

## Insights

# 1,4-DIOXANE: OCCUPATIONAL EXPOSURE CONSIDERATIONS

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## 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. NIOSH and OSHA published an [additional document](#) that also discusses workplace exposure to 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 <sup>1</sup>  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); and
- [Wisconsin](#) (WI Department of Health Services).

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).

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<sup>1</sup>OSHA also states that 1,4-dioxane may be absorbed through the skin.

### RELATED PRACTICE AREAS

- PFAS Team

- Environment

## MEET THE TEAM



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