

Troubleshooting

Presented By:

Chuck Durham, Tetra Tech, Inc.

Byron Ross, MMS



Objectives

- Prevent problem pollutants from entering the WWTP
- Properly document and handle problems
- Assist in developing investigation plan
- Conduct a pollutant source tracking investigation
- Interpret sewer system maps/schematics



Industrial Wastewater Characteristics

Process Water:

- Wide variety of pollutants
- Varies significantly from industry to industry
- Fluctuations hourly, daily, weekly



Effects of Industrial Wastewater on POTWs

- Toxic effects on POTW microbes
- Adverse impacts on sludge disposal
- Passthrough of pollutants into receiving stream
- Slug loads on POTW processes
- Corrosion of sewer and WWTP infrastructure



Comments on Joint Treatment of Municipal & Industrial Wastewater

- Possible adverse effects on POTW microbes and facilities
- Difficult to determine offending industry when POTW problems occur
- Joint biological treatment of domestic and industrial wastewater is usually beneficial



Preventing Interference & Slug/Hazardous Waste Loads

- Prevention is better than a cure
- Focus on pollution prevention
- Focus on problem contaminants



Preventing Interference & Slug/Hazardous Waste Loads

- Develop policy statement encouraging pollution prevention
- Identify problem pollutants
- Identify industrial users (IUs) which are sources of problem pollutants
- Prioritize IUs of greatest concern



Pollutants of Concern

- Pollutants which cause NPDES compliance problems
- Pollutants which limit sewage sludge use and disposal
- Pollutants which upset WWTP microbes



Identifying Problem IUs

- Use guidance documents to determine industries which generate specific pollutants
 - Review available data (e.g., inspection reports, permits, and industrial waste surveys)
 - Conduct new industrial waste surveys
 - Conduct industrial wastewater monitoring to identify problem IUs
- 

Control of Slug Loadings

- Evaluate the need for a slug control program
 - Develop an IU control program (require industries to develop and implement slug control plans)
 - Implement the slug control program
 - review & approve slug control plans
 - monitor & inspect IUs for compliance
 - develop & implement slug response procedures
- 

Protection of POTW Workers

- Collect information on potential hazards
- Perform hazards analysis
 - evaluate chemical management practices at key industries
 - screen industries for potential to cause reactivity or gas/vapor toxicity problems
- Control potential hazards
 - require industries to improve management of hazardous chemicals
 - prepare POTW toxics monitoring/response plan in case of toxics episode

Control of Hazardous Wastes

- Prohibit discharge of pollutants which:
 - create fire or explosion hazard
 - are corrosive ($\text{pH} < 5.0$)
 - obstruct flow in sewers
 - upset POTW processes or cause NPDES permit violation
 - increase POTW influent temperature to $> 140^{\circ}\text{F}$

Control of Hazardous Wastes

- Apply categorical pretreatment standards where appropriate
- Apply local limits to prevent hazardous pollutants at levels that cause interference, passthrough, or sludge contamination



Elements of a Local Pretreatment Program

1. Legal Authority

2. Technical Information

- industrial discharge data
- interference/inhibition data
- NPDES passthrough limits
- sludge quality data
- headworks analysis



Elements of a Local Pretreatment Program

3. Administrative Procedures

- notify IUs of applicable requirements
- receive & analyze IU applications & other data
- draft & issue pretreatment permits
- review IU self-monitoring data
- conduct compliance monitoring
- investigate noncompliance
- comply w/ public participation reqmts
- take enforcement action as necessary

Responsibilities of POTWs in Preventing Hazardous Waste Discharges

- If POTW accepts hazardous waste, it must comply with RCRA permit by rule provisions
- POTW may choose to prohibit the discharge of hazardous waste via truck, rail, or dedicated pipeline
- POTW may accept hauled IU waste that is not hazardous
 - it must meet applicable standards
 - POTW should license haulers & sample their loads
 - waste hauler must document source of waste
 - retain waste sample in case of plant upset

Potential Liabilities for POTWs

- If POTW receives hazardous waste, even unknowingly, it may be liable under RCRA and CERCLA for any past releases that harm the environment
- If POTW receives hazardous waste by truck, rail, or dedicated pipeline, it should comply with permit by rule conditions
- Violations of RCRA requirements can lead to civil and criminal penalties
- If POTW accepts haz waste from industry which does not comply with pretreatment standards, POTW may be in violation of RCRA requirements

Preventing Discharge of Hazardous Waste to POTW

- Mechanisms to prohibit haz waste discharges:
 - Ordinances
 - Permits
 - Contracts
 - Physical barriers
 - Waste tracking systems
- Prohibitions against truck and rail delivery of haz waste may not be applicable to dedicated pipeline carrying only industrial waste --- POTW must take extra precautions

Types of Spills & Uncontrolled Discharges

- Transportation accidents and leaks
 - impossible to predict
 - spilled material often reaches sewer system
 - petroleum products and flame suppressants are difficult to degrade
 - get as much info as possible from hazmat responders



Types of Spills & Uncontrolled Discharges

- Storage tanks and transfer pipe leaks
 - can be difficult to detect
 - first indication may be odor complaint
 - POTW should require periodic reports documenting tank inspections conducted pursuant to an SPCC Plan
 - POTW should require some type of spill notification
 - IU's SPCC Plan should provide tank inventory (tank type, volume, chemical stored, location, etc.)
 - POTW should be notified when tanks are to be removed

Types of Spills & Uncontrolled Discharges

- Industrial accidents
 - POTWs should require IUs to provide notification of accidental spills
 - IUs must make employees aware of notification requirements
 - IUs should post notification requirements for employees to see



Types of Spills & Uncontrolled Discharges

- Warehouse fires
 - Fire quench water runoff may reach sanitary sewers
 - Fire quench water may be contaminated with pollutants that could impact POTW
 - Coordination of emergency response activities with local fire department should be established



Types of Spills & Uncontrolled Discharges

- Midnight dumpers
 - most difficult to deal with
 - illegal dumpers may try to make discharge look like IU was the culprit
 - city employees, IUs, and citizens may provide tips of illegal dumping
 - dumping on roadways during a storm is still used



Troubleshooting

- The initial trouble call
- Investigation strategy
- Detecting interference, source identification, and source control
- Slug detection and source identification



The Initial Trouble Call

- Call can come from many sources
- Document call in a phone log
- Gather data as shown in Figure 10.1
- If possible, obtain waste sample immediately and hold for future analysis
- If call is an emergency, call 911 immediately
- Notify POTW staff immediately
- If human health/safety is threatened or environmental damage is occurring, warn persons who may be adversely impacted and notify state DEQ officials

Investigation Strategy

- Cross reference harmful substance to industrial producers
- Problem may be simple
- Problem may be complex
 - site inspections
 - set up automatic samplers at key locations
 - set up continuous pH monitoring at suspect locations
 - use dye tablets or smoke bombs
 - use 24-hour surveillance video cameras
 - conduct unannounced industrial site inspections

Detecting Interference

- Evaluate influent and effluent quality
- Evaluate plant operational parameters
- Evaluate changes in sludge quality
- Routinely inspect sanitary sewer infrastructure for damage
- If POTW interference is observed, determine type of interference:
 - hydraulic
 - physical, chemical, or thermal

Source Identification

- Determine specific causative pollutant via sampling, analysis, & review of operating data
 - heavy metal in sludge
 - shock BOD load
 - shock toxic load
 - Attempt to identify causative pollutant by odor, appearance, pH, solid residues, etc.
 - Attempt to identify recurring discharges
 - Review IU data to determine likely sources of causative pollutant
- 

Pretreatment & Source Control

- Most effective way of mitigating adverse effects on POTW
- Elements of pretreatment program crucial to proper source control:
 - ordinances
 - permits
 - audits and inspections
 - compliance schedules
 - escalating enforcement actions



Slug Detection & Source Identification

- Notification from IU is best means of slug detection and source identification
- Impose notification requirements on all potential slug dischargers
- Conduct regular and random monitoring in the collection system and at IUs for pH, LEL, etc.
- Measure pollutant concentrations at headworks



Maps and Schematics

- Pretreatment staff should have working knowledge of wastewater collection maps and IU pipe layout schematics
- Pretreatment staff should know flow path of SIU wastewater through collection system
- As-built maps of POTW collection system should be available
- As-built maps of industrial sewers showing point of connection to city sewer, pipe size, flow path, construction material, etc. should be available