



Badin Lake Fish Study

February 11, 2009

Background

Badin Lake in Stanly and Montgomery counties, N.C. is a popular recreational area for fishing, boating, and swimming. Chemical analyses of sediments collected from Badin Lake in 1996, 1997 and 2007 indicated elevated levels of polychlorinated biphenyls (PCBs) and polynuclear aromatic hydrocarbons (PAHs). PCBs and PAHs are groups of complex organic chemicals known to cause potential adverse ecological and human health effects from ingestion, inhalation, or direct contact.

Purpose of the study

In June, 2008 Stanly County officials asked the N.C. Department of Health and Human Services to:

- Review existing Badin Lake environmental data to determine if consuming fish from Badin Lake poses a health risk to the public
- Identify health data gaps
- Make recommendations to protect public health

How was the fish study conducted?

- In late summer of 2008, the N.C. Department of Environment and Natural Resources, Division of Water Quality collected fish from three areas of Badin Lake, the northeast, northwest and southwest.
- Different species of fish were collected to get a representation of the fish people eat in the area, and species of fish that might have different concentrations of contaminants depending on the type of food they eat.

- The fish were analyzed for polychlorinated biphenyls (PCBs) and polynuclear aromatic hydrocarbons (PAHs). These substances have the potential to move from sediments and water into living organisms, and between different living organisms, in the aquatic environment. Humans may be exposed to PCBs and PAHs in aquatic environments by contact with contaminated water or sediment, or by eating contaminated fish.

What are the study results?

- No PAHs were detected in the fish.
- Concentrations of PCBs in some catfish and largemouth bass were greater than the N.C. Division of Public Health level of concern (LV). The level of concern is the maximum concentration of a substance the state of North Carolina has determined as a level of safe exposure.

Consumption Limitations

Based on the results of the study, the N.C. Division of Public Health recommends that:

- Due to elevated levels of mercury in large mouth bass in the entire state, women who are pregnant, nursing, or of child-bearing age, and children younger than 15 years of age should not eat any large mouth bass.
- Other people should limit their consumption of catfish and large mouth bass from Badin Lake to no more than 1 meal per week.

What are PCBs?

Polychlorinated biphenyls (PCBs) are mixtures of up to 209 individual chlorinated compounds (known as congeners). They do not exist naturally in the environment. PCBs have been used as coolants and lubricants in transformers, capacitors and other electrical equipment. Products made before 1977 that may contain PCBs include old fluorescent lighting fixtures and electrical devices containing PCB capacitors, and old microscope and hydraulic oils.

How do PCBs enter the environment?

PCBs enter the air, water and soil during their manufacture, use and disposal; from accidental spills and leaks during their transport; and from leaks or fires in products containing PCBs.

PCBs do not break down easily in the environment and may remain there for very long periods of time. PCBs can travel long distances in the air and be deposited in areas far away from where they were released.

How can PCBs get in the fish?

PCBs in the water and soil are taken up by small organisms and fish in water. They are taken up by other animals that eat these animals as food. PCBs accumulate in fish, reaching levels that may be many thousands of times higher than in the water itself.

How can PCBs affect my health?

Small amounts of PCBs may cause:

- Anemia
- Acne-like skin conditions
- Liver, stomach, and thyroid gland problems
- Immune system changes
- Behavioral changes

In children, effects may include:

- Reduced birth weight
- Problems with motor skills
- Impaired short-term memory
- Impaired immune response

The U.S. Department of Health and Human Services, Division of Public Health and the U.S. Environmental Protection Agency have identified PCBs as possible carcinogens.

For more information contact your local health department.

Additional Information

www.atsdr.cdc.gov/tfacts17.pdf

www.epi.state.nc.us/epi/fish/current.html



State of North Carolina

Department of Health and Human Services

Division of Public Health

www.ncdhhs.gov

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