Excerpts of Topics Discussed At the Wastewater Treatment Forum

After a one-year absence, the Wastewater Treatment & Recycling Forum returned for AESF Week '99 at Lake Buena Vista, FL. Edited excerpts of some questions and answers at this popular session appear here. Thanks and congratulations to the panelists for another outstanding job.

Panelists at the Wastewater Treatment Forum were (l-r): Dr. Fred Reinhard; Tom Martin, CEF; Tam Van Tran; Lyle Kirman and Frank Altmayer, CEF. The popular session returned at AESF Week '99 following a one-year absence.

The forum moderator was Tom Martin, CEF, Delta Chemicals & Equipment, Inc., Indianapolis, IN. Panelists were: Frank Altmayer, CEF, Scientific Control Laboratories, Chicago, IL; Lyle Kirman, Kinetico Engineered Systems, Newbury, OH; Dr. Fred Reinhard, CH2M Hill, Eagan, MN; and Tam Van Tran, North American Finishing, Reading, MA.

Q: The POTW routinely samples our treated process water, and we also have a private lab analyze it. We keep getting different readings of cyanide levels, even with a split sample. What could be causing this?

Panelist: Splitting a sample is a complex issue. A lot of variables must be analyzed to determine why different results are obtained. If handled properly, samples can be held for several days and the same results can be obtained. The answer might be closer cooperation between your lab and the POTW. There is a lot of room for variation within the guidelines of the procedures. Get with your lab and the POTW lab to compare testing procedures. Get your lab on the same sampling program and the results will have a better chance of keeping you in compliance. I might point out, however, that the POTW is not obligated by law to supply you with a split sample treated in a particular way.

Q: I would like to know your recommendations for handling copper cyanide and silver cyanide in the same waste stream. Can the silver be reclaimed?

Panelist one: Most precious metals are retrieved through ion exchange. When copper and silver are combined in the same wastestream, it presents a different problem. The value of the silver reclaimed compared to the cost of doing it isn't very good. But, you can do it by ion exchange.

Panelist two: Find out why you have silver and copper together in the first place and arrange to separate them. That's the best way to handle it.

Q: Can acid be used to treat cyanide if a good exhaust scrubber is in use?

Panelist: Obviously, if the concentration of cyanide is a few ppm, acidification should not pose a problem, in the presence of a good ventilation system. Overall, it is not a good idea to even consider acidification of cyanide-bearing waste because you may acidify a high concentration of cyanide, which then would release toxic hydrogen cyanide gas into the atmosphere, possibly creating another "Bopal."

Q: We have extra capacity in our cyanide destruct system. Can we use the system to oxidize both cyanides and cleaners?

Panelist: There is no excuse for cyanide to be in a cleaner. Find out how it is getting in there and keep it out. It's a problem that you should never have.

Q: Is there a cost effective and efficient method of treating fluoride in wastewater?

Panelist one: The general treatment is to add calcium and precipitate calcium fluoride. There are a number of additives that can be used in certain situations. Ion exchange is also used in some circumstances. The fluoride limit is the key to what you need to use to treat it.

Panelist two: Isolate the fluoride to the process. Treat it on a batch basis at high concentration.

Q: How can I take boron out of my wastewater?

Panelist one: We dealt with this where I live in the ’70s when a l ppm boron limit was established. We were able to prove, however, that our part of the country is boron deficient. So, it’s not a problem there, even though the 1 ppm rule is still in effect.

Panelist two: There is a specific ion exchange resin that works. It has very low capacity and it is very expensive.

Panelist three: A client I work with went to a closed-loop waste treatment system to avoid this problem. It is now effectively treating the boron problem.

Q: Is there a flow level for discharge below which a permit is not needed?

Panelist one: That’s a local issue. Check with your local regulators in each case. Federal regulations do not differentiate between low and high volume. If you have a low enough volume, find a way to precipitate it. Even if you evaporate it, however, you still have to have a permit.

Panelist two: If you are producing any waste that falls under regulations, do not discharge without a permit.

Q: We have a flow-through electroplating wastewater treatment system and we are destroying cyanide and other contaminants. Can this treated water be reused for something other than finishing and fabrication? Maybe flushing toilets?

Panelist one: Be extremely careful. Don’t put any of it in the toilet, because that plumbing most likely discharges to a different sewer connection than your current monitoring station, and it could lead to severe federal and local penalties.The treated water is very high in dissolved solids, which makes it unsuitable for most rinsing operations. You need to have the water tested and compared against the requirements of each rinse in your processing line. The water also must be consistent in composition, and this is often not the case with wastewater treatment systems. You can, of course, treat the water to remove dissolved solids, but you need to compare the cost of doing this with the savings provided by water re-use.

Panelist two: In my area of the country, you can buy clean water cheaper than you can clean it up enough to reuse it.

Panelist three: Water from some processes can be cleaned for reuse with minimum treatment. The best way to determine this is to have a good consultant go through your shop and make recommendations.