

Toxicology Consult
Florida Department of Health, Division of Disease Control and Health Protection
Bureau of Epidemiology

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Consult Requested by: Florida Fish and Wildlife Conservation Commission

PURPOSE

The Florida Fish and Wildlife Conservation Commission (FWC) monitors the levels of metals in fish harvested from Otter Creek, located in northwest Bay County, FL approximately seven miles southwest of the town of Ebro or 10.5 miles northwest of Laguna Beach. One of the concerns for FWC is whether or not the fish from Otter Creek are safe to eat. Fish sampling data for Otter Creek collected in 2012 were forwarded to the Florida Department of Health (FDOH) for review to recommend consumption advisories for recreational fishermen. Species collected include: largemouth bass (LMB) and bluegill (BLUE).

METHODS

Concentrations of chemicals in the edible portion of the fish (i.e., fillet) were used by FDOH to provide advisory information. Composite fish data were provided and used for advisory determinations.

Chemical analysis for two composited fish tissue samples consisting of 20 harvestable size BLUE and 15 harvestable size LMB was performed. Chemical levels below method detection limits (MDLs) were not considered for further risk analysis. The maximum chemical value for each species was then compared to FDOH fish tissue action levels for recreational fishermen.

Fish tissues were analyzed for metals including: aluminum (Al), antimony (Sb), arsenic (As), barium (Ba), beryllium (Be), cadmium (Cd), calcium (Ca), chromium (Cr), cobalt (Co), copper (Cu), iron (Fe), lead (Pb), magnesium (Mg), manganese (Mn), nickel (Ni), potassium (K), selenium (Se), silver (Ag), sodium (Na), strontium (Sr), thallium (Tl), vanadium (V), and zinc (Zn).

Both FDOH action levels and monthly/weekly limits were calculated using equations that were obtained from USEPA Guidance for Assessing Chemical Contaminant Data for Use in Fish Advisories, Volume 1 and Volume 2, November 2000. Chemical specific values were obtained from USEPA's IRIS database. For all calculations, a consumption rate of 0.032 kg/day and a meal size of 0.228 kg (8 ounces) were used. For carcinogens, a target cancer risk (unitless) of 1E-5 was used. A body weight of 51.9 kilograms was used for the sensitive population (women of childbearing age and young children). A body weight of 70 kilograms was used for the general population (all other individuals). Total arsenic concentrations were multiplied by a coefficient of 0.20 (20%) to account for the portion of the total considered inorganic arsenic.

RECOMMENDATIONS

For LMB, FDOH would recommend **Do Not Eat** advisories for both the sensitive and general populations due to an elevated Hg concentration (1.7 milligrams per kilogram, [mg/kg]). For BLUE, FDOH would recommend **one meal per month** for both the sensitive and general populations due to the measured arsenic concentration (0.018 mg/kg).