1,4-Dioxane

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 and 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 US EPA 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 US EPA 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.

ALS Environmental has developed procedures to detect 1,4-dioxane below current state advisory levels.

<table>
<thead>
<tr>
<th>Emergent Chemical</th>
<th>Test Method</th>
<th>Reporting Limit</th>
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<tbody>
<tr>
<td>1,4-Dioxane</td>
<td>EPA 8270C</td>
<td>1.0µg/L (ppb)**</td>
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** Lower detection limits are available.

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

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.

For more information, scan the QR code or visit
http://www.alsglobal.com/environmental/services/north-america-environmental-services/usa/1-4-dioxane.aspx