



**LOUISIANA STATE UNIVERSITY**  
**AND AGRICULTURAL AND MECHANICAL COLLEGE**

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Response and Chemical Assessment Team*

**DES/RCAT08-01**

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**TO:** Charlie Henry, SSC  
NOAA-HMRD

**FROM:** Scott Miles  
Response & Chemical Assessment Team  
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**RE: Epichlorohydrin Spill**

**PHYSICAL PROPERTIES HIGHLIGHTS:**

- Colorless liquid with a sweet, pungent odor.
- Specific gravity: 1.175 at ambient temperature. Product will sink in water, but is easily mixed by currents or agitation.
- Slightly soluble in water, 6.5%.
- Vapor density: 3.3 (Air= 1). Product vapors are heavier than air and will spread along ground and collect in low or confined areas (sewers, basements, tanks, ship hold).
- Vapor Pressure: 16.4 mm Hg @ 25 deg C. Product is highly volatile at ambient temperatures (**flammable!**)

**FLAMMABILITY:**

Epichlorohydrin is highly flammable. Vapors will be easily ignited by heat, sparks or flames. Vapors may form explosive mixtures with air. Vapors may travel to source of ignition and flash back. Most vapors are heavier than air, so they will spread along ground and collect in low or confined areas (sewers, basements, tanks).

- Lower flammable limit: 3.8% by volume; Upper flammable limit: 21% by volume

Product is incompatible with strong oxidizers, strong acids, caustics, zinc, aluminum, and **water**. Epichlorohydrin can polymerize and react violently (heat) with water. Reaction within a closed

container or hold may cause temperature and pressure to increase. Combustion may produce irritants and toxic gases, including hydrogen chloride.

### **HUMAN HEALTH EFFECTS:**

- Epichlorohydrin is a **probable human carcinogen**.
- Main route of exposure is inhalation.
- Epichlorohydrin is also considered a primary skin & eye irritant.
- Long-term exposure may cause dizziness, drowsiness, slight disorientation, and unconsciousness. Effects may be delayed for several hours.
- Epichlorohydrin vapors have an odor threshold of approx. 10 ppm.

### **Toxic Limits:**

IDLH: Product should be treated as a potential human carcinogen.

OSHA Permissible Exposure Limit: Table Z-1 8-hr Time-Weighted Avg: 5 ppm (19 mg/cu m).

- Use self-contained breathing apparatus.
- Wear appropriate personal protective clothing to prevent skin contact.
- Epichlorohydrin can be detected by direct injection of an aqueous sample into a gas chromatography (GC).

### **ENVIRONMENTAL FATE:**

If released to air, epichlorohydrin will exist solely as a vapor in the ambient atmosphere. Vapor-phase cumene will be degraded in the atmosphere by reaction with photochemically-produced hydroxyl radicals; the half-life for this reaction in air is estimated to be 36 days.

If released to soil, epichlorohydrin is expected to have high mobility. Epichlorohydrin may volatilize from dry soil surfaces based upon its high vapor pressure.

If released into water, epichlorohydrin is not expected to adsorb to sediment and suspended solids in water. Volatilization from water surfaces is expected to be an important fate process based upon this compound's Henry's Law constant. A biological concentration factor (BCF) of 3 suggests bioconcentration in aquatic organisms is low.