



## Types of Inland Pollution Spills Sheet

Freshwater environments are highly sensitive to pollution spills as they serve as spawning habitat and food sources for freshwater organisms. All types of freshwater organisms are susceptible to the deadly effects of hazardous materials. These include mammals, aquatic birds, fish, insects, microorganisms, and vegetation. Harm to microorganisms, invertebrates and algae disrupts the food chain.

There are many causes of inland spills including tanker spills, leaking tanks and pipelines, transportation accidents, faulty operations, lack of maintenance misapplication of pesticides, and more.

### Common Types of Inland Spills

**Petroleum Pollutants (oil, gas, diesel):** Diesel is the most common petroleum product spilled in inland waterways. Diesel is a relatively light fuel that evaporates fairly quickly compared to heavier oils. It does not usually remain in the environment for more than a few days if it is exposed to sun and air. However, diesel can persist in soil or sediment for a longer period of time. The toxicity of diesel can kill plants and animals. Diesel floats on water and affects those animals that spend their time on or at the surface of the water or the surrounding land. Red diesel is used in off-road diesel engines, such as bulldozers and backhoes. Other spilled petroleum product includes crude oil and refined products like gasoline.

**Cement/Concrete Spills:** Cement or concrete spilled into freshwater increases the pH levels, which can have a toxic effect on aquatic species. The effects include extreme respiratory dysfunction from chemical erosion of sensitive gill tissue, irreversible chemical burns of eyes and ears, loss of equilibrium due to respiratory distress and evacuation of the gas bladder. This can lead to death of aquatic organisms.

**Animal Waste:** Animal waste contains high levels of ammonia, which is acutely toxic to aquatic life. In addition, animal waste changes the oxygen dynamics in water by adding organic nutrients. These added nutrients can cause algal blooms and increased production of certain vegetation, which can imbalance and harm habitat. Sources of animal wastes to inland waters include dairies, kennels, stables and feed-lots.

**Sewage:** Sewage spills can affect water oxygen dynamics and can injure and kill aquatic life. They also release ammonia into the water, which is acutely toxic to fish, amphibians, and aquatic invertebrates. Salts in sewage can also kill fish and invertebrate species.

**Sediment Discharge:** When sediment enters freshwater, the solids can smother organisms living in the streambed. Suspended solids can cause choking of gilled aquatic life. Water turbidity increases, which compromises aquatic species' ability to feed and shelter. Small particles from sediment discharges can fill in spawning gravels, inhibiting fish from reproducing.

**Pesticides:** Pesticides include herbicides, insecticides, algacides, and fungicides, all of which can be toxic to aquatic organisms. They may enter freshwater through misapplication to agriculture including drift from aerial discharges, such as crop dusters that accidentally overspray waterbodies, or chronic releases of agricultural tailwater “spilling” into streams. Pesticide spills can also be catastrophic to the environment as in the case of the Sacramento River train derailment that spilled metamsodium into the Sacramento River near Dunsmuir in 1991. Illegal marijuana grows sometimes use very toxic carbamate and other pesticides, which ultimately drain into State Waters.

*(Note: Almost anything may be deleterious to aquatic life. Many materials that are safe for human consumption, like milk, are harmful when spilled into freshwater environments because bacterial breakdown takes away oxygen that organisms need to survive.)*