New York State Department of Environmental Conservation Division of Fish, Wildlife & Marine Resources Bureau of Habitat, 5th Floor

625 Broadway, Albany, New York 12233-4756 Phone: (518) 402-8924 • Fax: (518) 402-8925 Website: <u>www.dec.ny.gov</u>



MEMORANDUM

TO: Matthew Dunham, DER

FROM: Mary Jo Crance, DFWMR Hazardous Waste Site Evaluation Unit

DATE: March 29, 2010

SUBJECT: Westinghouse Electric Corporation, Site No. 8-08-007, Review of "Ecological Risk Assessment Steps 3 through 5, Koppers Pond Kentucky Avenue Wellfield Superfund Site, Operable Unit 4, Horseheads, New York", Prepared by Integral Consulting Inc., Dated February 9, 2010.

NYSDEC had expected that the past and proposed field sampling effort and subsequent Site Characterization, SLERA and BERA documents would fulfill requirements to meet both EPA risk assessment and the NYSDEC Fish and Wildlife Impact Assessment (FWIA); however, the subject line document does not propose to collect enough data to fulfill the purpose of either document. At the request of EPA, NYSDEC DFWMR submitted a detailed memo dated April 30th, 2009, identifying what data would need to be collected to fulfill requirements of the NYSDEC Fish and Wildlife Impact Assessment (FWIA) and the Division of Environmental Remediation background data collection requirements specifically so that the preparer of the subject line document could use the memo as a guideline for the upcoming proposed work. The data that NYSDEC had requested to be collected is clearly within the typical expected scope of the Environmental Protection Agency (EPA) BERA Steps 3-5, and was requested to provide enough information to determine impact, or non-impact of Kopper's Pond; whichever the case may be. The subject line document does not include collection of the data requested in the April 30th memo. The proposed Ecological Risk Assessment is not accepted because it does not provide a sufficiently robust plan to assess resource impacts nor determine background constituent levels.

- Adoption of any alternative screening values should have been discussed prior to dropping a COPEC from consideration in the BERA. In several instances "refined screening levels" were adopted, and no explanation of how the refined screening level was derived was given. Many of the new refined screening levels cannot be accepted by the state without further review. Please provide the data and a detailed analysis of how the new refined screening levels were derived. Contaminants need to be retained as COPECs until further evidence is available for the adoption of alternative screening values.
- 2. Section 2.4 Summary of SLERA Screening Conclusions, a. Surface Water SLERA COPECs, page 2-6, PCB as a surface water contaminant of potential concern cannot be ruled out as a





COPEC because in previous investigations, the method detection limit was higher than NYSDEC criteria for this contaminant. Both benzo(a)anthracene and PCB need to be retained as COPCs in surface water in the BERA. A review of the chosen laboratory methods will be necessary to ensure that all methods are capable of detecting contaminants at criteria levels.

- 3. Section 3.1.1 Refined Surface Water COPEC Screening, Surface Water SVOCs, page 3-2, Section states that benzo(a)anthracene was detected below the "refined ESV"; however the document does not state how the "refined ESV" was determined. Refined ESVs need to be reviewed and accepted by the regulatory authorities prior to dropping a COPEC. Benzo(a)anthracene needs to be retained as a COPEC.
- 4. Section 3.1.2 Refined Sediment COPEC Screening, page 3-3,
 - a. Sediment VOCs, Section states "...an alternative ESV (for acetone)...EPA Region VI sediment screening benchmark (60,030 micrograms/kg) was used (retained as a refined ESV)"; rather than retaining the ESV of EPA Region V (9.9 micrograms/kg); however, no toxicological explanation was given for the modification of this benchmark. NYSDEC doesn't accept the refined bench as per comment #2. The benchmark of 9.9 micrograms/kg needs to be retained for acetone, and the contaminant needs to be retained as a COPEC.
 - b. Contrary to the text, Table 3-1b has the Refined ESV for acetone as 9.9 micrograms/kg. The discrepancy needs to be fixed.
 - c. Sediment Pesticides, Section states "gamma-BHC and gamma-Chlordane (are) not retained for the main risk characterization"; however no toxicological reason is given for dropping gamma-BHC. Further investigation would be needed to determine if the contaminant is spatially insignificant. The NYSDEC sediment criteria for gamma-Chlordane needs to be retained until after collecting toxicological data on the sediments. Both gamma-BHC and gamma-Chlordane need to be retained for consideration in the BERA.
- 5. Section 3.1.2, Sediment Inorganics, page 3-5 through 3-9, this section incorrectly drops contaminants from further consideration as a COPECs in the BERA and/or modifies ESVs based on a flawed analysis of regional spatial data. The noted databases or regional studies collected soil and sediment samples regardless if the sample location was impacted by contaminants or not. Another problematic issue with the regional data is that many sample locations are not similar to the sediments of Kopper's Pond, and in some cases it is unclear if the media sampled was a soil sample or sediment sample (sediment defined as collected from below the mean high-water line). Regional geochemical data can be used as one line of evidence for regional background information; however,
 - a. The data would need to be screened to remove contaminated sampling locations,
 - b. The data would need to be screened to retain only those sample locations that have sediment samples similar Kopper's Pond,
 - c. The data would need to be screened to retain only those locations close to the Horseheads area. Proposed reference ponds are within an approximate 20-mile radius of Kopper's Pond, perhaps the database and study sampling locations should be screened for that approximate distance as well.
 - d. The laboratory analysis would need to be reviewed to ensure that method used is acceptable and reaches required detection limits.

After the geochemical data is refined, it may be used as one line of evidence as a regional



background value; however, a site-specific background analysis would still need to be done and would carry more weight for interpreting impacted sediments.

- e. A contaminant can neither be dropped as a COPEC, nor have its ESV modified without site-specific toxicological evidence of non-impact and a site-specific background analysis. Screening values The following inorganic contaminants need to be retained for further consideration in the BERA with their original SLERA Ecological Screening Value:
 - i. aluminum, 14,000 mg/kg
 - ii. antimony, 2 mg/kg
 - iii. barium, 0.7 mg/kg
 - iv. copper, 32 mg/kg
 - v. lead, 31 mg/kg
 - vi. nickel, 23 mg/kg
- 6. Section 3.1.3 Refined Forage Fish COPEC Screening, page 3-9. Both the smaller forage fish and larger fish need to be analyzed for ecological purposes. The BERA needs to include contaminant concentrations found in the larger game fish of the past field effort. Since the remaining carcass of the fish was not analyzed for contaminants, a fillet to whole fish ratio needs to be used to estimate whole body contaminants prior to further analysis in the BERA. For example, ratios for mercury and total PCB (tPCB) are available in the Onondaga Lake Baseline Ecological Risk Assessment, Volume 1 of 2, (2002). The ratio of fillet to whole body fish for tPCBs is 2.5; therefore, simply multiply the fillet concentrations by 2.5 for an estimate of whole body fish tPCB. The fillet to whole body ratio will need to be applied for all COPECs, and an analysis will need to be done to determine if the extrapolated game fish exceed tissue criteria.
- 7. Section 3.3 Identifying Assessment and Measurement Endpoints to Frame the Evaluation, pages 3-11 to 3-13. The EPA guidelines state

"The most basic question applicable to virtually all Superfund sites is whether site-related contaminants are causing or have the potential to cause adverse effects on the assessment endpoint(s). To use the baseline ecological risk assessment in the FS to evaluate remedial alternatives, it is helpful if the specific contaminant(s) responsible can be identified. Thus refined, the question becomes "does (or could) chemical X cause adverse effects on the assessment endpoint?" In general, there are four lines of evidence that can be used to answer this question:

- 1. Comparing estimated or measured exposure levels to chemical X with levels that are known from the literature to be toxic to receptors associated with the assessment endpoints;
- 2. Comparing laboratory bioassays with media from the site and bioassays with media from a reference site;
- 3. Comparing in situ toxicity tests at the site with in situ toxicity tests in a reference body of water; and
- 4. Comparing observed effects in the receptors associated with the site with similar receptors at a reference site."

A perfect example of a good assessment endpoint is given on page 3-10 of Section 3.5, "Selection of Assessment Endpoints" in the EPA guidelines; which happens to be

years of stewardship 1970-2010

one of the COPECs of the Kopper's Pond Site (copper). In this example, it states "An operational definition of the assessment endpoint...would be pond fish and invertebrate community composition similar to that of other ponds of similar size and characteristics in the area." The measurement endpoint would then be the comparison of these communities from reference ponds to the study site pond.

All the assessment endpoints start within the current document state "Evaluate the potential for adverse effects...", and all solely depend on modeling to determine impact. NYSDEC expects all current assessment endpoints to be modified so that measured data are used to determine impact. Assessment endpoints which use all four lines of evidence can (and need to) be developed for Kopper's Pond. The new assessment endpoints should include measurements such as:

- a. Comparison of botia and abotic (sediment and surface water analysis) elements of Koppers pond to reference pond(s)
- b. Laboratory chronic bioassays of both Kopper's pond reference pond sediments
- c. Measurement of contaminants within sensitive biota previously not collected (for example, metals and PCBs within phytoplankton and mollusks, as suggested in the EPA guidelines), and within a sensitive food chain, such as metals and PCBs within small mammals (shrews) and amphibians.
- d. Finally, comparison of measured levels of contaminants within biota to literature values.
- 8. Section 3.4, Developing a Recommended Procedure to Identify Suitable Reference Ponds, page 3-13, Section states 'candidate reference pond selection methodology...(and) results of those investigations have been provided to EPA and NYSDEC". NYSDEC submitted a memo on the selected ponds dated January 13, 2010. Included with this memo is an <u>update</u> of the original memo which includes suggested reference locations, please see attached.
- 9. Section 3.5, Selecting Representative Receptors to be Evaluated Further in the ERA, page 3-15, Section states benthic communities were previously evaluated and that previous toxicity tests were completed; however, the primary purpose of the supplement BERA is to redo that past investigation because the data, including the toxicity tests, are considered too old, and the investigation was incomplete (no comparison with reference locations); therefore, the current supplemental BERA is expected to include bioassay testing and benthic community analysis. Further, it should be noted that the EPA guideline states "Chironomus tentans ... (the midge used in the past Kopper's Pond testing)... is considered more tolerant of metals contamination than is C. riparius,... to assess the effects of exposure of benthic communities to metal-contaminated sediment, C. riparius might be the better species to use as a test organism for many aquatic systems to ensure that risks are not underestimated. In general, the most sensitive of the measurement endpoints appropriate for inferring risks to the assessment endpoint should be used." Future bioassays should use C. riparius as one test species since it is a species sensitive to contaminants within Kopper's Pond.

10. Section 3.5.3 Recommended Supplemental BERA Receptors, page 3-15

a. Fish – The document suggests using minnows and/or young-of-year fish to evaluate potential risks to semi-aquatic upper trophic levels. This would erroneously skew the modeling efforts to be less conservative because the younger fish often have concentrations of contaminants lower than older fish. Meanwhile, the piscivores



selected to model commonly eat fish larger than young-of-year fish. Larger fish tissue results need to be used to evaluate potential risks to higher trophic levels. See comment 7.

b. Herbivorous Mammalian Species – The document suggests using the muskrat as the representative mammalian herbivore. As noted in the EPA document "Wildlife Exposure Factors Handbook, Volume I of II", EPA/600/R-93/187a, December 1993, "molluscs are an important component of the diet of some populations", and "among the animals that muskrats consume are crayfish, fish, frogs, turtles, and young birds". It is likely that the diet of a muskrat in Kopper's Pond have a large component of these other food sources, particularly during the non-growing season. The diet of the muskrat needs to be modeled as having a large component of these other food sources. Otherwise, tissue sampling should be collected to calibrate the modeling effort.

c. Piscivorous Mammalian Species – The document suggests re-evaluating the mink as a piscivore. If the mink is used, two dietary evaluations would need to be done; one evaluation with a terrestrial based diet noted in EPA, Dec 1993, the other evaluation with a diet that resembles that of an otter (composed of 90% fish), otherwise an otter should be used as the true mammalian piscivore.

- d. Benthic Macroinvertebrates The document states "The draft BERA (CDM, February 1999) found no evidence of benthic toxicity..." (Section 6.6.2 page 66) however the EPA's 1999 supplemental assessment of environmental and ecological risk concluded the benthic community is severely impacted (section 5.3, page 5-8) Hence, further benthic community sampling and analysis is warranted and needs to be included in the supplemental BERA to assess current conditions. Further, future toxicity testing needs to include long-term chronic testing with species noted as being sensitive to contaminants present in Kopper's Pond, see comment 9.
- e. Additional inclusion of shrews measured concentrations of COPECs in shrews should be included to evaluate potential risks to upper trophic level receptors.
- 11. Section 3.5.4 Exposure Calculations and Preliminary Exposure Assessements for Supplemental BERA Receptors, page 3-17, Both Area Use Factors (AUFs) and Seasonal Use Factors (SUFs) need to be conservatively modified to reflect site specific circumstances. For example, if Koppers Pond is the only area available within a likely forage range, then more weight should be given to Kopper's Pond in AUF. SUFs need to consider that the receptor may forage in the same area, but have seasonal dietary changes, see comment 12b.
- 12. Section 3.5.5 Preliminary Biota Transfer Factors for Estimating COPEC Concentrations in Prey or Forage Items, page 3-18, Additional sampling needed as key diet or forage items include small mammals (shrews).
- 13. Section 3.5.6 Derivation of Toxicity Reference Values, page 3-18, Additional literature sources that need to be included are Bursian, et. al., June 2003, "Dietary Exposure of Mink to Fish from the Housatonic River: Effects on Reproduction and Survival".
- 14. Section 4.1, Study Design, page 4-2, Proposed additional work needs to address:
 - a. additional benthic community studies and
 - b. toxicity studies,
 - c. collection of small mammals that may serve as forage for the evaluated receptors, and

years of stewardship 1970-2010

- d. collection of aquatic biota beyond crayfish (mollusks).
- 15. Section 4.1.2, Field Reconnaissance of Candidate Reference Pond, page 4-3, see attached

updated memo on reference locations.

- 16. Section 4.1.3, Collection of Additional Biota Samples, page 4-4, see comment 15
- 17. Section 4.1.4, Collection of Additional Sediment Samples from Koppers Pond Mud Flat Areas, page 4-4, It is reasonable to believe that the mud flat sediment samples will have similar variability to sediment samples within Koppers Pond. Since the variability of the past sampling is known, the number of mud flat sediment samples should be based on that variability. The past collected samples had a large variability (<0.1 to above 20 ppm). To have a reasonable certainty that the mud flat samples are below a sediment criteria threshold (0.1 ppm for sediments) and have no impact, more than three samples will be needed to be taken. A simple geostatistical analysis should be done to determine the proper number of samples needed.</p>
- 18. Section 4.1.5, Collection of Sediment and Biota Samples from a Reference Pond, page 4-5,
 - a. To compare the biota of Koppers pond to a reference pond, a similar number of biota samples that were taken in Koppers should be taken in the reference pond.
 - b. As far as sampling sediment and surface water, given an unknown variability, a minimum of 30 samples each should be taken.
 - c. Three composite plant samples is not enough data to have any kind of statistical certainty.
- d. The sediment samples from the reference pond(s) need to include a metal analysis.
 19. Section 4.2, Data Quality Objectives, page 4-6, Future testing of any media needs to ensure that the analytical detection limits of all laboratory methodologies are capable of meeting New York State criteria for the corresponding media. EPA method 1668a can be used to determine Total PCB because the detection limit is exceedingly close to the NYSDEC sediment criteria.

Information collected in past sampling efforts indicates there are impacts to fish and wildlife resources that warrant a remedial action. If defensible, acceptable site-specific remedial cleanup goals are not developed for Kopper's Pond, NYSDEC will expect that the NYSDEC ecological sediment criteria will be used as remedial goals.

If you have any questions call 518-402-8972.

ecc:

C. Dowd, DFWMR BOH R. Quail / C. Gosier / J. Dawson, DFWMR HWSEU S. Lorence / C.Keim / J.Thiel, NYSDEC BNRD

