RESPONSE TO OHIO EPA COMMENTS
RWP PHASE 2 ERA WORK PLAN
PLUM BROOK ORDNANCE WORKS
SANDUSKY, OHIO
JUNE 2000

Document: **Draft Work Plan and Site-Specific Safety and Health Plan for Phase 2 Ecological Risk Assessment of the Red Water Ponds Areas, Plum Brook Ordnance Works, Sandusky, Ohio, dated June 2000, Dated July 31, 2000**

Review Comments from Ron Nabors, NWDO-DERR and Laurie Moore, SWDO-OFFO, Dated July 31, 2000

Comment

1) **Section 4.1.2 Exposure Pathways, page 9**

Soil Exposure Pathway: For the soil exposure pathway, soil samples should be obtained from a depth of 0-2 feet for non-burrowing animals and soil samples obtained from a depth of 0-4 feet are considered for burrowing animals. For plant exposure, soil samples should be obtained from a depth of 0- 4 feet.

Sediment Exposure Pathway: What depths are considered when evaluating sediment exposure?

Responses to Comment No. 1

The sampling depths presented on page 9 reflect what was assumed in the Phase 1 ERA based on previously collected data. Soil sampling proposed for the Phase 2 assessment is presented in Section 4.2.3.1 (i.e., 0 to 1 foot depth).

Sediment sampling is proposed as presented in Section 4.2.3.3 (i.e., surface sediment will be collected based on the depth sampled using an Ekman dredge or similar device).

Comment

2) **Section 4.2.1.1 Soil Sampling for Earthworm COPEC Uptake Estimates, page 12**

What depth will surface samples be collected for the uptake study? Are the soil samples discrete or composite samples? What methods or protocols are used to collect soil samples?

Will the analytical results be evaluated prior to conducting earthworm uptake studies? If the analytical results show that the COPECs are non-detect, is the next step to automatically initiate soil spiking in the laboratory?

If field collected soil samples are non-detect for 1,3-DNB and 4-amino-2,6-DNT, what

method or protocol will be used to spike soil samples in order to determine the bioaccumulation factor? Will laboratory grade soil be used as the spiking media?

Responses to Comment No. 2

Surface soil sample will be collected from 0 to 1 foot bgs, as described in Section 4.2.3.1. Soil samples will be composite, see Section 4.2.3.1, along with protocol.

Yes, analytical results will be evaluated prior to conducting uptake studies. If the results show nondetect for COPECs with low frequency of detection, then it is recommended that no uptake study be performed, as recommended in the Memo on the Verification Site Visit Conducted June 29-30, 2000, dated July 18, 2000.

Spiking soil samples is not recommended for 4-amino-2,6-DNT if analytical results are nondetect. This is because the frequency of detection (FOD) for this nitroaromatic was 2%. The refined ERA can dismiss this COPEC as insignificant based on a realistic FOD evaluation. For 1,3-DNT, with a FOD of 12%, laboratory spiking is recommended if analytical results are nondetect. Spiking would be performed by the selected laboratory using supplied site soils. The laboratory will be requested to provide a spiking protocol, and it will be inserted to the Work Plan when received.

Comment

3) **Section 4.2.1.2 Fish Sampling for COPEC Uptake Estimates Based on Tissue, pg. 13**
What other factors will be taken into consideration when compositing similar fish species into individual samples? Will the ages, lengths and body weights of fish be measured and recorded before compositing?

If fish can not be collected from PRRWP, what approach will be used to determine the bioaccumulation factor for these COPECs? Ohio EPA recommends consulting the U.S. EPA's Great Lakes Water Quality Initiative Technical Support Document for the Procedure to Determine Bioaccumulation Factors, March 1995, EPA-820-B-95-005 and the Great lakes Water Quality Initiative Technical Support Document for Wildlife Criteria, March 1995, EPA-820-B-95-009.

Responses to Comment No. 3

No other factor than those presented in the Work Plan will be taken into consideration. Total length and body weight will be recorded before compositing, and this information will be added to the Work Plan.

If fish can not be collected from PRRWP, then the pathway will be deemed incomplete for fish ingestion, and no bioaccumulation factor will be needed.

Comment

4) **Section 4.2.1.3 Sediment Sampling for COPEC Uptake Estimates, page 14**

What depth will sediments be collected for the uptake study? How will these sediments

be collected? Will the sediment samples be discrete or composite samples? Will the analytical results for the sediments be evaluated prior to conducting the uptake study? What methods will be used to spike sediments if a laboratory bioassay is necessary based on the analytical results?

Responses to Comment No. 4

Sediment sampling is proposed as presented in Section 4.2.3.3 (i.e., surface sediment will be collected based on the depth sampled using an Ekman dredge or similar device). Sediment samples will be discrete. Analytical results for the sediments will be evaluated prior to conducting the uptake study, and historical FOD will considered prior to going ahead with the spiking if COPECs are nondetect. The laboratory will be requested to provide a spiking protocol, and it will be inserted to the Work Plan when received.

Comment

5) **Section 4.21.1.4 Sediment Sampling for COPEC Sediment Toxicity, page 15**

How were the sample locations selected for toxicity testing? What depth are sediments collected for toxicity testing? What methods are used to collect sediment samples?

Response to Comment No. 5

As stated in the Work Plan, sample locations were selected based on previously identified toxicity hotspots. Sediment sampling is proposed as presented in Section 4.2.3.3 (i.e., surface sediment will be collected based on the depth sampled using an Ekman dredge or similar device).

Comment

6) **Section 4.2.1.5 Surface Water Sampling for COPEC Surface Water Toxicity, pg. 16**

How were the surface water sample locations for toxicity testing selected? Are the surface water samples unfiltered or filtered? Are they grab or composite samples?

Response to Comment No. 6

As stated in the Work Plan, sample locations were selected based on previously identified toxicity hotspots. Surface water samples will be unfiltered grab samples, as discussed in Section 4.2.3.2.

Comment

7) **Section 4.2.1.6 Background Sampling, page 16**

If nitroaromatic compounds are detected in background samples, how will the data be used? This may indicate that the sample location is impacted and not appropriate for determining background.

Will PAHs be sampled for at background sediment locations? If PAHs are considered to be anthropogenic at this site, then it is recommended to establish site-specific background

concentrations for anthropogenic PAHs in sediments, in addition to soils.

When is the field verification task scheduled to be conducted? Have background soil sample locations been selected?

Responses to Comment No. 7

Agreed. Nitroaromatic compounds will not be analyzed in the background samples.

PAHs are not being sampled for at background sediment locations (Work Plan Table 5). PAHs in site sediment are only needed to estimate uptake factors for aquatic invertebrates. PAHs were not an issue for sediment toxicity, therefore background PAH concentrations in sediment are not needed.

Memo on the Verification Site Visit Conducted June 29-30, 2000, dated July 18, 2000 was sent to OEPA. OEPA could not make the Verification Site Visit due to scheduling conflicts.

Comment

8) **Section 4.2.2 Analytical Procedures, page 17**

What age organisms will be used for chronic freshwater toxicity tests, chronic freshwater sediment toxicity tests, and the bioaccumulation tests for freshwater sediments and upland surface soils?

How many test treatments and replicates will be used for each toxicity test and bioaccumulation test?

What water quality parameters will be measured during the toxicity test period (i.e. hardness, alkalinity, pH, dissolved oxygen, etc.)?

Prior to the bioaccumulation tests, will the test organisms be allowed to depurate prior to introducing them to the test media? How long will depuration occur?

Responses to Comment No. 8

The attached tables provide a summary of the conditions for conducting the toxicity and bioaccumulation tests, and they will be added to the Work Plan. As indicated in the tables, fathead minnow larvae will be less than 24 hours old, ceriodaphnids will be less than 24 hours old and all released within an 8-hour period, *Hyalella azteca* will be 7-14 days old, and the oligochaetes and earthworms will be adults. Each sample will constitute a test treatment, no dilutions of these samples will be used; thus there will be 10 treatments for each test type. There will be 5 replicates for the fathead minnow test, 10 for the ceriodaphnid test, 8 for the *Hyalella azteca* test, and 5 each for the bioaccumulation tests. Dissolved oxygen, pH, and temperature will be measured daily in all aquatic tests. Hardness, alkalinity, and conductivity will be measured on the sample prior to testing, and weekly for all tests greater than 7 days in length, except for the *Hyalella azteca* test in which they will be measured at the beginning and end of the

test, only. Organisms will be depurated prior to the bioaccumulation tests and after the tests. Oligochaetes to be used in bioaccumulation testing will be isolated in clean water the day prior to testing to allow for depuration. Earthworms will be placed on moist paper for 6 hours prior to testing to allow for depuration.

Comment

9) **Section 4.2.3.2 Surface Water Sampling, page 19**

Will hardness and alkalinity measures be taken in the field? This information will be helpful when determining the appropriate hardness level for the hardness control that is used in the freshwater toxicity test.

Response to Comment No. 9

As stated in the Work Plan (page 19), at the end of sampling, field parameters including Eh, pH, specific conductance, temperature, and dissolved oxygen will be measured and recorded in sample collection log. Historic hardness data for the sites are available from the Phase 1 ERA.

Comment

10) **Section 4.2.3.3 Sediment Sampling, page 20**

Please indicate what depth sediments will be collected.

Response to Comment No. 10

Sediment sampling is proposed as presented in Section 4.2.3.3 (i.e., surface sediment will be collected based on the depth sampled using an Ekman dredge or similar device).