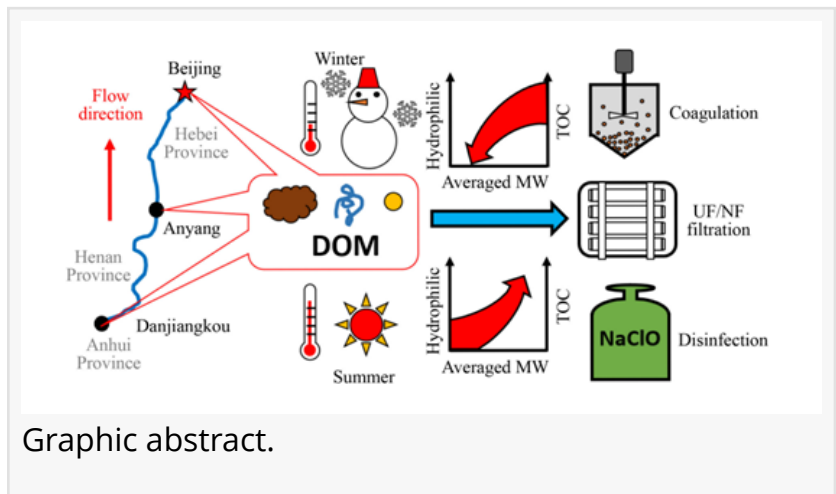


Impact unveiled: how China's massive water transfer shapes drinking water quality

USA, May 16, 2024 /EINPresswire.com/ -- A new study conducted by a team of researchers from China and the UK provides crucial insights into the variation of dissolved organic matter (DOM) during the South-to-North Water Diversion in China and its implications for drinking water treatment.



Graphic abstract.

Dissolved organic matter, originating from both natural and human activities, is a complex mixture of organic substances that can vary by season, location, and environmental conditions. DOM impacts the coagulation process, membrane fouling, and the potential for disinfection by-product (DBP) formation, necessitating dynamic water treatment adjustments to maintain compliance with drinking water standards.

In an article (DOI: [10.1007/s11783-024-1819-0](https://doi.org/10.1007/s11783-024-1819-0)) published in the *Frontiers of Environmental Science & Engineering*, a team of scientists from the Chinese Academy of Sciences and Imperial College London detail their examination of the significant seasonal variations in water quality within the monumental China South-to-North Water Diversion project. These variations, largely due to fluctuations in dissolved organic matter (DOM), pose a substantial challenge to the effectiveness of water treatment processes. The researchers are working to optimize these strategies to ensure the delivery of high-quality drinking water and to minimize the formation of harmful disinfection byproducts (DBPs).

In this detailed study, researchers traced the path of water along the South-to-North Water Diversion Project, one of the most ambitious engineering endeavors globally, designed to tackle northern China's severe water shortages. By analyzing water samples collected from the project's central route during different seasons, the team focused on the intricate changes in dissolved organic matter (DOM), which plays a crucial role in water quality and treatment efficacy. The research revealed that DOM undergoes significant transformations as it travels long distances, influenced by factors such as seasonal variations and geographical changes. In summer, polysaccharides tend to accumulate, impacting the ultrafiltration process used in water

purification, whereas in winter, a different set of challenges arises with the formation of potentially harmful disinfection by-products. These seasonal dynamics affect how water treatment plants must operate to effectively remove contaminants and ensure the water remains safe for consumption.

Highlights

- Variations of DOM in South-to-North Water Diversion is studied in winter and summer
- Polysaccharides seriously fouled the UF membrane in summer.
- NF membrane fouling in winter was mainly caused by the DOM degradation products.
- DOM was more easily to form THMs in summer but HAAs in winter.

Dr. Wenzheng Yu, the lead author of the study, commented, "Our research offers unprecedented insight into how the characteristics of dissolved organic matter evolve during their journey in a long-distance water transfer system. This understanding is key to optimizing water treatment processes and ensuring safe drinking water."

Findings from the study are critical for water treatment facilities using the South-to-North Water Diversion, providing them with the knowledge to adjust treatment processes according to seasonal variations in DOM. This could lead to more efficient water treatment methods and safer drinking water for millions of people.

DOI

10.1007/s11783-024-1819-0

Original Source URL

<https://doi.org/10.1007/s11783-024-1819-0>

Funding information

This research was funded by the Beijing Natural Science Foundation (China) (No. JQ21032) and the National Natural Science Foundation of China (Nos. 52200026 and 52200027).

Lucy Wang

BioDesign Research

[email us here](#)

This press release can be viewed online at: <https://www.einpresswire.com/article/712133068>

EIN Presswire's priority is source transparency. We do not allow opaque clients, and our editors try to be careful about weeding out false and misleading content. As a user, if you see something we have missed, please do bring it to our attention. Your help is welcome. EIN Presswire, Everyone's Internet News Presswire™, tries to define some of the boundaries that are reasonable in today's world. Please see our Editorial Guidelines for more information.

© 1995-2024 Newsmatics Inc. All Right Reserved.