Veolia Comments on the Statement of Basis
Reference to Previous Site-Specific Dispersion Modeling and Risk Assessment

Technical Evaluation
Developed by:
Delana W. Owen[1], Franklin Engineering Group, Inc.

US EPA Region V cites to the May, 2007 US EPA report titled, "Risk Screening and Risk Management Recommendations for Veolia ES Technical Solutions, L.L.C., Sauget, Illinois", attached hereto as Attachment 1, and the Addendum thereto dated November 2007, attached hereto as Attachment 2 (collectively "Report"), as support for the proposed reopening of the Veolia Title V permits and proposed revisions contained therein (from Statement of Basis, pg. 28, footnote 40). The Report presented results of risk screening conducted by US EPA Region 5 to address comments raised as part of the public participation process related to the 2003 proposed Title V Permit renewal of the Veolia ES Technical Solutions, L.L.C. ("Veolia") hazardous waste incineration facility located in Sauget, Illinois. The Report includes calculations based on assumed theoretical, rather than actual, sampling and analysis of water and fish from Frank Holten State Park and the hypothetical consumption of fish by residents in the area. US EPA refers to the Report as a risk screening because only specific pollutants believed to have a likelihood to exceed accepted levels of cancer risk or chronic toxicity in previous risk assessments for hazardous waste combustors were evaluated. Additionally, the Report was considered screening because a number of simplifying conservative assumptions were made in the process of conducting the assessment.

Due to errors, unsubstantiated assumptions and the failure of US EPA to resolve conflicting information, the Report is technically inaccurate for the Sauget facility. The Report only addresses facility risk and hazard superficially, rather than deriving a conclusion from a fair evaluation of reasonable assumptions and data. It is inappropriate and not in keeping with regulatory guidance to set permit limits based on a superficial risk screening, particularly when site-specific values are readily available. The US EPA Guidance that applies to Risk Assessments for Hazardous Waste Combustion Facilities (EPA 530-R-05-006, September 2005, Page 1-9) provides the following advice to permittees, "We encourage you to use existing and

[1] Please see curriculum vitae Attachment 9.

site-specific information throughout the risk assessment process in order to properly evaluate actual regulated operations for any particular combustor. We generally recommend conservative default assumptions only when they will provide confidence that ensuing permit limits will behealth protective."... "Throughout the HHRAP we offer parameter values for you to consider. These values are based on a number of elements, such as the best science available and professional judgment. Since this is a national level guidance, the recommended values typically reflect national average conditions. The values will be more appropriate for some sites, and less so for others. For example, the type of waterbody near a facility (i.e. lake, river, wetland) may affect the methylation rate of mercury in the waterbody, or the type of fish consumed may affect percent lipid content used in the assessment. So, a value that is reasonable for one facility may be over (or under) protective at a different facility." Guidance goes on to state, "You should generally make every effort to reduce limitations and uncertainties in the risk assessment process, since they can affect the confidence in the risk assessment results."

US EPA Region 5 performed a risk screening using overly-conservative and inaccurate assumptions that were neither investigated nor verified for applicability and appropriateness. Veolia provided additional information to US EPA so that site-specific values could be utilized in the evaluation of risk and hazard, but US EPA Region 5 refused to consider the information provided and chose to rely on default parameters that had no basis for the site in question.

Specific issues that are fatal to the Report's conclusions include:

1. The Report does not take into account that the Frank Holten Lakes are not a closed system. The government admits in a private e-mail which Veolia makes a part of the public record through this affidavit that Frank Holten Lakes are connected via drainage canals to the Mississippi River and to each other. These connections allow a constant exchange of fish between the River and lakes. The purpose of the Report is to evaluate whether Veolia's emissions are potentially adversely affecting the fish and humans consuming the fish from Frank Holten Lakes, and yet, it fails to recognize or account for whether the fish being studied spent any substantial time in the lakes.
2. The Report assumes that all fish in the Frank Holten Lakes are subjected to potential contaminants from Veolia emissions during their entire life cycle. In fact, US EPA Region 5 is aware or should be aware that channel catfish and other fish likely to be the focus of the public's fishing efforts are routinely stocked in Frank Holten Lakes at catchable size and that many fish caught from Frank Holten Lakes are caught shortly after stocking.
3. The Report specifies a default trophic level for fish caught from the Frank Holten Lakes of 4.0, which is the highest and most conservative value that is recommended for risk

assessment. In a private e-mail which Veolia makes a part of the public record through this affidavit, Illinois EPA has provided information that a more appropriate trophic level for the Frank Holten Lakes is 3.5. The actual site-specific trophic level of fish harvested may be lower than either of these values.

4. The Report makes contradictory assumptions that background concentrations of mercury in Frank Holten Lakes are both zero and high enough to be contributory to increased concentrations overall. Both assumptions cannot exist simultaneously.
5. The Report inaccurately assumes high fish consumption rates from Frank Holten Lakes. The Report specifies a consumption rate based on the alleged presence of subsistence fishers in the nearby area, who allegedly consume fish from the Frank Holten Lakes on a daily basis. The Report assumes this level of consumption without attempting to verify it in a scientific fashion and without considering the overwhelming evidence to the contrary. Harvesting of fish from the Frank Holten Lakes is guided by notices at the lakes that restrict the quantity of fish removed based on PCB levels in the lakes. It should be noted that PCBs have never been handled by Veolia's Sauget, Illinois facility. Therefore, the presence of PCBs in the fish which caused the government to post the consumption limitations are counter indicative of subsistence level consumption and independent of Veolia. Further, the lakes do not contain a sustainable fish population that would support subsistence consumption. The Report fails to consider these facts in reaching its conclusions and fails to consider Franklin Engineering's objections to the inaccurate consumption rates (see below).

Veolia contracted Franklin Engineering Group, Inc. (Franklin) to perform an independent Human Health Risk Screening Assessment using the same regulatory guidance and methodology as the US EPA Region 5 Risk Screening, but also using available site-specific information related to the issues discussed previously. Franklin's Human Health Risk Screening Assessment demonstrated that Veolia operations did not pose significant health effects at the current regulatory limits for the hazardous waste incinerator. The Human Health Risk Assessment Report (Final Version provided as Attachment 3 to this document) was published in September 2004, and revised in May and October 2005..

Risk screening methods are only valuable if they are based on accurate information and reasonable assumptions. The Report failed in this regard. Risk assessments, such as that conducted by Veolia, are more compelling than risk screenings because they utilize site-specific information to more closely approximate health impacts. Each of the five issues presented are discussed in depth in the following sections. Attachments are provided to substantiate the information provided and to document communication with both US EPA Region 5 and IL EPA.

1. <u>The Report purports to evaluate water and fish that move freely between the Mississippi River and the Frank Holten Lakes without attempting to account for this variable.</u>
Mr. Dan Stephenson of Illinois Department of Natural Resources stated in an October 2011 email (provided as Attachment 7) that "the lakes at Frank Holton are connected via ditches to the Mississippi River allowing a constant exchange of multiple species between lake and river. This is not a static system. There could be a claim that the fish tested originally came from the river and pick up the methyl mercury elsewhere."

Certainly, there is carryover of fish species and any pollutants between the lakes themselves and between the lakes and water bodies that are connected to the lakes. The INHS Post-Restoration Monitoring Report (provided as Attachment 6) documented flow between the lakes and between the lakes and other water sources. "For Lakes 1 and 2, the types of unaccountable flows are limited. Interlake transfers can be either inflows from Lake 3 or outflows to Lake 3. These flow rates, which are generally low due to the limited interconnecting channel capacity, can be significant over long periods of time. A one-directional flow of as little as 1 cubic foot per second (cfs) can result in a monthly inflow of more than 50 acre-feet."

"In addition to the interlake transfers and ground-water flows discussed for Lakes 1 and 2, there are replacement inflows from Harding Ditch to restore evaporation and infiltration losses. These replacement flows are not available to the upper lakes following their summer drop in level. The connection of Lake 3 to Harding Ditch is continuous, and these "slow" losses can be made up." Lake Management Status Reports also document the transfer of fish species from connecting water bodies, as stated in the April 3, 2003 report (Attachment 8) "The lake also floods through ditches connected to the Mississippi River. This connection introduces many undesirable species including common carp, buffalo, grass carp, bighead carp, gizzard shad, yellow bass, and bullheads."

It is clear that any pollutants entering Frank Holten Lakes would be affected by inflow and outflow with other sources. Likewise, the assumption that only fish that begin their life cycle in the lakes are harvested is inaccurate. Therefore, modeling the lakes as a closed system is inaccurate and inappropriate.

2. <u>The Report fails to consider the effect of fish stocking on assumed mercury concentrations in fish from Frank Holten Lakes, thus also invalidating the Report.</u>
Both of the Frank Holten lakes are regularly stocked with catchable size fish from the state hatcheries. Main Lake is generally stocked with an annual total of over 10,000 catchable size

fish, including Rainbow Trout, Channel Catfish, and Largemouth Bass. Lake #3 is also stocked with thousands of catchable size fish annually, including Channel Catfish and Largemouth Bass. These species of fish represent three of the five most prevalent species of fish harvested in the State of Illinois. Attachment 5 presents fish stocking records from 2006 through 2011 provided by Mr. Fred Cronin, Illinois DNR Fisheries Biologist.

The Report did not consider the effect of such stocking. Fish stocked later in their development or at catchable size are less affected by lake contaminants since they are not exposed to contaminants during their entire life cycle, most notably, during earlier stages when increased uptake of contaminants is accomplished. Consequently, incremental risk to fishers is reduced due to the practice of annual stocking of these lakes.

3. **The Report used a trophic level that was too high and not supported by the available evidence, thus overstating assumed mercury uptake in fish.**

Risk Assessment modeling estimates exposure to mercury through fish consumption by calculating the degree at which mercury concentrates in the fatty tissues of fish when exposed to the pollutant in the water column. A bioaccumulation factor (BAF) is specified by guidance that is defined as the ratio of methylmercury concentration in fish flesh divided by the concentration of dissolved methylmercury in the water column. Bioaccumulation factors are typically related to trophic level with trophic level 4 being specified as the default value in the absence of site-specific information. This highest trophic level corresponds to a higher BAF, since larger species are assumed to have been exposed to any potential contamination for longer and also to be higher level food chain representatives.

Based on review of available data, the maximum trophic level of 4.0 is not representative of fish caught at Frank Holten Lakes. Further, information from IEPA and US EPA Region 5 has been contradictory and unsubstantiated with respect to this parameter. For example, US EPA Region 5 stated in their Addendum 1 - Risk Screening for the facility (Attachment 2) that "The available information indicates that the lakes at Frank Holten State Park contain fish at a trophic level 4." Meanwhile, Mr. Ted Dragovich from IEPA stated in his August 15, 2011 email (Attachment 4) that "USEPA adjusted the trophic level down from 4 to 3.5 for the last risk assessment".

Fishing reports supplied by Mr. Fred Cronin from 2001 – 2004 indicate that largemouth bass, which are the only Trophic Level 4 fish documented at Frank Holten Lakes are largely present due to stocking practices. The Lake Management Status Report from 2003 (Attachment 8) states "Maintaining a decent sport fishery in this lake is challenging. The physical habitat of the lake is quite poor. The lake is shallow and turbid with no aquatic plants and little structure. The

lake also floods through ditches connected to the Mississippi River. This connection introduces many undesirable species including common carp, buffalo, grass carp, bighead carp, gizzard shad, yellow bass, and bullheads. These species compete directly and indirectly for the available space and resources of the lake.... However the continued stocking of rainbow trout, channel catfish, and largemouth bass can provide some quality angling opportunities at this lake."

Due to the stocking practices, trophic level 3.5 and 4.0 are likely both inappropriate to represent contaminated fish that are routinely caught from the Frank Holten Lakes, In any case, the Report's failure to address or even mention the effect of stocking on the trophic levels of the fish demonstrates the Report's failure to accurately represent and portray the conditions in the lakes and the anticipated mercury levels, if any, in the fish.

4. <u>The Report arbitrarily assumes two conditions that cannot exist simultaneously - both background concentrations of mercury and no mercury in Frank Holten Lakes.</u>

The Report assumed *both* background levels of mercury and no background levels of mercury in the water column. Each condition is exclusive of the other – they cannot both be simultaneously true.

One of the assumptions made by US EPA Region 5 is that background levels of mercury in the Frank Holten Lakes require a more stringent benchmark for comparison to risk assessment results because of the likelihood of increased background levels. US EPA's Risk Screening states, "...risk management decisions which follow U.S. EPA recommendations" ..."typically consider the potential for cumulative emissions indirectly by: (1) assuming that other nearby sources of similar toxic metals contribute up to three times the amount of the facility being evaluated; ..." This conservative approximation is the basis for regulatory guidance such as the following excerpt from the Region 6 Risk Management Addendum (EPA-R6-98-002, July 1998), which indicates that background concentrations are assumed to account for a significant fraction of exposure:

> ... for the purposes of RCRA permitting decisions and consistent with U.S. EPA (1994c), U.S. EPA Region 6 recommends a modified target hazard level, to account for background contributions, from an *HQ* or *HI* target value of 1.0 to a target value of 0.25. This modification eliminates the need to collect background COPC concentration data before completing the risk assessment, by assuming that COPC emissions from hazardous waste emission units result in incremental increases of existing background COPC concentrations, which are, by default, assigned an *HI* or *HQ* value of 0.75. Although background COPC *HQ* or *HI* values might not equal 0.75, as a result of this modified target level, either the *HQ* (for a single COPC) or the *HI* (for multiple COPCs

> or pathways) resulting from combustion unit emissions should be less than 0.25. An *HQ* or *HI* equal to or exceeding 0.25 indicates a potential for noncarcinogenic health effects. However, an *HQ* or *HI* equal to or exceeding 0.25, rather than necessarily indicating that noncarcinogenic health effects can or will occur, indicates only that there is a potential for noncarcinogenic effects, based on a specific set of exposure, model, and toxicity assumptions."

Although setting a benchmark at 25% of the target hazard level is a conservative approximation that can be assumed in the absence of site-specific data, the determination of actual background levels allows the development of more accurate risk assessment parameters and comparison to the more appropriate benchmark. Therefore, Veolia proposed the collection of water samples from the Frank Holten Lakes to eliminate the need for this overly conservative approximation, as well as to more closely model mercury concentrations in the lakes.

In response to Veolia's proposal, IEPA responded that it was unnecessary to attempt to quantify mercury concentrations in the water column because those values were already assumed to be zero. See Attachment 4 email from Ted Dragovich, IEPA dated August 15, 2011.

The regulators are simply not evenhanded. When they attempt to justify reducing Veolia's emissions, they claim that the lakes and fish are already burdened by mercury and therefore justify a stringent approach when evaluating Veolia's emissions against this assumed already burdened background. However, when Veolia proposed to actually test the lakes to verify mercury concentrations, the response was that the initial fish, water and sediment samples have no mercury.

5. <u>The Report inaccurately assumes high fish consumption rates.</u>

There is no scientifically valid documented evidence of subsistence fishing in the area of Sauget, Illinois or Frank Holten Lakes. Nevertheless, the Report utilizes a consumption rate that represents subsistence fishers in the calculations performed. This unjustified assumption grossly overestimates risk.

Veolia determined in its risk assessment that at most there was a potential for the presence of recreational fishing at Frank Holten Lakes. This determination was based on discussions with Mr. Fred Cronin, in January 2005. Although harvesting records were not available for more recent years, Mr. Cronin discussed the function of the park and its lakes as recreational. He advised that fishing at these lakes has changed from "a source of protein to recreational activity." He indicated that future creel surveys (which are interviews with anglers at targeted locations to

gain information about the effort, harvest, size distribution of fish species, etc.) would likely indicate much greater catch and release activity than had been present in the past.

Further, creel studies performed at Frank Holten Lakes support the determination that fishing conditions are poor and unlikely to support heavy consumption of any species. A creel survey was conducted on the lakes after a reconstruction project performed to enhance recreational use of the area in the early 1990's by the INHS under Federal Aid Project F-69-R. The 1994 report describing the project and results (Attachment 7 to this document) stated, "For the most part, the results of the creel survey were about what would be expected from an urban lake. But exceptions were found in angling pressure and boat fishing versus shore fishing. The total of 248 hours/acre (hrs/ac) fishing pressure measured is low compared to 666 hrs/ac at Beaver Dam and 850 hrs/ac at Siloam Springs. Further, shore fishing accounted for 80 percent of the fishing effort and boats accounted for only 20 percent. Normally, one would expect a 60-40 split the other way. The angler using FHSP Lakes traveled an average 4.6 miles to fish, and the overall rating of the lake by the anglers on a scale of 1 - 10 was 2.7, indicating much dissatisfaction with the fishing." This information and the conversations with Mr. Cronin in 2005 reflect that the lakes have not been a very productive source of protein for over a decade and even recreational fishing in the lakes is dissatisfying due to poor catches.

The same study went on to say that, "As an example, largemouth bass, the main predator stocked in these lakes, were caught at only 4.8 pounds/ac, but one would expect the catch rate to be about 20 pounds/ac. Further, it appears that the anglers are keeping most of what they catch, as the difference between catch and harvest is not great. The average size of fish harvested was small. Yellow bass, for instance, were less than 0.1 pound on the average. It is difficult to envision anyone being able to catch a fish that small."

"In summary, the catch results reflect the angler rating of the lake. Anglers were catching low numbers of fish that, for the most part, were smaller than expected or desired. This is probably due to lack of macrophytes, significant reduction in fish habitat during the summer stratification period, poor quality and quantity of benthos, overharvest, and/or possibly because most of the fishing was from the bank, limiting anglers to a relatively small proportion of the lake."

The Report should not have included a consumption rate based on subsistence fishing because, based on modern evidence, subsistence fishing does not take place in the area. Further, given the proximity of other large bodies of water, including the Mississippi River and Horseshoe Lake State Park, even if there were subsistence fishers in the local area – and there is

no evidence that such fishers exist in the area - they would be unlikely to fish solely at Frank Holten State Park. The most reasonable and likely scenario is that the recreational fisher and recreational fisher child exposure scenario should have been used because, as the evidence demonstrates, the Frank Holten Lakes may be lightly fished for recreational purposes. Therefore, the use of the recreational fisher and fisher child exposure scenarios more closely approximate the potential for risk than that of the subsistence fisher and fisher child. As Veolia demonstrated in it risk assessment, when the recreational scenario is utilized, no increased risk is found.

Prepared By: Delana W. Owen
Franklin Engineering Group, Inc.

Signature:

Date: 3-14-13

State of Tennessee
County of Davidson

SWORN AND SUBSCRIBED
Before me this 14 day of March, 2013.

Notary Public

My Commission Expires:
03 November 2015

DAVID FAUSTINO SANDOVAL
STATE OF TENNESSEE NOTARY PUBLIC
DAVIDSON COUNTY

References

Risk Screening and Risk Management Recommendations for: Veolia ES Technical Solutions, L.L.C. Sauget, Illinois (Formerly: "Onyx Environmental Services") / Document 174 / United States Environmental Protection Agency Region 5/ Christopher Lambesis et.al. / May 2007

Addendum 1 - Risk Screening and Risk Management Recommendations for:Veolia ES Technical Solutions, L.L.C., Sauget, Illinois - Explanation of Mercury Speciation, Dispersion and Methylation / Document 177 / United States Environmental Protection Agency Region 5/ Christopher Lambesis et.al. / November 2007

Onyx Environmental Services Rotary Kiln and Fixed Hearth Incinerators Screening Level Human Health Risk Assessment Report / Franklin Engineering Group, Inc. / Franklin, TN / Rev. October 2005

Human Health Risk Assessment Protocol for Hazardous Waste Combustion Facilities, EPA530-R-05-006, U.S. Environmental Protection Agency, Washington, D.C.

Region 6 Risk Management Addendum – Draft Human Health Risk Assessment Protocol for Hazardous Waste Combustion Facilities, EPA-R6-98-002, U.S. Environmental Protection Agency, Washington, D.C.

External Email correspondence from Ted Dragovich, IEPA / August 15, 2011

Frank Holten Park Fish Stocking Records, provided by Mr. Fred A. Cronin, District 16 Fisheries Biologist, Granite City, IL / October 2011

External Email correspondence from Mr. Dan Stephenson, Illinois Department of Natural Resources / October 2011

Frank Holten State Park Lakes: Phase III, Post-Restoration Monitoring by Raman K. Raman and William C. Bogner / Offices of Water Quality Management and Hydraulics & River Mechanics / Prepared for the Illinois Environmental Protection Agency / December 1994

Lake Management Status Report: Frank Holten State Park Main Lake / Fisheries Manager: Fred Cronin / April 2003