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» Quantifying the hidden environmental cost of hydroelectric dams

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Quantifying the hidden environmental cost of hydroelectric dams

["Future Impacts of Hydroelectric Power Development on Methylmercury Exposures of Canadian Indigenous Communities"](#)

Environmental Science & Technology

Hydroelectricity is a renewable energy, and the facilities that produce it give off less greenhouse gases than other power plants. But damming bodies of water can lead to the production and release of methylmercury from the soil. This toxic compound can move up the food chain and potentially harm human health. In the ACS journal *Environmental Science & Technology*, researchers quantify the possible increases in methylmercury exposures for indigenous communities living near planned facilities.

Bacteria can convert mercury, which occurs naturally in the soil, to methylmercury when the land is flooded, such as when dams are built for hydroelectric power generation. Unlike mercury, however, methylmercury moves into the food chain. People exposed to the chemical through their diet face increased cardiovascular risks, and children with high prenatal exposure can develop attention deficit/hyperactivity disorder, neurological abnormalities and other symptoms. Because a new hydroelectric facility is scheduled to fill a reservoir on the Churchill River at Muskrat Falls in Labrador, Canada, any day now, Ryan S. D. Calder and colleagues wanted to evaluate its potential impact on nearby communities.

The researchers combined direct measurements and modeling of future environmental concentrations with data collected from local residents and from other flooded regions. Modeling projections indicate that the flooding at Muskrat Falls likely will increase methylmercury 10-fold in the dammed river and 2.6-fold in surface waters downstream. Methylmercury concentrations in locally caught fish, birds and seals — which nearby Inuit populations use as a source of food — likely will increase up to 10-fold. In these communities, the researchers concluded, more than half the women of childbearing age and young children will be exposed to enough methylmercury to harm health. In addition, the researchers extrapolated the data to Canada's other planned hydroelectric facilities, which are all within about 60 miles of indigenous communities. The model forecast even higher methylmercury concentrations for 11 of these other hydropower sites.

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When a new hydroelectric facility goes online at Muskrat Falls, Canada, flooding of local land is expected to release methylmercury that could affect the health of local communities.

Credit: American Chemical Society

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