Questions and Answers about

The Lower Rio Grande Valley Transboundary Air Pollution Project

What is the Lower Rio Grande Valley Transboundary Air Pollution Project?

This study was to find out if air pollutants were moving across the border from Mexico into the Lower Rio Grande Valley of Texas (Cameron County) and to see what levels of air pollutants were present. The information also provides a base line against which future levels of air pollutants can be compared to determine if Valley conditions are changing.

Why was this research done?

This research began because of the Valley Community's concerns about the potential health impact of local air pollutants, and the lack of local information about air pollution.

Who is involved in this research?

This study was conducted by the U.S. Environmental Protection Agency (EPA) in conjunction with the Texas Natural Resource Conservation Commission (TNRCC), a state environmental agency. A committee of Valley residents provided input that was incorporated into the design of the study. Products from this research were reviewed by this community committee as well as a scientific committee.

What was done?

The study collected air pollution data and weather data for a year (March 1996-March 1997) at three fixed sites very close to the U.S.-Mexican border. Monitoring was limited to the U.S. side of the border.

What was measured in this research?

The study measured the levels of many air pollutants that are found in man-made activities (like from industry) as well as in natural emissions (like soil dust). Air pollutants analyzed included:

- Fine particulate matter. Industry, incinerators, automobiles and trucks, and other sources can emit tiny particles called "particulate matter." These particles can be inhaled into the lungs and at high enough levels may cause health problems, especially to the elderly and to persons with heart or lung problems. These particles were measured on a daily basis but were also measured every hour in case a very high air pollution event occurred.
- Metals. These chemicals were measured in the particulate matter. Metals include lead which can affect the nervous system.
- Volatile organic compounds (VOCs). These air pollutants are emitted into the air in a variety of ways. Some VOCs are produced as a result of combustion (burning). Combustion sources emissions include automobiles, cooking stoves, space heaters, and power tools such as lawn mowers. VOCs, such as toluene, are also used in solvents. Examples of businesses that may emit VOCs include dry cleaning establishments, automobile repair shops, and shoe repair shops. Some manufacturing processes also produce VOCs. Many VOCs are also hazardous air pollutants; for example, benzene causes cancer.
- Polycyclic aromatic hydrocarbons (PAHs). These air pollutants usually result from combustion processes and, as such, have a number of sources. The most common outdoor source of PAHs is automobile exhaust. Potential indoor sources include smoking, burning wood, and grilling or frying food. PAHs may pose cancer risks.

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What was measured in this research? (continued)

- Pesticides. These chemicals are used in agriculture as herbicides, insecticides, and fungicides. Pesticides are also used for a variety of household purposes, including control of roaches, ants, and flies indoors, for control of weeds and pests in yards and gardens, and for control of fleas and ticks on pets.

How did the study determine whether measured levels of air pollution posed problems?

Outdoor air samples cannot be used by themselves to measure health risks, because risks also depend on factors such as how much time people spend outdoors and whether they are already ill. To gain a general understanding of potential risks, however, this study compared Valley air quality to other "comparative values" where they were available. For example, air pollution levels were compared to values established by federal or state governments to protect human health. These included EPA's National Ambient Air Quality Standards and the Texas Effects Screening Level (ESL). Where such standards were not established, levels were compared to air pollutant levels collected in other geographic areas. In some cases (seven percent of the time) no comparative values were available but because air pollution sources emit many pollutants which have comparative values, this was not a limitation.

What conclusions can be drawn from this work?

This study found that overall levels of air pollution were similar to or lower than other urban and rural areas in Texas and elsewhere. In addition, transport of air pollution across the border did not appear to adversely impact air quality on the U.S. side of the Lower Rio Grande Valley. Southeasterly winds from the Gulf of Mexico were largely responsible for the clean air conditions in the Valley. Few observations of pollutants exceeded comparative data. Of the approximately 2,600 samples taken in this study, the following chemicals were higher than comparative values only once: silver, 2-nitropropane, benzene, methylene chloride, and vinyl acetate. No long-term health effects would be expected from these single cases of high levels. The only chemicals found to be higher than comparative values multiple times were acrolein and methanol; these two pollutants are usually emitted from automobiles. Acrolein and methanol are hard to measure, and it is not clear if these chemicals came from across the border or from Brownsville, Texas. No long-term effects are expected.

Are there any limitations to this study?

A full assessment of possible cross-border movement of air pollution was not possible since air monitoring took place only on the U.S. side of the border. No measurements were taken in Mexico and emissions from air pollution sources throughout the Valley were not measured. Since air monitoring was not conducted at people's homes, this study provides general information about whether air pollution is of health concern in the Valley but cannot be used to precisely estimate health risks.

In addition, this study only looked at air pollution. To fully understand health risks from pollution, other sources would need to be measured, such as drinking water, soil, and crops. This type of additional monitoring was beyond the scope of this Transboundary Project.

How can this study help the Community?

The study provides the Valley Community a better understanding of air quality and cross-border air pollution conditions in the Valley. In addition, the findings of the study may be useful to compare to future levels of air pollution to see how conditions of the Valley are changing.

What further action will be taken?

TNRCC is continuing to monitor air quality in the Valley to assess long-term trends. In terms of resources other than air, TNRCC and the International Boundary & Water Commission - U.S. Section as well as municipal authorities continue to look at water quality in the Lower Rio Grande Valley region.

How do I get more information about this study?

If you would like more information about the Lower Rio Grande Valley Transboundary Air Pollution Project, please call the EPA's representative on this study at 919-541-1865 or the TNRCC's Border Affairs Division at 512-239-3606. A Valley contact for information is the TNRCC's Region 15 Office in Harlingen at 956-425-6010.