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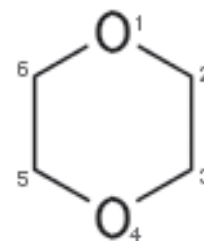


1,4-Dioxane, referred to as an “Emergent Chemical”, is a manmade compound primarily used as an industrial solvent or solvent stabilizer for chlorinated solvents or volatile organic compounds (VOCs). Industrial solvents are used in a wide variety of manufacturing processes (e.g electronics, metal finishing, fabric cleaning, pharmaceuticals, herbicides, pesticides, antifreeze, paper, etc.). As a stabilizer, it prevents the breakdown of chlorinated solvents during the manufacturing process. 1,4-Dioxane is also found in household products such as detergents, shampoos, body lotions, dishwashing soap, pharmaceuticals and cosmetics.



Releases of chlorinated solvents, or spent solvents disposed of improperly, can be a primary source of 1,4-Dioxane in the environment. 1,4-Dioxane has a high potential for entering the environment due to its volatility and solubility in water. 1,4-Dioxane has been detected in surface and ground waters throughout the United States.

The USEPA has classified 1,4-Dioxane as a “Group B2” probable human carcinogen of low carcinogenic hazard, which means exposure to 1,4-Dioxane may lead to adverse health effects. The USEPA has not yet established a Federal Drinking Water Standard or Maximum Contaminant Level (MCL) for 1,4-Dioxane. Many state governments have set advisory levels for this compound, with California having one of the lowest action levels at 3µg/L (ppb). Please contact your local state agency for advisory limits.



Columbia Analytical has developed procedures to detect 1,4-Dioxane below current state advisory levels.

Emergent Chemical	Test Method	Reporting Limit
1,4-Dioxane	EPA 8270C	1.0µg/L (ppb)**

1,4-Dioxane is highly water-soluble, so routine organic extraction procedures generally produce low recoveries (approximately 50% or less). The extraction procedure performed at Columbia Analytical allows us to increase the extraction efficiency of 1,4-Dioxane into the non-aqueous phase 80-90%.

The analytical approach also provides increased sensitivity using gas chromatography with mass spectroscopy in conjunction with isotope dilution, large volume injection, and selective ion monitoring.

** Lower detection limits are available.