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Wastewater Pretreatment: Making the Financial Case

In the Summer 2024 issue of EH&S From Experience, we discussed some common thresholds that would help determine if a wastewater pretreatment system was needed. In this issue, let's look at how to determine what system would fit your needs financially. Finances first, because whatever you decide, it will need to get capital expenditure approval. This is always easier with a well-reasoned plan.

You know the basics: To get capital approval, you need to demonstrate a positive financial analysis. This typically starts with a Return on Investment (ROI) standard timeframe of three years. Add up the last three years of sewer surcharges and compare that to the vendor's quote for a wastewater system. If the system costs less, there is an excellent shot at convincing your C-suite to buy it. This, however, is rare. It is much more likely that the ROI analysis shows a payback of greater than five years (if ever). That's mostly because wastewater treatment should be considered as more of a utility expense than a production project. Wastewater treatment will not make money for your company. Rather, it's an expense that's simply part of the production process, much like water and electric bills.

Even so, calculating a wastewater system's ROI can be valuable as a waypoint if you are upgrading or renovating your facility to include a new system. If you choose to do so, here are some things to check as you complete your calculation:

- Surcharges may not completely disappear after pretreatment. Get the estimated effluent concentrations from the vendor. For example, a Dissolved Air Flotation (DAF) system is great for reducing Total Suspended Solids (TSS) but may only reduce the Biochemical Oxygen Demand (BOD) by 20%. This may not be enough to eliminate the BOD surcharge. Therefore, your

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EXPERIENCE IN BRIEF

Per EPA rulemaking under 40 CFR Parts 261, 262, and 266, called the "Hazardous Waste Generator Improvements Rule" (2016), there is a "requirement for all Small Quantity Generators (SQGs) of hazardous waste to re-notify EPA of their hazardous waste activities every four years." The purpose of this is to maintain more accurate data regarding hazardous waste generators. This year is a notification year! Forms are due September 1 2025. Even if you miss this date, it is still important for you to submit the form! While many states have an electronic option through MyRCRAID, some require paper forms. Click here for details.

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surcharges after the new wastewater system will be less, but not zero. The ROI calculation would then look like:

(Existing surcharge x 3 yrs) compared to
(Cost of wastewater system + Future Surcharge x 3)
Existing Surcharges = $40,000/mo x 12 mo x 3 yrs = $1,440,000
After System: System cost $1,250,000 + ($15,000/mo x 12 mo x 3 yrs) = $1,790,000

- There are also increased operating costs to consider: The cost of chemicals used by the DAF, and sludge hauling and disposal. These can add $2,000 to $10,000 per month in the example above.

As you see, the new system doesn't quite meet the three year ROI measure of project viability. This may be close enough to move the project ahead, especially if compliance has been difficult without a wastewater pretreatment system upgrade. Compliance issues are more commonly the driver for upgrading or installing a wastewater pretreatment system over expected savings (ROI).

As an alternative, if the ROI analysis fails to keep the project moving, some facilities choose to invest instead in waste and water minimization efforts (often less capital by an order of magnitude).

If you can save more money by consistently reducing the amount of waste entering the drain (and contributing to surcharges) then that is easily the preferred plan. This may only happen for engineered solutions where a piece of equipment is changed or programming changes are made. Reductions in waste that are achieved by changing the behavior of personnel are often reduced over time as employees revert back to previous behavior or turnover causes a de-training effect.

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