

1,4-Dioxane: Occurrence, Toxicity and Population Risk

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DEPARTMENT OF ENVIRONMENTAL HEALTH SCIENCES • YALE SCHOOL OF PUBLIC HEALTH • NEW HAVEN, CONNECTICUT



1,4-Dioxane (1,4-DX), is a cyclic ether that is used as a solvent in the manufacture of other chemicals and, for decades, was extensively used as a stabilizer for chlorinated solvents, most notably 1,1,1-trichloroethane. This had led to extensive environmental release and groundwater contamination. 1,4-DX is also found as a contaminant in cosmetics, detergents, and shampoos. It has been classified as a class 2B carcinogen by IARC and the US-EPA considers it to be a likely human carcinogen. 1,4-DX is an emerging contaminant of growing concern based on its common occurrence in drinking water supplies worldwide. Its high polarity and low biodegradability hamper its retardation or removal from aquifer systems. 1,4-DX is carcinogenic in both mice and rats. While the mechanism by which this occurs remains unknown, it appears to be distinct from other well-known liver carcinogens. A lack of biomarkers of exposure to or the effects of this compound hampers epidemiological studies. Given that liver cancer incidence rates have more than tripled since 1980, there is an urgent need to evaluate emerging water contaminants that may be contributing to this increase, such as 1,4-DX.

In this symposium hosted by the Department of Environmental Health Sciences of Yale School of Public Health, experts from **Yale University**, the **International Agency on Research on Cancer (IARC)**, **Universities of California Los Angeles, Michigan, North Carolina State**, **State and Federal Government agencies (CA WATERBOARDS, CT DPH, CT DEEP, US EPA)**, and **public and private sectors** will review the current state of the science on 1,4-DX, and highlight the challenges associated with understanding health risks and setting regulatory policy, while exploring promising opportunities for addressing them.

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