



State of Oregon Department of Environmental Quality

Oregon DEQ Industrial Pretreatment Program

Guidance for evaluating impact of receiving wastewaters from non-categorical industrial users at POTWs (5 MGD or less) without formal pretreatment programs

Purpose

The purpose of this memo is to provide guidance on evaluating the impact of accepting wastewater from new non-categorical industrial users at Publicly Owned Treatment Works with design flow of 5 million gallons per day or less, and no formal pretreatment program.

Background

The National Pretreatment Program's primary goal is to protect POTWs and the environment from adverse impacts that might occur when pollutants are discharged into a sewage system.

The specific pretreatment program goals are as follows:

- Prevent the introduction of pollutants into the POTW that will pass through the treatment works or are otherwise incompatible with treatment
- Prevent the introduction of pollutants that could interfere with POTW operations, including interference with the POTW's chosen sewage sludge use and disposal practices, as well as pollutants that could threaten worker health and safety
- Improve opportunities to recycle and reclaim municipal and industrial wastewaters and sludge

Certain industrial discharge practices can interfere with the operation of POTWs, leading to the discharge of untreated or inadequately treated wastewater into rivers, lakes, and other waters of the United States. A discharge that causes interference inhibits or disrupts the POTW, its treatment processes or operations, or its sludge processes, use, or disposal and may lead to a violation of specific requirements of the POTW's National Pollutant Discharge Elimination System permit. Some pollutants are not amenable to biological wastewater treatment at POTWs and can pass through the treatment plant untreated. This pass through of pollutants affects the receiving water and may cause a decrease in water quality or impact designated beneficial uses. These same impacts should also be evaluated for a facilities solids removal plans.

Per 40 CFR Section 403.8(a), the following facilities publicly owned treatment works are required to develop a pretreatment program:

1. Any POTW (or combination of POTWs operated by the same authority) with a total design flow greater than 5 million gallons per day (mgd) and receiving wastewater from Industrial Users

which may cause Pass Through or Interfere with the operation of the POTW or are otherwise subject to Pretreatment Standards will be required to establish a POTW Pretreatment Program unless the NPDES State exercises its option to assume local responsibilities as provided for in §403.10(e).

2. The Regional Administrator or Director may require that a POTW with a total design flow of 5 mgd or less develop a POTW Pretreatment Program if he or she finds that the nature or volume of the industrial influent, treatment process upsets, violations of POTW effluent limitations, contamination of municipal sludge, or other circumstances warrant in order to prevent Interference with the POTW or Pass Through.

For more information on the pretreatment program, see the U.S. Environmental Protection Agency's [Industrial User Permitting Guidance Manual](#) and Oregon Association of Clean Water Agencies' [fact sheet](#) that summarizes the national and state industrial pretreatment programs.

Is the POTW Required to Notify DEQ About Receipt of Industrial Wastewater?

All National Pollutant Discharge Elimination System permits require POTWs to provide adequate notice to DEQ of the following:

- a. Any new introduction of pollutants into the POTW from an indirect discharger which would be subject to section 301 or 306 of the Clean Water Act if it were directly discharging those pollutants and;
- b. Any substantial change in the volume or character of pollutants being introduced into the POTW by a source introducing pollutants into the POTW at the time of issuance of the permit.
- c. For the purposes of this paragraph, adequate notice shall include information on (i) the quality and quantity of effluent introduced into the POTW, and (ii) any anticipated impact of the change on the quantity or quality of effluent to be discharged from the POTW.

Accordingly, the POTW must provide DEQ with a report detailing any anticipated impact on the POTW.

How Does a POTW Evaluate an Industrial Wastewater?

Prohibited Discharges

All IUs—regardless of whether they are subject to any other national, state, or local pretreatment requirements—are subject to the general and specific prohibitions identified in 40 CFR 403.5(a) and (b), respectively. General prohibitions forbid the discharge (the regulations use the term introduction) of any pollutant(s) to a POTW that cause pass through or interference. Pass through and interference are terms with very specific meaning in the regulations. Pass through is defined as a discharge that exits the POTW into waters of the United States in quantities or concentrations that, alone or in conjunction with a discharge or discharges from other sources, is a cause of a violation of any requirement of the POTW's NPDES permit. Interference is defined as a discharge that, alone or in conjunction with a discharge or discharges from other sources, both (1) inhibits or disrupts the POTW, its treatment processes or operations, or its sludge processes, use, or disposal and (2) therefore is a cause of a violation of any requirement of the POTW's NPDES permit.

Specific prohibitions in 40 CFR 403.5(b) forbid the following eight categories of pollutant discharges:

- Discharges containing pollutants that create a fire or explosion hazard in the POTW, including wastestreams with a closed-cup flashpoint of less than 140 °F (60 °C) using the test methods specified in 40 CFR 261.21
- Discharges containing pollutants causing corrosive structural damage to the POTW, but in no case discharges with a pH lower than 5.0, unless the POTW is specifically designed to accommodate such discharges
- Discharges containing pollutants in amounts causing obstruction to the flow in the POTW resulting in interference
- Discharges of any pollutants released at a flow rate or concentration that will cause interference with the POTW
- Discharges of heat in amounts that will inhibit biological activity in the POTW resulting in interference, but in no case heat in such quantities that the temperature at the POTW treatment plant exceeds 104 °F (40 °C) unless the Approval Authority, at the POTW's request, approves alternative temperature limits
- Discharges of petroleum oil, non-biodegradable cutting oil, or products of mineral oil origin in amounts that will cause interference or pass through
- Discharges that result in the presence of toxic gases, vapors, or fumes within the POTW in a quantity that could cause acute worker health and safety problems
- Discharges of trucked or hauled pollutants, except at discharge points designated by the POTW.

EPA's Guidance Manual for the Control of Wastes Hauled to Publicly Owned Treatment Works contains general procedures for evaluating the acceptability of wastewaters at a POTW. Figure 2.1, Determining Hauled Waste Characteristics is presented below. While this flow chart is intended for POTWs with formal pretreatment programs, POTWs without pretreatment programs should use the same process for evaluating industrial wastewaters.

Figure 2.1 Determining Hauled Waste Characteristics



Local Limits

The first step in evaluating non-hazardous, non-categorical, non-domestic (industrial) wastewaters is to compare the pollutants and pollutant concentrations to any local limits. While local limits are a requirement of a formal pretreatment program, POTWs may adopt local limits voluntarily. See Oregon ACWA's website for more information on establishing a voluntary pretreatment program.

Health and Safety Hazards – Toxic Fumes, Gases, Flammable or Explosive Conditions

Exposure to toxic or hazardous substances can pose dangers to the safety and health of collection system and POTW employees that are in contact with the wastewater. Fires, explosions, asphyxiation, and poisoning are the lethal effects of certain substances such as solvents, fuels, strong acids, strong bases, heavy metal chloride and sulfate salts, sodium, calcium, and potassium salts of strong bases, oxidizing agents, and reducing agents. The public may also be exposed to fumes and/or nuisance odors escaping from the sewerage system.

Corrosion or Exceed pH Limits

As mentioned above, the wastewater cannot cause corrosive structural damage to the POTW (including the sewerage system), but in no case may have a pH lower than 5.0, unless the POTW is specifically designed to accommodate such discharges.

Interference

EPA's Local Limits Development Guidance and Guidance Manual for Preventing Interference at POTWs provide basic information on evaluating a wastewater's potential for interference. When evaluating interference, the POTW must perform a technical analysis of the wastewater's potential to impact the POTW's capacity (hydraulic and organic), reduce biological treatment activity (toxicity), and to cause operational or maintenance problems.

Impacts on Capacity

The following steps should be followed to evaluate the potential impact on capacity:

1. Determine the unused treatment plant capacity available to handle and treat industrial waste loadings [the difference between the design or actual capacity (organic and hydraulic) of the treatment plant and the current and projected sewer collection system loadings].
2. Conduct this analysis on each individual unit process (including the sludge handling and treatment unit processes).
3. Determine the pollutant loading increases to the effluent, sludge, and air.
4. Compare these increased loadings/concentrations to any environmental standards (NPDES permit limits, water quality standards, sludge standards) to determine whether any standards will be exceeded.

Impacts on Treatment Plant Biology

EPA guidance documents referenced above contain information on toxic effects of various wastewaters on POTW biological activity. Accordingly, the POTW should first review this literature to determine any known toxic effects. If the literature review indicates that there are no known toxic effects for the type of wastewaters, the next step is to conduct a treatability study with actual wastewater, if possible. Oxygen

Uptake Rate measurements are made of several dilutions of wastewater: mixed liquor and compared against mixed liquor only.

Other Impacts

Although some pollutant discharges may not cause NPDES permit or sludge disposal violations, they might disrupt POTW operations or increase operation and maintenance costs. Inhibition may result in the production of sludge or other wastewater that requires special treatment before disposal, or that requires disposal in a manner not generally used by the POTW. Therefore, POTWs should also consider pollutants that are known to cause operational or maintenance problems.

Pass Through

The POTW must evaluate the potential for pollutants in the wastewater to pass through the treatment system and into the effluent and sludge. The first step is a literature search of the pollutants known to exist in the wastewater. EPA's [Local Limits Development Guidance](#) and [Guidance Manual for the Control of Wastes Hauled to Publicly Owned Treatment Works](#) contain information on the potential for pass through of pollutants of various wastewaters. Assessment of pass through must include POTW's ability to treat industrial wastewater discharged to the treatment plant, and whether the wastewater contains bio accumulative and/or persistent toxic substances in any amount that may result in a decrease of water quality or impact designated beneficial uses. The POTW also needs to discuss any impact the industrial contributor may have on current sludge disposal methods.

Slug Loading

A slug discharge is any discharge of a non-routine, episodic nature, including an accidental spill or non-customary batch discharge that has a reasonable potential to cause interference or pass through, or in any other way violate the POTW's regulations, local limits, or permit conditions. Slug discharges can have serious effects on the POTW. EPA's 1991 Control of Slug Loadings to POTWs Guidance Manual provides procedures for developing, implementing, and reviewing slug control plans. POTWs must evaluate whether each Industrial User needs a plan or other action to control slug discharges. To accurately evaluate the slug potential, POTWs likely will have to examine the IU during its normal operating conditions.

Other Considerations?

Prior to preparing the report, the POTW should ask the following additional questions:

- Does POTW have enough information to determine potential treatment plant impacts? Is additional information needed from the non-categorical industry?
- Are pollutants of concern from the non-categorical industry discharge identified?
- Is the non-categorical industry discharge compatible with the POTW effluent?
- Is the POTW able to efficiently treat wastewater discharge from the non-categorical industry?
- Are there any Total Maximum Daily Loads, Waste Load Allocation or Water Quality standards that are likely be affected by the non-categorical industry discharge?
- Does the POTW have information on non-categorical industry's hazardous waste storage, use and disposal system (if applicable)?
- Is the proposed IU a Significant Industrial User?

DEQ Review

If the POTW determines that the Industrial User is a SIU, the POTW must develop a formal pretreatment program and approved by DEQ. If the POTW determines that the Industrial User is not a SIU, the next step is to submit the report to DEQ for review and comment. If DEQ concurs with the assessment, the POTW does not need to develop formal pretreatment program. If DEQ's review determines that the potential impact is significant, the POTW will be required to develop a formal pretreatment program.

For POTWs that do not need an approved pretreatment program, DEQ recommends that they implement control mechanisms to minimize pollutants from commercial and industrial sources. One example of a control mechanism would be to issue a control letter to the users with conditions that provides safeguards to the wastewater systems. In general, all POTWs benefit from developing a voluntary pretreatment program to identify industrial users, develop legal authority, and to provide the basic procedures and forms to assist in controlling commercial and industrial user discharges that may impact the treatment works and collection system. The Oregon Association of Clean Water Agencies developed a Community-Based Pretreatment Tool for this purpose. More information the Community-Based Pretreatment program is found at <http://oracwa.org/cbpt-purpose.html>.