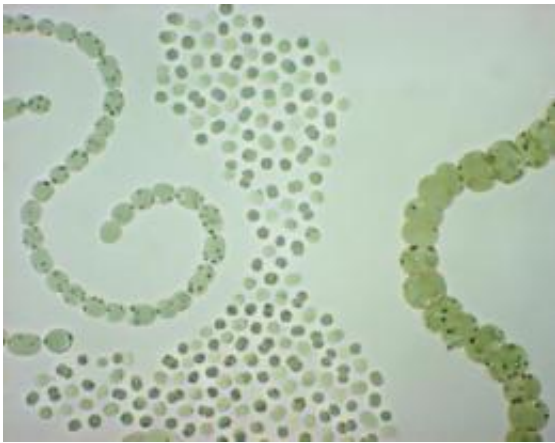


# Global warming favors proliferation of toxic cyanobacteria

July 3 2012

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This is a sample of cyanobacteria (*Anabaena* spp. and *Microcystis aeruginosa*).  
Credit: Y. Ouahid

Cyanobacteria are among the most primitive living beings, aged over 3,500 million years old. These aquatic microorganisms helped to oxygenate the earth's atmosphere. At present their populations are increasing in size without stopping. It appears that global warming may be behind the rise in their numbers and may also lead to an increase in the amount of toxins produced by some of these populations.

"Cyanobacteria love warm water, therefore an increase in temperature during this century may stimulate their growth, especially that of the cytotoxic varieties, which could even produce more toxins and become more harmful", says Rehab El-Shehawy, a researcher from IMDEA

Agua and co-author of the study published in the journal, *Water Research*. Her team is working on developing efficient tools to monitor the number of cyanobacteria in water.

Blooms of these [microorganisms](#) in lakes, reservoirs and rivers all over the world, and in estuaries and seas, such as the Baltic, are becoming a more and more frequent phenomenon. According to the experts, this poses an economic problem –as it affects water sanitation, shipping and tourism, for example–, and an environmental problem.

In Spain, the relation between the proliferations of toxic cyanobacteria in the Doñana wetlands and the death rate of wild fauna in this natural space has been confirmed, but of even more concern are its effects on human health.

## **Risk to human health**

"These toxins may affect the liver and other organs (hepatotoxins), the nervous system (neurotoxins), different cells (cytotoxins), the eyes and mucous membranes, as well as causing dermatitis and allergies", explains Francisca F. del Campo, another co-author and researcher at the Autonomous University of Madrid.

The scientist demands more attention from the authorities and the general population be given to this health and environmental problem about which little is known and to which little interest is paid.

"We suspect that these cytotoxins may be behind some gastrointestinal disorders and other illnesses, but epidemiological studies are required to confirm this", says Del Campo.

According to studies carried out by the Centre for Studies and Experimentation of Public Works (CEDEX), approximately 20% of

Spanish reservoirs (278 were sampled) revealed cyanobacteria in concentrations of more than 2 mm<sup>3</sup>/l, the guide level established by the WHO for bathing water quality.

In the group exceeding the limits, in 45% of the cases concentrations of microcystins (toxins which particularly affect the liver) were found at above 1 microg/L, which is the value recommended by the WHO and the maximum level established by Spanish legislation for bathing [water](#).

**More information:** Rehab El-Shehawy, Elena Gorokhova, Francisca Fernández-Piñas, Francisca F. del Campo. "Global warming and hepatotoxin production by cyanobacteria: What can we learn from experiments?" *Water Research* 46 (5): 1420-1429, April 2012.

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