DEPARTMENT OF ECOLOGY
State of Washington

Concentrations of Fresh Gasoline and Diesel Range Organics Predicted to be Protective of Aquatic Receptors in Surface Waters

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To: Interested Persons

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1.0 Purpose and Applicability

The purpose of this memorandum 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. These concentrations may be used to satisfy the requirements of the Method B surface water cleanup levels outlined in MTCA, WAC 173–340–730(3)(b)(ii) – Environmental Effects.

Cleanup project managers and consultants should use these surface water protective values (called environmental effects) at MTCA cleanup sites, where fresh or marine surface water is a potential pathway. Alternatively, they can also make this demonstration using the protocols described in Chapter 173–205 WAC, Whole Effluent Toxicity Testing and Limits.

2.0 Background

The predicted protective concentrations provided in this memorandum were derived from the Washington State Department of Ecology (Ecology) study titled, *Environmental Effects-Based Concentrations for Total Petroleum Hydrocarbons (TPH): Toxicity in Marine Water and Freshwater* (Ecology 2018, Publication No. 18-03-002).

The numeric values for gasoline and diesel were derived from fresh-spiked total petroleum hydrocarbon products, and are based on toxicity point estimates. These estimates represent the highest observed no-adverse effects concentration (NOEC) for surface water towards ecological receptors.

The numeric values for benzene, toluene, ethylbenzene, and total xylenes (BTEX) are the reported concentrations based on those Northwest Total Petroleum Hydrocarbons – Gasoline Fraction Method (NWTPH-Gx) NOEC toxicity point estimates.

3.0 Results

Table 1 lists the updated gasoline and diesel surface water concentrations that are recommended to be protective of aquatic receptors. These would satisfy the requirements of the Method B surface water cleanup levels in MTCA (WAC 173–340–730 (3)(b)(ii) – Environmental Effects) using the NWTPH-Gx and NWTPH-Dx methods.

Table 1: Gasoline and diesel concentrations that are considered protective of aquatic receptors in marine and freshwater using NWTPH (Gx and Dx) methods. Note: Diesel range organics includes sum of diesel fuels and heavy oils.

Hazardous Substance	Protective Value	
	Freshwater (µg/L)	Marine Water (µg/L)
Gasoline Range Organics	1000	1700
Diesel Range Organics	150	50
Benzene	10	23
Toluene	53	102
Ethylbenzene	12	21
Total Xylenes	57	106

4.0 References

Ecology. (2018). *Environmental effects-based concentrations for total petroleum hydrocarbons (TPH): Toxicity in marine water and freshwater.* (Ecology Publication No. 18-03-002.) Olympia, WA: Washington State Department of Ecology, Environmental Assessment Program. Retrieved from: https://fortress.wa.gov/ecy/publications/SummaryPages/1803002.html

Model Toxics Control Act—Cleanup Regulation. WASH. ADMIN CODE § Chapter 173-340 WAC. (2013). Retrieved from: http://apps.leg.wa.gov/wac/default.aspx?cite=173-340 and https://fortress.wa.gov/ecy/publications/summarypages/9406.html

Whole Effluent Toxicity Testing and Limits. WASH. ADMIN CODE § Chapter 173-205 WAC. (1993). Retrieved from: https://apps.leg.wa.gov/WAC/default.aspx?cite=173-205