

ALASKA TOP HAZARDOUS AIR POLLUTANTS

VINYL CHLORIDE

Class A Carcinogen

Inhalation Unit Risk Estimate for Cancer

- Vinyl Chloride - $0.0000088 (\mu\text{g}/\text{m}^3)^{-1}$ for angiosarcoma (a rare malignant cancer of the blood vessels) - people

Inventory Estimates for Vinyl Chloride

Community	Ranking by Mass	Total Emitted (tons per year)*	Top Sources
Anchorage	61 of 71	0.016	military
Fairbanks	45 of 58	0.060	military
Juneau	51 of 52	0.001	wastewater facility
Total of 3 Communities		0.077	

* The mass emission rates are based on input data that may or may not be accurate. The reader should not consider the inventory accurate to three decimal places (one thousandth of a ton). The use of three decimal places allows us to acknowledge small quantities of pollutants rather than showing the emission rate as zero.

Vinyl Chloride Sources Expected in Alaska

- military bases
- wastewater facilities

Potential Occupational Exposure to Vinyl Chloride

"reactor cleaners"	polyvinyl chloride (PVC) production	PVC used to manufacture plastic and vinyl products (e.g. pipes, wire and cable coatings, and packaging materials)
upholstery production	wall covering production	housewares production

automotive parts		
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Vinyl Chloride Emission Inventory Improvements

- None needed.

Vinyl Chloride Health Effects

Low level (<1 ppm; <2.6 mg/m³): Some evidence of increased genetic aberrations with exposure to concentrations above 0.3 ppm.

Low level (1 - 100 ppm; 2.6 - 260 mg/m³): At 50 ppm and above, may experience increase in genetic aberrations in exposed people. Occupational exposures 140-1200 mg/m³ led to respiratory tract irritation and hepatitis, and general liver dysfunction.

High level(100 -1000 ppm; 260 - 2600 mg/m³): No clearly perceptible acute effects at 1000 ppm. There may be some drowsiness, visual disturbances, stumbling, numbness and tingling hands and feet. Nerve cell degradation may occur. Long term (occupational) exposures led to blood vessel tumors in the liver. Long term occupational exposures 140-1200 mg/m³ led to respiratory tract irritation and hepatitis, and general liver disjunction. A small percentage of people occupationally exposed develop "vinyl chloride disease," characterized by white fingers and numbness, with discomfort upon exposure to the cold. There are changes in the bones at the end of the fingers, joint and muscle pain, and thickening of the skin, decreased elasticity, and slight blistering.

Very High level(>1000 ppm; >2600 mg/m³): Euphoria, followed by a alcohol-like drunkenness, with stomach pain and loss of appetite. Vertigo, nausea and headache also occur. May lead to dying nerves, problems with limb control, and sleep disorders.

Cancer ranking: The EPA classifies vinyl chloride as a Group A carcinogen for lung cancer. Group A carcinogens are considered known human carcinogens, like cigarette smoke. There is a 0.000088 (approximately 9 in one million) increase in lifetime risk of leukemia for every one µg/m³ of continuous vinyl chloride emissions exposure over a lifetime.