

## MEMO

TO: Dean Naujoks  
FROM: Environmental Stewardship Concepts  
RE: OU1 RI Review  
DATE: August 31, 2007

We have been reviewing the OU1 Remedial Investigation in preparation for compiling response to the Superfund Proposed Plan that is to be compiled by October 4<sup>th</sup> of this year. Below are the most serious issues so far and how they relate to the Proposed Plan.

### **General Issues**

The Remedial Investigation (RI) does not give any soil sampling data for the Ward Transformer Site itself (OU1). This omission is curious because contamination in these areas have a direct effect on OU2- the contaminated tributaries and water bodies draining into the Neuse River. The two problems are inseparable and cannot be discussed without mentioning the other. The concern is that remedial options for each site will be developed in a vacuum.

We know that the excavation for OU2 is scheduled to begin in late Aug or early Sept, and we have asked for the work plan, but EPA has not yet given us a copy of same.

While not directly related to OU1, the RI notes frequently in its background discussions that after 1979 only transformers with lower concentrations (< 50 ppm) were processed at the site. These transformers still contained PCBs, and plans at OU2 should be reviewed to make sure that the assumption that the reconditioning of these transformers carried no risk.

### **Sampling**

While the site has more fish tissue data than a number of other sites we have worked on, there is a dearth of data on soils, and sediment composition in Reach B. A total of 20 soil samples were taken over the entire study area, hardly enough to characterize the entire floodplain. That is a mere 5 samples per reach. This is hardly enough to characterize contamination in floodplain soils. Obtaining more complete data on these soils is critical to controlling PCB contamination in the Neuse River. Floodplain soils act as both sources and sinks for PCB contaminated sediments in waterways. The RI contains no real discussion of major weather events and how they may affect contamination at the site, and this is reflected in the low number of samples taken from floodplain soils. Small streams like the unnamed tributaries to Briar and Crabtree Creeks as well as Briar and Crabtree Creeks themselves are prone to flash flooding. These floods

can bring PCB and dioxin contaminated sediments far from established stream banks.

Stream sediments are also somewhat undercharacterized. Only four sample locations examined sediments greater than 24 inches beneath the surface. These deeper sediments are not likely to be as contaminated as those on the surface, but it is important to characterize them in order to better evaluate remedial options. Even low levels of contamination at these depths could affect dredging depths or other actions.

As noted above, there are an adequate number of fish tissue samples to characterize the site. However, the RI notes that catfish had their skins removed before they were analyzed. The reason for this is not stated. Wildlife that consume catfish and many fishermen do not remove these tissues before eating the fish, so it is unacceptable to evaluate whole body concentrations for the purposes of risk assessments without them. Other fish samples appear to have been handled properly. A copy of Tables 2-2 and 2-3 from the RI have been attached which summarize sampling efforts for the entire site (pages 116-131 of the RI PDF file).

## **Human Health Risk Assessment**

After reviewing the Remedial Investigation (RI) portion of the document, the most disconcerting problem was not with the document, but with changes or specific rules proposed by the regulatory agencies. In particular, the soil screening values of two toxic metals (arsenic and lead) were set dangerously high at the request of NCDENR or EPA Region 4. The residential screening value for lead was set to 400 mg/kg. This is almost twice the value used in most superfund cleanups around the country. Lead is highly toxic with no lower threshold for adverse effects, particularly in children. In other words, there is no "safe" dose of lead, and any dose will result in measurable health effects.

After the initial draft of the RI was released, EPA Region 4 sent out a bulletin setting a PRG based on noncancer-based endpoints. The resulting chronic reference dose for children was 20 mg/kg and 160 mg/kg for adults. The 20 mg/kg concentration can be considered dangerous to adults based on risks associated with cancer, and would be highly toxic for the stated endpoint of a child's health. It is highly disconcerting that regulatory agencies would exert their influence to establish such unprotective screening levels, particularly since the result effectively prevents lead and arsenic from becoming COPCs in future investigations.

The Baseline Human Health Risk Assessment (BHHRA) fails to examine an important and likely scenario: intrusive operations into the soil by construction workers in the future in Reach A. Reach A is the most contaminated Reach

examined by the BHHRA, and is directly adjacent to the Ward Transformer Site and its stormwater treatment outfall. Even if this area is not intended for residential use, additional industrial activity should not be discounted.

The report erroneously concludes that there is no risk in many of the scenarios outlined in the BHHRA. This is primarily because the BHHRA uses a less protective screening value of E-04 (1 in 10,000) instead of the more appropriate E-06 (1 in 1,000,000). For many of the Chemicals of Potential Concern (COPCs), particularly PCBs and dioxins, additional health effects are routinely found at lower and lower doses. The 1 in 1,000,000 screening level was designed to provide a margin of safety for these types of pollutants. The fact that the proposed Superfund plan is based around the higher risk threshold should call into question the effectiveness of the overall plan.

### **Ecological Risk Assessment**

The most significant problem of the Baseline Ecological Risk Assessment (BERA) is that the focus is on PCBs, while metals and other toxic compounds are completely ignored. Other compounds weren't even screened despite the sensitivity of wildlife to many of the pollutants present such as aluminum. This is completely unacceptable. While PCBs and dioxins are by far the most toxic compounds released by Ward Transformer for long term human health concerns, they are not the only source of risk to wildlife. This decision likely had a profound effect on risk estimates for wildlife and reduced the quantitative estimates of risk.

In addition, risks to wildlife are significantly underestimated based on the way that Toxicity Reference Values (TRVs) were calculated. No safety factors for increased species sensitivity were incorporated into these calculations when the species used in the laboratory were different than the target wildlife species. The report attempts to dismiss this by claiming that laboratory species tend to be more sensitive than wildlife species. This is simply not the case, particularly for avian receptors. Bald eagles are certainly more sensitive to PCBs than pheasants or chickens.

The report admits that it underestimates risks from PCBs to raccoons and mink by ignoring some pathways such as oysters and mussels. A study was originally planned to characterize mussel tissues but was cancelled. Given the amount of sediment that bivalves take up, it is likely that they are a significant pathway for PCB uptake to their predators. It is encouraging to see Weston openly admit this flaw in their design, but unfortunately these omissions simply compounds the flaws noted above.

Despite the fact that Lake Crabtree currently has fish advisories in place based on the concentration of PCBs and dioxins found in fish tissues, the BERA found no risks to fish and crayfish at the Lowest Observed Effect Dose (LOED).

Besides the obvious problem with combining toxicity data for two species of completely different phylogenetic groups, this finding contradicts all available evidence. The body burdens reported in the RI could be high enough to cause reproductive problems in sensitive fish and developmental problems in fish fry. Both of these endpoints are critical to the ongoing health and survival of fish populations, and neither appears to have been considered.

In addition to the above, there are a number of other issues with the BERA: Bald eagles were not examined in all reaches that fish found, a gap in crayfish sampling resulted in the omission of risk assessments in one reach, the use of maximum detected values when 95% upper confidence limits were exceeded, and the assumption that mink and bald eagles do not accidentally ingest soils or sediments. All of the above issues, though small in comparison to others, all result in the underestimation of risks to wildlife. Any one of these issues could potentially be enough to make the difference between a target species exceeding acceptable risk levels. Serious flaws such as these and the ones noted above represent serious issues that should be considered when determining the acceptability of the proposed Superfund plan.