

State Water Resources Control Board

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More Blue-Green Algae on Klamath River Than Last Year Say Local, Tribal, State and Federal Authorities

SACRAMENTO – In response to algal blooms in the Klamath River in California that are more concentrated now than last year, The State Water Resources Control Board, the Karuk Tribe, the North Coast Regional Water Board and the U.S. Environmental Protection Agency are joining other local, state and federal agencies in warning residents and recreational users of the river to use caution or avoid getting in the water when near such blooms.

“The public needs to be aware of these algal blooms and to avoid contact with them,” said Catherine Kuhlman, Executive Officer of the North Coast Water Board. “The presence of a blue-green algal scum in a swimming area means there is a high probability of adverse health effects for those who come in contact, according to the World Health Organization. The levels of algae and associated toxins are the highest yet recorded in these reservoirs and could cause a variety of problems for anyone drinking or swimming in the water, particularly children and animals.”

“The samples of toxic algae blooms taken at the end of July found the highest cell density recorded yet in Irongate and Copco Reservoirs.” said Alexis Strauss, Water Division director of the EPA’s regional office in San Francisco.

Water samples taken on July 12-13, 2006 and then again on July 26-27, 2006 in the two reservoirs located on the Klamath River near the Oregon border show the blooms of *Microcystis aeruginosa* increased dramatically during July. Blooms of *Microcystis aeruginosa*, which often occur between June and September, can look like green, blue-green, white or brown foam, scum or mats floating on the water. In the past, blooms have been found as far as 125 miles downstream of the reservoirs in quiescent river backwater areas.

The Klamath River is rich in nutrients that support the growth of the blue-green algae. Warm and calm surface water created by Iron Gate and Copco Reservoirs provide an ideal environment for the growth of large algal blooms.

“The samples collected this July showed levels of *Microcystis aeruginosa* as high as 393-million cells/milliliter; more than double the highest level of 163-million cells/milliliter recorded last August along the shoreline. The recent July levels exceed the World Health Organization (WHO) standard for moderate probability of adverse health effects by over 3,900 times,” explained Jacob Kann, Ph.D., a water quality specialist who reported on the sampling conducted by the Karuk and Yurok Tribes. “Microcystin toxin produced by the blooms in one location was 2813 micrograms/liter. That measurement is also the highest recorded to date and exceeds the World Health Organization guideline of 20 micrograms/liter by as much as 140 times. A 40-pound child accidentally ingesting 100 milliliters of water at this site would exceed the WHO Tolerable Daily Intake level by more than 388 times.”

According to California’s State Water Resources Control Board, the U.S. EPA, the Karuk Tribe and the North Coast Regional Water Board, the *Microcystis aeruginosa* and resulting microcystin toxin pose a significant potential health threat to humans and animals exposed through direct or indirect ingestion of contaminated water, aspirating droplets from the blooms, or getting contaminated water on the skin during recreational water activities and swimming.

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Studies of the possible health effects of exposure to *Microcystis aeruginosa* and its microcystin toxin range from mild, non-life threatening skin conditions to permanent organ impairment and death, depending upon exposure time and intensity.

Symptoms could include mild to severe eye irritation, allergic skin rash, mouth ulcers, fever, cold and flu-like symptoms, vomiting, diarrhea, kidney damage, liver damage or complete failure, and death.

Children and animals are at the greatest risk of adverse effects, due to their smaller body size and higher water ingestion rates. To keep them from drinking contaminated water, children, pets and livestock should be kept away from the water in which algal blooms are occurring.

There are three main ways to be exposed to *Microcystis aeruginosa* and subsequent microcystin toxins in contaminated waters:

- direct contact to exposed skin or to the highly sensitive membranes of the ear, eye, nose and throat
- accidental or intentional swallowing; and
- inhalation of contaminated water aerosols (e.g., through water skiing)

At current maximum levels a full-grown adult ingesting approximately 4 ounces (1/2 cup) of contaminated water in a given day would be exposed to levels over 100 times greater than the accepted World Health Organization's Tolerable Daily Intake value. This calculation is based on a single one-hour "swimming event" per day. More swimming events or activities of longer duration could result in greater exposure.

For an average-size child who is 3-years-old, ingesting slightly more than ½ cup of contaminated water in any one "swimming event" would be the equivalent of 388 times the accepted WHO Tolerable Daily Intake value.

As with adults, more swimming events or activities of longer duration by children could result in greater exposure.

Local, state, tribal and federal health and environmental agencies recommend that people not drink or cook with contaminated waters. Avoid or minimize contact with contaminated waters. It is best to stay out of the water near algal blooms and to keep pets away. If you do come in contact with the water, wash thoroughly with clean water. Avoid eating fish caught during an algal bloom. If you do eat the fish, clean them with fresh water and dispose of the innards away from the river and away from places where animals could eat them. Avoid irrigating with contaminated water; report dead or distressed wildlife along the shoreline to local, state or tribal authorities.

For more information, visit: The 1999 World Health Organization, Toxic Cyanobacteria in Water: A guide to their public health consequences, monitoring and management at:

http://www.who.int/water_sanitation_health/resourcesquality/toxiccyanbact/en/,

World Health Organization Guidelines for Drinking Water Quality, 3rd Edition at:

www.who.int/water_sanitation_health/dwg/gdwq3/en/index.html, California Department of Health Services Information on Blue-Green Algae Blooms at: <http://www.dhs.ca.gov/bga>

California State Water Resources Control Board Blue-green Algae Fact Sheet at:

<http://www.waterboards.ca.gov/bluegreenalgae/docs/workshop110805/shortfactcdsheet.pdf>

California State Water Resources Control Board Blue-green Algae in Klamath River Basin at:

<http://www.waterboards.ca.gov/bluegreenalgae/index.html>