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 POTW

- 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 (IUUs) which are sources of problem pollutants
• Prioritize IUUs 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 (pH < 5.0)
  - obstruct flow in sewers
  - upset POTW processes or cause NPDES permit violation
  - increase POTW influent temperature to > 140°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.