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Mercury concentrations in Wet and Dry Cat and Dog Food

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Highlights

Mercury concentrations in wet and dry cat and dog food were investigated.
Food with fish had higher concentrations.
The concentration of concern for the river otter is 100 ng g^{-1}.
14/101 of the pet food samples were > 100 ng g^{-1}

Abstract
Given that mercury (Hg) concentrates in fish, and this is an important ingredient in pet food, we hypothesized that Hg concentrations could be of concern. To address this hypothesis, total Hg concentrations were measured in a variety of brands of cat (n=47) and dog (n=54) food. Since most of the Hg in fish is methylmercury, we assume that this is the form in the pet food. However, this still needs to be tested. Mercury concentrations ranged from 1 to 604 ng g^{-1}. There are no standards for pet food, so values were compared to available consumption advisories: 300 to 1000 ng g^{-1} for humans, 30 ng g^{-1} for kingfishers (fish eating birds), small mammals (70 ng g^{-1}), and river otters (100 ng g^{-1}). Thirty one of the pet food samples had concentrations > 30 ng g^{-1}, and 14 > 100 ng g^{-1}. More studies are necessary to understand the health implications of Hg concentrations observed.

Keywords: Mercury Consumption Advisories, Brands, Lots,

Introduction
Mercury (Hg) is a heavy metal that can be harmful to human and animal health. There are advisories set by the United States Food and Drug Administration and Environmental Protection Agency to limit fish consumption by humans in order to protect human health. Fishing is not allowed in certain areas, because of the high known Hg content in fish. However, there are no advisories in place to limit the amount of Hg that can be in pet food products. Because of this lack of regulation, and the use of fish in pet foods, we hypothesized that there would be high amounts of Hg in those containing fish. In the Hg poisoning incident of Minamata, Japan, that occurred in the 1950s, cats were observed with Hg poisoning that occurred after eating contaminated seafood (Allchin 1999). The behavior of the cats was noticed as being odd, before the effects of Hg poisoning in humans that ate seafood from the same source were realized. For this project, given that fish products are so common in pet foods, the hypothesis tested was that they may have high Hg content.
As there are no standards for pet food, we compare these values to available consumption advisories that are 300 to 1000 ng g^{-1} for humans, 30 ng g^{-1} for kingfishers (fish eating birds), small mammals (70 ng g^{-1}), and river otters (100 ng g^{-1}) (USEPA, World Health Organization; Lazorchak et al., 2003; WACAP, 2008). Since cats and dogs eat the same food each day, the 100 ng g^{-1} value may be applicable; however, this will depend on the energy level of the dog or cat, since they need less food for survival.