

The Texas Air Quality Study 2000

<http://www.utexas.edu/research/ccer/texaqs/visitors/about.html>

(the website is talking about it before it happened – it has not been updated)

In August and September of 2000, a national team of researchers will undertake the largest air quality study ever done in the State of Texas. The study is designed to improve understanding of the factors that control the formation and transport of air pollutants along the Gulf Coast of southeastern Texas.

Plans call for six weeks of intensive sampling, beginning August 14. Measurements of gaseous, particulate, and hazardous air pollutants will be made at approximately 20 ground stations, located throughout the eastern half of the state. Additional sampling will be carried out with specially equipped aircraft that can detect air pollutants very quickly, at very low concentrations.

Experts in meteorology, atmospheric chemistry, and other areas of science will study the formation, composition, and day-night cycles of ozone and particulate matter, as well as how these pollutants are affected by weather. The large area covered by this study will also make it possible to examine long-range transport of air pollutants. Up to 250 researchers will be involved during the busiest stage of the project. Results of this study will be assembled into computer models for assessing the health effects of pollution and developing effective strategies to meet National Ambient Air Quality Standards.

Until recently, air pollution has been addressed as a local issue. Many of the air quality improvement strategies that are currently in place target specific non-attainment areas. However, this is starting to change. Recent research has demonstrated that ozone, fine particulate matter, and the chemicals that lead to their formation can travel over very long distances. To make a significant difference, future plans will need to take a regional approach.

The Texas Air Quality Study 2000 will be coordinated with a 16-month research project on airborne fine particulate matter. The Houston area has been designated a particulate matter "supersite" by the U. S. Environmental Protection Agency (EPA). Supersite researchers will use data collected in August and September to help them analyze the chemical makeup of fine particulates, where they come from, and how they behave in the atmosphere.

Lead Investigators

Dr. Peter Daum (Brookhaven National Laboratory)

Dr. James Meagher, Dr. Fred Fehsenfeld (National Oceanic and Atmospheric Administration)

Dr. James Price (Texas Natural Resource Conservation Commission)

Dr. David Allen (The University of Texas at Austin)

2007 Houston Air Quality Study

Source: University of Houston

<http://www.physorg.com/news106856349.html>

As a frequent addition to the list of America's most polluted cities, Houston is no stranger to having more than just oxygen and carbon dioxide in the air. But a University of Houston study found a few surprising results in the air Houstonians breathe day in, day out: mercury and formaldehyde. Although Houston's air quality has improved from previous years, the Texas Air Quality Study-II, a 45-day study conducted in 2006, is the first to provide solid mercury measurements in Houston, according to Barry Lefer and Bernhard Rappenglueck, UH professors of atmospheric science. Formaldehyde has been measured before in Houston's air, but, to the best of my knowledge, mercury has not been measured in Houston," Rappenglueck said. "There is now a significant amount of formaldehyde and mercury in the air here at times."

Scientists know mercury is emitted mostly from coal-burning power plants, such as the one in Sugar Land, but there is additional mercury coming from the area around the Houston Ship Channel and the nearby refineries and petrochemical plants, according to the study. The more than 100 scientists from UH and research institutions across the country who pored over the air quality data are still analyzing the information to identify what industrial processes are producing the mercury. Most of the data were collected from the UH Moody Tower Atmospheric Chemistry Facility, an 18-story building that is operational 24 hours a day, seven days a week, and from data collected from various aircrafts and a National Oceanic Atmospheric Administration ship in the Houston Ship Channel. Although traces of mercury have been found all over the country, the amounts detected varied from double to more than six times what is typically found in other parts of the United States, Lefer said.

"Mercury is toxic and is most detrimental to children and pregnant women and causes developmental abnormalities," Lefer said. "Mercury emissions from coal and other sources are going to be more problematic to reduce, but using cleaner fuels and alternative energy for electricity will reduce the mercury levels in the environment."

The base for embalming fluid, formaldehyde is believed to be the catalyst in the production of ozone, a harmful pollutant that may be primarily emitted from traffic and poorly maintained diesel cars, and secondarily by chemical reactions in the atmosphere. "Primary formaldehyde means it is directly emitted to the atmosphere," Rappenglueck said. "Secondary formaldehyde means that it is chemically formed in the atmosphere from other chemicals."

Formaldehyde emissions from automobile exhaust are directly emitted into the atmosphere, but their contribution is small, Rappenglueck said. Instead, the air quality data suggests there may be a "new" source of primary formaldehyde emissions in Houston. "Once the source of the formaldehyde is identified, it should be possible to figure out how to reduce these emissions," Lefer said. "Formaldehyde is not toxic at these levels, but it is very efficient at producing ozone pollution. We think this is one of the 'missing' links in understanding Houston's ozone

pollution.”

The UH Atmospheric Science group is working on calculations to assess the impact of primary formaldehyde emissions in producing ozone in Houston. They hope to have the results in time for conferences in December and January.

The Texas Air Quality Study-II wasn't all doom and gloom for Houston, though. Houston does have a serious ozone problem, but efforts to fix it are headed in the right direction.

“The bad news is that Houston's ozone levels are above the Environmental Protection Agency's (EPA) standards for 30 to 40 days each year,” Lefer said. “The EPA allows a city to have one to three ‘bad’ ozone days per year. So we are well above this average. But, the good news is that the number of ‘bad’ ozone days each year in Houston is decreasing. In addition, the peak ozone values observed in Houston have also been on a down trend the past six years. We still have a long way to go, though.”