Farm runoff and the worsening algae plague

November 16 2017, by John Flesher

Charter boat captain Dave Spangler holds a sample of algae from Maumee Bay in Lake Erie in Oregon, Ohio, on Friday, Sept. 15, 2017. Scientists estimate about 85 percent of the Maumee's phosphorus, which promotes algal growth, comes from croplands and livestock operations. (AP Photo/Paul Sancya)

Harmful algae blooms have become a top water polluter, fueled by fertilizers washing into lakes, streams and oceans. Federal and state programs have spent billions of dollars on cost-sharing payments to

farmers to help prevent nutrient runoff, yet the problem is worsening in many places. Here's a look at the algae menace and what's being done:

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ANCIENT ORGANISMS, NEW THREAT

Among the oldest life forms, algae are simple aquatic plants that form key links in food chains. Some types of bacteria are also considered algae, including cyanobacteria, or "blue-green algae," which is increasingly common across the U.S.

Scientists believe a combination of factors can trigger large blooms, including warm temperatures, slow water circulation and excessive nutrients, especially nitrogen and phosphorus. Among nutrient sources are runoff from farms and urban lawns as well as industrial wastes and sewage.

Some blooms generate toxins such as microcystin, which can cause nausea, fever and liver damage in humans and kill animals. A federal study detected microcystin in nearly 40 percent of lakes sampled around the nation, although mostly at below-harmful levels. Even when blooms aren't toxic, they can turn waters ugly shades of green or other colors, stink like rotten vegetables, foul beaches and kill fish by sucking oxygen from the water as they decompose.

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A WORLDWIDE PROBLEM

The U.S. isn't alone.

Many countries are experiencing "disturbing trends of increasing bloom

incidence" and growing economic losses, the National Oceanic and Atmospheric Administration says.

China's largest blooms on record washed onto beaches in 2013 from the Yellow Sea, as bulldozers scraped up rotting mats by the ton. A bloom the size of Mexico spreads across the Arabian Sea twice a year.

In this Dec. 5, 2016 photo, volunteers rake algae from the bottom of Crystal River to combat the algae growth at Hunter Springs Park in Crystal River, Fla. Pungent, ugly and often-toxic algae is spreading across U.S. waterways, even as the government spends vast sums of money to help farmers reduce fertilizer runoff that helps cause it. (AP Photo/Jason Dearen)

In Australia, blue-green algae extended more than 1,000 miles (1,600 kilometers) on the Murray River in 2016.

A European Commission study says blooms in Greece, Italy and Spain cost the economy $355 million (300 million euros) annually.

University of Alberta researchers say microcystin has been detected in more than 240 Canadian water bodies. Lake Winnipeg algae blooms are so large that they're visible from space.

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IS CLIMATE CHANGE BEHIND THIS?

Many scientists believe global warming is making conditions more favorable for algae blooms, primarily by raising water temperatures and causing heavier rainstorms that wash more nutrients into waterways.

A study in the journal Science this year said nitrogen runoff into lakes, rivers and bays could increase 19 percent by the end of the century if greenhouse gas emissions keep rising.

Climate change research in the journal Environmental Science and Technology predicts the number of days U.S. reservoirs are infected with blue-green blooms could triple by 2050.

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PLAYING CATCH-UP

Congress first enacted legislation to deal with harmful algae in 1998 and has updated it several times, with another version pending. Critics say it's too little and too slow.

Algae floats on the surface of Lake Erie's Maumee Bay in Oregon, Ohio, on Friday, Sept. 15, 2017. Chemicals and manure intended to nourish crops are washing into lakes, streams and oceans, providing an endless buffet for algae. (AP Photo/Paul Sancya)

A White House report last year said progress had been made in forecasting blooms and issuing warnings. The Governmental Accountability Office said 12 agencies had spent $101 million on studies and monitoring between 2013 and 2015.

But only in 2014 was the law updated to make inland waters a priority; the focus previously had been on coastal areas and the Great Lakes. Even then, no funding was included for inland water study.

And the law sidesteps the nutrient runoff problem, with no limits and no enforcement provisions.

WHAT ABOUT GOVERNMENT CONSERVATION MEASURES?

The Associated Press obtained data from the U.S. Department of Agriculture about the costliest of several programs that help farmers avoid pollution.

The agency awarded $1.8 billion between 2009 and 2016 for use of 45 practices intended to prevent fertilizer runoff.

The five most heavily funded included upgrading irrigation systems; managing brush growth; planting "cover crops" in fall and winter that hold soil in place and absorb fertilizers; stabilizing erosion-prone areas used by livestock; and developing plans for applying fertilizer in ways that will minimize runoff. Another popular measure is planting grass or other vegetation between croplands and streams.

Farmers in Texas, Kansas, Oklahoma, Indiana and Nebraska were pledged the most funding between 2009 and 2016.

Farmers in Sussex County, Delaware, a top chicken-producing area, received $17 million over the seven years, the most of any U.S. county.