

One Health Fish Monitoring - Mercury

Introduction: Mercury is a naturally occurring element that is found in air, water and food. However, at high concentrations mercury is a major health concerns. Mercury affects the nervous, digestive, and immune systems, as well as the lungs, kidneys, skin, and eyes. Fish absorb mercury through their gills as they swim and through their digestive tracts as they eat. They bioaccumulate mercury meaning that mercury builds up in larger fish as they eat smaller fish – who have eaten even smaller fish and other organisms.

About the data: ORCA Citizen Scientists catch fish and donate them to the One Health Fish Monitoring project. The fish are dissected by other citizen scientists who allocate 5 grams of fillet tissue for mercury analysis. That tissue is homogenized by ORCA scientists or citizen scientists and the homogenized samples are sent to an EPA certified commercial laboratory for total mercury analysis. Mercury data are reported as milligrams per kilogram of tissue (this can also be reported as parts per million or ppm). We have also provided the length of the fish and the county that fish was caught.

Variables:

- Species of fish
- County where fish was caught
- Length of fish
- Concentration of mercury in fillet tissue

References:

<https://www.epa.gov/mercury/guidelines-eating-fish-contain-mercury>

<https://www.whoi.edu/oceanus/feature/how-does-toxic-mercury-get-into-fish/>

Examples of questions you could answer creatively with this data set:

- Level 1:** In which county do fish have the highest concentration of mercury?
- Level 2:** How do the fish species rank with respect to mercury concentration?
- Level 3:** Within individual species, do the data demonstrate bioaccumulation of mercury?