

Why sewage is harmful

Sewage contains a host of toxic chemicals that can kill fish and threaten human health

Most people think that all sewage is fully treated at a sewage treatment plant and enters the ocean relatively clean. Some waste water engineers portray sewage as being largely human waste that is dispersed well in tidal currents with no effect on the environment. Think again.

WHAT'S IN SEWAGE

In fact, sewage contains hundreds of toxic chemicals dumped into the sewage system by households, businesses and industries. Some are harmful in very low concentrations. Some toxins combine with others in this deadly brew to create new compounds that are even more dangerous. Tests on Vancouver sewage show heavy metals like mercury, lead, chromium and copper. There are phenols, organochlorine compounds and hydrocarbons. There are also trace levels of persistent organic pollutants such as polychlorinated biphenyls (PCBs) and polycyclic aromatic hydrocarbons (PAHs), substances known to cause mutations and cancer.

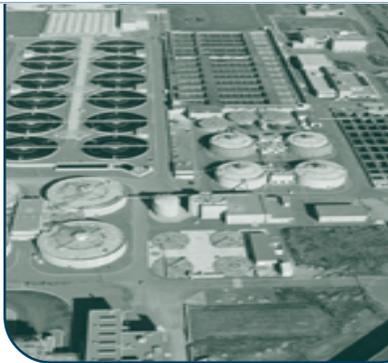
EFFECTS ON FISH AND OTHER MARINE LIFE

The organic waste in sewage is not benign. Dissolved oxygen in ocean water is used up by bacteria that feeds on decomposing organic material. This oxygen demand can literally suffocate fish and other sea creatures. Sewage also contains large amounts of suspended particles of matter that can prevent sunlight from reaching underwater plants that are the food source for so many species. Suspended solids can also cause abrasions on the gills of fish or delicate membranes of other organisms.

HUMAN HEALTH

Greater Vancouver is ringed by dozens of combined sewer outfalls (see following pages) that regularly discharge raw sewage when a heavy rainfall backs up the sewer system. City beaches get closed when bacteria counts soar. Tests in Burrard Inlet and False Creek show elevated toxin levels. Kayakers in False Creek have reported rashes on their hands after paddling near sewer outfalls.

Sewage contains hundreds of deadly chemicals that end up in Georgia Strait.



Some highly toxic industrial chemicals end up in the sewage system with little or no treatment.



FACT The amount of sewage dumped by the GVRD into Georgia Strait each year is 10,000 times the volume of the Exxon-Valdez oil spill.

MYTH Most people think sewage treatment plants remove all harmful substances. In fact, most toxins remain in effluent after primary treatment.

Long term ecosystem damage

Toxins disrupt immune systems, hormone function and reproduction in humans and marine life

Sewage is a hidden but deadly killer of marine life. Although Greater Vancouver sewage outfalls have often proven to be acutely toxic to fish, killing test subjects outright over a couple of days, this may not be the worst impact. Research is now showing that lower concentrations of the worst toxins can have disastrous effects over the long term.

SLOW DEATH FOR MARINE LIFE

Even small amounts of the most hazardous chemicals found in sewage can cause irreparable harm to fish, particularly juveniles. The result is not immediate and visible like the aftermath of an oil spill. There are no fish floating dead on the surface. It is a quiet, unseen death over time. Dead and dying fish are simply eaten by other marine organisms.

Death comes in a variety of ways. Some chemicals suppress the immune system allowing the onset of disease. Heavy metals, pesticides, persistent organochlorines, plastics, surfactants and aromatic hydrocarbons can disrupt the endocrine system interfering with sexual and bone development.

There is evidence that these chemicals can also disrupt the complex hormonal processes as juvenile salmon acclimatize to the saltwater ocean environment. This is bad news for the billions of juvenile salmon that spend months in the shallow waters around Vancouver. Many juvenile salmon simply will not make it.

The toxins found in sewage can also change fish behaviour, inhibiting normal swimming, schooling and migration in ways that significantly reduce their chances for survival.

BIOACCUMULATION

Some heavy metals and persistent chemicals that stay in the body biomagnify as they work their way up the food chain. Larger fish eating large numbers of contaminated smaller fish can end up with thousands or millions of times the level of toxins than the organisms that first absorbed them.

A poisonous brew of harmful chemicals make sewage a hidden but deadly killer of sea life.



Toxic chemicals under the kitchen sink and in the workshop often end up down the drain, then out to sea.

FACT Toxic chemicals can combine with other chemicals in sewage to create new toxins that are many times more deadly.