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Researchers ready for creek study

UTC professors to look into health effects of water's toxic waste

By Kathy Gilbert Staff Writer

A University of Tennessee at Chattanooga researcher hopes to help answer a decades-old question about the health effects of toxic waste in South Chattanooga. This spring, assistant professor Sean Richards will begin testing mice and rats for the presence and health effects of arsenic, mercury and cancer causing polycyclic aromatic hydrocarbons. "I knew there were significant sources of contamination in South Chattanooga," Dr. Richards said. "And it was obvious there was a lot of concern."

Margaret Kovach, also a UTC assistant professor, will study the effects of hazardous chemicals on mice genes. Researchers from Southern Illinois University Edwardsville are co-investigators. The 3-year project is funded by a $178,953 National Institutes of Health grant.

Through the early 1950s, tons of industrial waste were dumped in the Chattanooga Creek floodplain. Much of the dumping was illegal, according to the Environmental Protection Agency. The area is swampy, floods frequently and drains into the Tennessee River. Among the pollutants in portions of the floodplain are coal tar, polycyclic aromatic hydrocarbons, polychlorinated biphenyls (PCBs), volatile organic compounds and pesticides, according to the Environmental Protection Agency.

In the mid-1990s the EPA called Chattanooga Creek one of the country's most polluted streams. In all, 46 toxic waste sites have been identified in the floodplain, according to Tennessee Department of Environment and Conservation data. Many are on privately owned land, according to records.

In 1995, the EPA declared a portion of the polluted area a Superfund site. In 1997 and 1998, 32,500 tons of coal tar were cleared from a 1-mile section of the creek at a cost of nearly $12 million. Another 81,500 cubic yards of coal tar may be removed in future years, EPA officials have said.

Since the 1970s, residents have said they believe their respiratory problems, cancers and skin rashes are linked to pollution, but previous health studies have been inconclusive, according to officials.

A Tennessee Department of Health study attempted to resolve the dispute by comparing the health of Chattanooga Creek area residents to the health of people living in Avondale, another downtown Chattanooga neighborhood.

Participants filled out questionnaires, provided urine and blood samples for analysis of kidney, liver and immune system functions, and underwent lung function tests, according to archived news reports by The Associated Press.

Five cancer cases were found in the South Chattanooga area. One cancer case was found in Avondale.

The study found no statistically significant differences in health between the two communities, according to reports.

Community residents remain concerned about health problems, said Milton Jackson, president of Stop Toxic Pollution in South Chattanooga. Toxic waste dumps could be leaching into soil and water, he said. Frequent flooding could spread the pollution around the area.

Health studies so far have been "inconclusive," Dr. Richards said. That means they neither prove nor disprove a link between toxic substances and health.

One reason these studies have not been able to resolve the question, he said, is that humans vary widely in their genetics and lifestyle. With many things affecting human health, researchers struggle to link causes with effects. A smoker, for example, may have respiratory problems because he smokes or because he lives next to a toxic waste dump.

Causes and effects are easier to see with rodents, which is why they are often used in drug safety studies, Dr. Richards said. Mice and rats, all have similar genes and lifestyles. They also live in one place all their lives.

By studying these small mammals, Dr. Richards said, his team hopes to prove or disprove a link between heavy metals and toxic chemicals and mammal health in South Chattanooga.

"Contaminants in the soil may or may not be causing health hazards," Dr. Richards said. "The bottom line is that we just don't know. We will let the science provide the answers."

Dr. Richards won't be the first to test mice in the floodplain.

University of Tennessee Associate Professor Patricia Tithof tested Chattanooga Creek mice last year for markers of blood vessel damage. She did not look directly at their health, or test for toxics in their bodies, as Dr. Richards' team will do. Her research cannot prove, or disprove, a link between pollution and heart disease, she said.

She did find, however, that mice from polluted areas of Chattanooga Creek showed higher-than-normal markers of blood vessel damage, she said. "This tells us we should take a closer look at the residents in the Chattanooga Creek area," Dr. Tithof said.

Dr. Tithof is a member of a large UT research team that applied last year for a $10 million NIH grant to study pollution in South Chattanooga.

The application was recently denied, said Professor Gary Sayler, director of UT's Center for Environmental Biotechnology.

"It was an effort on our part to bring research to bear on a homegrown problem," Dr. Sayler said. "Unfortunately, we haven't convinced NIH to pay for it, yet."

The group is seeking funding from other sources, he said.

Mr. Jackson said Dr. Richards and his team were welcome in South Chattanooga.

"Anything that science has to offer we want to know, and we need to know," Mr. Jackson said.

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