

# Science for Environment Policy

## Is it safe to eat the fish you caught yourself? Contamination of fish in the Czech Republic

**Mercury contamination** of some wild fish species in areas of the Czech Republic may put anglers' health at risk, a new study suggests. The research showed that EU-wide and Czech national regulatory limits for mercury were exceeded in at least one analysed sample at 63% of the sites surveyed. However, contamination levels varied substantially between locations and species, the researchers say.

**Persistent organic pollutants (POPs)** and toxic metals can remain in the environment for a long time, allowing levels to build up, with damaging effects on wildlife. For instance, POPs collect in the fatty tissues of animals and can interfere with hormonal systems; mercury, cadmium and lead act as nerve toxins. Despite this, clear information on this type of contamination in wild fish in Europe is lacking. As a result, keen anglers and their families may be consuming higher levels of these [chemicals](#) than the rest of population without knowing it.

Angling is popular in the Czech Republic, and although most Czechs eat no more than 6 kg of fish each year, those who fish for sport, and their families, may eat twice that much - on average, about six 170 g portions of fish a month.

The researchers tested fish from 27 of the most popular fishing areas in the Czech Republic, looking for mercury, lead, cadmium and a variety of POPs, including the banned insecticide DDT. They tested common bream (*Abramis brama*) at all sites, as well as fish typical of each locality, and then compared the contamination found with the maximum allowable levels in food, as outlined in EU-wide and Czech national regulations. They also evaluated health risks posed to humans by eating contaminated fish.

Mercury was found in all tested fish species at all 27 sites and the maximum level was exceeded at 17 sites. In bream, concentrations of mercury slightly exceeded the maximum levels at four sites.

According to the researchers' calculations, to avoid consuming unsafe levels, anglers would have to limit the number of portions of bream they ate to between 6-115 portions a month—this wide range is because levels varied considerably between sites. Higher concentrations were detected in predatory fish, such as the asp (*Aspius aspius*), whereas carp (*Cyprinus carpio*) tended to be much less contaminated. This is because they were artificially stocked and came from uncontaminated pond breeding facilities. Approximately 80% of fish caught by anglers in the Czech Republic are carp, but some do specialise in predatory fish.

Cadmium and lead levels in bream were below the maximum levels at all sites. Furthermore, these metals did not accumulate further up the food chain in the muscle of predatory fish, as mercury did.

The most common POPs contaminating fish were DDT and 'non-dioxin-like polychlorinated biphenyls' (NDL-PCBs). Despite being banned in 1974 in the Czech Republic, DDT was present at all sites, although it was always below maximum levels set for pesticides. Anglers would have to eat thousands of portions of fish a month to consume anywhere near unsafe levels. Levels of NDL-PCBs were generally below maximum levels, except at four sites. Higher levels of both POPs were found in fish with bigger fat stores, such as eels. The highest concentrations of NDL-PCBs were found in European eels (*Anguilla anguilla*) from a reservoir in Zemanice in the east.



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