WHO ARE VULNERABLE POPULATIONS?

We often hear the words “vulnerable population.” Who is vulnerable to what and why? The fact is that we are all vulnerable (at risk), but some groups of people are more vulnerable to the harmful effects of chemicals than others.

Aboriginal Peoples: In Canada, First Nations people living on reserves and the Inuit are particularly vulnerable to the effects of environmental degradation, poor environmental health conditions and chemical exposure. Populations living in remote areas and on reserves, who rely on traditional foods may face more exposure to environmental contaminants than populations living in southern urban centres. Pollutants can originate in industrial areas and yet still be found on reserves or many kilometers away. Chemicals travel through the atmosphere or watershed, sometimes originating from the other continents, and are deposited in the North. For example, atmospheric emissions of mercury from coal fired power plants in China are transported by air currents over the pole and deposited in the Arctic and subarctic. These contaminants concentrate in the
watershed and eventually find its way into predator fish such as walleye and trout and some marine mammals, which are then harvested by First Nations and Inuit for food.

Other environmental health concerns for First Nations and Inuit are related to low-income situations, such as inadequate housing, construction materials that emit toxins, unsafe and inadequate drinking water, contaminated traditional foods, and a variety of health effects related to climate change. Of note is the forestry, pulp, paper and mining industries, which are often on or near First Nations lands and which use a variety of hazardous chemicals that are released into the surrounding environment.

**Pregnant Women:** Children in the womb are especially vulnerable to toxic chemicals because they are still developing. A group of chemicals called endocrine disruptors can produce adverse developmental, reproductive, neurological, and immune effects in both humans and wildlife. A wide range of substances, both natural and man-made, are thought to cause endocrine disruption. These include pharmaceuticals, dioxin and dioxin-like compounds, plasticizers such as bisphenol A, polychlorinated biphenyls, DDT and other pesticides, and livestock hormones found in agricultural runoff. Endocrine disruptors may be found in many everyday products including: plastic baby bottles, linings of cans containing foods, detergents, flame retardants, toys, cosmetics, and pesticides. Research shows that endocrine disruptors may pose the greatest risk to the fetus during pregnancy and to infants shortly after birth, as this is when the nervous system and other organs are still developing. In addition, many other toxic substances, such as lead, are able to pass through the placenta to the foetus and can weaken or break down the protective screen of the blood-brain barrier.

**Young Children:** The nature of childhood illness has evolved from epidemics like scarlet fever, smallpox and measles to chronic and disabling conditions like cancer, asthma, neurological impairment and hormone disorders. Environmental causes are now being implicated in ailments from autism and attention deficit disorder to violent behaviour, prompting widespread alarm among parents and activist groups and an unprecedented flood of research from the scientific community. Relative to their weight and size, children consume more food, drink more water and breathe more air than adults. Their behaviour also makes them more vulnerable than adults—children play on the ground where there are more contaminants. They are exposed to house dust, paint chips (that may contain lead) and other dangerous substances such as household cleaners and pesticides. Children also exacerbate their exposure by frequently putting their hands and toys in their mouths. Childhood is a period of critical organ development and fast growth and any critical disruption cannot easily be repaired. Children are especially vulnerable
during the first few months of life, because their natural defense mechanisms are not yet fully developed. This means that they are less able to break down and remove certain toxins.

**Seniors:** As we age, we are more likely to experience a variety of health problems. We are also more susceptible to hazards in the environment, even when in good health overall. Older adults’ bodies may contain environmental contaminants which have built up in their systems over the years. In fact, many chemicals and contaminants can remain inside us for decades. This higher "body burden" of environmental contaminants and elders' sensitivity to additional risks, increases their vulnerability to hazards in the environment. Certain illnesses or diseases may be caused by environmental contaminants, but these contaminants can also exacerbate the body’s ability to fight illness and to heal. While not necessarily a contributing factor to illness, chemicals that have built up in elders’ bodies may have weakened their ability to recover or could increase the severity of their illness.

**Occupational Exposure:** Certain occupations deal with chemicals as part of the job requirements. There are pest control operations, the petro-chemical industry, mining and smelting operations among others. Although there are labour laws that protect workers from exposure at work, they require that safety equipment be used and precautions be taken (without exception). Accidents can always happen and unfortunately, safety guidelines are not always properly followed or may be inadequate for the task at hand. As a result, people engaged in these occupations are the canaries in the coal mine. As a result, it is important that the workers and their families are aware of the nature of exposure as some of these chemicals may be unknowingly carried home on clothing. A sickness in the worker or his/her family may be regarded as non-occupational when in fact it has been contracted because of exposure at work.

**WHAT YOU CAN DO!**

Be aware of those chemicals in your environment considered to be harmful and take measures to avoid exposure. This means reading labels, finding and using substitute products, seeking advice when unsure what to do, and asking questions and demanding answers. It is the responsibility of government to protect its citizens’ from harm. If you believe industrial waste is putting you or your family in harm’s way, contact your local health authority. If you believe you are suffering adverse health effects from a chemical you may have come in contact with, discuss this with a health professional. For suggestions on where you can find more information on chemicals and organizations you can contact, please see the fact sheet entitled: Places and
People to Contact for Information. To find out more about the adverse health effects of exposure, please turn to the appropriate chemical fact sheet in this series.