

**Comments on “Human Health Risk Assessment: GE/Housatonic River Site, Rest of River”**  
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**On Behalf of**  
**The Housatonic River Initiative**  
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## **Introduction**

EPA requested comment on the changes to the Human Health Risk Assessment for the GE/Housatonic River Site, Rest of the River, originally released in 2003. EPA clearly asked for comments to address only those elements of the risk assessment that changed. The Housatonic River Initiative has contracted Dr. Peter deFur of Environmental Stewardship Concepts (ESC) to comment on the revised document. Notwithstanding EPA’s request, ESC will comment on any areas in which this revised version is still deficient. EPA’s revisions to the document, though minor, demonstrate that new information can alter the context of the entire report. The changes to the risk assessment are also sufficiently numerous and extensive that it is difficult to precisely determine all the changes.

## **General Comments**

For the most part, the revisions represent an improvement of the risk assessment, and the additions make the document more complete. In particular, the EPA was wise to directly contact the Schaghticoke Tribe in Connecticut. The tribe represents a vital constituency in the cleanup of the Housatonic River, and should be included in all discussions regarding its remediation. Details of the contact with the Tribe are needed.

The revision continues to omit any quantitative analysis of the non-cancer effects of dioxin and dioxin-like compounds, and states that there is no RfD for either dioxin or Ah active compounds. EPA can argue that they have abandoned the use of the RfD that was developed for dioxin, but to state that there is no RfD for dioxin is simply factually incorrect. The RfD for reproductive effects is old, but if EPA is going to use the old cancer potency factor and the older cancer classification, then they can certainly use the older RfD. The point is not that there is not an RfD, but that EPA chooses to not use the one that was determined previously. The reason that EPA does not use the RfD is that the population is already over-exposed to dioxin and the RfD would then mean that no additional exposures could be allowed.

The revised version still only gives token treatment to the Connecticut portion of the river. ESC has long argued that there is insufficient data to support many of EPA’s claims regarding the risks posed by PCBs in the section of the river contained in Connecticut. The increased involvement of Connecticut regulatory agencies in recent months only emphasizes this deficiency. Previously, the EPA has been exemplary in its efforts to involve all parties affected by the contamination in the river. If the EPA continues to limit discussion regarding Connecticut, it could potentially alienate Connecticut stakeholders and leave a vital voice out of the process.

## Comments on Specific Sections

### Volume I

#### Section 4, Toxicity Assessment:

The Section 4 Toxicity Assessment has been substantially changed, with some additional information and much rearranging. The total effect is to make the specific revisions difficult to sort out. The addition of the section on the Dioxin Reassessment adds a great deal to the reassessment and is a positive addition.

The additional material on dioxin toxicity could and should include current literature. Several important papers (cited below) offer additional support for the conclusions that EPA reached in the 2000 version of the Dioxin Reassessment.

Page 4-3 lines 15-18, explains the chronic RfD and should include the notation that the dose refers to total dose from all sources, not just the source(s) under investigation. Many people fail to recognize or understand this point and the significance thereof.

Section 4, Table 4-1 seems to be the revised version of Table 2-1 from the previous version. There is no obvious reason why EPA removed the other chemicals of potential concern (COPC) from this table of toxicity values. The other compounds may not have been carried forward in the final analysis, but the toxicity values surely came into play in the screening and therefore still inform the reader of the technical input to the process.

The present Table 4-1 has dioxin information from the HEAST database. The problem is that the literature citation for this database is not complete and cannot be used to obtain the toxicity value in the table. The EPA should give a website or full document citation, preferably the former. In addition, the toxicity listing for dioxin paints a rather limited picture. The National Toxicology Program lists dioxin as a known human carcinogen (as does IARC, the agency of the World Health Organization that addresses carcinogens). The only reason EPA has not upgraded the carcinogenic classification of dioxin is political pressure; EPA has taken almost no policy or regulatory action on dioxin, despite the wealth of information from research scientists and the NTP. The human health risk assessment must at least acknowledge the fact that the classification is out of date, due for updating and that the NTP has classified dioxin as a carcinogen. The current draft has gone to the trouble of indicating that the Dioxin Reassessment has been sent to the National Academy of Sciences for review, which was at the request of industrial interests. The dioxin reassessment and all other aspects of the scientific assessment, regulation and policy regarding dioxin have been incredibly political and this assessment needs to at least provide the multiple perspectives on the issue.

The human health assessment revision now adds language that the EPA has sent the dioxin reassessment to the National Academy of Sciences for additional review. It is not clear why this piece of information has been included, but for the sake of honest and completeness, but the report needs to add information that offers the scientific perspective and the public perspective. The scientific perspective is consistent with the findings over the past few decades- dioxin is a

complete carcinogen and causes a range of non-cancer effects, including reproductive and developmental abnormalities. Furthermore, as recently reported in Environmental Health Perspectives, experimental results support the use of toxic equivalency factors for mixtures of dioxin-like compounds (Walker, N. J. et al. 2005, Environmental Health Perspectives 113: 43-48). Steenland et al. (Environmental Health Perspectives 112: 1265- 1268, 2004) reviewed the controversy over dioxin carcinogenicity and concluded that the IARC classification is consistent with and supported by the research that has been published since 1997. All of these results need to be reported along with the reference to the National Academy of Sciences text.

#### Section 8, Risks from Fish and Waterfowl Consumption:

Section 8.4.1, page 8-9, lines 14-16 refers to EPA finding no evidence of subsistence fishing on the Housatonic River. The citizens submitted information with their comments on the original risk assessment that Asian Americans are catching and consuming fish from the Connecticut portion of the Housatonic River. It is not certain if this consumption is true subsistence, but it is consumption of PCB contaminated fish and this pathway needs to be addressed.

#### Section 10 Integrated Risk Characterization and Major Findings:

This section is new in this version, with the possible exception of any material that was brought in from the Risk Summary of the earlier version of the assessment. This section combining exposure pathways is a positive addition to the risk assessment and EPA is to be commended for making this addition. The examples make the text easier to understand, but unformed citizens are likely to have problems with this section.

Table 10-9 This table presents TEQ's from dioxins and furans compared with dioxin-like PCB's. This table demonstrates several points very well, and all need to be indicated in the text. The PCBs dominate the total amount of toxicity from substances that act via the Ah receptor; in addition, dioxins plus furans alone are enough to cause cancer and non-cancer effects and risks at unacceptable levels; finally, the non-cancer effects of dioxins plus furans are not quantified because EPA does not use the RfD that was published in 1984. Added together, the TEQ's for these Housatonic River exposures plus the existing TEQ exposures that the population faces at present from non-HR sources is enormous.

Section 10.1 is informative by presenting risks from multiple exposures of the sort that are likely to occur in a realistic situation. The examples are realistic and the explanations are helpful to see how to use the tables.

Section 10.2 considers the consequences of substituting grocery store food with Housatonic River watershed food products. The preceding sections of Volume I have already concluded that estimated cancer and non-cancer health risks from PCB's in the Housatonic River pose unacceptable risks. The entire purpose of this section is unclear, in no small part because the same point is already made in the preceding sections on contamination from specific pathways. I question the purpose of including this section and think the risk assessment may be better without it. The point of the risk assessment is to estimate the human health risks from the contamination on site, and determine if the risks are greater than the regulatory benchmarks, as

described in EPA guidelines. The conclusion of section 10.2 is that food products from the Housatonic River watershed, especially aquatic animals, will increase the total health risks from PCBs. This conclusion was already made and is obvious from a comparison of the PCB and dioxin/furan levels in the food items under consideration. The greatest part of the section then is a more detailed demonstration of the point already made- food taken from the Housatonic River is unsafe to eat.

### Section 10.3 Breast Milk

This section is, for the most part, a helpful and useful discussion of the technical aspects of breast milk as an exposure pathway for infants. The text does present the current information and the unknowns, uncertainties and variability of the available data. The bottom line is that breast milk is an important pathway, and one that has been found to raise PCB levels to unacceptable levels. Therefore, the risks from Housatonic River PCB contamination are great for infants and mothers should not eat fish or any meat products from the watershed.

This section has the same problem as other section regarding non-cancer health effects from dioxins and furans – EPA will not use its own RfD or any derivation of this value. In fact, the discussion is weak and thin on the non-cancer health effects presented here.

Section 10.3.2 presents more comparison with the general population. The problem with this type of comparison is that it is not directly relevant to excess risks from the site specific exposures. These exposures exceed any threshold, any benchmark, any consideration of “safe” for the people of Massachusetts and Connecticut. The reader has to wonder what is the point of this section and of comparing PCBs in Housatonic food with the general population. The results show two important factors- the risks from Housatonic River exposures are unacceptably high, and the risks to the general population also exceed most “safe” levels. The combination is alarming.

### Appendix B, Direct Contact:

4.2.2: The document needs to explain that work on Reaches 1-4 has been completed and therefore not included in the assessment.

4.2.3.4: The change from residential to commercial in property along Rt 102 does not necessarily mean lower risks. Construction activities could cause exposure to dust, and some commercial uses may actually fall under the recreational use category, and should not be overlooked.

4.2.3.6, last line: The assertion that the changes in land use would not result in unacceptable risks needs to be later in the text and sufficient evidence provided to support it.

4.2.4: The list of potentially exposed populations should include construction workers operating in the floodplain. Construction is possible according to new information regarding potential future uses. Section 5.5.1.6 indicates that the development of housing is possible in EAs 6, 18, 21, 34, and 86. Construction is also listed as an activity in which adults may be dermally exposed to contaminated soils in section 6.5.1.9.6 Minor construction (ie the construction of a house or

other small building) could still pose exposure risks. Risks to construction workers would be similar to those of utility workers and could be easily calculated

4.3.5: Again, needs to explain the exclusion of reaches 1-4. It is understood why these reaches were not included but should be made clear in the text in the interests of transparency.

4.3.6: Construction work should be included in the exposure scenarios for the reasons outlined in the comments on Section 4.2.4.

4.5: Exposure parameters do not include air exposure pathways, specifically the inhalation of contaminated dust. This is a particularly significant pathway, particularly for the recreational and utility worker scenarios where significant amounts of dust may be disturbed during activities. For some activities such as bike riding or the use of other recreational vehicles such as ATVs during dry weather, this may be a more significant pathway than either dermal exposure or ingestion.

5.1: Dioxins and Furans should be included wherever there are data. The risks from dioxins are additive to those of PCBs and act along the same or similar mechanisms. Tiny amounts of dioxins can cause significant cancer risks and non-cancer health effects, and should be considered in this section rather than the uncertainties.

5.5: The division of the site into Exposure Areas is applauded, and the increased level of detail regarding those Exposure Areas is appreciated.

5.5.1.36: The utility worker scenario should be included in the evaluation of EA 36. The area is owned by utility companies and contains large numbers of transformers and other equipment. It should be expected that maintenance will be required in this area, potentially exposing them to contaminated soils. The EPA should calculate risks to these workers and included them in the Risk Assessment.

6.1.1: This section should also include construction workers to exposed populations for the reasons given above in comments for Section 4.2.4.

6.5.1: Models should include total body burden of PCBs. PCBs stay in the body for long periods of time, potentially magnifying subsequent exposures.

7.2.3.2.2: By not evaluating the non-cancer health effects of dioxins and similar compounds, the Risk Assessment is greatly underestimating risk. There is enough data in both the literature and documents published by the EPA for investigators to evaluate these effects. Though an RfD is not used for dioxins, the reason (which is discussed in this section) is that if one were calculated it would be well below background doses. Therefore, it can be assumed that any additional dose of dioxins would have a detrimental effect and increase the risks to the immune, endocrine, and developmental systems. Considering the sensitivity that these systems have been found to have to dioxins (Mably et al, 1992), it would be difficult to overestimate the risks posed by these compounds.

#### Appendix C, Consumption of Fish and Waterfowl

1.2: This section should include a description of Reaches 1-4 and provide an explanation as to why they were not included in this risk assessment.

4.2: The addition of breast milk and *in utero* exposure as a potential exposure pathway is welcome and better quantifies risks to particularly vulnerable segments of the population.

4.3.4.1: EPA needs to give more information regarding the meetings between representatives of the Schaghticoke Tribe and EPA. Any formal accounts of the meeting including memos or reports should be cited in the text and included as an attachment. This will insure that the Tribe's views and practices will be heard and part of the public record that is available for review.

6.0: ESC strongly objects to the removal of CSF TEQ risk calculations from the document. This is valuable data that should be included, and at the least the EPA should have an explanation regarding their removal.

Figure 6-92: This figure is not displayed.

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