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Environmental Protection Agency

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Office of Chemical Safety and
Pollution Prevention

Nontechnical Summary of the Risk Evaluation for Carbon Tetrachloride

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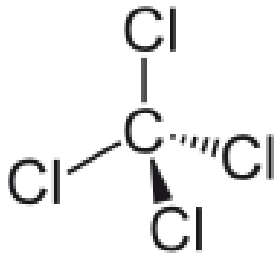

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BACKGROUND

- Carbon tetrachloride is used as a solvent, including as a feedstock in the production of hydrochlorofluorocarbons (HCFCs), hydrofluorocarbons (HFCs), hydrofluoroolefins (HFOs) and perchloroethylene (PCE). EPA has also identified carbon tetrachloride as a process agent in the manufacturing of petrochemicals-derived and agricultural products and other chlorinated compounds such as chlorinated paraffins, chlorinated rubber and others that may be used downstream in the formulation of solvents for degreasing and cleaning, adhesives, sealants, paints, coatings, rubber, cement and asphalt formulations. The use of carbon tetrachloride for non-feedstock uses (*i.e.*, process agent, laboratory chemical) is regulated in accordance with the Montreal Protocol.
- Data from 2016 Chemical Data Reporting shows the total manufactured volume, including imports, was between 100 and 250 million pounds of carbon tetrachloride in the U.S in 2015.

ACTION

- EPA is releasing a final risk evaluation on carbon tetrachloride. After evaluating 15 conditions of use of carbon tetrachloride, EPA has determined that carbon tetrachloride presents an unreasonable risk under 13 conditions of use. This includes unreasonable risks to workers and occupational non-users (ONUs) when manufacturing the chemical; processing the chemical as a reactant or intermediate and into formulation of other products; laboratory uses; recycling; uses in a variety of industrial and commercial applications; and disposal. Carbon tetrachloride does not pose an unreasonable risk when processed as a reactant in reactive ion etching and during distribution in commerce. EPA also determined that carbon tetrachloride does not present an unreasonable risk to the environment under all conditions of use.
- This final risk evaluation is conducted pursuant to the Toxic Substances Control Act (TSCA), as amended by the Frank R. Lautenberg Chemical Safety for the 21st Century Act, which requires EPA to prioritize and evaluate the safety of existing chemicals to determine whether a chemical presents an unreasonable risk of injury to health or the environment under the conditions of use. If a chemical is determined to present an unreasonable risk, EPA must regulate the substance to address the unreasonable risk.
- Carbon tetrachloride was selected in 2016 as one of the first 10 chemicals for risk evaluation under section 6 of TSCA.
- Public comments and external scientific peer review informed the development of the carbon tetrachloride final risk evaluation. EPA published the carbon tetrachloride draft risk evaluation in January 2020, the carbon tetrachloride problem formulation document in May 2018, and the scope document in June 2017.
- The final risk evaluation and supplemental materials can be found in docket EPA-HQ-OPPT-2019-0499 on www.regulations.gov.

KEY POINTS

- After evaluating 15 conditions of use of carbon tetrachloride, EPA determined that carbon tetrachloride presents an unreasonable risk under 13 conditions of use. This includes unreasonable risks to health of workers and ONUs during occupational exposures.
- These unreasonable risks include cancer and liver toxicity from chronic exposures. Cancer risks were assessed using two lines of evidence: linear low-dose extrapolation and threshold. This is based on considerations for the modes of action for the different cancers evaluated.

The unreasonable risk determination is based on the risk estimates derived from both approaches.

- The conditions of use that EPA determined present an unreasonable risk include manufacturing; processing as a reactant or intermediate; processing in the incorporation into a formulation, mixture or reaction product in the manufacturing of petrochemicals, agricultural products, and other basic organic and inorganic chemicals; laboratory uses; recycling; a variety of industrial and commercial uses including as a processing aid and additive; and disposal.
- The conditions of use that EPA determined do not present an unreasonable risk are processing as a reactant in reactive ion etching (i.e., semiconductor manufacturing) and distribution in commerce.
- EPA released the draft risk evaluation for carbon tetrachloride in January 2020 for a 60-day public comment period. Additionally, EPA held a peer review meeting of the Science Advisory Committee on Chemicals (SACC) on the draft risk evaluation of carbon tetrachloride on February 25-26, 2020. The report is in the docket (EPA-HQ-OPPT-2019-0499). Along with the final risk evaluation, EPA is releasing a document that provides a response to public and peer review comments.

NEXT STEPS

- EPA has issued the final risk evaluation for Carbon Tetrachloride, meeting the requirements set forth in TSCA Section 6(b) for chemical risk evaluations. EPA is now initiating the process to address the unreasonable risks identified. EPA has two years following the issuance of the final risk evaluation to address, by rule, the unreasonable risks identified.

SUMMARY OF UNREASONABLE RISK DETERMINATIONS

EPA has determined that the following conditions of use of carbon tetrachloride do not present an unreasonable risk of injury to health or the environment. These determinations are considered final agency action and are being issued by order pursuant to TSCA section 6(i)(1). The details of these determinations are in section 5.2, and the TSCA section 6(i)(1) order is contained in Section 5.4.1 of this final risk evaluation.

Conditions of Use that Do Not Present an Unreasonable Risk
• Processing as a reactant/intermediate in reactive ion etching (i.e., semiconductor manufacturing) • Distribution in commerce

EPA has determined that the following conditions of use of carbon tetrachloride present an unreasonable risk of injury. EPA will initiate TSCA section 6(a) risk management actions on these conditions of use as required under TSCA section 6(c)(1). Pursuant to TSCA section 6(i)(2), the unreasonable risk determinations for these conditions of use are not considered final agency action. The details of these determinations are in section 5.2.

Manufacturing that Presents an Unreasonable Risk
• Domestic manufacture

- Import (including loading/unloading and repackaging)

Processing that Presents an Unreasonable Risk

- Processing as a reactant in the production of hydrochlorofluorocarbons, hydrofluorocarbon, hydrofluoroolefin, and perchloroethylene
- Processing for incorporation into formulation, mixtures or reaction products (petrochemicals-derived manufacturing; agricultural products manufacturing; other basic organic and inorganic chemical manufacturing)
- Repackaging for use in laboratory chemicals
- Recycling

Industrial and Commercial Uses that Present an Unreasonable Risk

- Industrial/commercial use as an industrial processing aid in the manufacture of petrochemicals-derived products and agricultural products
- Industrial/commercial use as an additive
- Industrial/commercial use in the manufacture of other basic chemicals (including chlorinated compounds used in solvents, adhesives, asphalt, and paints and coatings)
- Industrial/commercial use in metal recovery
- Specialty uses by the Department of Defense
- Industrial/commercial use as a laboratory chemical

Disposal

- Disposal