Chapter 217 Rule Changes Webinar Outline

1. **Webinar Introduction, Instructions, Acknowledgments [5 min]**

2. **Speaker Introductions [5 min]**

3. **Chapter 217 Rules Changes by Chapter [60 min]**

Subchapter A: Administrative Requirements *[5 min]*

- Applicability:
  - Facilities or treatment units built, approved, or unaltered before Aug. 28, 2008 – Chapter 317
  - Facilities or treatment units built, approved, or altered between Aug. 28, 2008 and Nov. 26, 2015 – Original Chapter 217 (as approved on Aug. 28, 2008)
  - Facilities or treatment units built, approved, or altered after Nov. 26, 2015 – New Chapter 217 (as adopted on Nov. 4, 2015)
- New Definitions: Alter, Bypass, Design Flow, Innovative Technology, Owner, Overflow, etc.
- Variances: Criteria when a variance may be automatically approved without written approval from the executive director:
  - When variance request conflicts with any prohibition
  - When variance requests conflicts with a provision that requires approval from Executive Director in writing.
- Clarification that the as-built drawings need to be dated, sealed and signed by an engineer, not necessarily the engineer responsible for the facility design.
- New requirements for O&M manuals
- New section:
  - All safety and emergency equipment must be operational, maintained and readily accessible.
  - Copies of TCEQ approvals must be kept with other records for the treatment facility
  - Copies of all records shall be available within 24 hours during an inspection and must be submitted within 15 days of a written request.

Subchapter B: Wastewater Treatment Facility Design Requirements – 10 min *[5 min]*

- Changes to Design Organic Loading (Table B.1.):
  - 5-day BOD concentrations for municipal flows increased from [200-350] to [250-400] mg/L.
  - New typical concentrations for ammonia-nitrogen – [15-75] mg/L.

- Peak Flow:
  - New requirement to use site-specific data or projections to calculate the peak flow.
  - When there are occasional peak events with a peaking factor greater than 5.0, the event-based peaking factor must be used to calculate the peak flow to the plant.
- Flow Measurement:
  - "Accurate" flow measurement replaced with "less than 10% error or manufacturer's error tolerance which is less".
  - Weirs: If the channel approach length is not straight for at least 20 times the maximum expected head height on a weir, manufacturer's recommendation may be used if approved in writing by TCEQ.
  - A secondary flow measuring device must be designed to allow periodic calibration and cannot interfere with the accuracy of the primary flow measuring device.
- Organic Loadings – New Requirements:
  - For a wastewater treatment facility that will not be affected by future growth, the design flow and the organic loading for the alteration is the facility's *average flow plus one standard deviation*.
  - For facilities that will be affected by future growth, the future design flow and organic loading is to be predicted using a linear regression or other appropriate statistical method.
  - Data used to calculate a facility's design organic loading should include samples collected during both dry and wet weather conditions.
- Emergency Power Requirements:
  - Treatment facilities must have an audiovisual alarm system that transmits alarm conditions via SCADA, auto-dialer system or a telemetering system connected to a continuously monitoring location.
  - Alarm must self-activate: power supply interrupted; pump fails; high water alarm.
  - Determine reliability of the existing commercial power service for the facility using records from the past 60 consecutive months instead of 24 months from the electric utility.
  - Systems for preventing discharge of untreated wastewater must operate at least equal to the longest power outage on record for the past 60 months or at least 20 minutes, whichever is longer.
  - If the longest power outage is longer than 48 hours and generator is used for backup power, the Owner must have a contract in place to guarantee fuel supply.
- Owner to post a sign at the entrance of the treatment facility with the 24-hour emergency contact information.

Subchapter E: Preliminary Treatment Units *[5 min]*

- "Bypass Channel" has been changed to "Emergency Overflow".
- New General Requirements Section:
  - Facilities must be designed with the ability to add provisions for removal of fats, oils, and grease (FOG).

  - A screening or grinding device must not be housed in the same structure as an office unless separated by an air-tight partition.
  - An area that houses a screening or grinding device to be ventilated at a minimum rate of 30 air exchanges per hour.
  - Any screening device located 4.0 feet or more below ground level to include mechanical equipment capable of lifting the screenings to ground level.
- Coarse screens are required, unless all flow entering a facility is processed through a grinder pump.
- Maximum spacing between bars in coarse screen devices from 1.75 inches to 1.0 inch.
- Design of a mechanically cleaned coarse screen must include automatic disposal equipment.
- BOD reduction percentage claimed for fine screens must not exceed 35%.
- Clarification that the purpose of the tight-fitting cover on a container that holds screenings or debris is to reduce vector attraction.
- Clarification that a minimum of two units are to be provided when grit removal is required.
- Influent organic loading as a consideration for the flow equalization basin requirements to prevent chronic overloading or underloading of biological treatment processes.

Subchapter F: Activated Sludge Systems *[10 min]*

- New Scum Removal Requirements:
  - A clarifier at a wastewater treatment facility with a design flow equal to or greater than 10,000 gpd must use a mechanical skimmer.
  - Less than 10,000 gpd may use mechanical skimming or hydraulic differential skimming. Hydraulic differential skimming may only be used if the scum pickup is capable of removing scum from the entire operating surface of the clarifier.
- Sludge Pipe Velocity:
  - The flow velocity in a sludge pipe must be greater than 2 fps for a wastewater treatment facility with a design flow greater than 150,000.
  - For design flow less than 150,000, flow velocity in sludge pipes must be greater than 0.5 fps. Lower velocities are permissible on case-by-case evaluation by executive director.
- Restrictions on hopper bottom clarifiers:
  - Prohibits the use of hopper bottom clarifiers at a wastewater treatment facility with a design flow of 10,000 gpd or more, whether or not mechanical sludge collection equipment is provided.
- Aeration system sizing:
  - A minimum design dissolved oxygen concentration of 2 milligrams per liter to ensure adequate DO throughout an aeration basin at the maximum diurnal organic loading rate for effective biological treatment and to enhance compliance and enforceability. Deviations approved on a case-by-case basis for BNR or tapered aeration.
- SBR Decant:

  - An equalization basin is required if an SBR has fixed decant equipment and decant volumes that do not accommodate the peak flow.
- New Air lift Pump Design Criteria:
  - Engineering report must contain calculations to determine static and dynamic pressure head necessary for air lift pump operation.
- Advanced Nutrient Removal:
  - A biological nutrient removal process that involves fixed-film processes are not exempt from the innovative and non-conforming technology requirements and is subject to executive director's determination.

Subchapter G: Fixed Film and Filtration Units *[5 min]*

- New Cloth of Disk Filter System Design Requirements:
  - Cloth or disk filter systems must meet the requirements in new §217.190.
  - Average pore size of media must not exceed 30 microns
  - Media must be disinfectant-resistant and chlorine-resistant if exposed to chlorine.
  - Design filtration rate must be between 3.25 and 6.5 gallons per minute per square foot of submerged media.
  - Backwash flux rate must be at least 6.0 gpm per square foot of media.
  - Each filter unit must monitor head loss across the unit and must have a head loss gauge or readout. Each filter unit must monitor effluent turbidity and have a turbidity gauge or readout. Gauges and readouts must be readable from the control panel.

Subchapter H: Natural Treatment Facilities *[5 min]*

- Applicability:
  - Clarification that all lagoons used to store treated, untreated, or partially treated domestic wastewater must be lined to control seepage, including raw influent storage lagoons.
  - Clarification that lagoons used to store reclaimed water must comply with 30 TAC Chapter 210.
- Aerated lagoon % BOD removal equation correction: Corrects equation H.1 by inserting “1-”.
- Evaporative Lagoons: Defines the evaporation rate used for design as the lowest annual evaporation rate in the past 25 years from the Texas Water Development Board’s (TWDB’s) precipitation and lake evaporation dataset for the quadrangle where the evaporation lagoon is located.
- Constructed Wetlands:
  - Removes *Typha* species from the approved plant list because of their tendency to displace other plant species and inhibit diversity.
  - Corrects the C* value for TSS in organic removal treatment efficient Equation H.5. for Subsurface Flow System Wetland.

Subchapter J: Sludge Processing *[10 min]*

- Control of sludge and supernatant volumes
    - Allows supernate, filtrate, and centrate return to headworks or lift station
- Sludge pipes
    - Adds that pipes must not contain bends that form acute angles
- Exclusion of grit, grease, and debris from sludge treatment units
    - Clarifies separation from sludge for land application but there is no need to separate from sludge for landfill or sludge-only monofill
- Chemical pretreatment
    - Adds that chemicals must not adversely affect any other treatment unit
    - Clarifies that owners must follow NFPA 70 NEC
    - Adds that chemicals must only be combined in a feed solution. Intermixing prior to preparing feed solution is prohibited
    - Clarifies that containers that store acid must be enclosed and acid resistant
- Sludge thickening
    - Clarifiers that mechanical gravity thickener MUST use a chemical addition or dilution water feed system
- Sludge stabilization
    - Deviations of requirements must be documented in variance requests
    - Anaerobic digestion
        - Clarifies that digester may be in series or parallel
        - Clarifies minimum anaerobic digestion temperature.
        - Clarifies that waste gas burner must be accessible
        - Adds that engineering report must specify where the emergency overflow for digester is routed.
        - Clarifies that supernatant treatment is not optional.
    - Aerobic digestion
        - Clarifies that the design temperature for an aerobic digester is based on the temperature of the water in the aerobic digester.
        - Clarifies that removable diffusers is not required if redundant basin is provided.
    - Heat stabilization
        - Clarifies that grinder must protect heat exchanger from damage or clogging
    - Alkaline stabilization
        - Clarifies that engineering report must include specifications about external heat necessary for sludge stabilization.
- Sludge Dewatering
    - General requirements
        - Clarifies that mechanical dewatering units must be capable of dewatering the daily average sludge flow in all circumstances (largest out of service).
        - Adds that engineering report must specify where the dewatering unit bypass flow is routed (each unit must have bypass)
    - Sludge conditioning

        - Clarifies that the design and location of a chemical addition point must consider chemical interactions.
        - Clarifies that storage requirements for both chemical and batch processes are based on max chemical demand and the total amount of chemical needed per shift (instead of chemical needed every 8 hours).
        - Clarifies that engineering report must justify any storage volume reduction.
    - Sludge drying beds
        - Adds that weather data be derived from nearest NAOAA weather station that has at least 10 years of data.
        - Clarifies that accelerated dewatering is intended to ensure dewatering when local climate is abnormally wet.
        - Adds that sludge drying bed must be designed to prevent unauthorized discharges.
        - Adds specify where drying bed underdrain will be routed to.
        - Adds that decanted liquid from drying bed must be routed to headworks or beginning of secondary treatment process
        - Clarifies that adequate sludge storage must be based on the disposal.
    - Belt presses
        - (in redundant press or alternate method, flows greater than 4 mgd) Clarifies that executive director's approval of alternate methods must be in writing.
        - Adds that electrical equipment subject to corrosion in a BFP must be protected from splashes and corrosive gases.
- Sludge storage
    - General
        - Adds term "mimimize" to recognize that a small degree of vector attraction is expected.
    - Storage of solids - not dewatered (anaerobically digested)
        - Makes mandatory that storage basins include gas release valves and control measures to prevent explosive pressure conditions.
    - Storage of dewatered solids
        - Incorporates materials (steel and concrete) for the container
        - Deletes re-wetting prevention for open stockpiles.
    - Dried solids storage
        - Dried solids must be stored in a covered bin or container to prevent re-wetting and storage limit of two years in accordance to fed
        - Clarifies air exchanges for ventilation must be complete air exchanges and not partial air exchanges.
- Final use or disposal of sludge
    - Quantities of sludge
        - In addition to a mass balance approach, allows design engineer to use actual data for design purposes.
    - Sludge constituents
        - Changes methods to determine metals in sludge to those approved in 40 Code of Federal Regulations.

Subchapter K: Chemical Disinfection *[5 min]*

- Reduces the number of redundant cylinders required for gaseous chlorine and sulfur dioxide - Only one redundant cylinder is required, (instead of an entire bank of cylinders).
- Clarification that a sulfur dioxide dechlorination system be sized based on the amount of residual chlorine to be dechlorinated instead of the amount of influent chlorine.
- New criteria for outdoor storage of 150-pound cylinders to prevent unsafe storage conditions:
- Enclosed storage/feed rooms have continuous forced mechanical ventilation (one air exchange every three minutes).
- New graphic showing the position of exhaust vents and fans in a chlorine/sulfur dioxide room.
- Vent exhaust end points must include a sign that says "Danger: Hazardous Exhaust."
- New separation requirements for chlorine and sulfur dioxide storage and feed systems.
- Storage time limits for sodium hypochlorite:
  - A storage supply limit of 30-days of sodium hypochlorite greater than 10% solution strength for storage facilities that include a residual analyzer or oxidation/reduction potential (ORP) monitor
  - Without a residual analyzer or ORP monitor, the limit is 15-days of storage.
- Clarification that secondary chemical tank containment structure must be able to drain to prevent the tank from floating.
- Allows use of a serpentine disinfection channel (with channel L:W ratio of 40:1 and ability to complete a dye test), instead of initial turbulent mixing.
- Rectangular chlorine contact basins must have rounded corners.
- The design of an aerated chlorine contact basin must include an analysis of the chlorine feed rate required to offset chlorine volatilization.

Subchapter L: Ultraviolet Light Disinfection *[5 min]*

- UV System Redundancy Requirements:
  - Quartz sleeves to be added to the list of required replacement equipment that the owner must maintain in inventory.
- UV System Monitoring and Alarms:
  - Transmittance of UV light in the disinfection channel be continuously monitored (in addition to flow rate, lamp intensity, status, etc.)
  - Low transmittance (based upon manufacturer's recommendations) will be added to the conditions for a major alarm.
- UV Reactor Design:
  - An enclosed UV system must have a dehumidifier or must be designed to prevent corrosion of electrical components.
- UV System Safety:

- A sign is to be posted in the UV reactor area in English and Spanish to improve safety precautions for individuals entering UV areas.

Subchapter M: Safety *[5 min]*

- Safety Audit:
  - Owner to conduct an annual safety audit, regardless of whether the facility has been materially altered or expanded.
  - Collection system included in the annual audit.
  - Owner to develop a corrective action plan with a reasonable risk-based schedule for implementing corrective action to address the cause of injuries and incidents.
- Chemical Handling:
  - Owner to make additional protective equipment recommended by the safety data sheets available for all individuals, and not just operating staff.
- Railings, Ladders, Walkways, and Stairways:
  - Guard rail with an opening designed to provide access must have a removable chain across the opening when it is not in use.
  - A ladder cannot be used to access equipment or work areas that are more than 4.0 feet above or below ground level.
  - Grating is required across the discharge pipe in the launder or stop bars across the launder before the discharge pipe, to prevent an individual from being swept into the discharge pipe from the clarifier.
- Electrical and Fire Code Compliance:
  - Electrical elements must be protected from environmental hazards such as moisture, extreme temperature, and pests with a housing.
- Facility Access Control:
  - The fence must have a locked gate at each access point.
  - Intruder-resistant fence must be at least 6.0 feet tall and the bottom of the fence close enough to the surface grade to prevent human access.
  - The top of the intruder-resistant fence must have at least three strands of barbed wire, the top of the fence may instead have outwardly-directed iron bars spaced on four-inch centers instead of barbed wire.
  - WWTF hazard signs must be posted whether a facility has an open tank or not.
  - Outward-facing signs that read "DANGER-NO TRESPASSING" in both English and Spanish must be posted on each side of the fence and on the gate.
- Color Coding of Pipes:
  - The stenciled wording on a non-potable water pipe to read "NON-POTABLE WATER, DO NOT DRINK" and add the Spanish translation "NO BEBA EL AGUA."

4. Panel/Q&A [20 min]

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