective*". That conclusion was made clear in our own front yard. In 2011 a ten point collection system claimed that "trace" amounts of contaminate were found. Then, in 2016, a more comprehensive 30 point collection system could not find any contaminates in the same area.

If this PLM-VE system of determination is so subjective, then is seems to us, that the contamination is so small that it is of little consequence and does not warrant strip mining. I also submit that since the 25% rule cannot be easily explained, the use of it is also very subjective.

What we need assistance in, is protecting our property value. We are told that if we do not agree to let further cleanup happen on our property, it will be labeled contaminated which would lower its value. If we let the cleanup happen, all top soil will be removed and replaced with sterile rocks and dirt which will also lower our property value. If there were large amounts of contaminates, such as were addressed in the 2011 remediation, we would have no problems, but since only "trace" amounts can be found using a "subjective" analysis, and since as Deborah McKean stated to us, "*EPA can permit a small portion of yards to contain small amounts of trace soil (approximately 25%) without resulting in an unacceptable risk.*", we see no reason for any actions that would result in the lowering of our property values to take place.

In closing, we agree with the cleanup of Libby, even with its subjective application. We agreed to remediation of all heavy, and light contaminated areas of our property. Which was done. What we don't agree with is that further action is necessary. Subjective "trace" contamination of areas that equal less than 25% of our 4 acres should not be the basis for destroying our property and its value.

Any assistance you can render in this matter would be most appreciated. I am sure we are not the only property owners located in the Libby area that are being strong armed using these questionable methods, and I would hope that they can also be assisted.

Jerry and Mary Bernardi

(b) (6)

(b) (6)

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Environmental Protection Agency
Office of the Administrator 1101A
1200 Pennsylvania Ave N.W.
Washington DC 20460

APR 3 2017

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 8
1595 Wynkoop Street
DENVER, CO 80202-1129
Phone 800-227-8917
http://www.epa.gov/region08

APR 20 2017

Ref: 8EPR-SR

Jerry Bernardi
(b) (6)

Dear Mr. Bernardi

I would like to thank you for taking so much of your time yesterday afternoon to speak with me and Dr. Debra McKean about the concerns you expressed in your recent letter to EPA Administrator, Scott Pruitt. The conversation was helpful for us to gain a better understanding of your perspective on the EPA cleanup work in Libby and most importantly at your property. Dr. McKean and I discussed your situation again this morning and we will be working in the next few days to carefully review the history of work done at your property in preparation for another meeting with you to go over the sampling results and our conclusions about what work may still be necessary to ensure that your property meets the cleanup objectives established in the 2016 Record of Decision for the Libby Asbestos Superfund site. I'm concerned about what you told us regarding the area of your property that was previously cleaned up and the difficulties you have had in establishing a satisfactory grass cover in that area. We may have a solution for that problem.

Again, thanks for speaking with us and we expect to be back in touch with you in the next few weeks. If you have any questions in the meantime, please feel free to contact me at (303)312-6401 or by email at murray.bill@epa.gov.

Sincerely,

Bill Murray, Director
Superfund Remedial Program

cc: Debra McKean, EPR

Stanley J. Walcek
119 Parkwood Street
Bethany Beach, De. 19930
(302)539-3259

2017 APR -3 PM 1:20
OFFICE OF THE
EXEC

March 28, 2017

Mr. Scott Pruitt, Secretary
EPA
1200 Pennsylvania Ave.
Room 3000
Washington, D.C. 20460

Re: Regulation Changes

Dear Mr. Pruitt,

Congratulations on your deserved appointment.

Enclosed is an example of how 404 unnecessarily intrudes. The 24 unit subdivision, as proposed, is within the Town Code.

Bethany Beach is a 1 square mile area. Our acreage abuts a Canal about 4 miles from a Federal Waterway. We spent over $175,000 processing our permit over the past 4 years.

Could you advise if any changes are made?

Very truly yours,

Stanley J. Walcek

Enc. Plat

SITE DATA:

Owner

Stanley J. & Dolores F. Walcek
PO Box 557
Bethany Beach, Delaware 19930
Ph. 302-539-3259

Engineer/Surveyor

Vista Design, Inc.
11634 Worcester Hwy.
Showell, MD 21862
Ph. 410-352-3874
Fax 410-352-3875

Tax Map

TM 1-34 13.19 Parcels 62, 63, 64 & 65
Deed Book: 3528
Deed Book Page: 146

Site Area

±536,459.74 SF / ±12.315 Acres

Flood Zone

This Site is Located Within Flood Zone "AE"
(El 5 & 6) per FIRM Map # 1000C5C0515J
Effective Date January 06, 2005

Zoning Information

Existing Zoning	R-1
Land Use	Residential District
Proposed Zoning	PRD - Planned Residential Development

Proposed Development

Condominium Type Units 24 Total

Proposed Setbacks

Front Yard	20' (min) From Back of Curb
Rear Yard	15'
Side Yard	35' (min) Between Units
	28' (min) From Rt. 26
BLDG Height	42' (max)

Sewer Provider

Central - Sussex County

Water Provider

Town of Bethany

Horizontal Datum

NAD 83/2007 Delawater State Plane Grid

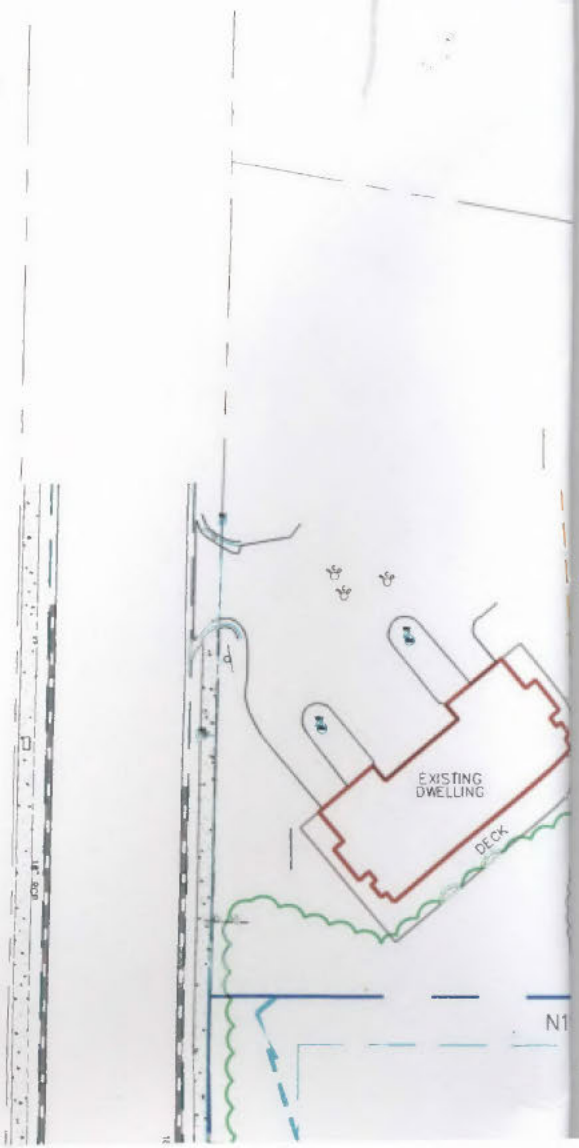
Area Information

Area of Ditch to be filled:	±4,197 SF / ±0.096 AC
Area of Phragmites:	±242,258 SF / ±5.56 AC
Exisitng Wooded Area:	±289,340 SF / ±6.85 AC
Proposed Wooded Area:	±203,292 SF / ±4.67 AC
LOD	±87,948 SF / ±2.02 AC

Existing Areas Table

DESCRIPTION	SQUARE FEET	ACRES
TOTAL SITE	± 545,837	± 12.53
FEDERAL WETLANDS	± 340,950	± 7.83
STATE WETLANDS	± 190,357	± 4.37
PHRAGMITES	± 242,258	± 5.56
* DITCH	± 4,197	± 0.096
UPLANDS	± 5,162	± 0.118

* ± 230 cu.yd. of fill required for both on-site ditches



W [redacted] (b) (6)

AF 03 2017

Mr. Scott Pruitt, Sec.
EPA
1200 Pennsylvania Ave
Room 3000
Washington, D.C.
20460

FCF2027105

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, DC 20460

OFFICE OF WATER

APR 13 2017

Mr. Stanley J. Walcek
(b) (6)

Dear Mr. Walcek:

Thank you for your March 28, 2017, correspondence to the U.S. Environmental Protection Agency (EPA) Administrator Scott Pruitt regarding your concerns with the Clean Water Act section 404 regulatory program and Clean Water Act jurisdiction. Your letter has been referred to me in EPA's Wetlands Division within the Office of Water.

The U.S. Army Corps of Engineers (Corps) is the permitting agency for the Clean Water Act (CWA) Section 404 program in your region. Although the EPA does not issue these permits, the EPA has an important role in this process and we will continue to review section 404 permit applications to ensure that projects proposed for section 404 authorization comply with the implementing regulations.

On February 28, 2017, the President signed the "Executive Order on Restoring the Rule of Law, Federalism, and Economic Growth by Reviewing the "Waters of the United States." The Executive Order calls on the EPA Administrator and the Assistant Secretary of the Army for Civil Works to review the final Clean Water Rule and "publish for notice and comment a proposed rule rescinding or revising the rule…." The Executive Order directs the EPA and the U.S. Army Corps of Engineers to "consider interpreting the term "navigable waters" in a manner "consistent with Justice Scalia's opinion" in *Rapanos*. The Scalia standard describes the scope of Clean Water Act jurisdiction to include relatively permanent waters and wetlands with a continuous surface connection to relatively permanent waters.

Since the Executive Order was issued, EPA has taken two actions. First, we published a *Federal Register* notice on March 6, 2017, entitled "Intention to Review and Rescind or Revise the Clean Water Rule." The notice announces EPA's and Army's intention to review and rescind or revise the 2015 Clean Water Rule, consistent with Justice Scalia's standard. Second, at EPA's request, on March 6, 2017, the Department of Justice advised the Sixth Circuit Court of Appeals that the agencies intend to consider rescinding or revising the Clean Water Rule. The notice is called for by the Executive Order in light of the ongoing Clean Water Rule litigation currently before that court.

Until a new rule is in place, the agencies continue to implement the Clean Water Act in accordance with longstanding practice. Approved jurisdictional determinations (AJD) are generally valid for five years unless circumstances change warranting a revision to the AJD. If you as the landowner believe such circumstances have occurred, you could ask the Army Corps of Engineers to reopen the determination in order to see if a new AJD is warranted.

Information about these actions can be found on EPA's website at https://www.epa.gov/cleanwaterrule.

Sincerely,

Mindy Eisenberg, Acting Director
Wetlands Division

Council Rudolph

(b) (6)

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OFFICE OF THE
EXECUTIVE SECRETARIAT

I am appalled at the action of the Environmental Protection Agency (EPA). I bought this property in the 1970's as an investment. There were no restrictions on the property at that time. But now the property has been ruled as contaminated. I have really no control of my own investment nor can I get any compensation. We all know who contaminated the property – Mansanto.

I will use this as an example. If someone hits and damages my car, am I supposed to fix the damage or is the one who did the damage responsible? Ms. Pam Sully seems more interested in making sure Monsanto does not owe for the contaminated property. Does the EPA work for Monsanto? To me, the one who contaminated my property should pay for all of the clean up and make me whole at a fair price. I cannot sell my property. At this point, I lose all around.

This cleanup is a MUST for all of the citizens of Anniston, Alabama. The cancer rate is very high for Anniston vs the state of Alabama. Ms. Sully gave me a report that confirmed that my property was very contaminated over the limits. Now, I am told that I must clean it up. But, who is to pay?

When I bought the land as an investment, there were no restrictions on it. But now that it has been contaminated, I have been told that I am responsible to pay for the cleanup.

Monsanto should pay for the cleanup and pay me and others that are hurt by the contamination of property.

ANNISTON PCB SUPERFUND SITE PUBLIC COMMENT

You may send in comments or use the space below to write your comments, then fold and mail. A response to your comment will be included in the Responsiveness Summary.

Name [redacted]
Addres
City
State a

Comment: Please see attached

[redacted] (b) (6)

FCL2031840

TAMPA FL 335
SAINT PETERSBURG FL
27 MAR 2017 PM 3 L

APR 03 2017

Scott Pruitt
1101 A
1200 Pennsylvania Ave, NW
Washington, DC
20460

20460-

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 4
ATLANTA FEDERAL CENTER
61 FORSYTH STREET
ATLANTA, GEORGIA 30303-8960

APR 17 2017

Mr. Council Rudolph
(b) (6)

Dear Mr. Rudolph:

Thank you for your letter to Scott Pruitt, Administrator of the U. S. Environmental Protection Agency, concerning contamination on investment property you own in Anniston, Alabama. Your letter was forwarded to the EPA Region 4 office in Atlanta, Georgia, for response.

Your letter was also sent to Region 4 as a comment to the Proposed Plan for Operable Unit 1/Operable Unit 2 of the Anniston PCB Site. The comment period began on March 13, 2017 and will end on May 12, 2017. When the comment period is over, the EPA will determine whether or not to modify the preferred alternative based on all the comments received. The final selected remedy will be described in a Record of Decision, and all comments received during the comment period will be responded to in the responsiveness summary section of the Record of Decision. The EPA has interpreted your comment to be that if the presence of contamination from the Site creates any limitations on your ability to use or sell the property you own, the EPA should require the responsible parties to pay for cleanup of the property and for the diminished value of the property.

During meetings about the Proposed Plan, similar concerns have been raised by residents with wooded property near the former PCB production facility. It would not be appropriate for the EPA to respond to that concern before the comment period is over and a decision has been made. I can assure you that your comment will be thoughtfully considered. The EPA expects to sign the Record of Decision for Operable Unit 1/Operable Unit 2 of the Anniston PCB Site this summer and will be able to respond more specifically to your comment at that time.

We appreciate your desire to protect and preserve the environment and hope you find this information helpful. If we may be of further assistance, please contact Pam Scully at 404-562-8935.

Sincerely,

Franklin E. Hill, Director
Superfund Division

Gregory Antipa
(b) (6)

March 21, 2017

President Donald Trump
The White House
1600 Pennsylvania Ave
Washington, D. C. 20500

Re: EPA regulations

Dear President Trump,

I am writing in support and concern for your recommendation to streamline and reduce the regulations imposed by the federal government by various agencies. There can be no question that regulation after regulation eventually results in redundancy, non-compliant regulations, and massive, unnecessary requirements for both public, private, and corporate partners. This must be the case throughout federal, state, county, and city governments. Your attempt to reduce both paperwork and administration of these regulations is to be admired, and we all hope that this effort will make for a better, and in some cases, a less restrictive, more streamlined, more efficient, and better economic process.

With respect to the Environmental Protection Agency (EPA), as well as some other agencies, these regulations represent major protections to the health and safety of our Americans as well as visitors to our country. Please consolidate and streamline these protections for the benefit of us all.

Most Sincerely,

Gregory Antipa

Gregory Antipa

PC Scott Pruitt
Senator Dianne Feinstein
Senator Kamala D. Harris
Congresswoman Nancy Pelosi

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SUTRO HEIGHTS

(b) (6) [redacted]

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FOREVER

Scott Pruitt
Office of the Administrator 1101A
Environmental Protection Agency
200 Pennsylvania Avenue, N.W.
Washington, DC 20460

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Citizens Advisory Committee

TO THE CHESAPEAKE EXECUTIVE COUNCIL

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Maryland

Nikki Tinsley
Maryland

Victor Ukpolo
Maryland

Neil Wilkie
Maryland

March 28, 2017

Chesapeake Executive Council:

As your appointed volunteers representing perspectives from citizens, we strongly urge you to advocate for full funding of $73 million for the EPA Chesapeake Bay Program (Bay Program). A healthy Chesapeake Bay is an economic engine for our region. The seafood industry alone provides more than 41,000 jobs and $2 billion in sales.[1] Oyster and clam aquaculture is now thriving in the Bay, netting Virginia alone approximately $50 million in 2015.[2] Real estate, tourism, and many other commercial sectors also rely on the health of the Rivers of the Chesapeake Bay and the Chesapeake Bay Program is the foundation for clean waterways in our region.

The President's 2018 Budget Blueprint proposal to eliminate the funding for the Bay Program and other Bay-related federal programs would severely threaten the health of local rivers and the Chesapeake Bay, state and local water protection, and the scientific integrity of the restoration effort. Two-thirds of the Bay Program funding is passed down to the States and local governments, and for on-the-ground restoration programs that include the highly effective Small Watershed and Innovative Nutrient and Sediment Reduction Grants. While the combined contributions by the States and D.C. make up the majority of the investments toward watershed recovery, the Bay Program and other federal spending are crucial components to the success of the Chesapeake Bay Partnership. Simply put, the states already invest in the Chesapeake Bay restoration effort and cannot make up the difference if the federal responsibility is not met.

The Bay Program supports local restoration work by providing essential monitoring of progress, modeling for decision making, and collaboration among the six States, D.C., local governments and stakeholders. The Bay Program provides much-needed, and otherwise not available, technical support, expert panel guidance, and collaboration to all of the partners working for healthy and resilient local rivers systems. Elimination of the Bay Program and other Bay-related federal funding sends a strong signal that the federal government will not uphold its responsibility and contribution for clean water and human health as Congress intended by the Clean Water Act. Furthermore, Section 117 of the Clean Water Act calls for the EPA Administrator to maintain an office to support the Chesapeake Bay Program. Without the Bay Program the States' ability to adapt practices for performance and cost effectiveness and reduce pollution flowing into local rivers will be critically hindered.

Jessica M. Blackburn, CAC Coordinator
612 Hull Street, Suite 101C | Richmond, VA 23224 | (804)775-0953 | jblackburn@allianceforthebay.org |

Chesapeake Bay Program
A Watershed Partnership

Alliance *for the* Chesapeake Bay

The Bay Program has led a successful Federal-State partnership that is showing progress in improved water health and living resources. In 2009 a peer reviewed economic analysis concluded that the cost to implement the clean-up plan provides over four times the economic return.[3] If the clean-up plan was fully implemented, the value of our region's land and water natural benefits would be $129.7 billion per year.[4] If the clean-up plan is not finished it would mean a loss of value of $5.6 billion every year.[5] The Bay Program and other federal agencies contribute to a healthy economy relied upon by the residents and businesses in the watershed.

Administrator Pruitt expressed his support for the Chesapeake Bay Program during his Congressional confirmation hearing in January 2017, indicating the EPA and States' approach to the Bay clean-up should be "commended and celebrated". As your appointed advisors, we agree and strongly encourage you to fight to ensure the federal government upholds its role in continuing the progress and economic value of the Chesapeake Bay Watershed for future generations.

Thank you for your urgent attention to this crucial federal 2018 Fiscal Year budgeting concern. It holds great influence over the 18 million residents that rely on a clean Chesapeake Bay Watershed for health, jobs, and tourism. The Bay Program is a national model because of its ability to establish effective collaboration among the six states and D.C, at least ten federal agencies, dozens of nonprofit organizations, several leading research institutions, and the public. As the Chesapeake Bay Program goes, so goes similarly complex watershed restoration efforts around our nation.

Please let us know if we can be of assistance.

Sincerely,

Paula Jasinski

Paula Jasinski
Chair, Citizens' Advisory Committee

[1] CBP Website 2011.
http://www.chesapeakebay.net/blog/post/ask_a_scientist_how_big_of_an_industry_is_the_chesapeake_bay
[2] VIMS 2015 Shellfish Aquaculture Situation and Outlook Report, Hudson and Murray
[3] Spencer Phillips, Ph.D., 2009. *The Economic Benefits of Cleaning Up the Chesapeake: A Valuation of the Natural Benefits Gained by Implementing the Chesapeake Clean Water Blueprint*, report commissioned by Chesapeake Bay Foundation developed by with scientific assistance from Beth McGee, Ph.D., and peer reviewed by Dr. Gerald Kaufman of University of Delaware, Dr. Valerie Esposito of Champlain College, Dr. Tania Briceno of Earth Economics, and Mr. Dan Nees of the University of Maryland Center
[4] Phillips, The Economic Benefits of Cleaning Up the Chesapeake
[5] Phillips, The Economic Benefits of Cleaning Up the Chesapeake

Jessica M. Blackburn, CAC Coordinator
612 Hull Street, Suite 101C | Richmond, VA 23224 | (804)775-0953 | jblackburn@allianceforthebay.org |

Chesapeake Bay Program
A Watershed Partnership

Alliance for the Chesapeake Bay

612 Hull Street
Suite 101 C
Richmond, VA 23224

Alliance for the Chesapeake Bay

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Administrator Scott Pruitt
USEPA
1200 Pennsylvania Ave N.W
Washington DC
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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

APR 24 2017

OFFICE OF THE
CHIEF FINANCIAL OFFICER

Paula Jasinski
Chair, Citizens' Advisory Committee to the
Chesapeake Executive Council
612 Hull Street
Richmond, VA 23224

Dear Chair Jasinski:

Thank you for your letter of March 28, 2017, to Scott Pruitt, Administrator of the U.S. Environmental Protection Agency, expressing concern about the agency's Fiscal Year 2018 President's Budget, to be submitted to Congress in May, for the Chesapeake Bay program.

The EPA is working towards implementing the President's budget based on the framework provided by his blueprint. The agency can effectively serve the taxpayers and protect the environment. While many in Washington insist on greater spending, the EPA is focused on greater value and real results. The agency will partner with the states to ensure a thoughtful approach is used to maximize every dollar to protect our air, land, and water. However, the EPA is unable to comment further on the FY 2018 President's Budget proposal until it is submitted to Congress and publically released.

Again, thank you for your letter. If you have further questions, please contact me or your staff may contact James Blizzard, in the EPA's Office of Congressional and Intergovernmental Relations, at blizzard.james@epa.gov, or (202) 564-1695.

Sincerely,

David A. Bloom
Acting Chief Financial Officer

U.S. GOVERNMENT ACCOUNTABILITY OFFICE

441 G St. N.W.
Washington, DC 20548

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March 24, 2017

The Honorable Scott Pruitt
Administrator
Environmental Protection Agency

Dear Administrator Pruitt:

The purpose of this letter is to remind you of the Federal Vacancies Reform Act of 1998 (Vacancies Act)[1] and, in particular, of the provisions of the Vacancies Act that require executive departments and agencies to report information about vacant positions to the Congress and to the Comptroller General.

The Vacancies Act provides rules for the temporary filling of certain vacant positions that require presidential appointment and Senate confirmation.[2] Under the Act, a person may serve as an acting officer in a vacant position covered by the Act for no longer than 210 days from the date of the vacancy. The Act provides for adjustments to the 210-day time limitation when the President submits a nomination to fill the position.[3]

The Act requires executive departments and agencies to immediately report to the Congress and to the Comptroller General when a vacancy occurs, the name of any person serving in an acting capacity, the name of any person nominated to fill the position, and the date of a rejection, withdrawal, or return of any nomination. The Act also requires the Comptroller General to report to Congress, the President, and the Office of Personnel Management if the Comptroller General determines that an acting official is serving longer than the 210-day period (including applicable extensions).[4]

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[1] 5 U.S.C. §§ 3345-3349d.

[2] The Vacancies Act applies to all presidentially-appointed, Senate-confirmed nominees, except for Article I judges, members of the Federal Energy Regulatory Commission and the Surface Transportation Board, and any appointment to a multimember board or commission that governs an independent establishment or a government corporation. 5 U.S.C. § 3349c.

[3] The Department of Justice's Office of Legal Counsel provides advice to agencies on the application of the Vacancies Act to specific vacancies as well as some general guidance. *See* Memorandum for Agency Counsels, *Guidance on Application of Federal Vacancies Reform Act of 1998*, OLC Opinion, Mar. 22, 1999, available at: http://www.justice.gov/sites/default/files/olc/opinions/1999/03/31/op-olc-v023-p0060_0.pdf (last visited March 1, 2017).

[4] GAO's Vacancies Act webpage, at http://www.gao.gov/legal/federal-vacancies-act/overview, provides information on the Act and a searchable database containing all information reported to the Comptroller General pursuant to the Act.

GAO would also appreciate certain supplementary information to meet its statutory reporting requirements. Specifically, GAO requests that each agency report:

- the authority under which an acting officer was designated, if not the Vacancies Act;[5]
- any changes in the status of the vacant position and the effective date of the change (such as a change in title or elimination of the position);
- the discontinuation of service in an acting role; and
- the name, mailing address, telephone number, and email address for your agency's designated contact person.

GAO has created a form that agencies may use to report this information. It is available at: http://www.gao.gov/pdfs/legal/fed_vac.pdf.

If you have any questions about the reporting of vacancies to GAO, please contact Robert Cramer, Managing Associate General Counsel, on 202-512-7227, or Shirley A. Jones, Assistant General Counsel, on 202-512-8156.

Sincerely yours,

Susan A. Poling
General Counsel

cc: Kevin S. Minoli
Acting General Counsel

[5] For most vacancies, the Vacancies Act provides the exclusive means for making temporary appointments. However, there are some specific exceptions, such as where a statute expressly authorizes the President, a court, or an agency head to designate an officer or employee to temporarily perform the functions and duties of a specified office in an acting capacity. *See* 5 U.S.C. § 3347.

United States Government Accountability Office

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Washington, D.C. 20548

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The Honorable Scott Pruitt
Administrator
Environmental Protection Agency
Mail Code1101A
1200 Pennsylvania Avenue, NW.
Washington, DC 20460-0001

20460-0001

From:	Sweeney, Stephen
To:	Peabody, Hitch; Allen, Reginald
Cc:	Lesperance, Twanna; Leavy, Jacqueline; Barnett, Howard
Subject:	RE: Controlled Correspondence AX-17-000-7064 (Reporting of Federal Vacancies)
Date:	Wednesday, August 09, 2017 3:52:49 PM

GAO sends these missives to all agencies periodically.

EPA provided a big batch of Vacancies Act reports on June 10th, including catch up reports from the end of the previous Administration up through the confirmation of the current Administrator.

The nominations for the AA positions in OECA and OCSPP have not yet been reported. The OECA one was shortly before big batch report. The OCSPP one came a while later. The incoming GAO controlled correspondence has a March date on it.

From: Peabody, Hitch
Sent: Wednesday, August 09, 2017 3:38 PM
To: Allen, Reginald <Allen.Reginald@epa.gov>
Cc: Sweeney, Stephen <Sweeney.Stephen@epa.gov>; Lesperance, Twanna <Lesperance.Twanna@epa.gov>; Leavy, Jacqueline <Leavy.Jacqueline@epa.gov>; Barnett, Howard <Barnett.Howard@epa.gov>
Subject: FW: Controlled Correspondence AX-17-000-7064 (Reporting of Federal Vacancies)

Have you bounced this off Steve Sweeny in OGC? I know he maintains a list of these vacancies and tracks them closely.

From: Allen, Reginald
Sent: Tuesday, August 08, 2017 4:46 PM
To: Peabody, Hitch <Peabody.Hitch@epa.gov>
Cc: Leavy, Jacqueline <Leavy.Jacqueline@epa.gov>; Lesperance, Twanna <Lesperance.Twanna@epa.gov>
Subject: Controlled Correspondence AX-17-000-7064 (Reporting of Federal Vacancies)

Hitch this is a CMS vacancies act question that was lost in the system that I believe should reside with OARM or OGC.

Let me know what you think

Reggie

Reginald E. Allen, SES
Assistant Deputy Chief of Staff
U.S. Environmental Protection Agency
Office 202-564-0444

Direct 202-564-1029
Cell 202-306-2879