ALASKA TOP HAZARDOUS AIR POLLUTANTS

CHROMIUM VI ACID MISTS

#1	Non Cancer Endpoint

CHROMIUM VI PARTICULATES

Class A Carcinogen

Reference Concentration

- Chromium VI Acid mists - 0.000008 mg/m^3 for degradation of the nasal septum - humans
- Chromium VI Particulates - 0.0001 mg/m^3 for abnormal enzymes in lung fluid - rats

Inhalation Unit Risk Estimate for Cancer

- Chromium VI Particulates - 0.012 $(\mu g/m^3)^{-1}$ for lung cancer - humans

Inventory Estimates of Chromium Compounds (including Chromium VI)

Community	Ranking by Mass	Total Emitted (tons per year)*	Top Sources
Anchorage	46 of 71	0.103	Residential heating with oil & NG, military facilities, gasoline and diesel powered equipment
Fairbanks	40 of 58	0.383	Residential heating with oil, used oil combustion, power generation
Juneau	32 of 52	0.15	Residential heating with oil, waste incinerator
Total of 3 Communities		0.636	

* 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.

Chromium Compound Sources Expected in Alaska

vehicles	locomotives	Non-road sources like chainsaws, snow blowers, snowmobiles, outboards, and personal watercraft
boats and ships	woodstoves	open burning
asphalt plants and paving	seafood processing	power generators
residential heating	wastewater facilities	military bases
airports	refineries	incinerators
hospitals		

Potential Occupational Exposure to Chromium Compound

alloy manufacturing	metal plating	production of insoluble salts
textiles	dyeing	silk treating
printing	moth proofing wool	leather tanning
photographic fixing bath	catalysts	fuel additive

Chromium Compound Emission Inventory Improvements

- Update emission factors for asphalt plants, open burning and residential heating
- Update emission factors for area sources

Chromium Compound Health Effects

Low level (<0.30 mg/m^3): Long term exposure to workers led to pulmonary disease (0.27 mg/m^3).

Medium level (0.30-10 mg/m^3): Perforation of the nasal septum and severe irritation of the respiratory tract. Longer exposures may lead to damaged lungs

High level (>10 mg/m^3): Shock and irritation of the upper respiratory tract.

Cancer ranking: Like many metals, chromium exists in different chemical states which have differing toxicities to humans. The EPA classifies chromium VI particulates as a Group A carcinogen for lung cancer. Group A carcinogens are considered known human carcinogens, like cigarette smoke or benzene. EPA estimates a 1.2×10^{-2} (approximately 1 in 100) increase in lifetime risk of lung cancer for every one µg/m^3 of continuous arsenic exposure over a lifetime.