Tneme-News

INTRACTABLE FACTS ABOUT EXTRACTABLES IN POTABLE WATER

Never take clean drinking water for granted. Residents of a city in upstate New York were informed last year that their town's water supply contained concentrations of the solvents xylene and ethylbenzene that exceeded the Maximum Contaminant Levels (MCLs) established by the New York State Health Department. Both xylene and ethylbenzene are used as solvents for epoxy coatings that are certified for use on the interior of potable water tanks.

The source of contamination was linked to the town's 500,000-gallon water storage tank that had been relined with a solvent-based potable water epoxy coating from one of Tnemec's competitors. In a letter addressing the issue, the town's public works department informed customers that "cold ambient temperatures were also present when the curing process occurred."

When solvents leach out of the coating into water storage tanks or reservoirs, they are referred to as "extractables," which are detectable in laboratory testing based on parts per million (ppm) and parts per billion (ppb). "New York has extraordinarily low tolerances for volatile organic compounds (VOCs) in drinking water," explained Doug Hansen, director of sales, Tnemec Water Tank Market. "The state health department regularly tests drinking water for VOCs and when they found the city's water in excess of established MCLs, it created a huge headache for everyone involved."

Published reports indicate that after the interior of the city's water storage tank was lined with the potable water epoxy, a heater was used over a four-week period to promote curing. The tank was then disinfected, filled with water and tested for VOCs, which were shown to exceed the state's MCLs. Following the test, according to reports, the tank was emptied and its interior was heated and ventilated over several days in an effort to enhance the coating's ability to cure. The interior was disinfected for a second time and refilled, but concentrations of xylene and ethylbenzene remained detectable after repeated testing over a several week period.

In New York, the MCL is 5 ppb for a single xylene extractable in drinking water and 10 ppb for combined xylene (ortho, meta and para) extractables. Rhode Island does not allow any organic solvent extractables in drinking water. "In both states, advanced generation, 100 percent solids epoxy liners are being specified to meet requirements," Hansen explained. "More than 300 tanks in these states have been lined using 100 percent solids epoxy technology from Tnemec."

Series FC22 Epoxoline is a 100 percent solids epoxy liner that offers a return to immersion service in 24 hours at 75 degrees F. Series 22 Epoxoline is a 100 percent solids epoxy liner that offers a return to service in five days at 75 degrees F. Both coatings are certified by NSF International in accordance with NSF/ANSI Standard 61, which establishes minimum requirements for the control of potential adverse health effects from products that come in contact with drinking water.

Compared to more conventional, low solids epoxy liners that require multiple coats, both Series FC22 and Series 22 have the ability to achieve the necessary dry film thickness (DFT) in a single application. "This helps to save labor costs because you're only applying one coat," Hansen noted. "Traditional epoxy liners require seven days to cure at 75 degrees F before return to service."

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Another advantage of 100 percent solids epoxy liners is their longer maintenance cycle when used with a zinc-rich urethane primer, such as Series 91-H2O Hydro-Zinc. "These high-build coating systems offer twice the thickness of a standard solvent-based epoxy liner," Hansen revealed. "With the greater thickness comes longer term performance."

A consideration for applicators is the fact that a heated plural component spray system is required with Series FC22, while Series 22 can be applied using airless spray equipment. Generally, Series FC22 is recommended for elevated water storage tanks, while Series 22 is better suited for water treatment and ground storage tanks.

Series FC22 is available in a convenient, six ounce touch-up kit that is ideal for small repairs and holidays. "Given the 24-hour-return-to-service at 75 degrees F, you can fill in voids or holidays on Series FC22 or Series 22 projects and get them back in operation very quickly," Hansen advised.

"Several states are looking at implementing more stringent standards for the content of organic solvents in drinking water," Hansen added. At present, jurisdictions outside New York and Rhode Island fall under the NSF International maximum allowable limit (MAL) of 1 mg/L or 1,148 ppb for xylene and 0.07 mg/L or 80 ppb for ethylbenzene.

The NSF International standards are less than their respective U.S. Environmental Protection Agency (EPA) maximum contaminant levels, which are 10 times higher. The 10-fold change is to account for more than one source within a water system, such as the tank, pipes, fittings and valves that may be coated in a manner that would result in extractables.

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