

Publication

Mercury evasion from a boreal peatland shortens the timeline for recovery from legacy pollution

JournalArticle (Originalarbeit in einer wissenschaftlichen Zeitschrift)**ID** 4044613**Author(s)** Osterwalder, Stefan; Bishop, Kevin; Alewell, Christine; Fritsche, Johannes; Laudon, Hjalmar; Åkerblom, Staffan; Nilsson, Mats B.**Author(s) at UniBasel** [Osterwalder, Stefan](#) ; [Alewell, Christine](#) ;**Year** 2017**Title** Mercury evasion from a boreal peatland shortens the timeline for recovery from legacy pollution**Journal** Scientific Reports**Volume** 7**Number** 1**Pages / Article-Number** 16022

Peatlands are a major source of methylmercury that contaminates downstream aquatic food webs. The large store of mercury (Hg) in peatlands could be a source of Hg for over a century even if deposition is dramatically reduced. However, the reliability of Hg mass balances can be questioned due to missing long-term land-atmosphere flux measurements. We used a novel micrometeorological system for continuous measurement of Hg peatland-atmosphere exchange to derive the first annual Hg budget for a peatland. The evasion of Hg ($9.4 \mu\text{g} \cdot \text{m}^{-2} \cdot \text{yr}^{-1}$) over the course of a year was seven times greater than stream Hg export, and over two times greater than wet bulk deposition to the boreal peatland. Measurements of dissolved gaseous Hg in the peat pore water also indicate Hg evasion. The net efflux may result from recent declines in atmospheric Hg concentrations that have turned the peatland from a net sink into a source of atmospheric Hg. This net Hg loss suggests that open boreal peatlands and downstream ecosystems can recover more rapidly from past atmospheric Hg deposition than previously assumed. This has important implications for future levels of methylmercury in boreal freshwater fish and the estimation of historical Hg accumulation rates from peat profiles.

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