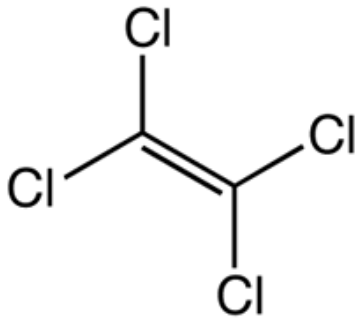
United States
Environmental Protection Agency

December 2020
Office of Chemical Safety and
Pollution Prevention

Risk Evaluation for Perchloroethylene (Ethene, 1,1,2,2-Tetrachloro-)

CASRN: 127-18-4



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ACTION

- EPA is releasing the final risk evaluation on perchloroethylene (PCE). After evaluating 61 conditions of use of PCE, EPA has determined that PCE presents an unreasonable risk under 59 conditions of use. This includes unreasonable risks to workers and occupational non-users (ONUs) when domestically manufacturing or importing the chemical; processing the chemical for a variety of uses; and when used in a variety of industrial and commercial applications. This also includes unreasonable risks to consumers from all consumer uses, and when exposed to dry cleaned articles, and to bystanders for most consumer uses. EPA determined that PCE does not present an unreasonable risk to the environment for 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, then EPA must regulate the substance to address the unreasonable risk.
- The final risk evaluation and supplemental materials can be found in docket EPA-HQ-OPPT-2019-0502 on www.regulations.gov.
- PCE 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 PCE final risk evaluation. EPA published the PCE draft risk evaluation in April 2020, the problem formulation document in May 2018, and the scope document in June 2017.

KEY POINTS

- After evaluating 61 conditions of use of PCE, EPA determined that PCE presents an unreasonable risk under 59 conditions of use. This includes an unreasonable risk of injury to health to workers and ONUs during occupational exposures, and to consumers and bystanders during exposures to consumer uses.
- These unreasonable risks of injury to health include neurotoxicity from acute exposures and neurotoxicity, kidney, liver, and immune, and developmental effects, and liver cancer from chronic exposures.
- The conditions of use with unreasonable risks include domestic manufacturing and import; processing as a reactant or intermediate and incorporation into a formulation, mixture or reaction product; repackaging and recycling; a variety of industrial and commercial uses, including several types of degreasing uses, lubricants, adhesives, paints and coatings, automotive care products, metal and stone polishes, welding, textile processing, use in wood furniture manufacturing, foundry application, use by Department of Defense for oil analysis and water pipe repair, and various dry cleaning-related uses; and all consumer uses including exposure to dry cleaned articles.
- PCE does not pose an unreasonable risk of injury to health when distributed in commerce and in industrial and commercial use in lubricants and greases for penetrating lubricants and cutting tool coolants. EPA also determined that PCE does not present an unreasonable risk of injury to the environment (aquatic organisms) from all conditions of use, based on the risk estimates, the environmental effects of PCE, the exposures, physical-chemical properties of PCE, and consideration of uncertainties.

- EPA released the draft risk evaluation for PCE in April 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 on May 26-29, 2020. Along with the final risk evaluation, EPA is releasing a document that provides a response to public and peer review comments.

BACKGROUND

- PCE is currently manufactured, processed, distributed, used, and disposed of as part of industrial, commercial, and consumer conditions of use. PCE has a wide range of uses, including production of fluorinated compounds and as a solvent in dry cleaning and vapor degreasing. A variety of consumer and commercial products use PCE, such as adhesives (arts and crafts, as well as light repairs), aerosol degreasers, brake cleaners, aerosol lubricants, sealants, stone polish, stainless steel polish, and wipe cleaners. The total aggregate production volume reported for PCE under the Chemical Data Reporting rule ranged from 324 million to 388 million pounds between 2012 and 2015.
- Evaluation and risk management steps for the PCE final risk evaluation:
    - EPA has issued the final risk evaluation for PCE, meeting the requirements set forth in TSCA section 6. 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 risk identified.
- State actions on PCE:
    - Some states have taken actions on PCE. There are several state-level National Emission Standards for Hazardous Air Pollutants for dry cleaning and restrictions or phase outs of PCE (*e.g.*, California, Maine, Massachusetts). Numerous states list PCE on a list of chemical substances of high concern to children (*e.g.*, Oregon, Vermont, Washington). Under the California Proposition 65 list, PCE is known to the state of California to cause cancer. Many states regulate PCE as a volatile organic compound (VOC). These regulations may set VOC limits for consumer products and/or ban the sale of certain consumer products as an ingredient and/or impurity. Regulated products vary from state to state, and could include contact and aerosol adhesives, aerosols, electronic cleaners, footwear or leather care products, and general degreasers, among other products.

NEXT STEPS

- EPA has issued the final risk evaluation for PCE, meeting the requirements set forth in TSCA section 6(b). 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 PCE 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).

Conditions of Use that Do Not Present an Unreasonable Risk
• Distribution in commerce • Industrial and commercial use in lubricants and greases as solvent for penetrating lubricants and cutting tool coolants

EPA has determined that the following conditions of use of PCE 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.

Manufacturing that Presents an Unreasonable Risk
• Manufacturing (domestic manufacturing) • Manufacturing (import)

Processing that Present an Unreasonable Risk
• As a reactant/intermediate • Incorporation into formulation, mixture or reaction product in cleaning and degreasing products • Incorporation into formulation, mixture or reaction product in adhesive and sealant products • Incorporation into formulation, mixture or reaction product in paint and coating products • Incorporation into formulation, mixture or reaction product in other chemical products and preparations • Repackaging • Recycling

Industrial and Commercial Uses that Present an Unreasonable Risk
• Industrial and commercial use as solvent for open-top batch vapor degreaser • Industrial and commercial use as solvent for closed-loop batch vapor degreaser • Industrial and commercial use as solvent for in-line conveyorized vapor degreaser • Industrial and commercial use as solvent for in-line web cleaner vapor degreaser • Industrial and commercial use as solvent for cold cleaning • Industrial and commercial use as solvent for aerosol spray degreaser/cleaner • Industrial and commercial use as a lubricant and grease in aerosol lubricants • Industrial and commercial use as an adhesive and sealant in solvent-based adhesives and sealants

- Industrial and commercial use in paints and coatings as solvent-based paints and coatings
- Industrial and commercial use in paints and coatings as a maskant for chemical milling
- Industrial and commercial use as a processing aid in pesticide, fertilizer and other agricultural chemical manufacturing
- Industrial and commercial use as a processing aid in catalyst regeneration in petrochemical manufacturing
- Industrial and commercial use in cleaning and furniture care products in wipe cleaning
- Industrial and commercial use in cleaning and furniture care products in other spot cleaning and spot removers, including carpet cleaning
- Industrial and commercial use in cleaning and furniture care products for mold release
- Industrial and commercial use in cleaning and furniture care products in dry cleaning and spot cleaning post-2006 dry cleaning
- Industrial and commercial use in cleaning and furniture care products in dry cleaning and spot cleaning $4^{th}/5^{th}$ gen only dry cleaning
- Industrial and commercial use in cleaning and furniture care products in automotive care products (e.g., engine degreaser and brake cleaner)
- Industrial and commercial use in cleaning and furniture care products in non-aerosol cleaner
- Industrial and commercial use in metal (e.g., stainless steel) and stone polishes
- Industrial and commercial use in laboratory chemicals
- Industrial and commercial use in welding
- Industrial and commercial use in other textile processing
- Industrial and commercial use in wood furniture manufacturing
- Industrial and commercial use in foundry applications
- Industrial and commercial use in specialty Department of Defense uses (oil analysis and water pipe repair)
- Commercial use in inks and ink removal products (based on printing)
- Commercial use in inks and ink removal products (based on photocopying)
- Commercial use for photographic film
- Commercial use in mold cleaning, release and protectant products

Consumer Uses that Present an Unreasonable Risk

- Consumer use in cleaning and furniture care products in cleaners and degreasers (other)
- Consumer use in cleaning and furniture care products in dry cleaning solvent
- Consumer use in cleaning and furniture care products in automotive care products (brake cleaner)
- Consumer use in cleaning and furniture care products in automotive care products (parts cleaner)

- Consumer use in cleaning and furniture care products in aerosol cleaner (vandalism mark and stain remover)
- Consumer use in cleaning and furniture care products in non-aerosol cleaner (e.g., marble and stone polish)
- Consumer use in lubricants and greases (cutting oils)
- Consumer use in lubricants and greases (lubricants and penetrating oils)
- Consumer use in adhesives for arts and crafts (including industrial adhesive, arts and crafts adhesive, gun ammunition sealant)
- Consumer use in adhesives for arts and crafts (livestock grooming adhesive)
- Consumer use in adhesives for arts and crafts (column adhesive, caulk and sealant)
- Consumer use in paints and coatings as solvent-based paints and coatings (outdoor water shield (liquid))
- Consumer use in paints and coatings as solvent-based paints and coatings (coatings and primers (aerosol))
- Consumer use in paints and coatings as solvent-based paints and coatings (rust primer and sealant (liquid))
- Consumer use in paints and coatings as solvent-based paints and coatings (metallic overglaze)
- Consumer use in metal (e.g., stainless steel) and stone polishes
- Consumer use in inks and ink removal products
- Consumer use in welding
- Consumer use in mold cleaning, release and protectant products

Disposal that Presents an Unreasonable Risk
• Disposal