

# BIOLOGICAL SCIENCES COMPLETES 10-YEAR ACID RAIN STUDY



**Sam Houston State University biological sciences students Toby Cox, right, and brother Todd, work with SHSU biological sciences Professor James DeShaw to check the acidity of a water sample.**

HUNTSVILLE - After a 10 year acid rain study, a Sam Houston State University biology professor says that there is good news and bad news.

The good news first. Rain acidity is about the same as it was 10 years ago. Now the bad news. Rain acidity is about the same as it was 10 years ago.

"There has been very little change over 10 years," said James DeShaw, professor of biological sciences. "The population is growing, but controls are somewhat better."

The cause of acid rain, DeShaw said, is sulfur released from burning hydrocarbons such as gasoline and coal. DeShaw's rain collection site was about 10 miles northeast of Huntsville. He estimates that within 100 miles of the site, which is approximately 75 miles north of Houston, there are more than 1.5 million automobiles and approximately a dozen coal burning power plants.

Acid rain is believed to have many destructive effects on our environment including killing or altering plant life and plants and animals in areas in which it collects, such as lakes and ponds . Scientists are not sure what the cumulative effect of years of acid rain will be, but most believe it could be severe.

Each Tuesday for the past 10 years DeShaw or his students have checked a rain collection sampler device on what was once called the Country Campus, now the Sam Dominey ranch, between Huntsville and Trinity. When there was water in the device, they brought it to the SHSU campus for analysis, shipped it to a laboratory in Austin for further analysis, and sent a small amount to a laboratory in Illinois for trace element analysis.

The project was funded by the Texas Natural Resource Conservation Commission and the National Atmospheric and Oceanic Administration.

The rainfall at the site just northeast of Huntsville averaged 4.8 on the pH scale, which measures from 0 to 14. According to DeShaw, normal rainfall is between 5.5 and 5.7. Some comparisons-battery acid is about 1.5 pH, vinegar, 2.2 to 2.5, orange juice as low as 3, and human blood is a balanced 7.3-7.5.

DeShaw said that rainfall in other parts of the state range from the Hill Country and High Plains areas' "very normal" readings to the Tyler/Longview area's rainfall that is "a little more acidic." Huntsville area and Houston area readings are about the same, he said, and there is no explanation for Tyler/Longview's higher numbers.

Acid rain is an international problem, as well, in areas such as the Black Forest of Germany, which has recorded pH readings in the low 4s. Acid rain and the greenhouse effect caused by the release of nitrogen into the atmosphere will be subjects for an upcoming conference in Kyoto, Japan, in December.

"With air pollution, there are no boundaries," said DeShaw. "There is no stopping it at national or state lines." Conference participants will seek to come to international agreement in the form of a treaty or "protocol."

Solutions must balance environmental and economic concerns, he said, and won't be easy. In today's world economy, there may be competing manufacturing plants in India, China, the U. S. and Mexico. Plant owners are hesitant to install costly pollution control equipment if it puts them at a competitive disadvantage.

Poor nations seeking to catch up to the United States economically are also reluctant to agree to measures which would slow that process.

Environmental awareness has improved over the past 15 years, he said. Pollution control technology has shown immense development. But the world's population continues to boom.

"Schools all over the world are doing a better job of education," said DeShaw. "On the other hand, we're adding a tenth of a billion people every year. That's 30-35 Houstons every year."

Environmental problems are also resulting from the destruction of huge areas of forests in the Amazon of South America and places like Indonesia. Scientists are concerned that delicate balances are being altered.

Strange things are being found in nature more often, like deformed frogs and fish, which depend on pond and lake water as habitat.

"Acid rain could easily be the cause," said DeShaw. "It will take a long time to change the land, but on lakes that are poorly buffered, there is more concern."

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