

from experience

environmental, health & safety edition

Use of Sensors for Wastewater Surcharge Reduction

When looking for operating cost savings, wastewater surcharges are often targeted because they appear to be an “easy” fix. Logically this makes sense: If less material enters the drains, less pollutants will be in the wastewater and therefore, the sewer charge will be reduced. Yet difficulties in achieving surcharge reductions are encountered when the metrics are applied to daily operations. Typically, a monthly or quarterly sampling event determines the surcharge rate for the month or quarter. Since that sampling event is only four to five days long, it is a challenge to achieve a true, long-term average sample: One bad day can affect the annual budget. Changing operator behaviors to reduce the amount of product going down the drain for those few days is not effective and trying to get an accurate idea of what happened more than a week later (because sample result reporting can lag collection by five days or more) can be a bit like chasing a tail.

What if you knew within a few minutes that more-than-average amounts of valuable product or raw materials were in the wastewater system? Could you identify processes to change or reinforce better behaviors more easily? Sensors in the wastewater stream prior to treatment can give you this information! The trend toward more sensors in wastewater is growing rapidly. The right sensors, in the right place, will tell you the relative strength of your wastewater within minutes. Sensors are available for many wastewater parameters such as Opacity, Suspended solids, Chemical Oxygen Demand (COD), Biochemical Oxygen Demand (BOD), pH, flow, and specific materials (e.g., dairy products). And in case you’re wondering: The “right place” is as far upstream in your wastewater system as can be managed, although a typical location is on the discharge side of the primary lift station pumps.

Sensors for compliance are dictated by the parameters in the permit but wastewater influent sensors are chosen based on the products and process specific to the facility. The sensors below have been found to be helpful in the industries listed:

- Opacity/Turbidity – used for dairy, fried foods, and bakeries.
- Dairy sensor – used for dairy or dairy product plants.
- COD/BOD sensors - used for beverage, juice, and bakery wastewaters.

Hixson has integrated sensors into the influent of the wastewater pretreatment systems to identify the relative strength of pollutants entering the system, with alarms to let managers know when unexpectedly high measurements are occurring. Each alarm is an opportunity to improve a process or behavior.

One of the more recent sensor technologies used is a multi-parameter probe using spectrometry in both ultraviolet (UV) and visible spectrums simultaneously to get Total Suspended Solids (TSS) and organic carbon loading (COD/BOD) results within two minutes of sampling. While it does require a learning curve, this tool and the others like it can greatly improve your feedback of product loss – directly impacting your bottom line. Want to learn more? Ask for the Summer 2015 edition of *EH&S From Experience* for sample calculations for the cost of product going down the drain.

experience in brief

Most states regulate the use of radiation generating equipment such as x-ray devices used in many manufacturing settings for detection of foreign objects and product fill levels. The state regulating agency is typically that state’s Board of Health (BOH). Requirements may vary slightly from state to state, but compliance parameters generally include device registration, radiation quality assurance program, preventive maintenance procedures, annual radiation surveys, and periodic BOH inspections.

continuing education

Hixson associates regularly participate in continuing professional education events across the country. To learn more about the events below, e-mail Hixson at: info@hixson-inc.com

The Institute of Internal Auditors
“EH&S Exchange”
 Washington, D.C.
 September 2019

American Society of Safety
 Professionals - SWOH Chapter
“Fall Protection”
 Cincinnati, OH
 October 2019

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