OPTION 1 – INDIRECT DISCHARGERS

Option 1 is EPA's preferred option and builds on the existing MPP ELGs by adding … new conventional pollution limits (pretreatment standards) for large indirect dischargers based on very basic wastewater treatment such as screening and DAF technologies to prevent passthrough and interference at POTWs. EPA requests comment on the concept of allowing POTWs, control authorities, or permit authorities to waive, under certain circumstances, the new conventional pollutant limits for large indirect dischargers.

Subpart A—Pretreatment Standards for Existing Sources [PSES]

Regulated parameter	Maximum daily[1]	Maximum monthly avg[1]
BOD	1945	1323
TSS	1578	925
Oil and grease	1635	1393

[1] mg/L

INDIRECT DISCHARGERS

- What facilities does the apply to?
  - Meat > 50million LWK lbs/year
  - Meat Further Proc > 50mm lb/yr
  - Rendering > 10mm Raw lb/yr
  - Poultry > 100 mm LWK/yr
  - Poultry FP > 7mm lb/yr
- Can we work with our municipality and get an exemption from the requirement?
- What does EPA think will work?
- What are we considering for improvements to comply with the pending Rule?
- What if we have significant Soluble BOD?
- Is there a best practice pretreatment system to install?

Table 8-7. Primary Treatment Units Used in the MPP Industry

Treatment Unit	Description
Screens	Screening removes large solid particles (0.01 to 0.06 inch in diameter) from wastewater. Different types of screens can be used in wastewater treatment, including static or stationary, rotary drum, brushed, and vibrating. Screens typically have stainless steel wedge wire that removes medium and coarse particles.
DAF	In a DAF unit, air is dissolved under pressure and then released at atmospheric pressure in a tank containing wastewater. The released air creates bubbles that adhere to suspended solids, causing the solids to float to the surface where they can be removed by skimming. DAF removes suspended solids (e.g., soil, sand), fatty tissue from meat and poultry, oils, grease, and metals. This treatment unit can also be used for biological treatment, as it can reduce biochemical oxygen demand (BOD) and chemical oxygen demand (COD). Solids gathered from this treatment unit are often combined with sludge from other treatment units and moved to solids handling, discussed in Section 8.5.
API Separators	API separators remove oils, fatty grease from animals, and suspended solids by skimming and collecting the materials from the surface of the wastewater.
Catch Basin	Catch basins separate grease and finely suspended solids from wastewater by the process of gravity separation. Each basin is equipped with a skimmer and a scraper. The skimmer removes grease and scum on the surface, and the scraper removes sludge that collects at the bottom of the basin.
Flow Equalization	A flow equalization unit is any type of basin, lagoon, tank, or reactor that serves to control a variable flow of wastewater to achieve a near-constant flow into the treatment system. A separate unit for equalization may not be necessary as many treatment units (such as DAF, a catch basin, or an anaerobic lagoon) may provide flow equalization.
Chemical Addition	Facilities may add chemicals for settling, thickening, and/or pH control. These chemicals can be added in the DAF, flow equalization, or other units, or before the wastewater enters these units. Chemicals include polymers, coagulants, and flocculants.

PHOSPHOROUS REMOVAL

Option 1 is EPA's preferred option and builds on the existing MPP ELGs by adding new effluent limitations for large direct and indirect dischargers. Option 1 would include new phosphorus limits for large direct dischargers based on chemical phosphorus removal technology, ….

Regulated parameter	Maximum daily[1]	Maximum monthly avg.[1]
Total Phosphorus	1.5	0.8

C. Actions Leading to Proposed Revisions to the MPP ELGs

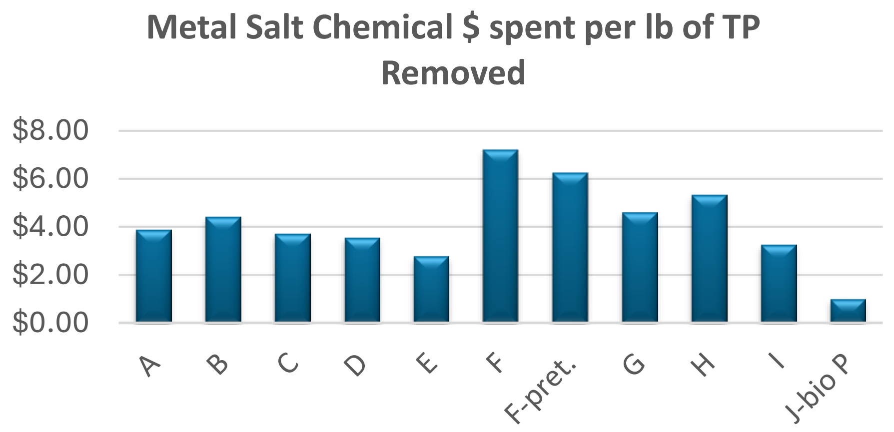
required under the ELG regulations. For phosphorus, which is not regulated under the existing ELGs, the median annual average of 140 MPP facilities was less than 2 mg/L indicating that some MPP facilities are meeting water-quality based low phosphorus limits of their NPDES permits using current treatment technologies. These initial results indicated that revised ELGs may be appropriate as the industry is capable of achieving effluent limitations well below the current 2004 regulations.

PHOSPHOROUS REMOVAL

- What is our typical TP loading?
- Should we use Ferric or Alum in the pretreatment DAF to lower TP in activated sludge?
- Biological or Chemical Precipitation?
    - Can biological achieve <0.8 mg/l?
    - If biological – how?
- What, how much, where do you dose chemical?
- What is the impact on MLvSS?
- What is the impact on WAS production?
- If I add a metal salt, will it corrode my equipment (eg diffuser system, pipes)?
- Can we install a tertiary DAF for TP removal?
- Do we need tertiary filtration?

Table 8-10. List of Phosphorus Removal Treatment Units

Treatment Unit	Description
Chemical Precipitation	Chemical precipitation involves adding chemicals that encourage coagulation and promote particle adhesion to form large, visible clumps (i.e., flocculation) which can then settle out of the wastewater. The sludge collected from the treatment unit is moved to solids handling treatment units. MPP facilities use chemical precipitation for phosphorus removal through the addition of metal salts, most commonly alum or ferric chloride. MPP facilities may add chemicals to primary treatment (e.g., DAF), biological treatment, or they may have a separate treatment unit.
Filtration	Filtration is the process of passing treated wastewater through a granular media, (e.g., sand, mixed-media, or a filter cloth). This treatment provides further clarification of wastewater by removing total suspended solids (TSS), nitrogen, and phosphorus. The sludge collected from the filter is moved to solids handling treatment units. Reverse osmosis is another type of filtration system, used to remove small ions from water.



TOTAL NITROGEN REMOVAL

Option 1 is EPA's preferred option and builds on the existing MPP ELGs by adding new effluent limitations for large direct and indirect dischargers. Option 1 would include new phosphorus limits for large direct dischargers based on chemical phosphorus removal technology, more stringent nitrogen limits for large direct dischargers based on full (not partial) denitrification….

Regulated parameter	Maximum daily[1]	Maximum monthly avg.[1]
Ammonia (as N)	8.0	4.0
Total Nitrogen	20	12

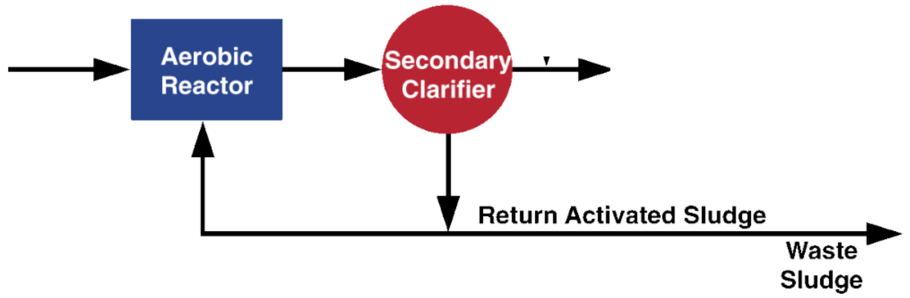
C. Actions Leading to Proposed Revisions to the MPP ELGs

EPA found that some MPP facilities are performing better than the existing 2004 ELG for nutrient discharges (nitrogen and ammonia), as well as removing phosphorus, which is not regulated under the existing ELG. For nitrogen, the median annual average of 97 direct discharging MPP facilities was 32.8 mg/L, which is well below the 2004 ELG monthly averages of 103 mg/L for poultry and 132 mg/L for meat processors. For ammonia, the median annual average for 119 facilities was approximately 0.5 mg/L, which is far lower than the 4 mg/L

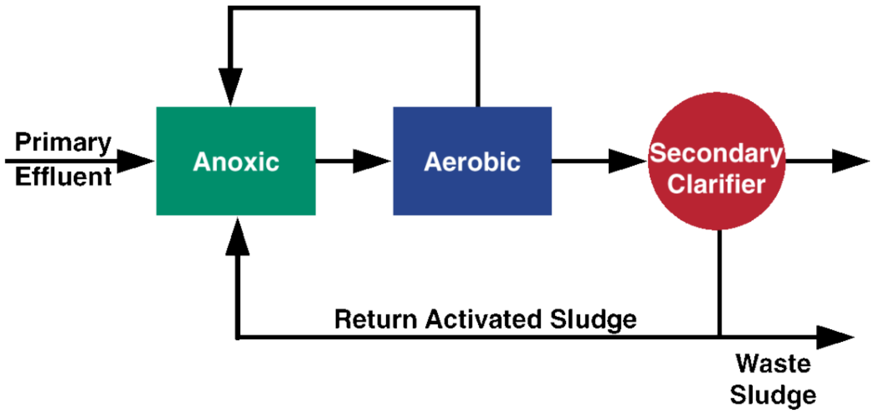
TOTAL NITROGEN REMOVAL

- What is a MPP facility’s typical TN loading?
- Is it realistic to implement point source reduction to significantly lower TN?
- Can my current process achieve <12 mg/l TN monthly average?
- Carbon is a limiting factor, how much carbon do I need?
- Where can I get supplemental carbon, and what are the pros & cons of the different sources?
- What are my treatment options to ‘fully’ denitrify? Which process are we considering?
- Can I install a Denitrification Filter post clarifiers?

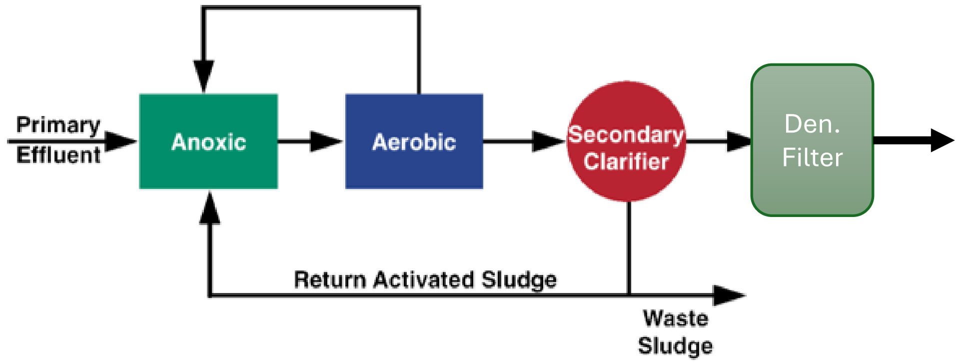
Pre 2004 – Aeration and Clarification



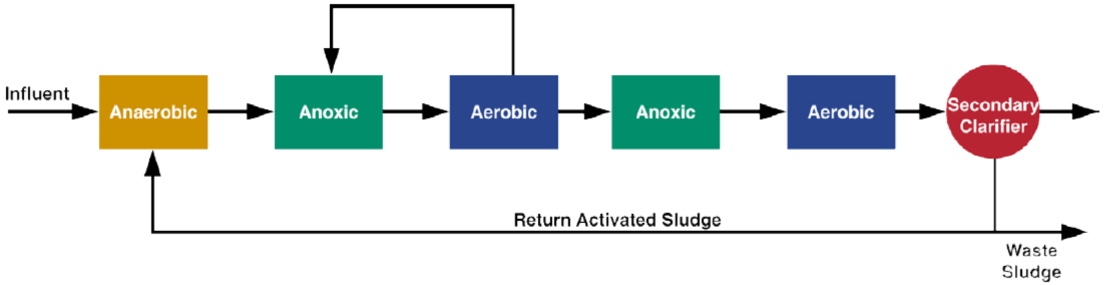
2004 – 2025 - Modified Ludzack Ettinger (MLE)



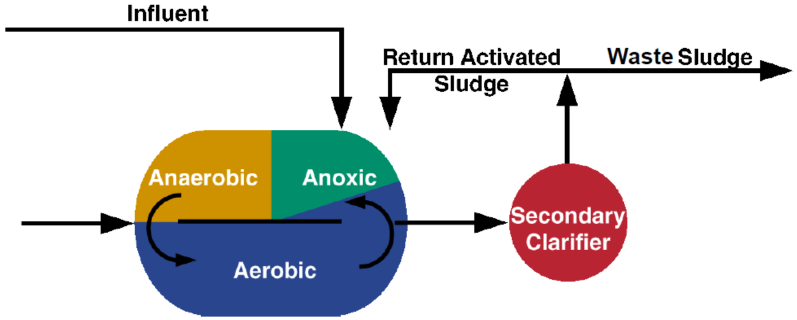
Post 2025? – Denitrification Filter



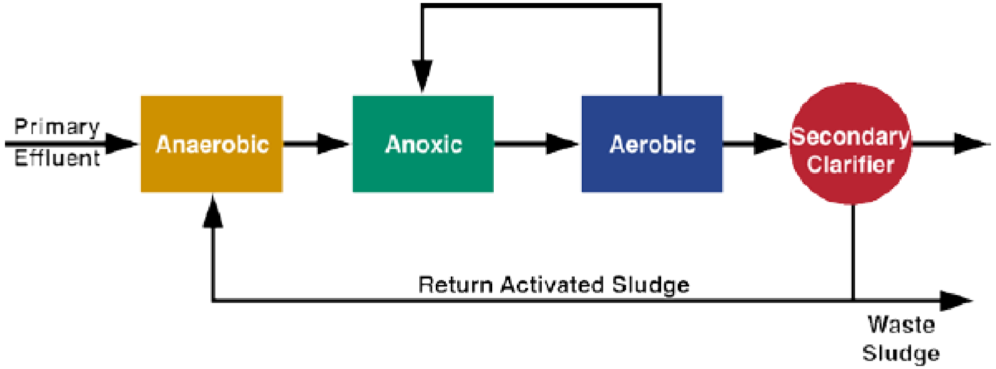
Post 2025? – 5 Stage Bardenpho



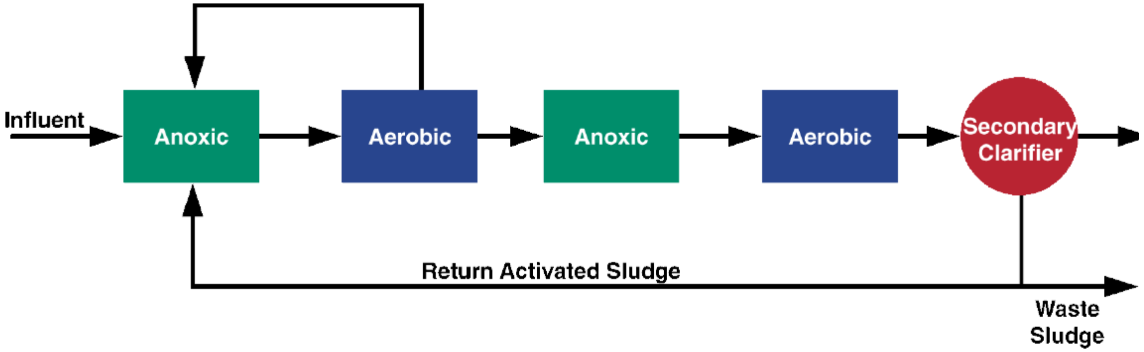
Post 2025? – Upgrade Oxidation Ditch



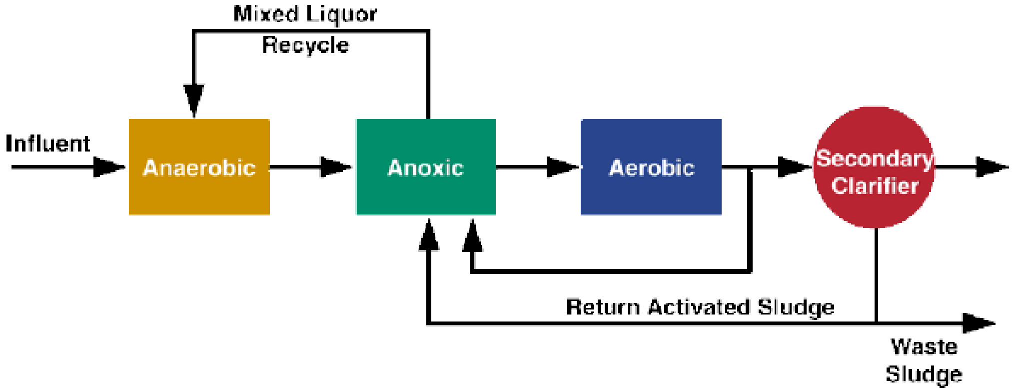
Post 2025? – A^2/O



Post 2025? – 4 Stage Bardenpho



Post 2025? – UCT



HIGH STRENGTH CHLORIDE STREAMS

Establish zero discharge requirement for certain high chlorides wastestreams. The technology basis for this requirement is segregation of these wastestreams from other process wastewater streams and management via sidestream evaporation.

These processes include hide processing, water softening regeneration wastewater, meat and poultry koshering, and further processing operations involving marinating and curing.

EPA's Average Pollutant Conc, mg/l

Analyte	Meat	Poultry	Rendering
Chloride	675	98.8	467
Sodium	512	148	365
TDS	2970	4680	4530

HIGH STRENGTH CHLORIDE STREAMS

- What is a High Strength Chloride Stream?
- What is EPA proposing?
- Are there exemptions?
- What are today's common practices to comply?
- Can we switch to a non-chloride containing chemical?
- Is it possible to ship the Stream offsite?

Some facilities use various types of mechanical evaporation systems, which have smaller footprints and can be used in any type of climate. Submerged combustion evaporators, which use a heat exchanger to evaporate water by combusting fuel and releasing the heat directly into the water, have had limited success. More often, MPP facilities that use mechanical evaporation systems for chlorides use forced circulation evaporators, which use steam with a heat exchanger and condenser to evaporate water and recover solids (see Figure 8-4). The concentrated brine ~~(condensate)~~ is recirculated to the preheater and a portion of the brine is either disposed of or sent on to a crystallizer to create a solid salt wastestream.

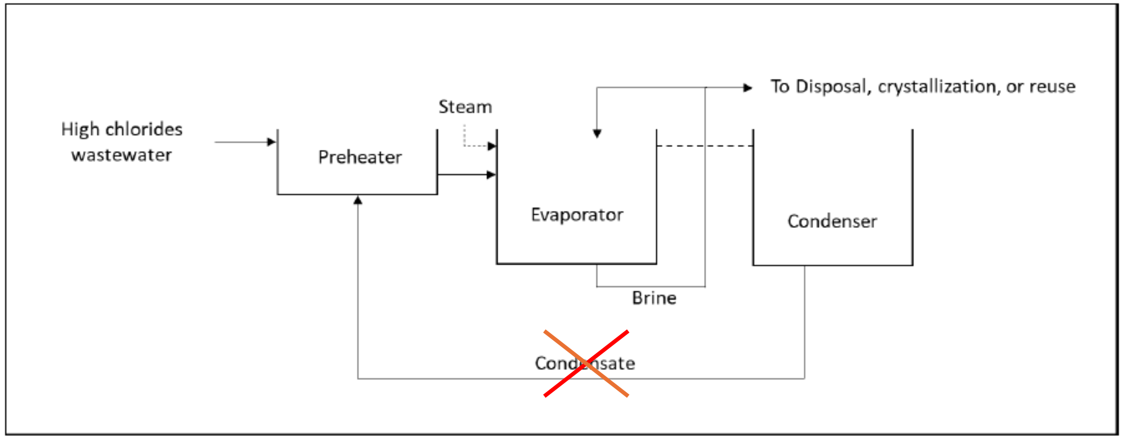


Figure 8-4. Process Flow Diagram of a Forced Circulation Evaporator System

Some MPP facilities dispose of their high chlorides wastewater using deepwell injection via Class I wells. Class I wells are used to inject hazardous and nonhazardous wastes into deep, confined rock formations, typically thousands of feet below the lowermost underground source of drinking water. However, deepwell injection is not allowed in some states and may not be an option for many facilities.

Lastly, some MPP facilities transfer their high chlorides wastewater to off-site wastewater treatment or to a renderer for treatment. See the *Summary of High Chlorides Wastewater Data* memorandum for more information on treatment technologies for this wastestream (U.S. EPA, 2023c).

OPTION 2 & 3

Option 2 builds on (includes all requirements in) Option 1 and would add nitrogen and phosphorus pretreatment standards for some large indirect discharging slaughterhouses and renderers. Specifically, Option 2 would add phosphorus and nitrogen limits for indirect discharging slaughterhouses producing greater than or equal to 200 million pounds per year and indirect discharging renderers producing greater than or equal to 350 million pounds per year.

Option 3 extends the requirements for both direct and indirect discharging facilities under Options 1 and 2 to smaller facilities. For direct discharging facilities, Option 3 would apply phosphorus and nitrogen limits to all subcategories producing greater than or equal to 10 million pounds per year, and additional more stringent nitrogen limits in all subcategories producing greater than or equal to 20 million pounds per year. For all indirect discharging facilities, Option 3 would require conventional pollutant limits for facilities producing greater than 5 million pounds per year, and nitrogen and phosphorus limits for facilities producing greater than 30 million pounds per year.