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Determining Fish Mercury Levels: An Alaska Native/Napaskiak Subsistence Food Source

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Determining Fish Mercury Levels: An Alaska Native/Napaskiak Subsistence Food Source*

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Abstract

Alaska Natives living in rural areas rely on subsistence fishing throughout the year as their primary source of food. The purpose of this project is to determine the levels of mercury (Hg) in fish commonly consumed by Alaska Natives. Mercury naturally cycles throughout the environment between air, water, and land. Because it is a heavy metal, when it enters an ocean, lake, or river it sinks to the bottom where plankton, bottom feeder fish, and organisms consume it. Mercury becomes dangerously concentrated as it passes through the food chain through a process called biomagnification. Biomagnification occurs when a small fish with low levels of mercury is consumed by a bigger fish that is then consumed by a bigger fish. Each time a fish is consumed higher up on the food chain the concentration of mercury biomagnifies. The primary route of exposure to Hg for humans is through fish consumption. Studies show that consuming fish with high levels of mercury can lead to adverse health effects. Our project will examine the levels of mercury in three types of fish using an atomic absorption Hg analyzer: king salmon (*Oncorhynchus tshawytscha*), chum salmon (*Oncorhynchus keta*), and pike (*Esox Lucius*). Results are pending on completion of analysis. We hypothesize that pike fish will contain the highest level of mercury due to its nature of feeding at the bottom of the river.

KEYWORDS: Mercury; Fish; Subsistence; biomagnification

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ABSTRACT

Alaska Natives living in rural areas rely on subsistence fishing throughout the year as their primary source of food. The purpose of this project is to determine the levels of mercury (Hg) in fish commonly consumed by Alaska Natives. Mercury naturally cycles throughout the environment between air, water, and land. Because it is a heavy metal, when it enters an ocean, lake, or river it sinks to the bottom where plankton, bottom feeder fish, and organisms consume it. Mercury becomes dangerously concentrated as it passes through the food chain through a process called biomagnification. Biomagnification occurs when a small fish with low levels of mercury is consumed by a bigger fish that is then consumed by a bigger fish. Each time a fish is consumed higher up on the food chain the concentration of mercury biomagnifies. The primary route of exposure to Hg for humans is through fish consumption. Studies show that consuming fish with high levels of mercury can lead to adverse health effects. Our project will examine the levels of mercury in three types of fish using an atomic absorption Hg analyzer: king salmon (*Oncorhynchus tshawytscha*), chum salmon (*Oncorhynchus keta*), and pike (*Esox Lucius*). Results are pending on completion of analysis. We hypothesize that pike fish will contain the highest level of mercury due to its nature of feeding at the bottom of the river.

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