
WA CAFO Permit Fact Sheet

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Whole Effluent Toxicity (WET) Testing

There are times when we know that discharges, especially effluents from waste water treatment plants (WWTPs), are harmful to fish and aquatic life. But WWTPs and industrial operations process so many chemicals that managers cannot always break down the effluent into components and determine concentrations for each potential toxin. At these times regulators can rely on Whole Effluent Toxicity or WET Testing.

In simple terms, a WET test is conducted by exposing several fish, aquatic organisms, or plants to the effluent. After a given time period, trained personnel measure the survival rate, or the impact on reproduction.

There are three categories of WET testing: Acute Toxicity to Freshwater and Marine Organisms, Chronic Testing to Freshwater Organisms, and Chronic Testing to Marine and Estuarine Organisms.¹

Acute Testing involves five different concentrations of the effluent, plus a control, and lasts from 24 to 96 hours. Some of the test organisms are minnows, daphnia and trout.

¹ U.S. Environmental Protection Agency. Whole Effluent Toxicity Methods. <https://www.epa.gov/cwa-methods/whole-effluent-toxicity-methods>

Chronic Freshwater Testing also involves five concentrations plus a control and lasts from four to eight days. Endpoints are survival, growth, reproduction, or teratogenicity. Test organisms include minnows, daphnia, and green alga.

Chronic Marine Testing also involves five concentrations plus a control and lasts from one hour to nine days. End points are survival, growth, fertility, teratogenicity, and/or fertilization. Test organisms include minnows, silverside, and sea urchins.

WET tests can be used to determine compliance with Water Quality Based Effluent Limits (WQBELs) in National Pollutant Discharge Elimination System (NPDES) permits. WET tests can be used to measure toxicity when regulators worry that the combination of sub-lethal levels of two components may be synergistic – may be worse than the sum of the two lethalties. The EPA recommends combining WET testing with testing for specific chemicals in discharges. In addition, “when the permitting authority determines, . . . that a discharge causes, has the reasonable potential to cause, or contributes to an in-stream excursion above a narrative criterion within an applicable State water quality standard, the (NPDES) permit must contain effluent limits for whole effluent toxicity.”²

WET Testing is included in the Individual NPDES permit for Seattle’s troubled West Point Wastewater Treatment Plant and Combined Sewer Overflow System.³ WET Testing is included in Ecology’s Fresh Fruit Packing General NPDES

² 40 CFR § 122.44 (d)(v) <https://www.law.cornell.edu/cfr/text/40/122.44>

³ WA Ecology Water Quality Permitting and Reporting Information System (PARIS) <https://apps.ecology.wa.gov/paris/PermitLookup.aspx>

permit.⁴ And WET Testing is required for Industrial Waste Water Treatment Facilities such as the Port of Sunnyside's IWWTF.⁵

The Port of Sunnyside receives waste water from multiple food processing operations, treats the waste water and discharges it to a drainage ditch that empties into a drain that discharges to the Yakima River. Throughout 2015 and early 2016 WET testing at the Port of Sunnyside found 100% pass rates for acute testing, but frequent failures for chronic testing. This led to implementation of a toxicity identification/reduction plan in May of 2016, with mandated improvements in treatment of the wastewater.⁶ This is an example of how WET testing can be used to improved management of waste water discharges.

WET Testing is currently not part of Ecology's NPDES General Permits for CAFOs. Given problems with instream flows, non-point source pollution, and combinations of contaminants, it would be reasonable to consider WET testing in future iterations of these permits.

Thank you for reading.

Friends of Toppenish Creek

You have received this Fact Sheet because you are on a list of potentially interested parties. If you do not want to receive further information, please contact Jean Mendoza at jeanmendoza@icloud.com

⁴ WA Ecology. Fresh Fruit Packing General Permit. <https://ecology.wa.gov/Regulations-Permits/Permits-certifications/Fresh-fruit-packing-general-permit#current>

⁵ Port of Sunnyside IWWTF. <https://apps.ecology.wa.gov/paris/FacilitySummary.aspx?FacilityId=3220496>

⁶ WA Ecology. Permitting and Reporting Information System (PARIS). [file:///C:/Users/Jean%20Mendoza/Downloads/WA0052426-2016-07-22ToxicityIdentificationReductionPlan-md%20\(5\).pdf](file:///C:/Users/Jean%20Mendoza/Downloads/WA0052426-2016-07-22ToxicityIdentificationReductionPlan-md%20(5).pdf)
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