

Kennedy/Jenks Consultants, Inc.

General Comment – We commend Ecology's efforts for developing additional screening tools to help navigate the MTCA process. As a screening step intended to avoid false negatives, these values could serve a purpose (i.e., identify the potential for impacts, but not necessarily the occurrence of impacts) and trigger additional investigation activities that provide lines of evidence to assess whether actual impacts are occurring. However, because these values were generated using fresh product, their use as preliminary cleanup criteria could greatly overestimate the potential for adverse risk.

Petroleum Composition

1. Ecology states the purpose of Draft Implementation Memorandum No. 23 "is to provide fresh gasoline and diesel range organic concentrations that are predicted to be protective of aquatic receptors in marine and fresh surface waters at any Model Toxics Control Act (MTCA) cleanup site." Does Ecology intend for these environmental effects values to be applied to release sites where the petroleum body is comprised of weathered product? In addition, how would these values be used at sites where there may be a mixture of contaminants?
2. The values were developed using fresh hydrocarbon mixtures and don't consider the effects of weathering on mixture composition. As such, these values could be overly conservative for historical releases/legacy site issues. Will Ecology provide additional guidance or criteria for sites where the petroleum product is weathered?
3. Has Ecology considered how it will regulate proposed cleanup values for sites where the compositional structure of the petroleum hydrocarbon body in soil or groundwater is significantly different from fresh product (e.g. weathered diesel)?

Risk

1. It appears that the diesel solution used for the experiment was prepared using acetone to maximize its solubility in toxicity test water. What are the toxicological impacts on aquatic organisms from mixing acetone in with the diesel mixture?
2. Based on Implementation Memorandum No. 23, we understand that site-specific testing activities could be performed that focuses on individual constituents rather than a broad non-specific hydrocarbon mixture. Ecology's own publications indicate that ecological toxicity information is lacking for mixtures and assessments should be site-specific. Specifically, Ecology states:

The underlying study indicates that "the recommended surface water concentration of diesel that is protective of freshwater aquatic receptors is 150 ug/l". The 150 ug/l value equates to the lowest no-observed-effect concentration (NOEC) derived for a freshwater invertebrate, *Ceriodaphnia dubia*. Ecology (2018) reports that they were "unable to find data on the impacts of a similar petroleum mixture on freshwater invertebrates". Does Ecology have plans to conduct additional testing to supplement the available NOEC data for invertebrates exposed to low concentrations of diesel?
3. Ecology (2018) indicates: "this study is based on unweathered NWTPH, a companion field study using contaminated groundwater and weathered NWTPH in toxicity tests would be a logical follow-up". Will toxicity tests using weathered diesel product be conducted prior to implementing

the use of the proposed values?

Reference

Ecology. 2018. Environmental Effects-Based Concentrations for Total Petroleum Hydrocarbons (TPH), Toxicity in Marine Water and Freshwater. Publication No. 18-03-002.