BCLP. Client Intelligent

Insights

1,4-DIOXANE: OCCUPATIONAL EXPOSURE CONSIDERATIONS

Oct 18, 2022

SUMMARY

Workers may be exposed, and ultimately injured, by exposure to 1,4-dioxane. The principal pathway of exposure, as discussed below, is through inhalation. A worker's level of exposure relates to the type of work being conducted, airborne concentrations of 1,4-dioxane, and the duration of exposure.

Examples of potential worker exposure to 1,4-dioxane include the following industries and situations:

- Researchers in scientific laboratories;
- Employees working with certain industrial solvents;
- Factory workers manufacturing certain cosmetics; and
- Workers in paper pulping industries.

Our firm had provided some background regarding 1,4-dioxane in a previous Client Alert. Importantly, 1,4-dioxane is of increasing interest to government agencies.

This Client Alert discusses federal and state occupational exposure standards addressing 1,4-dioxane.

I. Federal Requirements and Recommendations

The Occupational Health and Safety Administration (OSHA) governs worker safety, including exposure to 1,4-dioxane. OSHA established a research organization called the National Institute for Occupational Safety and Health (NIOSH), which created the occupational exposure standard for 1,4-dioxane. As a note, NIOSH's current guidance contains more protective levels than does OSHA's enforceable levels.

The following table summarizes the requirements and recommendations for occupational exposure inhalation to 1,4-dioxane:

National Standards for 1,4-Dioxane Inhalation Exposure		
Agency/Organization	**Requirement**	**Category**
OSHA	100 parts per million (ppm) averaged over an 8-hour shift[1] Airborne Permissible Exposure Limit	Regulatory
NIOSH	1 ppm averaged over 30 minutes Airborne Exposure Limit	Advisory
American Conference of Government Industrial Hygienists (ACGIH)	20 ppm averaged over an 8-hour shift Airborne Exposure Limit	Advisory

There are several documents available that, in part, discuss occupational safety regarding 1,4-dioxane:

- NIOSH's Pocket Guide to Chemical Hazards;
- OSHA's Chemical Database;
- EPA's 1,4-dioxane Document;
- EPA's Technical Fact Sheet;
- EPA's Scope of the Risk Evaluation (expand the document using the lower left-hand corner);
- EPA's Final Risk Evaluation (December 2020), but numerous state entities have challenged the findings in court (March 2021); and
- ACGIH's Informational Sheet.

II. State Requirements and Recommendations

Many states have issued regulations or guidance to protect workers potentially exposed to 1,4-dioxane. California OSHA has established a Permissible Exposure Limit for 1,4-dioxane of 0.28 ppm averaged over an eight hour shift (or, approximately one-third of OSHA's exposure limit, making California's standard more stringent).

The following are the relevant information sheets published by the states:

- California (CA Office of Environmental Health Human Assessment);
- Connecticut (CT Department of Energy and Environmental Protection);
- Florida (FL Department of Health);
- Massachusetts (MA Department of Environmental Protection);
- Michigan (MI Department of Health and Human Services);
- New Hampshire (NH Department of Environmental Services);
- New Jersey (NJ Department of Health and Human Services);
- New York (NY Human Health Fact Sheet);
- North Carolina – Cape Fear River Basin (NC Environmental Quality);
- Vermont (VT Department of Health).

Several other states, cities, and counties have published information to address 1,4-dioxane in drinking water supplies. Minnesota Department of Health provides a helpful example.

III. Conclusion

We anticipate that regulation of occupational safety concerns for 1,4-dioxane at the federal and state levels will continue in the future. If you have any questions regarding 1,4-dioxane, please contact Phil Karmel (212-541-2311), John Kindschuh (314-259-2313), or Erin Brooks (314-259-2393).

---

[1]OSHA also states that 1,4-dioxane may be absorbed through the skin.

RELATED CAPABILITIES

- PFAS
- Environment

MEET THE TEAM

Philip E. Karmel

New York

philip.karmel@bclplaw.com
+1 212 541 2311

Erin L. Brooks

Chicago / St. Louis

erin.brooks@bclplaw.com
+1 312 602 5093

John R. Kindschuh

St. Louis

john.kindschuh@bclplaw.com
+1 314 259 2313