

Bioaccumulation

Bioaccumulation is the accumulation of toxins through the food web. At first glance, my art shows a diagram of a food chain, but really it is meant to show how Polychlorinated Biphenyls (PCBs) move up the food chain. Even though PCBs have been banned in the US, they are going to stick around for a very long time. Although the effects of bioaccumulation are different for each type of killer whale, due to prey selection, it is a big issue for almost all marine mammals. For the Southern Resident killer whales, the effects are slightly lower in comparison to the marine mammal eating transient killer whales. This is because residents eat exclusively chinook salmon, which are lower on the food chain. As for transients, once deceased, their bodies are considered hazardous waste.

PCBs are man-made chemicals that are fat soluble. This means that they don't dissolve in water, but rather are stored in fatty tissues and never leave the organism. Some effects of PCBs are reduced resistance to diseases, reduced fertility, and premature births.

It starts with toxins, primarily PCBs, which are leaked into the water by industrial sites. Then a filter feeder, zooplankton in this case, filters all the nutrients from the water but also absorbs very small amounts of PCB in its fatty tissue. Next, herring will consume thousands of zooplankton throughout its life and collect all of the cumulative PCBs. After that, an adult chinook salmon will consume the thousands of herring. Finally, a killer whale will eat thousands of chinook salmon, and get all the PCBs that have magnified throughout the food chain.

I made this art in hopes that it would spark awareness and action around this topic. I hope that if enough people see my art, they will do something to help these whales. Seeing killer whales swim under our boat made me realize how much I wanted these animals to stay on this planet. Though I was still passionate about helping orcas before I saw them up close, but I had never really seen a wild orca before. When it swam up to our boat, I felt honored, fulfilled, and happy. With an even greater sense, I didn't want PCB's to affect them anymore.

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