

# INDUSTRIAL USER MONITORING

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# LEARNING OBJECTIVES

- Describe purpose of monitoring conditions
- Discuss the considerations for establishing monitoring conditions
- Explain analytical methods requirements

# FOLLOW ESTABLISHED PROTOCOLS

- Standard Operating Procedures (SOPs) are step-by-step instructions that act as guidelines for employees to follow through their work processes.
- The purpose of having SOPs is to produce a product that is consistent and predictable.
- Written SOPs may be numbered steps, formatted as flow charts, or videos.

**Who?**

**What?**

# MONITORING REQUIREMENTS

**When?**

**Where?**

# MONITORING REQUIREMENTS

- Pollutants to be monitored
- Sampling location
- Sample collection method
- Monitoring frequency
- Analytical methods



# POLLUTANTS TO BE MONITORED

- Your SIU Permit should be your first source in determining this criteria.
  - Pollutant types, monitoring frequencies, and sample types.
- All sampling methods, holding times, and preservation techniques must be consistent with 40 CFR Part 136



# POLLUTANTS TO BE MONITORED

- Include numerical limits
- Include all categorical pretreatment standards
- Include other parameters subject to local limits
- Include monitoring for unregulated pollutants of potential concern (if justified)
- Include flow monitoring where required

# SAMPLING LOCATION

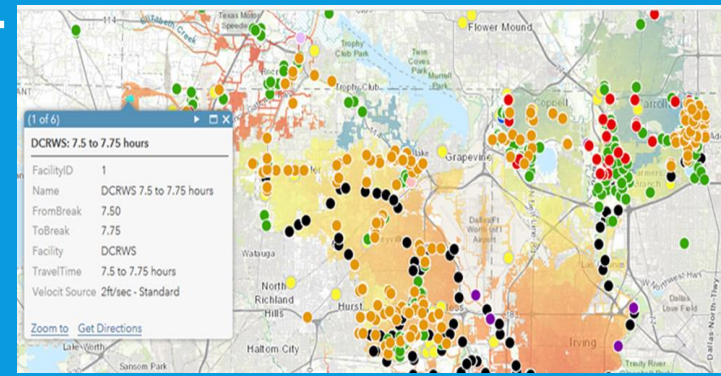
- Must coincide with the point(s) at which the effluent limits apply
- Must produce a sample “representative” of the nature and volume of the Industrial User’s effluent
- Must be safe, convenient and accessible to Industrial User and Control Authority personnel



# SAMPLING LOCATION

Finding your sampling location:

- GIS mapping systems
- Pictures
- Narrative descriptions
- Maps/Diagrams



# SAMPLING LOCATION

- Site Specific Safety:
  - Tall Grass
  - Poisonous Plants
  - Rocky Terrain
  - Muddy Areas
  - Traffic



- Sample Location Characteristics:
  - Chemical Fumes
  - Steam, hot sample (>120°F)
  - Foam
  - Discolored Sample

# SAMPLE COLLECTION METHOD

- Specify collection method
  - Grab sample
  - Composite sample (proportional to time or flow)
- Specify sampling period (e.g., 24-hour, 8-hour)
- Specify minimum number of aliquots
- Specify minimum number of grab samples

# TYPES OF SAMPLES

- Grab Sample: Taken from a wastestream on a one-time basis without consideration of the flow rate of the wastestream and without consideration of time
  - Must be used to monitor certain parameters (e.g., pH, oil & grease, dissolved oxygen, volatile organics, cyanide)
  - On a case-by-case basis – may be used for monitoring batch discharges



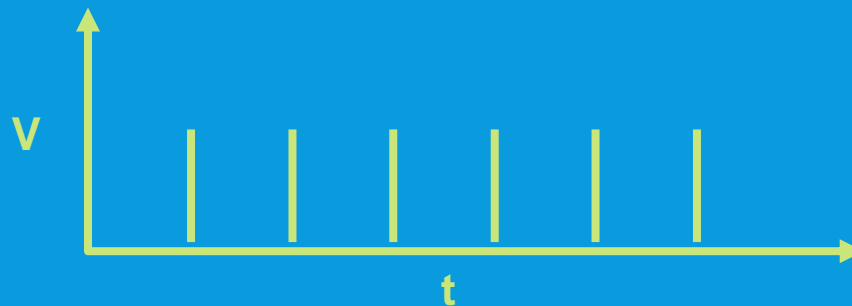
# TYPES OF SAMPLES

- Composite Sample: Composed of four or more discrete aliquots. The aggregate sample will reflect the average water quality over the sample period.
  - More representative measure of the discharge of pollutants over a given period of time
  - Accounts for variability in pollutant concentration and discharge flow rate



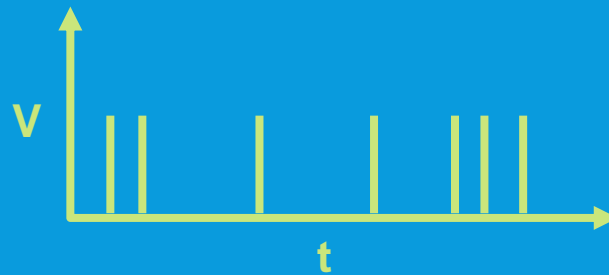
# TYPES OF SAMPLES

- Composite sample is defined by the time interval ( $t$ ) between aliquots, and the volume of each aliquot ( $V$ )
  - Time Proportional ( $t_c, V_c$ ): Interval time and sample volume are constant

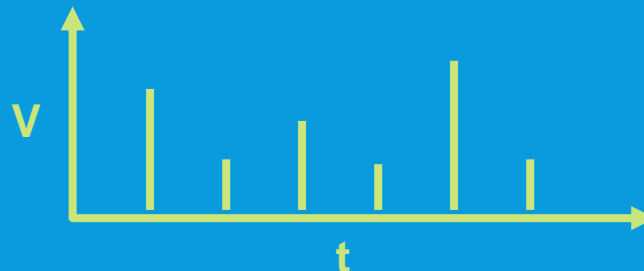


# TYPES OF SAMPLES

- Flow Proportional: Interval time or sample volume may vary
- Constant volume ( $t_v, V_c$ )



- Constant time ( $t_c, V_v$ )



# TYPES OF SAMPLES

- Continuous Sample: Automated collection and analysis of a parameter in a discharge
  - Typically used for pH, temperature, DO and flow



# MONITORING FREQUENCIES

- Federal Regulations require a minimum of “twice” per year
  - Once by IU and once by Control Authority
- Develop compliance monitoring requirement based on at least the following factors:
  - Representative data of users discharge
  - Potential impact of industry
  - History of user compliance
  - Costs

# ANALYTICAL METHODS

- Analytical methods must comply with 40 CFR Part 136 regulations
- May specify exact analytical method required
- May require analysis be performed by a State certified laboratory
- Alternative methods



# ANALYTICAL DETECTION LEVEL CONSIDERATIONS

- Occasionally, the value of a calculated local limit falls below method detection limit (MDL) and minimum level (ML) of approved analytical methods
  - Method detection limit: the minimum concentration of an analyte (substance) that can be measured and reported with a 99% confidence that the analyte concentration is distinguishable from the method blank results

# ANALYTICAL DETECTION LEVEL CONSIDERATIONS

- Minimum level: the sample concentration equivalent to the lowest calibration point in a method or a multiple of the method detection limit (MDL), whichever is higher. May be published with method; based on lowest calibration used by lab. Or may be calculated by multiplying MDL by factor of 3
- Most commonly occurs with water quality-based limits

# RESOURCES

- 40 CFR Parts 136 and 403
  - <https://www.ecfr.gov/current/title-40/chapter-I/subchapter-D/part-136?toc=1>
  - <https://www.ecfr.gov/current/title-40/chapter-I/subchapter-N/part-403?toc=1>
- Industrial User Permitting Guidance Manual
  - <https://www.epa.gov/npdes/industrial-user-permitting-guidance-manual>
- Industrial User Inspection and Sampling Manual For POTWs
  - <https://www.epa.gov/compliance/industrial-user-inspection-and-sampling-manual-publicly-owned-treatment-works>

# QUESTIONS

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