

PRETREATMENT CORNER

Emerging Pollutants of Concern

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During the past ten years or more there has been a lot of research and testing conducted in evaluating new pollutants of concern to the environment. One such study was conducted by the USGS in cooperation with EPA, CDC, USDA and NIEHS, evaluating “emerging contaminants” in the environment. The occurrence of these emerging contaminants in surface water is the focus of this article. The effects these emerging contaminants are having on the environment are still being discovered. Subtle effects may include impacts on development, spawning and other behaviors in aquatic organisms. This also translates to human consumption of drinking water from both ground and surface waters that may contain the emerging contaminants.

What are some of these future emerging pollutants of concern? They are common consumer products we use everyday – cleaning products, non-cleaning fluids (i.e., automotive fluids, paints and adhesives), pesticides, over-the-counter (OTC) and prescription medications, personal care products and disinfectants. Some of the pollutants identified in consumer products include: Alkyl Phenol Ethoxylates (shampoos, detergents), Chlorinated Solvents such as Tetrachloroethylene (automotive cleaning products, metal polishes, strippers), Copper (root killers), p-Dichlorobenzene (urinal deodorizers), Lindane (lice treatment), Pesticides (pet shampoos, lawn care, sewer root killer), Pharmaceutical compounds, Phthalates or Plasticizers (personal care products) and Selenium (dandruff shampoo), to name a few.

The National Institute of Health (NIH) has an interesting website on which one can search for a multitude of household products and view the health and safety information on each product. This website is at: <http://householdproducts.nlm.nih.gov/>

What will EPA do with all of the information being gathered by such agencies as USGS in addition to their own in-house studies? Will EPA include additional parameters to the list of pollutants of concern for which a POTW must develop local limits? Will POTWs be required to issue discharge permits to residential users? More likely a POTW may be required to conduct public education as a best management practice to reduce the release of such emerging pollutants to the environment.

Some states, such as California, have banned the use of certain products containing the chlorinated solvents Methylene Chloride, Tetrachloroethylene and Trichloroethylene. As an example, it is noted that one can of engine degreaser containing Tetrachloroethylene may contaminate 8 million gallons of water. The use of urinal deodorizers (also used in portable toilets) containing p-Dichlorobenzene, will also be banned in California, effective at the end of 2006.

Did you know that approximately 10% of the ibuprofen you consume each day is excreted and ends up in the sewer system? One antiseizure medication is entirely excreted by the human body. Pharmaceuticals, of course, are more concentrated in the wastewater discharges from hospitals, long term care facilities and other medical facilities. Guidance documents could be provided to such facilities to encourage the reduction of pharmaceutical discharges to the public sewer system through alternative disposal practices as a hazardous or medical waste.

EPA is systematically reregistering Pesticides and will be evaluating water/wastewater impacts when conducting the risk assessments.

Can some of these untested emerging pollutants cause interference at the POTW treatment plant or cause a WET test failure? Of course they can. If this is the case, what does a pretreatment coordinator test for? As an example, detergents contain surfactants. Surfactants can be further classed as anionic, nonionic and cationic. Anionic surfactants are measured as methylene blue active substances (MBAS - Standard Method 512B) and account for about 60% of the surfactants used in the U.S. Nonionic surfactants make up about 30% of the surfactants used in the U.S. and are measured as cobalt thiocyanate active substances (CTAS - Standard Method

512C). Cationic surfactants comprise the remaining 10% of the surfactants used in the U.S. and are measured as Eosin Y active substances (EYAS). Anionic surfactants are known to show toxicity to Fathead Minnow ranging from 0.50-60 mg/L. Surfactant levels greater than 0.50 mg/L in wastewater may create foam in a biological wastewater treatment system. EPA's human health water quality standard for MBAS-measured surfactants is 0.50 mg/L.

While no definitive answers are provided in this column, the information is food for thought. Emerging pollutants of concern is a hot topic at environmental conferences and workshops, so keep your ears and eyes open to see how this may impact your pretreatment program in the future.