



**Frequently Asked Questions (FAQs)  
Human Health Risk Assessment  
Onondaga Lake Site  
Lake Bottom Subsite: Sediment Consolidation Area  
Camillus, NY**

**August 2010**

The US Environmental Protection Agency's (EPA's) human health risk assessment looked at the potential risks posed by the management and dewatering of lake sediment that will take place at Wastedbed 13. Two potential exposure scenarios were evaluated in the assessment. The first scenario that was evaluated was exposure to contaminants by air as a result of chemicals volatilizing from the dredged sediment and from the water draining from the geotextile tubes. The second exposure scenario that was assessed was an unlikely hypothetical situation that assumes a significant failure of the Sediment Consolidation Area (SCA). In this latter scenario, sediment is released and individuals would come onto Wastedbed 13 and contact the sediments on or near the SCA daily for a 45 day period until the sediment is cleaned up and the affected area is repaired. All resulting estimated risks were within levels identified by EPA as acceptable. The finding of acceptable risk estimates when applying health protective assumptions suggests that the plans for the sediment consolidation area will not result in unacceptable risks for the surrounding community.

The table below provides answers in response to written and oral questions recently raised by the public regarding EPA's human health risk assessment performed for the engineered SCA on Wastedbed 13 which will receive sediments dredged from Onondaga Lake. The answers were prepared by EPA in consultation with New York State Department of Environmental Conservation (NYSDEC) and the New York State Department of Health (NYSDOH).

It should be noted that the questions, comments and responses provided below are those that relate directly or indirectly to the human health risk assessment. This document does not address other questions and comments which were raised that are unrelated to the human health risk assessment. Many of these questions and comments were responded to via e-mail and/or at the July 8, 2010 public meeting on the human health risk assessment at the New York State Fairgrounds. Some of the questions raised at the meeting were not responded to due to time constraints. The non-human health risk assessment-related questions and comments which were not responded to, will be addressed separately.

**Frequently Asked Questions (FAQs)**  
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<b>Questions/Comments</b>	<b>Responses</b>
1. Since EPA has decided there is no health risk from this sediment, why not just leave it where it is?	1. The June 2010 human health risk assessment, which looked at potential health impacts to people who live near the facility which will contain sediments removed from the lake, determined that all resulting risk and hazard estimates were within the range or below levels identified by EPA as acceptable. That, however, should not be interpreted to mean that contaminated sediments are not currently causing adverse effects when they are left in the lake. As noted in the Frequently Asked Questions (FAQs), Onondaga Lake Dredging Project Sediment Consolidation Area (SCA) at Wastedbed 13, response # 1 at <a href="http://www.dec.ny.gov/docs/regions_pdf/scafaq.pdf">http://www.dec.ny.gov/docs/regions_pdf/scafaq.pdf</a> , ecological and human health risk assessments conducted previously indicated that contaminants associated with the lake sediments resulted in risks which exceeded threshold levels to the ecological community and potentially to people who eat fish caught from the lake. The remedy for Onondaga Lake includes dredging to remove a portion of the contaminated sediment from the bottom of the lake and to enable the isolation (through capping) of the remaining contaminated sediments that exceed the cleanup criteria noted in the Onondaga Lake Bottom Subsite Record of Decision. By doing so, humans and the environment will be protected from the contaminants that are currently present in sediments.
2. Are EPA's standards for acceptable risk always correct? If no, what are some examples?	2. There is no "correct" cancer risk range or noncancer hazard threshold. The acceptable excess cancer risk range of between one in ten-thousand and one in one-million, and the "hazard index" of 1 which relates to potential adverse effects to the human population from systemic toxicants, are established under Superfund regulations, specifically the National Oil and Hazardous Substances Pollution Contingency Plan (NCP) at 40 CFR 300.430(e)(2)(A). These criteria for acceptable risk are applied at all Superfund sites. The Human Health Risk Assessment for the Sediment Consolidation Area was conducted in accordance with the NCP, Superfund policy and guidance.
3. Will the sediment core data used to support the human health risk assessment (HHRA) be made publically available?	3. Much of the data used to support the SCA HHRA is already available at the document repositories located in the Syracuse area. If anyone would like access to the full data set used to support the HHRA, he or she may contact Bob Nunes at <a href="mailto:nunes.robert@epa.gov">nunes.robert@epa.gov</a> or at 212-637-4254.
4. Are the levels of volatile contaminants used to evaluate reasonable maximum inhalation exposures (RME) based on absolute concentrations or are they additive above background levels?	4. In accordance with EPA guidance, human health risk assessments do not take into account background levels of contaminants. Baseline monitoring of volatile organic compounds (VOCs) will be conducted prior to and during operations of the SCA. Contaminants that may be present in background air can be considered in developing the monitoring and Health and Safety plans for the project.

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<p>5. Which of the expected pollutants to be dredged can become airborne during the piping and drying of the geotextile tubes and how will that be prevented?</p>	<p>5. Table 2-2 in Appendix B and Tables 2, 4, 5 and 6 in Appendix E identify the contaminants which were detected in the wind tunnel tests. These contaminants may become airborne during screening and dewatering of the dredged material, although as noted in Responses #6 and #14, the use of wind tunnel tests as a measure of what might be emitted from geotextile tubes is conservative since emissions from geotextile tubes are expected to be significantly less than emissions from an open lagoon. If these chemicals are categorized as volatile and have been assigned a toxicity value, they were quantitatively evaluated under the air pathway scenario. In addition, contaminants which were not detected in the wind tunnel tests but which were detected in sediment were also quantitatively evaluated under the air pathway scenario if they were categorized as volatile and have an assigned toxicity value. A total of 27 contaminants met the above criteria and were quantitatively evaluated for inhalation risks in the human health risk assessment (see Table 3-2 in Appendix B). To estimate air concentrations in residential neighborhoods, the risk assessment assumed that all of these contaminants would be simultaneously present at the maximum allowable concentrations at the work zone perimeter and used an air dispersion model to estimate air concentrations in the residential community. Even with this very health-protective assumption, estimated risk and hazard levels in the residential community were within acceptable ranges.</p> <p>In addition, the project is being designed to minimize the potential for emissions from the operations (hydraulic dredging instead of mechanical dredging, active dewatering of the sediments instead of settling basins, the housing of treatment equipment inside buildings, etc.). Limits in air will be established at the monitoring points that are not to be exceeded by the operations and the monitoring will be performed to allow for additional controls to be enacted prior to those limits being reached (<i>e.g.</i>, when concentrations might hit “action” or “control” levels which will be set at concentrations less than the work zone perimeter concentrations). If conditions warrant, work will be shut down before any emissions would reach the permissible exposure limits.</p>
<p>6. What wastebed design was all of the wind tunnel testing conducted under?</p>	<p>6. The wind tunnel tests, which were performed during an earlier design phase (see Onondaga Lake Phase I PDI Wind Tunnel Testing Report, dated March 2006 and revised June 2008; Onondaga Lake PDI: Phase II &amp; III Odorant Characterization and Analysis Summary Report, dated February 2008; and OL PDI: Phase III Addendum 7 Summary Report, Air Emissions and Odors in Appendix K of the Onondaga Lake PDI Phase III Data Summary Report, dated September 2009), were primarily conducted to identify contaminants which might be emitted during operations from a dewatering system that uses an open lagoon. Experience with geotextile tubes from other applications indicate that emissions and odors would be expected to be significantly less than what might be emitted from an open lagoon. Therefore, use of wind tunnel results to help identify potential volatile contaminants is a health-protective assumption.</p>
<p>7. On page 7 of the HHRA in section “Potential for Overestimation within Exposure</p>	<p>7. The uncertainty section of the HHRA discusses circumstances under which estimated risks might be overestimated or underestimated. With respect to the hypothetical scenario which estimated risks attributable to ingestion or dermal contact with contaminated sediment, it is more likely</p>

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<p>Scenarios” it is stated “Consequently, the assumed potential for exposure to sediments is hypothetical and may overestimate risks”. Does the answer to a hypothetical question always overstate the outcome or is there a possibility that it may understate the outcome as well?</p>	<p>that these risks are overestimated than underestimated since this scenario assumes that there is a release of sediments from the SCA resulting from a failure of the containment system, and that people would come onto Wastedbed 13 and would be in direct contact with the released sediment everyday for a period of 45 days before a response action to address or mitigate the release was completed.</p>
<p>8. The HHRA states that, “During remedy implementation, if monitored air concentrations indicate a trend towards chemicals reaching this maximum annual average concentration for a sustained period of time, risk managers can modify site operations to reduce these concentrations so that the actual risks are much lower than those estimated here.” How does the sensitivity level of the detectors that will be used compare to the perimeter air levels in the work zone area assumed in the HHRA?</p>	<p>8. The equipment and analytical methods which will be used to measure work zone perimeter air concentrations will have detection levels below criteria specified in the air quality monitoring plans to be developed. The specific types of instruments and analytical methods to be employed will be specified in the plans.</p>
<p>9. Section 6.4.7 in the HHRA states that, “The air concentrations used as a starting point in deriving offsite air estimates are all assumed to be the lower of either the Division of Air Resources (DAR)-1 number or the industrial Regional Screening Levels (RSLs) after adjustment for a 5-year exposure duration for all chemicals identified in the sediments as volatile.” Why were the air-concentrations used as a starting point in deriving offsite air estimates modified for some contaminants but not for others (e.g.; chlorobenzene)?</p>	<p>9. EPA evaluates exposure to carcinogenic chemicals based on an understanding that each exposure throughout the duration adds to the potential for incidence of cancer when averaged over a lifetime. Therefore, the air concentrations used in this HHRA are appropriately adjusted to 5 years to account for the period of time the SCA will be in operation. Noncarcinogenic chemicals, which include chlorobenzene, are evaluated under a different toxicological assumption: each exposure is a distinct scenario. Therefore, the duration of the exposure is not part of the overall evaluation and no adjustment is needed.</p>
<p>10. Why were PCBs not quantitatively evaluated in the HHRA air inhalation pathway?</p>	<p>10. The types of PCBs found in the lake are highly chlorinated and have high molecular weight and would be less likely to volatilize, particularly at the concentrations present at this site. The average concentration of PCBs in Onondaga Lake sediment to be dredged is 0.59 milligrams per kilogram</p>

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	<p>(mg/kg) and the maximum concentration is 23 mg/kg. By contrast, the average PCB concentration in the Hudson River sediment which is being dredged is more than 100 times greater than the average PCB concentrations in Onondaga Lake sediment. Other “PCB” sites (e.g. Anniston site, AL) have even higher PCB levels. Based on the above and since PCBs were not detected in the wind tunnel tests, volatile emissions of PCBs from the SCA are not expected to contribute significantly to risk.</p>
<p>11. Are PCBs volatile? Will air criteria for PCBs at the work zone perimeter be included in the site monitoring plans? If so, what would be the levels of PCBs required at the work zone perimeter to meet DAR-1 and EPA RSL guidelines? What detection methods exist that can accurately detect PCBs to the AGC levels provided?</p>	<p>11. Certain PCBs are considered volatile. However, due to the low levels of PCBs in the sediments that will be dredged (the average concentration of PCBs in the sediments is less than the level of 1 mg/kg appropriate for residential land use), the absence of PCBs in the wind tunnel samples, and the wet sediments that will be handled at the SCA, it is not anticipated that air monitoring plans will include monitoring for PCBs.</p>
<p>12. The Phase I PDI wind tunnel report prepared by Service Engineering Group March 2006 and later revised June 2008 states in section 2.6.5 “PCBs were not analyzed in the sediment or slurry samples due to a sampling error. As shown in Tables 15 and 17, PCBs were analyzed in the SMU 1 and SMU 7 air samples for the 10% Mixed test runs and were not detected.” Does this statement provide evidence of PCBs in the wind tunnel samples? If one cannot prove the concentrations of PCBs in the wind tunnel samples, how can one claim that the PCBs were not detected volatilizing?</p>	<p>12. Although PCBs were not analyzed for in sediment samples collected for the wind tunnel tests due to sampling error, PCBs were detected in other sediment samples collected during baseline sampling in close proximity to the wind tunnel test sampling points. Based on these samples, it is believed that PCBs were present in the sediment used for the wind tunnel testing.</p>
<p>13. The document “Onondaga Lake Pre-Design Investigation: Phase III Addendum 7 Summary Report, Air Emissions and Odors” by Honeywell April 2009 states “Initial Phase III bench tests were conducted following a NYSDEC-approved work plan (O’Brien &amp; Gere 2008)</p>	<p>13. Although the Phase III wind tunnel tests were modified so as to lower the detection limits relative to the Phase I tests, the Phase I tests results are still considered to be valid. The Phase I detection limits ranged between 0.16 to 1.4 micrograms per cubic meter.</p>

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<p>and utilizing a modified version of the wind tunnel used for Phase I bench tests. Preliminary test results indicated that the volumetric flow of air through the modified Phase I wind tunnel resulted in excessive sediment emission dilution and thereby insufficient wind tunnel emission detection limits. Therefore, to essentially lower its detection limit, the wind tunnel was redesigned.” Do the findings of the Phase III study invalidate findings of the Phase I study? What was the value of the insufficient detection limit for PCBs in the Phase I study?</p>	
<p>14. In the same Phase III study it is stated “Phase III Addendum 7 Pre-Design Investigation activities conducted for Onondaga Lake consisted of bench testing sediment samples from key areas within the Lake to evaluate potential air emissions and odors from the management of dredged materials, specifically through the use of a settling basin (as was Phase I)... In conjunction with discussion with NYSDEC, consideration of the settling basin dewatering approach was recently discontinued in favor of the geotextile tubes dewatering option due to various uncertainties associated with the use of the settling basin dewatering option. This decision was reached before the bench testing was completed; therefore, bench testing was discontinued before all testing had been conducted.” Does the discontinuation after the move to geotextile tubes invalidate all of the</p>	<p>14. The decision to discontinue the wind tunnel tests does not invalidate the wind tunnel test results. The testing was discontinued when it was determined that geotextile tubes would be used to dewater the dredged material. The testing results obtained from the wind tunnel testing conducted on the lagoon sediment dewatering method are not being used to estimate chemical emission rates from the geotextile tubes. However, based on experience with geotextile tubes from other applications, emissions and odors would be expected to be significantly less than what might be emitted from an open lagoon. Therefore, use of wind tunnel results from the open lagoon testing is considered to be a health-protective method to help identify potential volatile contaminants that may be emitted from the geotextile tubes. In addition, the HHRA was also conservative in that it included chemicals in the quantitative evaluation that are identified by EPA as volatile and which have toxicity values, even if they were not detected in the wind tunnel tests.</p>

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<p>wind tunnel findings with regards to the current Wastedbed 13 sediment consolidation approach?</p>	
<p>15. PCBs are a major contaminant in the Hudson River. The Hudson River project like the Onondaga lake project have focused on PCB pathways through fish ingestion only. Has the EPA read the following two articles regarding volatility and inhalation of PCBs in the Hudson Valley?  <a href="http://www.clearwater.org/news/p_cbs.html">http://www.clearwater.org/news/p_cbs.html</a>  <a href="http://qcpages.gc.cuny.edu/CBNS/p_cbs/watershed_rpt_.pdf">http://qcpages.gc.cuny.edu/CBNS/p_cbs/watershed_rpt_.pdf</a></p> <p>What is the EPA response to these articles? What is the relevance of these articles to the Onondaga Lake clean-up project including disposal of sediment in Wastedbed 13? Can the EPA in good conscience completely ignore the risk of PCB volatilization and inhalation in and around Wastedbed 13? Has the HHRA for Wastedbed 13 adequately addressed the risks of PCB volatilization and inhalation?</p>	<p>15. EPA has read the referenced articles and compared the situation at the Hudson River to the SCA and Onondaga Lake. EPA has closely reviewed and carefully evaluated PCB data that characterizes the sediments to be dredged and placed in the SCA. The average concentration of PCBs in these sediments is less than the concentration allowable under New York State soil cleanup objective and EPA guidance for residential land use. The 95% upperbound confidence limit of the average concentration only slightly exceeds this residential land use concentration. (The 95% upperbound confidence limit is a statistic that represents a conservative estimate of the average, and represents a 95% level of confidence that the true average will not exceed this concentration.) The concentrations of PCBs in the sediments that will be dredged in Onondaga Lake are orders of magnitude lower than the levels found in the Hudson River sediments being dredged there. Based on these lines of evidence and careful evaluation of the data, EPA concludes that volatilization of PCBs is not considered to be a significant contributor to air concentrations at the SCA.</p>
<p>16. The activity proposed for the SCA differs from most in that the potential air emissions have the potential to vary wildly, depending on the weather for extended periods of time. For example, Camillus has in the past experienced long periods of sunny weather with little to no rain. The amount of evaporation from fluids leaving the geotextile tubes will be very much more on sunny summer days compared to overcast fall days. The HHRA deals in averages and provides no</p>	<p>16. The SCA liquids management system includes the gravel drainage layer, pumps, sumps and risers designed to handle the appropriate design flows. Water which drains out through the geotextile tubes will immediately pass through the gravel drainage layer which will be, on average, 24 inches thick and will be conveyed to sumps on the SCA and subsequently pumped to the water treatment plant. The amount of evaporation from fluids will therefore not be expected to be significantly affected by weather conditions. While emissions will vary during the course of the year due to weather fluctuations and other factors, the air releases from the site will be closely monitored and kept within the long-term and short term risk-based guidelines in order to prevent any adverse health effects.</p>

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<p>information on what the health impacts might be if there is an extended period of exposure at many times the average. EPA should address those questions.</p>	
<p>17. Many questions have been asked about the combined effects of the various contaminants. EPA reduces allowable exposure limits by 90% to account for that but there is no justification provided. EPA should address those concerns in a more specific fashion.</p>	<p>17. The process used to screen chemicals for inclusion in the quantitative HHRA includes a comparison of the maximum detected concentration of each chemical to a risk-based concentration, available at: <a href="http://www.epa.gov/reg3hwmd/risk/human/rb-concentration table/Generic Tables/pdf/master_sl table run MAY2010.pdf">http://www.epa.gov/reg3hwmd/risk/human/rb-concentration table/Generic Tables/pdf/master_sl table run MAY2010.pdf</a></p> <p>The risk-based concentrations are developed to ensure that exposure to concentrations at or below the risk-based concentration would not contribute significantly to the cumulative risk. Therefore, chemicals that are present at levels that do not exceed these concentrations can be excluded from further evaluation.</p> <p>When screening carcinogenic chemicals, values from the table are established at the more protective end of the acceptable risk range. Risk-based concentrations for chemicals that are noncarcinogenic and may induce systemic health effects, such as impacts to the liver or kidney, are set at the acceptable Hazard Quotient of 1. It is understood that not all chemicals act on the same target organ. However, in order to account for exposure to multiple chemicals that may impact the same target organ, the risk-based screening concentration is lowered by a factor of 10 to ensure that chemicals are not prematurely discounted from the quantitative risk assessment and to ensure that their combined effect will be included if multiple chemicals are present that act on the same target organ.</p>
<p>18. The World Health Organization (WHO) has concluded that “In real life, exposure to mixtures of chemicals occurs with additive, synergistic, or antagonistic effects.” Consideration should be given to the interrelationships between the various air pollutants. Why were synergistic effects not considered? Are we that far behind other industrial nations?</p>	<p>18. Chemicals which are in a mixture may interact in a synergistic manner, meaning that their combined effects would be greater than the sum of their individual effects. Chemicals in a mixture may also interact in antagonistic way, meaning that their combined effects would be less than the sum of their individual effects. In a human health risk assessment, EPA’s standard approach (as was done for the SCA HHRA) is to assume that the effects of all chemicals in a mixtures are additive. This approach has been peer-reviewed by toxicological experts across the country and has been incorporated into Superfund risk assessments and decision documents nationwide.</p>
<p>19. The HHRA appears to be based on dispersion modeling performed by Parsons several years ago. There is no statement that EPA has either crosschecked that modeling in detail, or rerun the model to see if they arrived at comparable results.</p>	<p>19. The AERMOD dispersion model used to support the HHRA was run with the most recent version of the model software and the model was reviewed by both NYSDEC and EPA. NYSDEC reviewed the model input and output files, and performed independent model calculations to check the appropriateness of the dispersion factor generated by the model. NYSDEC determined that the dispersion factor was appropriate and EPA concurred with NYSDEC’s assessment.</p>
<p>20. The HHRA identifies significant risks to those who might enter the site and become exposed to the</p>	<p>20. All risk estimates resulting in exposure due to direct contact with sediments are within acceptable levels. The assumed potential for exposure is also hypothetical so risks are likely to be overestimated. Nevertheless, the</p>

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<p>sediments. This information is critical in requiring access limitation and 24/7 security.</p>	<p>SCA area is planned to be closely managed and maintained. Information on site access and security will be outlined in the Site Security and Community Health and Safety Plan which will be developed as part of the final design for the project.</p>
<p>21. The HHRA did not involve thorough testing of the existing wastebed (Wastebed 13) on which the proposed SCA will sit (i.e. why weren't hundreds or thousands of deep core samples taken from Wastebed 13 and analyzed to look for toxic hot spots, etc.), but rather focused on the SCA itself and the pumping and dumping of sediment to the SCA. The existing wastebed has toxic substances contained in it by its classification as a Class 3 Hazardous Waste Site by the NYSDEC. The Wastebed 13 also currently leaches into the environment as it is not lined and it may contain similar toxic substances to that of the Onondaga Lake sediment that will be pumped to the SCA. How can the SCA be constructed on a wastebed (Wastebed 13) if its contents have not been thoroughly tested? The proposed SCA will be lined and monitored to protect the environment, but if there are similar toxic substances in Wastebed 13 already, which is not lined, what will be done to stop and prevent the leaching of toxic substances into groundwater, air, soil from Wastebed 13? By building the SCA on top of a wastebed before knowing the precise contents of that Wastebed, aren't you risking taxpayer money down the road, because it is possible that years from now it may be determined that Wastebed 13 is leaching toxic substances into the environment which are a hazard to human health and that the entire wastebed will then need to be remediated, which means that the SCA will need to be removed as well (since it will be</p>	<p>21. As noted in the Frequently Asked Questions (FAQs), Onondaga Lake Dredging Project Sediment Consolidation Area (SCA) at Wastebed 13, responses # 11 and 21 at <a href="http://www.dec.ny.gov/docs/regions_pdf/scafaq.pdf">http://www.dec.ny.gov/docs/regions_pdf/scafaq.pdf</a>, Wastebed 13 contains relatively low concentrations of volatile organic compounds, phenols and metals such as mercury and its Class 3 status indicates that the site does not pose a significant threat to human health or the environment. Geotechnical testing conducted on Wastebed 13 which provided information on potential settlement rates and geotechnical stability indicate that the SCA can be safely constructed and operated on the Wastebed. The levels of hazardous substances currently in Wastebed 13 were not taken into account in the HHRA because the levels of contaminants in the wastebed are generally low. Any release of materials from Wastebed 13 would not be expected to result in risks or hazards which would be greater than those estimated as a result of direct contact with dredged material. Any potential leaching of contaminants currently in Wastebed 13 will be addressed as part of the site closure program to be implemented for the Wastebeds 9-15 site.</p>

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constructed on the wastebed)?	
22. The impact of airborne dust from the SCA construction and operation reaching receptors was not addressed. This issue has been a public concern in the past and should be addressed.	22. At the request of community members and elected officials, the SCA HHRA evaluated risks associated with potential exposures to material dredged from the lake. This material will primarily be wet and will be conveyed and managed in a manner which is not expected to produce airborne dust. Consequently, potential risks to airborne dust were not evaluated in the SCA HHRA. Air quality monitoring, which includes monitoring for airborne dust, and procedures to ensure that dust generation is prevented and controlled (e.g., using a water truck to wet site roadways, application of dust-suppressing road materials onto roadways), are being included in the Community Health and Safety Plans being developed for the project. A draft Community Health and Safety Plan for 2010 construction was recently made available for public review and comment and can be found at <a href="http://www.dec.ny.gov/chemical/37558.html">http://www.dec.ny.gov/chemical/37558.html</a> .
23. What is a photoionization detector? What chemicals can it detect? Are photoionization detectors suitable for fixed monitoring environments? What are the recommended maintenance and calibration procedures for photoionization detectors? Was a failure of the perimeter detectors considered in the HHRA risk assessment?	23. A photoionization detector, or PID, is an instrument which is used to measure airborne concentrations of volatile organic compounds and other gases. PIDs are typically portable models which are used to obtain periodic readings and may be used on the project to assess compliance with short-term (e.g.; 1-hour) exposure criteria. Maintenance and calibration of PIDs will be done in accordance with equipment manuals. Other equipment and sampling methods will be used to assess compliance with long-term exposure criteria (e.g.; annual) such as the NYSDEC DAR-1 criteria and EPA RSLs cited in the SCA HHRA. Sampling and analytical methods to be utilized to assess compliance with long-term criteria will be specified in site monitoring plans to be developed.
24. The HHRA does not indicate whether any of the airborne contaminants are a causative agent for allergies, asthma, emphysema, or similar diseases. These issues are of significant concern to nearby residences and should be addressed.	24. The toxicity values applied in the risk assessment represent effects on the most sensitive endpoints (such as the target organ that is affected by exposure to the lowest dose of a chemical) and life stages (such as children or women of child-bearing age, who may be more susceptible to certain health effects than the general population), and as such provide a health protective means to evaluate risks. Potential health effects that are factored into toxicity values include allergies, asthma, emphysema, and similar health effects.
25. What are the potential risks to State Fairgrounds workers and attendees?	25. Potential exposures to Fairgrounds workers and attendees is expected to be significantly less than that of a resident since their frequency and duration of exposure is much lower. Also, due to the distance between the Fairgrounds and the residential receptor boundary (blue line shown on Figure 3 in Appendix A), there would likely be greater dilution than the dispersion factor of 4.5 which represents the minimum amount of dilution to the air leaving the work zone perimeter as it travels to the nearest residential areas. Since all resulting risk estimates and hazard indices for residents were within levels identified by EPA as acceptable, potential risks to Fairgrounds workers and attendees would also be within acceptable levels.
26. What are the potential risks to school bus operators and passengers that pass within 200 feet next to the SCA everyday?	26. Since operators and passengers on school buses would be in the vicinity of the SCA relatively infrequently and for only brief periods of time, they would not be exposed at frequencies and durations which would result in chronic or subchronic health effects. Facility compliance with short-term exposure criteria will ensure that individuals who may be in the vicinity of the SCA will not be exposed to levels which may cause any adverse health

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	effects.
27. Since many of the chemicals in the SCA are flammable, has any type of combustion risk been looked at?	27. Combustion potential is not included in the HHRA. However, the physical properties of the chemicals and the sediments were reviewed as part of the design of the SCA. Combustion of chemicals in the sediments is not expected due to the nature of the chemicals and sediment, and low concentrations of chemicals in sediment.
28. What are the 38 chemicals from which potential exposures and risks resulting from a hypothetical failure of the SCA containment system and direct contact with exposed sediments were calculated? What are the 27 volatile chemicals from which potential exposures and risks resulting air emissions were calculated?	28. The 38 chemicals which factored into estimated risks from exposed sediments can be found on Table 3-1 in Appendix B of the SCA HHRA. The 27 chemicals which factored into estimated risks via the air inhalation pathway can be found on Table 3-2 in Appendix B of the SCA HHRA. These tables are available at <a href="http://www.epa.gov/region02/superfund/npl/onondagalake/hhrs_appendix_b.pdf">http://www.epa.gov/region02/superfund/npl/onondagalake/hhrs_appendix_b.pdf</a>
29. What is the additive effect if you assume a person came onto Wastebed 13 and was in physical contact for 45 consecutive days with contaminated sediment released as a result of a failure of the SCA containment system, and lived within the airborne radius discussed in the HHRA?	29. Any potential risk to a person who might be exposed under the scenario suggested in the comment – 45 days of consecutive exposure to the sediments and daily exposure to the airborne contaminants during operation of the SCA – can be estimated by summing the risks from the two separate scenarios. These risks are within EPA’s acceptable levels, and no adverse health effects would be anticipated. In addition, it should again be noted that these scenarios include several health-protective assumptions, including daily exposure to the highest airborne concentrations and requiring an individual to breach several engineering controls such as a fence and berm to access the SCA in order to be exposed to the sediments.
30. The possibility of failure was considered, with possible release of sediments on site. Why is there no exposure scenario for resident exposures to airborne VOCs released from sediments in the event of a failure?	30. Exposures to airborne VOCs resulting from a failure of the SCA were not evaluated in the HHRA since these exposures would be of relatively short duration and would not be expected to result in risks or hazards greater than those estimated for the air inhalation pathway for the five-year duration that was assumed in the HHRA.
31. The estimated risks for the inhalation pathway were based on an assumed exposure period of 5 years. What would the risks be if the dredging project were to take place over 25 years?	31. If the HHRA assumed that the duration of the dredging project would be 25 years as opposed to 5 years, cancer risks associated with the air inhalation pathway would be 5 times higher than what was estimated in the SCA HHRA or $2 \times 10^{-5}$ for adults, adolescents and children. This would still be within the acceptable risk range. Due to how EPA assesses noncarcinogenic health effects, hazard indices, which evaluate potential health risks based on each exposure rather than over the duration of the exposure, would not change even if the dredging project were to be extended for any period of time. Therefore, even if the dredging project were extended to 25 years, all estimated cancer risks and noncancer hazard indices would still be within EPA’s acceptable levels and no adverse health effects would be expected.  In addition, it should be noted that, in the SCA HHRA, the air concentrations modeled in the residential areas are based on work zone perimeter concentrations that reflect the maximum annual average

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	<p>concentrations for all chemicals and it's highly unlikely that every volatile chemical would be present at that concentration for a one year period of time to result in that exposure scenario. For this reason and because of other health protective assumptions incorporated into the risk assessment, the estimated risks and hazards from the air inhalation pathway are likely to be overestimated. In addition, air monitoring will be conducted prior to and during operations and the results will be regularly evaluated to assess compliance with air criteria during the operating phase of the project.</p> <p>It is also worth noting that it is extremely unlikely that the dredging project will take place over 25 years. In compliance with the Consent Decree issued for this Lake cleanup effort, the dredging and sediment dewatering operations are being designed to be completed in four years. Furthermore, under no circumstances will site operations be allowed to continue unabated if monitoring results indicate that emissions are present at levels which may be harmful to site workers or to residents in the surrounding community. In the event that air concentrations approach or exceed long-term criteria for a sustained period, engineering controls or other mitigative measures would be implemented to reduce air concentrations to be at or below acceptable levels. In the event that these measures are insufficient, dredging operations will cease and will not restart until corrective actions are taken to ensure that workers and the community are fully protected.</p>
<p>32. Why were risks due to 1-phenyl-1-(4-methylphenyl)-ethane and 1-phenyl-1-(2,4-dimethylphenyl)-ethane (PTE and PXE, respectively) not included in the evaluation?</p>	<p>32. PTE and PXE were not quantitatively evaluated in the SCA HHRA since these compounds are "tentatively identified compounds" (TICs). As noted in the SCA HHRA, the presence nor concentration levels of TICs cannot be reported with certainty and they typically do not contribute significantly to the overall risk or hazard at a site. There is also limited information about the toxicity of PTE and PXE. PXE is a synthetic fluid which was used with other fluids to manufacture Edisol XT, a viscous type of insulating oil used in capacitor banks. Edisol XT is not listed as a RCRA hazardous waste and none of its components are hazardous substances under Superfund. Edisol XT and its components are characterized by a low vapor pressure and low solubility in water which minimize the possible transport mechanisms in the environment. In addition, the components of Edisol XT are considered to be relatively innocuous and are not likely to be toxic, especially under the potential exposure scenarios considered in this HHRA. EPA was not able to locate any toxicity information on PTE, but because its chemical structure is similar to that of PXE, its toxicity is also expected to be similar.</p>