

MERCURY POLLUTION

Metal bioaccumulation

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Credit: Zoonar GmbH / Alamy Stock Photo

Chlor-alkali industries produce the widely used chemicals chlorine and sodium hydroxide. However, they can also generate large amounts of mercury waste. Chlor-alkali landfills can release mercury into the air, so they are frequently revegetated to confine mercury within plant biomass. Insects living among the vegetation are also exposed to mercury, which may accumulate in the food web.

Loïc Yung, from the University of Bourgogne Franche-Comté (France), and colleagues studied twenty-three insect species living in a chlor-alkali landfill five years after revegetation. The landfill contained stinging nettle, which had low physiological mercury levels (1% as methylmercury). The insect mercury levels varied widely, with some species containing up to 1 mg kg⁻¹ dry wt (75% as methylmercury). The authors considered life traits and found that, among nettle-related insects, most mercury exposure occurred from the food web with biomagnification particularly strong at the level of secondary predators. Within nettle-unrelated insects, mercury enrichment was related to habitat, and insects whose life cycles were in direct contact with mercury sources had the highest enrichment. This research helps illuminate the role of insects in mercury dissemination because insects are common foods for birds and more generalist predators.

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