Message

From: Strynar, Mark [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=5A9910D5B38E471497BD875FD329A20A-STRYNAR, MARK]
Sent: 3/26/2018 8:23:00 PM
To: Julie Leibach [julie_leibach@ncsu.edu]
Subject: RE: North Carolina Sea Grant/questions about GenX

Julie,

I just picked up the copy of the Coastwatch you sent. I gave the article a thorough read. Well done! I really enjoyed it. You did a fine job of distilling the info down into a very readable package.

One thing you should also know is me and Andy Lindstrom (USEPA) are on the team with Detlef Knappe, Jane Hoppin and Jamie DeWitt on the GenX study in Wilmington. We are doing the blood and urine methods development and analysis for GenX and related chemicals in the human samples here at EPA.

Cheers,
Mark

From: Julie Leibach [mailto:julie_leibach@ncsu.edu]
Sent: Tuesday, March 13, 2018 9:59 AM
To: Strynar, Mark <Strynar.Mark@epa.gov>
Subject: Re: North Carolina Sea Grant/questions about GenX

Hi again, Mark,

Yes, an actual print copy! I will send it to your work address.

Thanks,
Julie

On Tue, Mar 13, 2018 at 9:55 AM, Strynar, Mark <Strynar.Mark@epa.gov> wrote:

> Julie,
>
> Thanks for the info. Do you mean sending me a print copy? If so here is my work address.
>
> Mark Strynar
>
> US EPA
>
> 109 TW Alexander Dr.
>
> MD D205-05
>
> Durham, NC 27711

From: Julie Leibach [mailto:julie_leibach@ncsu.edu]
Sent: Tuesday, March 13, 2018 9:43 AM

To: Strynar, Mark <Strynar.Mark@epa.gov>
Subject: Re: North Carolina Sea Grant/questions about GenX

Hello, Mark,

I had emailed you a while back regarding an article I was writing about GenX for North Carolina Sea Grant's print publication, *Coastwatch*. I just wanted to let you know that the magazine is now out, and I can send you a copy if you'd like. The article is also available online here: https://ncseagrant.ncsu.edu/coastwatch/previous-issues/2018-2/winter-2018/a-river-of-woes/

Thanks again for your help.

Warm regards,

Julie

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Julie Leibach
Science Writer/Digital Content Specialist
North Carolina Sea Grant
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Mailing Address: Box 8605 | NCSU Campus | Raleigh, NC 27695

On Wed, Jan 24, 2018 at 1:32 PM, Strynar, Mark <Strynar.Mark@epa.gov> wrote:

> No problem Julie.

Mark

From: Julie Leibach [mailto:julie_leibach@ncsu.edu]
Sent: Wednesday, January 24, 2018 12:16 PM
To: Strynar, Mark <Strynar.Mark@epa.gov>
Subject: Re: North Carolina Sea Grant/questions about GenX

Dear Mark,

I can't thank you enough for putting the time in to responding to my questions. Your answers are extremely helpful, and I'll update my draft accordingly.

Regards,

Julie

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Julie Leibach
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On Wed, Jan 24, 2018 at 8:47 AM, Strynar, Mark <Strynar.Mark@epa.gov> wrote:

Julie,

See my responses below in red.

Mark

From: Julie Leibach [mailto:julie_leibach@ncsu.edu]
Sent: Monday, January 22, 2018 12:13 PM
To: Strynar, Mark <Strynar.Mark@epa.gov>
Subject: North Carolina Sea Grant/questions about GenX

Hello, Mark,

My name is Julie Leibach, and I work in the communications department at North Carolina Sea Grant. I attended your seminar last week at NC State.

I'm working on an article for our print magazine, *Coastwatch*, about GenX, and how it fits into the broader picture of PFASs in the environment.

I have a few questions I'm hoping you can answer. If any of them are better suited for another expert, please let me know. And if you'd rather chat on the phone, I'm happy to call you. I sincerely appreciate your time.

Here are my queries:

1) This is a really dumb and basic question, but I think it prudent to ask: What is GenX used for? You said in your talk that it's used as an industrial surfactant, but I'm not entirely sure what that means. I thought that GenX is essentially a chemical replacement for PFOA, which I thought had been used to make Teflon. GenX is a polymer processing aid (PPA) which is a surfactant used in the production of such things as Teflon. In the past PFOA (or actually ammonium perfluorooctanoate APFO) was used for this need. The issue is to polymerize tetrafluoro ethylene (TFE) into polytetrafluoroethylene (PTFE – Teflon) the monomers (TFE) need to be brought together to make the polymer (PTFE). A surfactant or PPA such as GenX or PFOA does this job.

2) In your 2015 paper in *Environmental Science & Technology*, you use the word "novel" to describe the fluorinated compounds that you examined. Could you please define with you mean by "novel"? Novel is a term we sometimes used to mean "new and emerging" or "first discovered". For this use it means we are the first to report on in the published literature as being found in water. It does not mean we are the first to know about it as the company has been manufacturing these compounds for some time.

3) What's your impression of how people have reacted to the news that GenX was found in drinking water? I won't comment on this.

4) If you had to gauge what the most pressing question is on people's minds about GenX, what would it be? I hear people ask the question is my water safe to drink?

5) The DHHS has set a health goal of GenX of 140 parts per trillion. Do you have a good analogy for that concentration? E.g., a drop of water in a swimming pool. (I made that up, obviously.) I believe these analogies diffuse the reality of what we can do in our lab and others by making it sound like these are incredibly low concentrations. PFOA and PFOS have Health Advisories at 70 ng/L for water consumption. The health goal for GenX at 140 ng/L is in the same range. However, money is the best analogy 140 dollars in one trillion dollars.

6) During your talk, I wrote down that you have a hunch that Nafion byproducts 1 and 2 might have more biaccumulative potential than GenX. Could you briefly explain again why you think that? This is a hunch and not yet confirmed however two thoughts fuel this speculation 1) the molecular weight of the Nafion BP1 (mass 443)and BP2 (mass 463) is significantly larger than GenX (mass 329) . Usually larger molecular weight compounds in this class of compounds bio-accumulate more 2) Nafion BP1 and BP2 are sulfonic acids whereas GenX is a carboxylic acid. In the past sulfonic perfluorinated acids have been shown to bio-accumulate more than carboxylic acids.

7) Detlef Knappe explained to me that Chemours has generated GenX as a byproduct since 1980, but only started making it as a commercial product in 2010. Since Chemours started commercial production of GenX, has the company *always* collected the wastewater associated with it and sent it offsite for disposal? My understanding is no. In response to an NCDEQ request at sometime this summer (check the NCDEQ website) Chemours started collecting the waste and sending it offsite.

8) Do you know if Chemours has now stopped discharging all wastewater into the Cape Fear River? (I also sent this question to DEQ.) That I am not sure of either.

9) Is it accurate to describe PFASs as "a large and growing class of manmade compounds"? I believe this is accurate.

10) Is there a primary way that most people are exposed to PFASs? From the data I have seen it appears water consumption is a major route. However this compounds are also found in many of the consumer products we use in the home (ex. Carpeting, furniture, microwaveable paper/packaging) and food we consumer (ex. Fish) thus there are multiple contributors.

11) Do you think it's accurate to say that it's a "constant challenge" to ensure that drinking water is clear of PFASs? I would say it is a constant challenge to ensure that drinking water is clear of any new and emerging chemicals. PFAS fall into that category.

If there's any way you can get back to me in the next few days, I would be extremely grateful. Sorry for the tight deadline.

Thanks very much for your expertise.

Julie

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