

Students look to clean river

BY ELISABETH BURICK
Jambar Reporter

Abandoned steel mills line the banks of the Mahoning River, reminders of Youngstown's steel past.

The steel-induced prosperity of 50 years ago has since ended, leaving residents of the Mahoning Valley with a health hazard and an environmental problem lying beneath the calm surface of the river.

When Dr. Carl Johnston, professor, biology and environmental studies, moved to the area, he quickly learned that the Mahoning River has been polluted for years by steel mills.

It was an "industrial sewer for the steel industry," he said, and he wanted to help clean it up. Johnston is heading what he calls The Mahoning River Project. This project is researching how to clean up contaminated Mahoning River sediment, using bacteria native to the river.

For the past year and a half, Johnston and several

graduate and undergraduate students have been researching an environmental clean-up technique called "bioremediation," with hopes of applying their research to the clean-up of the Mahoning River.

Bioremediation is the use of plants and microorganisms, or microbes, for environmental clean-up, Johnston said.

"The whole project is to see if it is possible to clean the river in this manner," said Sarah Ellis, sophomore, environmental studies.

Ellis is participating in the Mahoning River Project. She is concluding a semester-long study of river sediments from the Lowellville section of the Mahoning River.

Jennifer Mosher, a biology graduate student, is finishing a two-year survey of the river sediments as part of her master's thesis.

The Mahoning River Project is focused on cleaning up only one of the many pollutants in the river.

"PAHs are the major problem in the Mahoning River,"



Sarah Thompson / The Jambar

STEEL MILL AFTERMATH: A biology professor and his students are studying the Mahoning River, shown here in Youngstown, in hopes of being able to clean the contaminated water.

Johnston said.

Polycyclic aromatic hydrocarbons are cancer-causing agents left over from the oils and greases used during the Valley's steel manufacturing years.

"It looks like black, oily mayonnaise," Mosher said, referring to the contaminated sediments on the river bottom.

It has a strong, oily smell — like petroleum.

PAHs in the Mahoning River pose a health threat to both animals and wildlife. The Ohio Environmental Protection Agency has issued a "Contact Advisory," warning people to not come in contact with the Mahoning River sediment, Johnston said.

The Ohio Department of Health has also issued a "Wading Bad" for the stretch of river between Warren and the

Pennsylvania border.

Both warnings are still in effect, Mosher said.

• The PAHs will not cause any problems for humans unless they are continuously exposed for a long period of time, Mosher said, but the fish in the river are being affected.

The PAHs are causing mutations in carp and other bot-

RIVER, continued from page 1

in the river are being affected.

The PAHs are causing mutations in carp and other bottom-feeding fish.

The department has issued a ban on eating any of the bottom-feeding fish from the river, Mosher said.

The bacteria in the river use the contaminants as a food and energy source. By adding oxygen and nutrients to the microbes, they hope to speed up the process by which the microbes "eat" the contamination, making them more effective.

Johnston, Mosher and Ellis said they think this project is "likely to work." Mosher said her studies of the bacteria are promising. The sediments with the highest amount of PAHs also have high numbers of bacteria.

"The microbes are flourishing in that environment," she said. Ellis said the success of the bioremediation project is "defi-

nately possible," but it would need "more testing and more funding."

Funding for the project began at the university, with the biology department and the College of Arts and Sciences giving the project start-up money. As the scope of the project increases, Johnson looks to other sources for funding and testing of the technology, such as the Army Corps of Engineers.

YSU is preparing to work with BioRemedial Technologies, Inc., a corporation specializing in the biodegradation of organic material and the Army Corps of Engineers on the future dredging of the Mahoning River, Johnston said.

In a decision between the community and the Army Corps, contaminated sediments will be dredged out of the river bottom and placed in landfills. The bioremediation technique,

if proven successful, may be applied by BioRemedial Technologies, put into widespread use and used to clean up portions of the Mahoning River's banks.

YSU is also participating in an Ohio contaminated groundwater project sponsored by the Department of Energy.

DOE has designated a number of sites in Ohio to be contaminated with an industrial solvent that has cancer-causing byproducts.

The contaminated sites are providing samples for testing the bioremediation technology.

"I think it is really important to clean up areas people have polluted this much," Ellis said about her decision to participate in the research.

Mosher concludes her research later this year, but her thoughts will still be with the project.