



March 2, 2026

Office of Legislation and Regulatory Review
Department of Toxic Substances Control
P.O. Box 806
Sacramento, California 95812-0806

Via <https://calsafer.dtsc.ca.gov/cms/commentpackage/?rid=12794>

Re: [Listing Manual Dish Detergents and Shampoo Containing 1,4-Dioxane at Concentrations Greater Than 1 Part per Million \(ppm\) as Priority Products](#) (Reference Number: R-2025-08R)

The American Cleaning Institute (ACI)¹ appreciates the opportunity to provide the Department of Toxic Substances Control (DTSC) with comments on its proposed listing of manual dish detergents and shampoo containing 1,4-dioxane greater than 1 part per million (1 ppm) as Priority Products under California’s Safer Consumer Products (SCP) regulations (“Proposed Rule”).

We appreciate DTSC’s commitment to engaging with stakeholders throughout this process, including meeting with ACI, and recognize the substantial work that went into developing the draft Product-Chemical Profile and draft regulations with a targeted, scientific approach. ACI members maintain a commitment to protecting human health and the environment and have invested significant resources over the years to reduce the presence of 1,4-dioxane, including to achieve compliance with New York State’s content limits for household cleansing products. ACI and its members maintain a vested interest in related policies and look forward to continuing constructive dialogue as DTSC’s regulatory process moves forward.

ACI also appreciates the extent to which DTSC has aligned with the best available science and existing regulatory regimes, and our comments request additional considerations and provide recommendations. With improvements to the Analytical Method Performance Guidelines (“Guidelines”)² for testing for 1,4-dioxane in these products, clarity on how DTSC may rely on its Guidance, provisions for concentrated products, and noting EPA’s reconsideration of its cancer risk assessment, ACI could lend stronger support to a rule that protects Californians and

¹ ACI is the home of the U.S. Cleaning Products Industry® and represents the \$60 billion U.S. cleaning product supply chain. ACI members include the manufacturers and formulators of soaps, detergents, and general cleaning products used in household, commercial, industrial and institutional settings; companies that supply ingredients and finished packaging for these products; and chemical distributors. ACI serves the growth and innovation of the U.S. cleaning products industry by advancing the health and quality of life of people and protecting our planet. ACI achieves this through a continuous commitment to sound science and being a credible voice for the cleaning products industry. For more information: www.cleaninginstitute.org.

² Analytical Method Performance Guidelines for Personal Care and Cleaning Products Containing 1,4-Dioxane (November 2025), available at: https://dtsc.ca.gov/wp-content/uploads/sites/31/2025/11/14-Dioxane_Analytical_Method_Performance_Guidelines_Accessible_Version.pdf.

the environment while allowing manufacturers to continue selling safe and effective cleaning products in compliance with appropriately calibrated regulations.

The Proposed Concentration Limit is Appropriate for Ready-to-Use Products

As ACI has previously communicated and DTSC understands, 1,4-dioxane is formed as a trace level impurity during the production of ethoxylated surfactants that can remain present in finished products as an unintentional byproduct. It is not intentionally added and serves no functional purpose, and manufacturers have taken significant steps to minimize its presence. We agree that avoidable contaminants should be minimized at their source.

We support DTSC's proposal that the product-chemical Priority Product listing for manual dish detergents containing 1,4-dioxane is limited to those with concentrations greater than 1 ppm for ready-to-use products. Reformulations and innovations have enabled ACI members to make great strides in achieving levels below 1 ppm in household cleansing products, demonstrating technical feasibility and consistent with New York State law already in effect.³ Regulatory harmonization reduces reformulation cycles for timely product delivery and reduces inefficiencies created or exacerbated by market fragmentation.

Concentrations above 1ppm are also reliably measured, and ACI-led research has provided an analytical method for quantifying 1,4-dioxane in finished cleaning products.⁴

Concentrated Products Should Be Defined and Permitted to Use a Dilution Calculation

We appreciate that DTSC has recognized the environmental benefits (e.g., reductions in water consumption, packaging consumption, transportation emissions) of concentrated and refill products. The uniform limit for 1,4-dioxane across all product forms, however, penalizes these products and deters related innovations even though there is no reduction in the overall amount of 1,4-dioxane entering the environment once products are properly diluted prior to use. While ingredient and byproduct concentrations in these formulas are higher compared to ready-to-use products, the amounts in properly diluted products are still similar on a single dose basis, meaning the amounts that go down the drain are also similar.

ACI previously commented⁵ that California's consumer product regulations for volatile organic compounds recognize the benefits of concentrated products and proposed that DTSC adopt

³ Available at: <https://dec.ny.gov/environmental-protection/help-for-businesses/household-personal-cosmetic-dioxane-limits>

⁴ Palumbo B., Conrad-Vlasak D., Stanton K. A novel protocol for quantitative determination of 1,4-dioxane in finished cleaning products. *J Surfact Deterg.* 2023; 26(4): 565-576. <https://doi.org/10.1002/jsde.12674>

⁵ ACI comments on the *Product-Chemical Profile for Personal Care and Cleaning Products Containing 1,4-Dioxane*, September 17, 2024, available at: calsafer.dtsc.ca.gov/workflows/Comment/15560/?from=search.

language that would also permit cleaning product manufacturers to use a dilution calculation to demonstrate compliance for finished concentrated products.

We request that the definition at Section 69511.11(a) of the Proposed Rule be revised to read:

(a)(1)“Manual dish detergents containing 1,4-dioxane at concentrations greater than 1 part per million (ppm)” means any product or preparation specifically designed to clean dishes without the use of a dishwashing machine that contains 1,4-dioxane at concentrations greater than 1 ppm.

(2) Notwithstanding subsection (a)(1), “manual dish detergents containing 1,4-dioxane at concentration greater than 1 part per million (ppm)” does not include detergents for which the label, packaging, or accompanying literature specifically states that the product should be diluted with water prior to use, and results in a 1,4-dioxane concentration below 1 ppm.”

Accurate Understanding of the Hazard Traits and Toxicological and/or Environmental Endpoints

DTSC has separated the hazard traits and the environmental and/or toxicological endpoints associated with other Candidate Chemicals in corresponding regulatory texts.⁶ Likewise, DTSC has also provided detailed endpoints that include the species of observation for two other groups of Candidate Chemicals.⁷ These are precedents we believe DTSC should follow going forward.

While regulatory text is necessarily limited in detail, it is important for stakeholders to understand that the associated toxicological endpoints in rodents occur at substantially higher doses than 1ppm. Similarly, 1,4-dioxane at less than 1ppm would not be considered irritating to the eye based on the concentrations triggering classification under the hazard-based and conservative United Nations (UN) Globally Harmonized System of Classification and Labelling of Chemicals (GHS) criteria for Category 1 (serious eye damage) substances.

ACI also requests exclusion of “neurotoxicity” from the list of associated hazard traits. In the Office of Environmental Health Hazard Assessment’s (OEHHA) review draft for its “Proposed

⁶ See: 22 CA ADC § 69511.1 on tris(1,3-dichloro-2-propyl) phosphate (TDCPP; CAS RN 13674-87-8) and tri(2-chloroethyl) phosphate (TCEP; CAS RN 115-96-8); 22 CA ADC § 69511.2 on 4,4'-methylenediphenyl diisocyanate (CAS RN 101-68-8) and generic methylene diphenyl diisocyanate mixed isomers (CAS RN 26447-40-5); 22 CA ADC § 69511.3 on methylene chloride (CAS RN 75-09-2); 22 CA ADC § 69511.6 on toluene (CAS RN 108-88-3), and 22 CA ADC § 69511.9 on methyl methacrylate (MMA; CAS RN 80-62-6).

⁷ See: 22 CA ADC § 69511.4 and 22 CA ADC § 69511.5 on perfluoroalkyl and polyfluoroalkyl substances (PFASs); 22 CA ADC § 69511.7 on N-(1,3-Dimethylbutyl)-N'-phenyl-p-phenylenediamine (6PPD), and 22 CA ADC § 69511.8 on nonylphenol ethoxylates (NPEs).

Public Health Goal for 1,4-Dioxane in Drinking Water,” OEHHA’s assessment was that insufficient evidence exists to draw a firm conclusion on potential associations of 1,4-dioxane. In two studies, exposure to 1,4-dioxane was assigned based on zip codes and air concentrations and other and more relevant routes of exposure were not included. These effects may be more appropriately considered as molecular-level key events associated with respiratory toxicity. We believe DTSC should likewise not rely on the limitation of these studies. Furthermore, the effects described herein as justifying inclusion of neurotoxicity—nuclear enlargement, inflammation, and atrophy in the olfactory epithelium—are also incorrect and should be added to the effects described for respiratory toxicity hazard characteristic. Furthermore, the nuclear enlargement is not a diagnosis by itself, as it often occurs subsequently to a number of triggers such as inflammation, tissue irritation or injury. Hence, this hazard characteristic is not an appropriate justification for neurotoxicity hazard characteristic; it should preferably be removed altogether or described under the respiratory toxicity.

We request that the hazard traits and/or environmental and toxicological endpoints associated with 1,4-dioxane in Section 69511.11(c) of the Proposed Rule be separated, include the species of observation where applicable, address neurotoxicity and respiratory toxicity as described above, and be revised to read:

~~(c) Hazard traits and their toxicological and/or environmental endpoints associated with 1,4 dioxane include one or more of the following:~~

~~(1) Carcinogenicity;~~

~~(A) Presence of hepatic and kidney tumors.~~

~~(2) Hepatotoxicity;~~

~~(A) Liver necrosis and degeneration.~~

~~(3) Nephrotoxicity;~~

~~(A) Tubular degeneration, enlarged nuclei, and hydropic changes in kidneys.~~

~~(4) Respiratory toxicity;~~

~~(A) Irritation of nose and throat in humans, and inflammation of respiratory epithelium.~~

~~(5) Ocular toxicity;~~

~~(A) Irritation of the eyes.~~

~~(6) Neurotoxicity;~~

~~(A) Nuclear enlargement, inflammation, and atrophy in the olfactory epithelium.~~

~~(7) Hematotoxicity; and~~

~~(A) Alterations in blood cell count.~~

~~(8) Environmental Persistence.~~

~~(A) Persists in water and soil for longer than 60 days.~~

(c) Hazard traits associated with 1,4-dioxane include:

- (1) Carcinogenicity;
- (2) Hepatotoxicity;
- (3) Nephrotoxicity;
- (4) Respiratory toxicity;
- (5) Ocular toxicity;
- (6) Hematotoxicity; and
- (7) Environmental Persistence.

(d) Environmental and toxicological endpoints associated with 1,4-dioxane include:

- (1) Presence of hepatic and kidney tumors in rodents,
- (2) Liver necrosis and degeneration in rodents,
- (3) Tubular degeneration, enlarged nuclei, and hydropic changes in kidneys in rodents,
- (4) Irritation of nose and throat in humans, and inflammation of respiratory and olfactory nasal epithelia as well as atrophy in the olfactory epithelium in rodents,
- (5) Irritation of the eyes in humans,
- (6) Alterations in blood cell count in rodents,
- (7) Persists in water and soil for longer than 60 days.

~~(d)~~(e) For the purposes of this chapter, the Candidate Chemical identified in subsection (b) is designated as the Chemical of Concern for the product defined in subsection (a).
~~(e)~~(f) A responsible entity shall submit a Priority Product Notification within 60 days of the effective date of this regulation or no later than 60 days after the Priority Product is first placed into the stream of commerce in California. The Preliminary Alternatives Analysis Report for this Priority Product shall be submitted within 180 days after the effective date of this regulation.

Clarity on Measuring 1,4-Dioxane in Products Will Support Compliance and Enforcement

As mentioned, ACI has published peer-reviewed research that developed a novel method to quantify 1,4-dioxane in finished cleaning products. The results of this research demonstrate that reliable, standardized analytical approaches are available to support enforceable and science-based consumer product regulations such as those in New York and those being developed by DTSC. We appreciate that DTSC has included this method in Appendix D of the final *Product-Chemical Profile for Personal Care and Cleaning Products Containing 1,4-Dioxane* (“Profile”).⁸ We also appreciate that DTSC has already taken the important step of publishing Guidelines that while provided as “recommendations for analytical testing of 1,4-dioxane and should not be interpreted as required criteria,” will nonetheless be the basis of determining compliance.

⁸ At: https://dtsc.ca.gov/wp-content/uploads/sites/31/2025/05/14-Dioxane_Final_Profile_AccessibleVersion.pdf

ACI would therefore like to 1) identify improvements to the Guidelines based on our research and existing regulations in New York and 2) clarify how Article 8 of the SCP Regulations will recognize the potential for different measurements.

We ask that DTSC:

- Update the Guidelines to reflect that Appendix D (versus C) of the final Profile contains analytical methods for measuring 1,4-dioxane
- Include definitions for “certified reference material” and “percentage of recovery”

We believe it is incredibly important to understand how Article 8 of the SCP regulations “Audits of Program Compliance” will be applied to manufacturers. Manufacturers’ compliance will hinge on when and how 1,4-dioxane is measured in consumer products. Complicating matters is the fact that manufacturers are often dependent on information provided by suppliers of surfactants confirming the concentration of 1,4-dioxane in those ingredients before formulation. If DTSC finds a discrepancy in either 1) products that did not file a Priority Product Notification (PPN) due to the understanding that the product was below the threshold or 2) the DTSC measurement of a product is different than what is reporting in a PPN, a process should be established to reconcile these differences. ACI requests that information pertinent to how DTSC and manufacturers can reconcile any differences and ensure adherence to the analytical method performance guidelines before moving forward with a regulatory response be provided.

Conclusion

The alignment of California’s consumer product regulations with those of New York, along with the incorporation of clear definitions and standardized analytical methods, is essential for effective compliance and enforcement. By providing explicit guidance on measuring 1,4-dioxane concentrations and establishing transparent procedures for reconciling measurement discrepancies, DTSC can ensure both regulatory certainty and the protection of public health. We urge DTSC to consider these recommendations to foster a consistent, science-based regulatory framework that supports both manufacturers and consumers.

Sincerely,



Marie Gargas

Associate Vice President, Regulatory and International Affairs