

ALASKA TOP TEN HAZARDOUS AIR POLLUTANTS

#4	FORMALDEHYDE	
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Inventory Estimates

Community	Total Emitted (tons per year)	Top Sources
Anchorage	172	aircraft, cars/trucks, area sources
Fairbanks	104	military jets, home heating oil, cars/trucks
Juneau	46	aircraft, home heating oil
Total of 3 Communities	322	

Formaldehyde Sources

vehicles	structural fires	boats and ships
consumer products like automotive care and sealants	aircraft	home heating
locomotives	power generators	airports
off-road equipment like construction equipment and chainsaws	asphalt plants and paving	military bases
open burning	hospitals	

Formaldehyde Emission Inventory Improvement

- Assess indoor release from carpets, glues, and solvents.
- Refine off-road assessments such as locomotives if possible
- Refinement of emission factor data

Formaldehyde Health Effects

Low level (< 0.5 ppm): Immune system cellular alterations from long-term exposures. Reports of nose and upper respiratory symptoms, and lower forced vital capacity. Alterations in nasal cells. Exposure in children led to greater rates of asthma and chronic bronchitis, peak expiratory flow decreased as well. Children self reporting of symptoms decreased when moved from levels 0.075-0.043 ppm to levels 0.023-0.029 ppm

Medium level (0.5 – 2 ppm): 6 minute exposure to workers had significant irritant response at 1 ppm. For 0.5-0.9

ppm exposure over 14 week study, lab workers had small decrease in peak expiratory flow during first 4 weeks of exposure in; no difference after week 4. Increase in DNA cross links after long term (14 years) exposure. Worker complaints of odor, prickling sensation in nose, and disturbed sleep

High level (> 2 ppm): Irritated eyes, nose, throat, headache, odor detection, cough, tight chest, wheezing, and shortness of breath. One study found smaller forced exhalation volume. Possible increase risk of lung cancer of long term exposure

Very high level (> 50 ppm): Injury to airways and alveoli leading to fluid in the lungs

Cancer ranking: EPA classified as a probable human carcinogen: squamous cell carcinoma - Cancer originating from squamous cells on the skin, lips, inside the mouth, or throat. The EPA estimates a 1.3×10^{-2} increase in lifetime risk of this cancer for every one mg/m^3 of formaldehyde exposure over a lifetime.