



# AFN ENVIRONMENTAL STEWARDSHIP

RESPECTING AND PROTECTING MOTHER EARTH

## Air Pollution and Smog

### Introduction

Air pollutants can be in the form of solid particles, liquid droplets, or gases. There are four main categories of air pollutants:

- criteria air contaminants,
- persistent organic pollutants,
- heavy metals, and
- toxic pollutants.

Criteria air contaminants include pollutants such as sulfur oxides, nitrogen oxides, volatile oxides, particulate matter, carbon monoxide and ammonia. When these pollutants exist and interact with one another, air quality problems such as smog and acid rain can result.

Industrial chemicals, such as PCBs, pesticides (DDT, chlordane), and by-products, such as dioxins and furans, make up the class of persistent organic pollutants (POPs). As a result of human activity, POPs enter the environment and can accumulate in the tissue of living organisms resulting in long-term toxic effects.

Heavy metals, such as, mercury, cadmium and lead can be released into the environment from human sources. Heavy metals are transported in the form of particulate matter, airborne particles in both solid and liquid form.

Toxic pollutants contain a wide range of pollutants that have been assessed and listed within the Canadian Environmental Protection Act (CEPA), and can include asbestos, lead, and mercury.

Sources of air pollution can be classified as stationary or mobile. Stationary or fixed sources include smokestacks from power plants, manufacturing plants or factories, and waste incinerators. Mobile sources include motor vehicles, marine vessels and aircrafts.

Smog is composed of a mixture of gases, such as ground level ozone, and particulate matter. It appears as a haze. Ground level ozone is produced when pollutants like nitrogen oxide and volatile compounds react in the sunlight. This reaction occurs in stagnant air, and therefore the

smog becomes trapped at ground level. Smog is a serious concern as it has been linked to numerous adverse health effects.

Air quality can adversely affect respiratory and cardiovascular health. Exposure to air pollutants and chemicals can aggravate asthma, causing wheezing, coughing and shortness of breath. When harmful pollutants are inhaled, they enter the bloodstream and can negatively affect blood vessels, the heart, and other organs. Some studies even suggest that long-term regular exposure to particulate matter can increase the risk of early death and lung cancer.

Children and the elderly are particularly vulnerable to the adverse effects of air pollution, especially where respiratory or cardiovascular illness is already present. In children, the developing respiratory system is relatively fragile and can be especially vulnerable to air pollution.

### **Challenges and Considerations**

Pollution and smog are concerns for First Nations given the proximity of many industrial plants to their communities. Since industrial pollution does not respect geographic boundaries, communities located near to or down-wind from industrial facilities face increased exposure to air pollutants.

### **For More Information**

For more information on air pollution and smog, please consult the following websites:

Environment Canada: [www.ec.gc.ca](http://www.ec.gc.ca)

Health Canada: [www.hc-sc.gc.ca](http://www.hc-sc.gc.ca)

The Lung Association [www.lung.ca](http://www.lung.ca)

World Health Organization [www.who.int](http://www.who.int)

Weather Network [www.theweathernetwork.com](http://www.theweathernetwork.com)