

Wastewater Treatment Chemicals

“Chlorine” tablets are not all the same

Illinois Administrative Code, Section 905.120 requires that wastewater effluent which is discharged to the ground surface and leaves the property, or into a pond, lake or stream in which swimming, water skiing or other water contact occurs shall be disinfected with a chlorine solution. The code further advises that “Chlorine products used for disinfection of treated wastewater effluent shall be used in accordance with the product labeling.” Thanks to the efforts of the state and local health departments, there is little confusion about when disinfection is required, but the importance of specifying that chlorine products “shall be used in accordance with product labeling” needs to be both reviewed and stressed.

Prior to selling a microbiocide in Illinois, or any other state, the Federal Environmental Protection Agency and the state Department of Agriculture must evaluate and approve the composition of the product, the manufacturer’s claims, and the proposed label directions. This very thorough and expensive evaluation includes assessment of how effectively the chemical kills bacteria, the potential hazards to the individual using the product, and the potential hazards to the environment. Once the evaluation is complete and the product is approved, the product labeling can be finalized.

Frequently taking over a year, product labeling evaluation is the way the USEPA and the state of Illinois control what chemicals are used to disinfect water and insure maximum safety for the environment and protect the public health. Those who use the incorrect type of chlorine tablets in a wastewater treatment system violate the EPA’s control system and are subject to civil, as well as, criminal prosecution under the Federal Insecticide and Rodenticide Act, plus many other state and local statutes.

Currently, there are two predominant types of chlorine tablets found on the market – calcium hypochlorite and chlorinated isocyanurates. Calcium hypochlorite tablets, such as Norweco’s Blue Crystal[®] or Bio-Sanitizer[®] tablets, are the only readily available products labeled and approved for wastewater disinfection. Calcium hypochlorite tablets are very reactive and quickly kill bacteria present in wastewater (99% of the bacteria kill takes place in the first ten minutes following contact). Just as important, chlorine residual present after disinfection dissipates rapidly so that it will not damage the receiving environment. All chlorine products are hazardous and must be handled with care. Installers or plant operators handling calcium hypochlorite tablets must be thoroughly familiar with product label directions and must never repack the tablets into a smaller container or a plastic bag. This practice is against the law and extremely dangerous. The other type of chlorine tablet is chlorinated isocyanurates, which are usually referred to as swimming pool tablets or “Tri-Chlors.” Tri-Chlor tablets can be purchased from swimming pool supply stores, discount retail stores, and mail order outlets. Due to their

widespread availability, Tri-Chlor tablets often make their way into wastewater treatment systems, though their use is both dangerous and illegal.

Formulated for swimming pool disinfection, Tri-Chlor tablets dissolve more slowly than calcium hypochlorite and create a residual that does not readily dissipate. These tablets work well in swimming pools, where clean water is continually recirculated and slow dissipation of residual is desired, but they are unsatisfactory for wastewater treatment. When put into a flow-through wastewater tablet feeder, Tri-Chlor tablets will not thoroughly disinfect the effluent and the chlorine residual remains for long periods of time to damage the receiving environment.

An additional danger arises in some installations using Tri-Chlor tablets for disinfection, due to an accumulation of moisture within the tablet. Designed to be totally immersed in water, Tri-Chlor tablets that are exposed to periodic flows begin to decompose and release an explosive gas called nitrogen trichloride. This colorless gas is heavier than air and has a strong odor of chlorine. If a sufficient concentration of nitrogen trichloride builds within the wastewater system, it can be ignited when exposed to an open flame or organic contaminants. Though rare, these explosions can be devastating, causing extensive property damage and potentially serious injuries.

As professionals in the wastewater industry, it is very important for all of us to be thoroughly familiar not only with state and local codes, but also with the chemicals that we routinely use and sell to our customers. Every chemical manufactured is formulated for a specific application and use. If you use the wrong chemical in the wrong application, you are risking environmental damage, legal problems, and serious personal injury.

For further technical information about the composition and use of disinfecting tablets contact Don Bach, Vice-President, Norweco Inc., 220 Republic Street, Norwalk, Ohio 44857. Phone: (419) 668-4471, Fax: (419) 663-5440, E-Mail: email@norweco.com.



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