

Editorial on Beach pollution: A problem

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Editorial

Beach pollution includes everything from plastic, rubbish, and litter to sewage, pesticides, and oil that contaminate our coastlines. Pollutants include excessive quantities of natural substances such as nitrogen and phosphorus from fertilizers and animal waste.

The consequences for public health

People who come into contact with contaminated water or sand on polluted beaches face severe health risks. In 2013, 10% of all water samples collected from 3,500 coastal and Great Lakes beaches failed to meet the EPA's strictest swimmer safety standard. The Environmental Protection Agency estimates that up to 3.5 million people get sick from swimming in sewage; children are the most vulnerable because they swallow more water. Beachgoers may become infected from bacteria, fertilizers, animal and human waste, and garbage. An upset stomach is the most common ailment, but swimmers may also develop neurological problems, respiratory problems, pinkeye, earaches, meningitis, and hepatitis. People with weakened immune systems, small infants, and the elderly may face death.

Because there is a time lag between contact with polluted waters and the onset of symptoms, most people are unaware that their disease was triggered by going to the beach. People will get sick without even getting into the water, according to one study, because contact with contaminated beach sand was enough to make them sick.

Aside from sewage contamination, another health problem is harmful algal blooms (HABs), which can cause serious illness in humans. Toxins produced by several phytoplankton species can cause severe and potentially life-threatening symptoms in people who come into contact with or ingest them. Paralysis, seizures, vomiting, and cardiovascular diseases are just a few of the side effects.

The Consequences for animals

Beach pollution is thought to affect over 800 species of wildlife around the world. Each year, over 100,000 seabirds, sea turtles, seals, and other marine mammals die as a result of ingesting or becoming entangled in plastic. Animals will

easily mistake floating plastic for food, choking, injuring themselves internally, or starving. The ingested plastic will then travel up the food chain, finally ending up in the stomachs of humans who consume seafood. Plastic pollution has gotten so bad that it's influencing sea turtle reproduction rates by changing the temperature of the sand where incubation usually takes place.

Marine species is also harmed by HABs. When HABs die and decompose, they consume oxygen, resulting in dead zones-areas with little or no oxygen. This not only depletes greater aquatic animals' food sources, but it also destroys ecosystems. HABs may also harm or clog fish gills, as well as block sunshine from reaching beneficial algae and sea grasses.

Parts of the United States' West Coast were hit hard by a large-scale HAB in 2015. Anchovies, seabirds, whales, and sea lions were among the animals harmed by the toxic bloom, which forced recreational and commercial fisheries in California, Oregon, and Washington to close. The bloom was caused by the proliferation of *Pseudo-nitzschia* diatoms, a microscopic alga that contains domoic acid, a neurotoxin.