# Biomagnification Encyclopedia Article

## Biomagnification

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In most parts of the ecosystem, elements introduced at high levels as pollution or as a result of a region's geology can be degraded over time into harmless substances by the air, water and by biological decomposers. Most synthetic chemicals created by humans however, such as DDT as well as some radioactive materials and some mercury compounds, are not diluted or broken down by natural processes. In these cases, their concentrations can intensify as they are transferred up the food chain, or biomagnify.

While these contaminants may be present in the water or air at extremely low levels, their amount and intensity increase dramatically as they move up the food chain. For example, plankton and invertebrates absorb toxins as they filter the water for food. Forage fish such as alewife and smelt, which eat large amounts of phytoplankton and zooplankton, consume toxins from each one. When the trout, salmon, snapping turtles and herring gulls consume large amounts of forage fish, the levels and intensity of these contaminants again intensify. The species at the top of this food chain, such as eagles and other birds and humans, thus receive the highest concentration of these chemicals each time they consume the fish.

Because people have a varied diet, contaminants do not biomagnify as quickly as those in other species at the top of the food chain that rely on fish or other species for their entire diet. The concentration of some chemicals, which are stored in fatty tissues and thus are not excreted, can be millions of times greater than that found in the water or air itself. Many of these chemicals persist in the environment from eight weeks to decades.