Biologists Find Resistant Bacteria in Ohio River

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A comprehensive analysis of the health of the Ohio River has demonstrated that antibiotic-resistant bacteria are flourishing in the river and its tributaries from West Virginia to Cincinnati. The researchers involved emphasized, however, that there is no immediate health threat to the general public.

The data was collected during River Run 2001, a collaborative research project involving University of Cincinnati (UC), Northern Kentucky University, Thomas More College and Marshall University.

"This is the first survey ever undertaken with this level of detail to examine the selection and spread of such resistant organisms," said Michael Miller, UC professor of biological sciences and a member of the River Run team.

The scientists floated down the Ohio River from Pittsburgh to Rising Sun, Indiana last August. They sampled the water every five miles for a total of 500 miles. An additional 48 tributary streams were included in the sampling.

Miller said the most noticeable change occurred in the water samples taken downstream of the area where West Virginia's Kanawha River joins the Ohio. "Counts of resistant bacteria were relatively low above the Kanawha, and relatively high below the Kanawha, associated with sediment erosion during a summer flood."

The microbiology done by Chuck Somerville of Marshall University found that bacteria in the river were resistant to three common antibiotics: ampicillin, streptomycin and tetracycline. Streptomycin resistance was most common. "The frequency of resistance was startling to us," said Miller.

The researchers believe flooding and increased runoff had an impact on the numbers of resistant bacteria found, because there was a direct correlation between areas with large numbers of resistant bacteria and increased turbidity of the river water. Turbidity is a measure of the sediments and cloudiness of the water.

The researchers will continue their surveys this summer with River Run 2002. The trip will take 10 researchers over the same stretch of river Aug. 5-10 later this year, monitoring chemistry, nutrients, algal biomass and zebra mussel larvae as well. The UC participants will include doctoral student Diane McCubbin and environmental studies senior Ben Jones.

The project is funded by many small contributors, the Ohio River Valley Sanitation Commission (ORSANCO), Cinergy, Ingram Barge Company, Bass Pro Shops and the parent departments of the faculty.