Wastewater and Storm Water Management

Key Takeaways:

– Understanding why your facility needs to manage and discharge industrial wastewater properly
– Learning about your facility’s wastewater management responsibilities
– Observing the actions you should take to support your facility’s wastewater management efforts

Course Description

The aim of this course is to explain the importance of proper wastewater and storm water management. Often, our water sources can get contaminated, resulting in poisoned populations and widespread illnesses. Industrial process wastewater, generated during commercial or industrial activity (such as washdown or process clean-up), can become contaminated with regulated pollutants before it is discharged as a wastewater. Stormwater is contaminated during precipitation events at industrial facilities where the run-off picks up materials that can adversely affect water quality.

The most dangerous water contaminants made by human activities are microbial pathogens, nutrients, oxygen-consuming materials, heavy metals and persistent organic matter, in addition to suspended sediments, nutrients, pesticides and oxygen-consuming substances, much of it from non-point sources, according to the World Water Assessment Program.

In some areas, mercury and lead from industrial activities, commercial and artisanal mining and landfill leachates threaten human and ecosystem health, with emissions from coal-fired power plants being a major source of the mercury accumulating in the tissues of fish at the top of fish trophic levels.

Common options for industrial wastewater discharge include:
– Discharge to a municipal sewer system
– Direct discharge to surface water

Another option for sanitary wastewater discharge:
– Discharge to a septic system

Regulatory Requirements
– The Clean Water Act (CWA) ensures facilities discharging to surface water get a National Pollutant Discharge Elimination System (NPDES) Permit.
– Local Sewer Use Ordinances govern all discharges to municipal sewer systems, and may require pretreatment.

– The Safe Drinking Water Act (SDWA) govern all water discharged from municipal sewer systems.
– Septic system discharges are regulated most directly by the SDWA and local health departments.

Possible Sources of Industrial Process Wastewater
– Washdown operations
– Process clean-up
– Boiler/compressor blowdown
– Cooling tower water
– Water treatment system discharge
– Boiler water backflow
– Industrial Wastewater Discharges
– Many facilities discharge wastewater to a municipal sewer, or Publicly-Owned Treatment Works (POTW).

Your Options for Discharging to a Municipal Sewer System (or POTW)
– POTW might allow discharges with no pretreatment when it is low volume with few pollutants
– Will have a good treatment system allowing for easy treatment of waste stream
– POTW might require pretreatment and/or apply a surcharge
– POTW needs to comply with their discharge permit
– Might require hard-to-treat contaminants to be removed
– Might offer to perform expensive treatments for a surcharge

Typical prohibited discharges include:
– Fire or explosion hazards
– Wastewater outside an acceptable pH range
– Solids that could cause obstruction
– Discharges that could cause upsets at the POTW
– Extreme heat
– Toxic fumes or vapors
– Trucked or hauled pollutants, unless approved

Plants discharging into municipal systems will be required to maintain certain records in addition to meeting certain reporting requirements, which can be found either in the facility permits or the POTW ordinance. Common reporting requirements include test results and compliance certifications.

Due to the Clean Water Act, discharging directly to surface water requires a National Pollutant Discharge Elimination System (NPDES) permit. All facilities which discharge industrial process wastewater directly into surface water are required to obtain an NPDES permit and comply with all its conditions; some conditions include pretreatment systems, testing and reporting requirements, water quality requirements, and flow restrictions.

Every manufacturing facility needs a Storm Water Permit unless:
– They are not part of the regulated SIC Code categories.
– All storm water runoff from industrial areas is contained on-site, goes into a public sanitary sewer system which goes to a POTW, or goes to an already permitted discharge.
– No storm water runoff from industrial areas exists, in which case you must apply for a “No Exposure Certification”.

The Storm Water Pollution Prevention Plan needs to designate the members of a Pollution Prevention Team. As well, the team’s responsibilities must be clearly identified in the plan, including developing the Storm Water Pollution Prevention Plan and assisting with the implementation, maintenance, and revision of the Storm Water Pollution Prevention Plan.

Also, the Storm Water Pollution Prevention Plan needs to include a topographic and

site layout map. The topographic map needs to include the location of the facility, surface water bodies, wells, seepage pits, and filtration ponds.

On the other hand, the site layout map needs to include storm water conveyance and discharge structures, an outline of storm water drainage areas for each outfall, paved areas and buildings, material storage, handling, and disposal areas exposed to storm water, and the locations of major spills and leaks that have occurred within the last three years. In the case that you have a major spill after completing your Storm Water Pollution Prevention Plan and that spill could affect storm water runoff, you'll need to amend your plan to describe that spill. As long as all of the required elements are included, the topographic and site maps may be combined.