

Initial Risk-Based Prioritization of High Production Volume Chemicals

Ethylphenols Category

Sponsored Chemicals

o-Ethylphenol (CASRN 90-00-6)
(9th CI and CA Index Name: Phenol, 2-ethyl-)

m-Ethylphenol (CASRN 620-17-7)
(9th CI and CA Index Name: Phenol, 3-ethyl-)

p-Ethylphenol (CASRN 123-07-9)
(9th CI and CA Index Name: Phenol, 4-ethyl-)

Test Substance

Ethylphenol isomer mixture (CASRN 25429-37-2)
(CA Index Name: Phenol, ethyl-)

This document is based on screening-level characterizations done by EPA on the environmental fate, hazard, and exposure of the listed chemicals. The information used by EPA includes data submitted under the HPV Challenge Program¹ and the 2006 Inventory Update Reporting (IUR)², and data publicly available through other selected sources³. This screening-level prioritization presents EPA's initial thinking regarding the potential risks presented by these chemicals and future possible actions that may be needed. These initial characterization and prioritization documents do not constitute a final Agency determination as to risk, nor do they determine whether sufficient data are available to characterize risk. Rather, they are interim evaluations. Recommended actions may be considered by EPA in the future based on a relative judgment regarding these chemicals in comparison with others evaluated under this program, and in light of the uncertainties presented by gaps in the available data that may be determined to exist. These evaluations contribute to meeting U.S. commitments under the chemicals cooperation work being done in North America⁴ through the EPA Chemical Assessment and Management Program (ChAMP)⁵.

Hazard and Fate Summary:

- **Human Health:** The acute oral toxicity for the members of the ethylphenols category is low, based on a gavage study of CASRN 25429-37-2 in rats. CASRN 123-07-9 is severely irritating to rabbit eyes and slightly irritating to rabbit skin. A combined repeated-dose/reproductive/developmental toxicity study on CASRN 25429-37-2 in rats showed no systemic, reproductive, or developmental toxicity. A repeated-dose toxicity

¹ US EPA, HPV Challenge Program information: <http://epa.gov/hpv/>.

² US EPA, IUR information: <http://www.epa.gov/oppt/iur/index.htm>.

³ US EPA, Information on additional public databases used: <http://www.epa.gov/hpvis/pubdtsum.htm>.

⁴ US EPA, U.S. Commitments to North American Chemicals Cooperation:
<http://www.epa.gov/hpv/pubs/general/sppframework.htm>.

⁵ US EPA, ChAMP information: <http://www.epa.gov/champ/>.

study in rats showed low toxicity for CASRNs 620-17-7 and 123-07-9. A direct dosing study in newborn rats showed low toxicity for CASRNs 620-17-7 and 123-07-9. Neither CASRN 25429-37-2 nor CASRN 90-00-6 induced gene mutations in bacteria. CASRN 25429-37-2 induced increases in chromosomal aberrations in mammalian cells *in vitro*.

- Environment: Available data indicate that the potential acute hazard of the chemicals in this category is moderate to fish and aquatic invertebrates and low to aquatic plants.
- Persistence and Bioaccumulation:
 - Available data indicate that the chemicals in this category have low persistence.
 - Available data indicate that the chemicals in this category have low bioaccumulation potential.

Exposure Summary:

- Both Confidential Business Information (CBI) and non-confidential information from IUR and other sources were used in developing this initial prioritization.
- Production Volume: The three chemicals in this category are HPV chemicals with an aggregated production volume in the range of 3-30 million pounds in 2005, with each reporting volume in the range of 1-10 million pounds.
- Uses: All IUR information concerning the industrial processing and use of chemicals in the ethylphenols category is claimed as CBI. Commercial and consumer uses were reported as not readily obtainable in some IUR submissions; there may be other commercial and consumer uses that are claimed as confidential. Information submitted as part of the HPV Challenge Program indicates that chemicals in this category are used as intermediates in the manufacture of a wide variety of industrial products such as resins, flame retardants, antioxidants, and insulating varnishes. Information from the Hazardous Substances Data Bank (HSDB) indicates that CASRN 620-17-7 can be used in the production of photochemicals and varnishes, and that CASRN 123-07-9 can be used in the production of phenolic resin varnishes, rubber and polymers, as an intermediate for pharmaceuticals and dyes, and as a synthetic food flavoring. According to HSDB, CASRNs 620-17-7 and 123-07-9 may be released to the environment during their extraction from coal. In addition, they are both present in cigarette smoke.
- General Population and Environment: It is likely that there would be some releases to water or air during manufacturing, processing, and use. The actual percentage and quantity of release of the chemicals associated with this category are not known but could be high. Based on environmental fate, chemical presence in monitoring data, and IUR information that indicates that most of these chemicals are not site-limited, EPA identifies a medium potential that the general population and the environment might be exposed to these chemicals, although the degree of exposure that can be attributed to TSCA uses cannot be determined from the available references.
- Workers: EPA identifies a medium relative ranking for potential worker exposure. The relative medium ranking is based on the potential for inhalation exposure to volatile liquids with vapor pressures between 0.05 torr and 0.16 torr at 25°C, and a moderate number of potentially exposed workers at manufacturing sites. The chemicals in this category do not have OSHA Permissible Exposure Limits (PELs).
- Consumers: EPA identifies a medium potential that consumers might be exposed to the chemicals in this category from consumer products. IUR submissions indicate that information on consumer uses was Not Readily Obtainable (NRO). Information from the

HPV Test Plan indicates low potential for consumer exposure. Information from HSDB, however, shows the use of CASRN 123-07-9 as a synthetic food flavoring and the use of CASRNs 620-17-7 and 123-07-9 in the production of phenolic resin varnishes, rubber, and polymers. Accordingly, consumer exposures may be expected to occur through food consumption or the household use of some consumer products.

- **Children:** EPA identifies a medium potential that children might be exposed to the chemicals in this category from consumer products. IUR submissions reported that children's use information is Not Readily Obtainable. No uses in products specifically intended to be used by children were reported in the IUR or found in other data sources. Exposures to children, however, may be expected to occur through food consumption or the household use of some consumer products.

Risk Characterization Summary:

- **Potential Risk to Aquatic Organisms from Environmental Releases:** *LOW/MEDIUM CONCERN*. EPA identifies a medium potential that aquatic organisms might be exposed from environmental releases. Chemicals in this category have low persistence and low bioaccumulation. These characteristics in combination with the low toxicity to aquatic plants and the moderate toxicity to fish and aquatic invertebrates indicate a low concern for potential risks to aquatic plants and a medium concern for potential risks to fish and aquatic invertebrates.
- **Potential Risk to the General Population from Environmental Releases:** *LOW CONCERN*. EPA identifies a medium potential that the general population might be exposed from environmental releases. The potential human health hazard is low. Taken together, the available information indicates a low concern for potential risk to the general population from environmental releases.
- **Potential Risk to Workers:** *LOW CONCERN*. EPA identifies a medium relative ranking for potential worker exposure. The potential human health hazard is low. Taken together, the available information indicates a low concern for potential risk to workers. However, there may be some concern for irritation since CASRN 123-07-9 is severely irritating to rabbit eyes and slightly irritating to rabbit skin.
- **Potential Risk to Consumers from Known Uses:** *LOW CONCERN*. EPA identifies a medium potential that consumers might be exposed to the chemicals in this category from food consumption or consumer products. The potential human health hazard is low. The available information indicates a low concern for potential risk to consumers. However, there may be some concern for irritation since CASRN 123-07-9 is severely irritating to rabbit eyes and slightly irritating to rabbit skin.
- **Potential Risk to Children:** *LOW CONCERN*. EPA identifies a medium potential that children might be exposed to the chemicals in this category through food consumption or the household use of some consumer products. Postnatal animal studies show low toxicity associated with CASRNs 25429-37-2, 620-17-7, and 123-07-9. The available information suggests a low concern for potential risks to children.

Regulatory and Related Information Summary:

- These chemicals are on the TSCA Inventory but are not otherwise regulated under TSCA.

Assumptions and Uncertainties:

- EPA has no information on releases of these chemicals, and assumes potential exposures based on reported uses.
- There is uncertainty regarding the extent of personal protective equipment used by workers who may be exposed to CASRN 123-07-9.

Rationale Leading To Prioritization Decision:

- Available data suggest a low concern for risk to human health and aquatic plants and a medium concern for risk to fish and aquatic invertebrates.
- Hazard communication and standard industrial hygiene practices, if properly followed, may be sufficient to address eye and skin irritation concerns for occupational exposures.

Prioritization Decision:

- LOW PRIORITY – Follow-up action not suggested at this time.

Supporting Documentation:

Screening-Level Risk Characterization: September 2008

Screening-Level Hazard Characterization: September 2008

Screening-Level Exposure Characterization: September 2008