Why Should You Make Waves for the Ocean?

Land-based Pollution

When we hear about ocean pollution, we often think of oil tanker spills. In fact, only 10 per cent of pollution in the seas comes from this type of accident. A whopping 80 per cent of ocean pollution comes from human activities on land and poses risks to human health and the environment. These land-based human activities pollute lakes, rivers, streams — and eventually oceans:

Municipal Wastewater and Stormwater Run-off: In Canada, approximately 25 per cent of the population is without some form of sewage treatment. This situation has led to sewage discharges that range from major cities to leaks from home septic systems. As a result, about 500 billion litres of untreated wastewater flow into Canadian waters (both fresh and marine).

- Municipal wastewater can be a source of a number of pollutants, including: nutrients (phosphates and nitrates), oxygen-demanding material, suspended matter, bacteria and viruses, and a variety of toxic substances.
- The primary concern is human health. Sewage treatment continues to be important to public health because it controls the spread of disease. Today, areas polluted with sewage are closed to swimming. Contaminated shellfish harvesting areas are also closed because eating shellfish from these locations is unsafe.
- Other problems related to discharges of untreated sewage can include algal blooms that consume excess oxygen and can produce toxins; water that becomes cloudy with silt; disruptions in habitat; and impacts on the normal growth of aquatic creatures. Two other sources of marine pollution are non-point (widely spread) sources, such as land-wash from agricultural areas (including manure, fertilizers, and pesticides) and run-off from industrial or commercial areas.

Hazardous Household Wastes: Canadians dump 30 million litres of used motor oil into the environment annually. In fact, almost half the oil that ends up in oceans comes from land.

- Toxicants in this oil can cause health problems like liver disease in fish and cancer in humans.
- Other hazardous wastes poured into our waters include paints, solvents, and corrosive chemicals from household cleaners. Sometimes these chemicals wash into storm sewers or end up in landfill sites, where they can leach into the soil and contaminate groundwater and nearby streams.

Industrial Pollution: Factories and mines discharge toxic chemicals, such as dioxins, furans, and more harmful polycyclic aromatic hydrocarbons (PAHs). They also release heavy metals like mercury and lead, plus airborne pollutants, including sulphur dioxide and nitrogen oxides, which cause acid rain.

- Some toxic chemicals, such as dioxins and furans, build up in the environment and persist for a long time. Removing them can be difficult, if not impossible. These persistent chemicals come from many sources, including combustion and chemical processes used in industry. They can cause cancer, liver

damage, reproductive problems, and birth defects in animals and humans.
• Some persistent pollutants build up in the fatty tissue of plants, animals, and humans. This process is called bioaccumulation. When plants or animals are eaten, the contaminants in their fat enter the body of the consumer. This process is called bioconcentration, because the consumer gets higher concentrations of contaminants through its food. Bioaccumulation of contaminants is especially high in the Arctic, where many species have a lot of fatty tissue. Airborne PAHs fall to the earth in Arctic snow after blowing on air currents and jet streams from industrial areas thousands of kilometres away.
• Imagine an enormous tank the size of a football field, 4.5 metres deep, full of healthy fish. If you poured just a tablespoon of mercury into the tank, the fish would become unsafe to eat. Mercury compounds contaminate water, often through pulp and paper plant discharges.
• Industrial smokestacks spew sulphur dioxide and nitrogen oxides into the atmosphere, causing acid rain. When water becomes too acidic, plants and animals can die.
• Many industries and power generating plants cause thermal pollution by using water as a cooling agent. Heated water is returned to rivers and lakes, creating a warm zone that attracts more creatures than the surrounding colder water. When the flow of heated water stops, the site's temperature suddenly drops and may cause these creatures to die.

Marine Debris

You wouldn't believe all the garbage that ends up in our oceans and along beaches everywhere.

• Marine debris can be anything we throw away daily — from fast-food containers and pop cans to motor oil, bottles, rope, and fishing line.
• Most debris cannot break down for three to five years and, as it continues to be released year after year, it accumulates in the marine environment.
• Debris gets into the marine ecosystem through waste disposal or loss of materials from tourists, boaters, commercial shipping and fishing operations, and construction along shores and at sea.
• Tides and currents carry debris to even the most remote locations, such as B.C.'s Queen Charlotte Islands.
• Marine creatures get tangled and trapped in plastic fishing lines, nets, ropes, and six-pack rings. Sea turtles can choke on plastic bags and balloons they mistake for jellyfish.
• Ocean garbage also damages boat propellers, clogs up water intake pipes, and blocks pumping systems.
• Lost or discarded fishing nets, known as "ghost nets," continue to trap and kill sea creatures, depriving fishers of their catches.
• Tourism languishes when vile garbage washes up on shorelines.

Pollution From Air

In the Arctic, between December and April each year, you can see a haze in the air. It contains pollutants that have drifted mainly from southern Canada and other industrialized parts of the world. Eventually, some of it falls with snow or rain to the land or sea.

- Some scientists think about 20 per cent of all ocean pollution comes from the air.
- The wind can blow pollution from land thousands of kilometres out to sea.
- Airborne pollution includes dusts from soil, volcanoes, and forest fires, as well as poisonous sprays, gases, and emissions belching from industrial smokestacks.