

Unique study: more iron in lakes is making them brown

October 23 2017

The iron concentration in lakes is increasing in many parts of northern Europe, including Sweden. This has been shown in a study in which researchers at Lund University in Sweden examined 23 years of data from 10 countries. High iron levels contribute to browner water; furthermore, iron binds environmental toxins such as lead and arsenic.

The research study shows significant differences between North America and Europe.

While the [iron](#) concentration has increased in almost 4 out of 10 studied lakes in Europe, the corresponding figure is less than 1 in 10 in North America. In exact figures, this amounts to 84 out of 213 lakes and watercourses in Europe, and 11 out of 127 in North America.

The study is unique because it examines the propagation of iron in a much larger geographical area than any previous study. In the water bodies in which researchers found a significant increase in iron, its concentration had risen by an average of 60 per cent. Among the 10 countries included in the study, the largest increases can be found in Scandinavia.

"High iron concentration may have a negative impact and affect entire ecosystems. Together with carbon compounds, iron contributes to lakes becoming increasingly browner. Iron also binds environmental toxins, such as lead and arsenic. An increased iron concentration can cause such [environmental toxins](#) to become more mobile in the environment", says

Caroline Björnerås, doctoral student at Lund University.

The researchers studied data series from environmental monitoring programmes in 10 different countries in Europe and North America. They had access to data from 1990 to 2013, and studied the iron concentration of 340 lakes and watercourses.

Caroline Björnerås led the study in collaboration with colleagues in Sweden, Norway, Finland, Estonia, Latvia, Germany, the Czech Republic, the United Kingdom, the United States and Canada.

"We focused on locating where and to what extent the increases have occurred, and not so much on why. This will be our focus as we continue our work", she says.

However, she highlights certain factors that have probably contributed to high iron concentration. Climate change with increased temperatures, more precipitation and longer growing seasons is one; the propagation of coniferous forests is another. In areas with a lot of spruce, the iron concentration increases significantly more than in areas dominated by other types of forests and vegetation.

"We believe that the land use in catchment areas largely affects the amount of iron that ends up in the water", says Caroline Björnerås. "Regional differences in precipitation, temperature and land use could explain the major differences between Europe and North America, but this cannot be said with certainty".

The results confirm the few minor studies that have been conducted.

More information: Widespread Increases in Iron Concentration in European and North American Freshwaters, [DOI: 10.1002/2017GB005749](https://doi.org/10.1002/2017GB005749)

Provided by Lund University

Citation: Unique study: more iron in lakes is making them brown (2017, October 23) retrieved 25 April 2024 from <https://medicalxpress.com/news/2017-10-unique-iron-lakes-brown.html>

This document is subject to copyright. Apart from any fair dealing for the purpose of private study or research, no part may be reproduced without the written permission. The content is provided for information purposes only.