



The United Sludge-Free Alliance Recommended Reading

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Expert discusses quality of water

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DENTON | A crowd of about 100 gathered Friday evening at Camp Walter Johnson for the annual meeting of the Yadkin Riverkeeper to learn more about area water quality.

Dean Naujoks, the Yadkin Riverkeeper, spoke about his work raising awareness about water quality issues, an estimated 15.9 million gallon sewage spill from a Thomasville wastewater plant over the summer and the ongoing procedure of Alcoa's bid for another 50-year license to operate its hydroelectric projects on the river and lakes.

Since the wastewater spill became public in September, Naujoks said he received several calls from area residents asking if it was safe to wade or fish in High Rock Lake. Not knowing how to advise them, Naujoks sought answers from the City of Thomasville and asked for a public hearing on the lake's quality, but the city didn't schedule one. So, Naujoks held one and invited an expert to answer to public's questions.

After the crowd enjoyed dinner, Naujoks introduced Dr. JoAnn Burkholder, an award-winning water quality researcher and professor of aquatic ecology at N.C. State University. Though she wished she could offer encouraging information, she shared information her studies have found to be universally true of all North Carolina's surface waters.

"I'll do my best to answer your questions, but unfortunately for me it always seems like I'm the bearer of bad news," Burkholder said. "I want to take you through my logic and why sewage is continuing to cause so many problems in our state and in our country."

The U.S. Environmental Protection Agency published a study in 2003 that found the nation's surface waters were slowly but steadily growing more contaminated. Developing urban areas meant more pavement-covered soil that no longer absorbed falling rain quickly. Stormwater runoff joined a growing list of secondary sources of pollution that threatened creeks, rivers and lakes, along with industrial waste, human waste and soil erosion.

"High Rock Lake has been accumulating pollution from its rapidly developing watershed for years," she said.

Turbidity, or the amount of solid particles suspended in the water, is one of the largest challenges to the lake's water quality, Burkholder said. High turbidity prevents sunlight from penetrating down into the water, which hinders algae growth but also negatively affects fish and other aquatic animals.

The lake water also has unusually low levels of dissolved oxygen, which kills or limits aquatic life. Low

dissolved oxygen levels and high amounts of nitrogen and phosphorous that seep into the lake from commercial fertilizers, create ideal conditions for algae growth. Some algae, Burkholder said, release toxins that are harmful to humans, substances that are not removed by standard wastewater treatment processes.

"And finally some of the pollution from the recent sewage spills should be expected to have lingering effects on High Rock Lake because of the sediment memory," Burkholder said. "And it will contribute to the ongoing degradation to the lake's water quality."

The accidental release of untreated human or animal sewage into the lake adds another factor. Disease-causing bacteria can be introduced into surface water and thrive for a time at the very bottom and in the sediment.

But sediment is not tested, Burkholder said. Several water ecology scientists have encouraged state and federal agencies to begin collecting soil samples from river and lake beds for the purpose of studying water quality, but so far, no agencies use this method. Burkholder said not only are sediment tests expensive and sometimes difficult to measure, but the EPA has long been pressured by large companies against them because of sediment's long contaminant memory.

"It'll take a lot of struggle to get all the states to routinely test sediment, even maybe once a month," she said.

For a considerable time after a major sewage spill, the land just below the water could hold contaminants until more layers of sediment can cover it. It can take months for disease-causing microbes thriving on the lake or river bed to finally die. Harmful chemicals from storm water runoff, residual pharmaceuticals and estrogens not removed during sewage treatment, human or animal fecal matter, industrial spills that release mercury or other heavy metals carried into the lake by the river are deposited onto the lake bed.

"Even though the water column is fine - the water column has almost no fecal coliform bacteria left - the sediment has a memory and those bacteria thrive down there still for some time after the spill," she said. "The water column standards for fecal coliform is just that, up in the water. The state doesn't monitor the surface sediments, where the memory of the pollution still exists."

If it stays there, undisturbed, Burkholder said new layers of sediment protect the water quality from the contamination. But if swimming, boating or any other activity scrapes or otherwise moves the layers of sediment, the contamination can be a potential threat.

Burkholder cited statements by the City of Thomasville and officials with the N.C. Division of Water Quality saying water samples taken from the Abbotts Creek arm of High Rock Lake during and after the period of the spill tested below the state standard for fecal coliform.

"That's the water column. They're only focusing on the water column, but water flows quickly though the lake, so the contamination has already moved on," she said.

Hopefully, Burkholder said, help will come to High Rock Lake soon. The Division of Water Quality is conducting tests on the lake to determine the total maximum daily load (TMDL) of nutrients and contaminants the lake can absorb without negative effects. Wastewater treatment plants, industries, farmers and cities or any other entity with a permit to release anything into the Yadkin River basin or High Rock Lake watershed will be held accountable for elevated contaminant levels by the N.C. DWQ.

"Controlling turbidity is not enough," Burkholder said. "So, if you get a good TMDL plan, as Dean was talking about, it needs to consider several things. Not just light, not just turbidity, not just algal chloroform, but nutrients, too."

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