

Aamjiwnaang Background Sample

In an effort to take a “clean” background sample of the area, the Amjiwnaang Environment Committee representatives took a bucket air sample on March 10, 2008 in the reserve burial grounds. The wind was coming from the east and southeast, no odours were detected, no accidents or malfunctions were happening at nearby industry.

The sample was sent to Columbia Analytical Services in Simi Valley, California and analyzed for sulphurs and volatile organic compounds. Below are the chemicals detected in the sample:

| Chemical Detected in Sample | Detection Level (ug/m3) | Health Guidelines Exceeded | Possible Industrial Source* |
|------------------------------------|--------------------------------|--|---|
| Carbon Disulphide | 41 | Texas Effects Screening Level, short and long term | Cabot Canada |
| Carbonyl Sulphide | 44 | Texas Effects Screening Level, short and long term | Cabot Canada |
| Isopropyl Alcohol | 11 | | Shell Chemicals Corunna, UBE Automotive, Nova Chemicals Mooretown, Imperial Oil-Chemical Plant and Refinery, Shell Canada-Corunna |
| Ethanol | 130 | | -- |
| Octamethylcyclotetrasiloxane | 100 | | -- |
| d- Limonene | 6.4 | | -- |

*According to the National Pollutant Release Inventory

About the Chemicals

Carbon disulphide -41 ug/m3

2006 NPRI source info: Cabot Canada 61 tonnes in 2006 to air

According to the United States Agency for Toxic Substances and Disease Registry (ATSDR) pure carbon disulphide is a colorless liquid with a pleasant odour that is like the smell of chloroform. The impure carbon disulfide that is usually used in most industrial processes is a yellowish liquid with an unpleasant odor, like that of rotting radishes.

Some workers who breathed high levels during working hours for at least six months had headaches, tiredness, and trouble sleeping. However, these workers may have been exposed to other chemicals besides carbon disulfide. Among workers who breathed lower levels, some developed very slight changes in their nerves.

Studies in animals indicate that carbon disulphide can affect the normal functions of the brain, liver, and heart. After pregnant rats breathed carbon disulphide in the air, some of the newborn rats died or had birth defects. Carbon Disulphide is a registered reproductive toxin under California's Proposition 65.

High concentrations of carbon disulphide have caused skin burns when the chemical accidentally touched people's skin.

The amount of Carbon disulphide present in the Amjiwnaang background sample exceeds the Texas Effects Screening Level-short term (1 hour of exposure) of 30 ug/m³. The Texas Effects Screening Level-long term (one year of exposure) of three ug/m³ was also exceeded by 17 times.

Ontario does not have health based screening levels for carbon disulphide, but does have a provincial Point of Impingement (POI) standard under Ontario Regulation 419/05. The provincial POI standards apply at the industrial facility fence line and are legally enforceable. Compliance with POI standards is typically determined using air dispersion modeling. The Ontario POI standard for Carbon disulphide is 330 ug/m³ (half hour averaging time) and is based on the odour threshold, not on concerns regarding impact on the health of neighbouring communities.

Alberta does have ambient air quality objectives that serve as guidelines for exposure to Carbon disulphide, with a one-hour average of exposure set at 30 ug/m³. The background sample exceeds the Alberta ambient air quality objective level. Although not legally enforceable, they are used to establish approval conditions for industry such that all industry in Alberta must be designed to meet the Alberta ambient air quality objectives.

Carbonyl Sulphide -44 ug/m³

2006 NPRI source info: Cabot Canada 18.357 tonnes in 2006 to air

Carbonyl Sulphide is a colourless gas with an unpleasant smell that is used in the synthesis of alkyl carbonates and other organic compounds. Carbonyl Sulphide is a by-product of petroleum refining and destructive distillation of coal. High doses could be fatal.

Exposure to Carbonyl Sulphide may cause irritation of the skin, eyes, lungs, and trachea. It is a central nervous system depressant (Sittig, 1991; U.S. EPA, 1994a).

The amount of Carbonyl Sulphide present in the Aamjiwnaang background sample exceeded Texas Effects Screening Level both short term and long term. The sample picked up 44 ug/m³, exceeding the 24-hour short term level is set of eight ug/m³ by six

times. The long term, annual standard was exceeded by 55 times. Ontario does not have an air standard or guideline for Carbonyl Sulphide.

2- Propanol (Isopropyl Alcohol) - 11 ug/m³

NPRI 2006 source info: Shell Chemicals Corunna 44.807 tonnes, UBE Automotive 18.95 tonnes, Nova Chemicals Mooretown 10.7 tonnes, Imperial Oil Sarnia Chemical Plant 0.006 tonnes, Imperial Oil Sarnia Refinery 0.003 tonnes, Shell Canada Sarnia Manufacturing Centre Corunna 0.002 tonnes

Isopropyl alcohol is a flammable, colorless liquid with an odor resembling alcohol. According to the US Occupational Safety and Health Administration Isopropyl alcohol is an irritant of the eyes and mucous membranes. By analogy with effects seen in animals, it may cause central nervous system depression at very high concentrations.

Ontario has several standards for Isopropyl Alcohol including Point of Impingement odour based standards set at 22,000 (µg/m³) for an half hour averaging time, this standard will be enforceable only after February 1, 2010. Also enforceable after February 1, 2010 is a 24-hour averaging health based standard set at 7,300 ug/m³. Right now this is a non-enforceable guideline referred to as an 'ambient air quality criteria' (see below).

Current Guidelines for Isopropyl Alcohol:

- 24,000 ug/m³ odour based half hour averaging time
- 7,300 ug/m³ health based 24 hour averaging time, non enforceable 'ambient air quality criteria'

Chemicals detected but not reported on in the National Pollution Release Inventory:

Ethanol, also called ethyl alcohol, is a flammable, colorless, chemical compound. It is best known as the type of alcohol found in alcoholic beverages and in thermometers. Ethanol is widely used and produced in Canada and the United States as a gasoline additive.

Ontario has a half hour odour based guideline for Ethanol of 19,000 ug/m³.

d- Limonene is a component of oil extracted from citrus rinds. Smells of oranges and is used as an industrial solvent/degreaser and in fragrance and flavour blends and cosmetics.

Octamethylcyclotetrasiloxane (D4) is used in synthetic rubber manufacturing. It is an odorless, colorless non-oily silicone fluid used primarily to make other silicone materials. It seems it may also be used in some personal care products.

There are no federal standards for any of these chemicals.

Texas Effects Screening Levels

These levels are based on existing studies of chemical health effects. Below these levels, no adverse health effects are thought likely to occur. They reflect the experimentally-determined levels at which the chemicals caused adverse effects in study populations of people or animals, combined with safety factors to account for the differences among human populations and between humans and animals.

"Short-term" refers to exposure duration of one hour. "Long-term" refers in most cases to duration of one year; for benzene and ethylene dichloride, it indicates a 24-hour period.

These levels reflect both cancer and non-cancer effects. They are not legally enforceable.

This report was compiled by Ruth Breech, Global Community Monitor; Elaine MacDonald, EcoJustice and the Aamjiwnaang Sample Analysis and Chain of Custody Forms.