

# What's Happening to the Mysterious Mercury?



*Recent tests showed elevated levels of methyl mercury in prairie potholes on Lostwood National Wildlife Refuge in North Dakota, but it has not become a significant issue for wildlife like this blue-winged teal and her brood. Scientists are still trying to figure out why the methyl mercury is not traveling through the food chain at Lostwood Refuge as it has in the Everglades. (John and Karen Hollingsworth/USFWS)*

**This is a story** with more questions than answers. It is also the story of government agencies being proactive about a potential problem rather than reactive to a crisis.

A few years ago, officials with the North Dakota Health Department heard a U.S. Geological Services scientist talking about the impact of mercury contamination on the environment of the Florida Everglades. Realizing that the prairie potholes on Lostwood National Wildlife Refuge present some of the same hydrology issues, North Dakota decided it was worth looking into mercury levels on the refuge.

Both the Everglades and the prairie potholes on Lostwood Refuge have fluctuating water levels. The potholes at Lostwood Refuge range from several hundred acres to a tenth of an acre, with water levels higher or lower depending on the amount of rain and snow melt. There is similar natural fluctuation in the Everglades, combined with management

practices that intentionally draw down and re-flood certain areas.

Mercury is inorganic and nontoxic as a naturally occurring element in the environment. Through drying and re-wetting of the soil, mercury is chemically transformed into methyl mercury, which is toxic and organic. With funding from North Dakota, the Environmental Protection Agency and USGS, researchers for the first time ever in 2003 began sampling levels of methyl mercury on Lostwood Refuge.

The results were stunning. The levels of methyl mercury in the prairie potholes of Lostwood Refuge exceeded the levels in the Everglades. The levels were higher than EPA's acceptable standard.

"Now that we know that the prairie potholes are mercury sensitive," explained Kevin Johnson, an environmental contaminants specialist in the Mountain-Prairie Region, "we need to determine if these elevated levels are having an effect on wildlife." He emphasizes that it is

strictly a wildlife issue at Lostwood Refuge, with no human health implications.

Invertebrates, amphibians, birds and eggs were all sampled in the fall of 2005 – from the aquatic invertebrates at the very bottom of the food chain to the amphibians and then the birds.

Data are still being analyzed, but so far, says Johnson, "the mercury is not accumulating in animals at levels that would be high enough to negatively affect wildlife. No populations are dying off." Interestingly – and without explanation – this differs from the Everglades, where the methyl mercury did get into the food chain and there are elevated levels of methyl mercury in fish and birds.

Johnson plans to write a final report by this fall on the extent and impact of methyl mercury at Lostwood. Studies so far have determined that mercury is falling onto the ground from the atmosphere. It has also been determined that mercury is in the environment regardless of whether the refuge engages in prescribed burning, which had been considered a possible source. Johnson says the mercury could emanate from the coal-fired power plants that surround Lostwood, although that has not been confirmed.

So far, concludes Johnson, "we are finding that methyl mercury is not a significant issue for wildlife at Lostwood, but it was better to learn this upfront than after a crisis or die off of wildlife."

Scientists are still trying to figure out why the methyl mercury is not rising through the food chain at Lostwood Refuge as it is in the Everglades. Johnson suggests it would be prudent for other refuges to consider methyl mercury testing if they are near potential sources of mercury and have wetlands with fluctuating water levels. ♦