

# Assessing the Public Health Implications of the Criteria (NAAQS) Air Pollutants and Hydrogen Sulfide

Midlothian, Texas

December 2012



The Agency for Toxic Substances and Disease Registry (ATSDR) and the Texas Department of State Health Services (DSHS) are conducting an extensive review of environmental health concerns raised by community members in Midlothian, Texas. The goal of this review is to determine if chemical releases from local industrial facilities could or have affected the health of people and animals in the area. The review will consist of four Health Consultations that will evaluate environmental exposures in air and other environmental media (soil, sediment, plants, etc.). Health outcome data and animal issues will be addressed in the last two Health Consultations. The findings from the first Health Consultation (ATSDR, 2012) have been incorporated into the second Health Consultation (Assessing the Public Health Implications of the Criteria (NAAQS) Air Pollutants and Hydrogen Sulfide).

## Were the sulfur dioxide (SO<sub>2</sub>) air levels in Midlothian high enough to cause health effects?

ATSDR found that in the past (1997 – late 2008):

- \* Breathing air contaminated with SO<sub>2</sub> for short periods (5 minutes) could have harmed the health of *sensitive individuals* (e.g., people with asthma).
- \* Individuals functioning at elevated breathing rates (e.g., exercising, working outdoors, gardening, or climbing steps) may have had a higher risk of harmful exposure.
- \* SO<sub>2</sub> air levels would not be expected to have harmed the health of the general population (*non-sensitive individuals*).
- \* Past SO<sub>2</sub> levels were above the current EPA standard but not the one in place at that time.



Reductions in SO<sub>2</sub> levels in Cement Valley have occurred since late 2008. As a result, exposures to both sensitive individuals and the general public are not expected to be harmful. These lower levels may be due to a drop in production at local industries. If production rises to at least its previous levels, harmful exposures could occur in Cement Valley in the future.

No SO<sub>2</sub> data are currently available to evaluate exposures to individuals who live downwind of the Ash Grove Cement and Holcim facilities. However, in the past the SO<sub>2</sub> emissions have been similar to those from TXI that produced harmful exposures in Cement Valley and possibly elsewhere.

## Could breathing the air in Midlothian contaminated with PM<sub>2.5</sub> for many years be harmful to people's health?

ATSDR concludes that, except for a localized area just north of the Gerdau Ameristeel fence line from 1996-1998, breathing air contaminated with PM<sub>2.5</sub> downwind of TXI and Gerdau Ameristeel for one year or more is not likely to have harmed people's health. These estimated PM<sub>2.5</sub> levels were at the upper end of the risk range in several important scientific studies. Short-term potentially harmful levels of PM<sub>2.5</sub> have been infrequent in Midlothian but could result in harmful cardiopulmonary effects, especially in sensitive individuals, but not the general public. These infrequent, short-term, exposures to PM<sub>2.5</sub> have not been above the EPA standard; however, they have been in the range considered by EPA (based on the Air Quality Index) to a concern for sensitive persons.

ATSDR is uncertain about PM<sub>2.5</sub> exposures downwind of Ash Grove and Holcim due to a lack of data and information. In addition, ambient air monitoring data are more limited for the residential neighborhoods in immediate proximity to the cement manufacturing facilities' limestone quarries.

## Were the ozone levels detected in Midlothian harmful to people's health?

Many of the levels of ozone detected in Midlothian since monitoring began in 1997 indicate that *sensitive individuals* have an increased likelihood of experiencing harmful respiratory effects (e.g., breathing discomfort). This is primarily true for active children and adults and people with respiratory diseases, such as asthma. The general population of Midlothian is not expected to experience harmful effects from ozone exposure except on rare occasions when ozone levels reach around 100 parts per billion (ppb) or more.

It should be noted that emissions from industrial sources, mobile sources, and natural sources throughout the Dallas/Fort Worth area and beyond all contribute to the ozone levels found in Midlothian.

**Did exposure to multiple contaminants in the Midlothian air increase someone's chance of adverse health effects?**

ATSDR believes that there is enough information to show that sensitive individuals, especially when these persons are breathing at higher rates (e.g., while exercising, etc.) may have had an increased chance of health effects from multiple air pollutant exposures. However, ATSDR believes the severity of health effects from a mixture exposure is not likely to exceed those discussed for SO<sub>2</sub>, PM<sub>2.5</sub>, or ozone exposure alone.

It is possible, that for past SO<sub>2</sub> exposures, the number of sensitive individuals affected may have been greater when:

- \* Exposures to levels of SO<sub>2</sub> were combined with exposure to ozone, PM<sub>2.5</sub>, or both.
- \* Sufficient levels of contaminants were present during the same time and at the same locations during the warmer months when PM<sub>2.5</sub> and ozone levels are generally the highest.
- \* Multiple exposures occurred for several consecutive days.

**Next Steps**

ATSDR will work with the Texas Commission on Environmental Quality (TCEQ) to address the recommendations of this health consultation and will continue to evaluate any additional data that may become available in relation to these recommendations.

ATSDR and DSHS will educate the community on exposure through the distribution of health education materials specific to exposures to SO<sub>2</sub>, PM<sub>2.5</sub>, and ozone. This will include information on health effects as well as ways to minimize harmful exposures to air pollutants.

ATSDR and DSHS will provide health educational materials specifically for health professionals on air pollution and patient health.

**Are the past and/or present levels of lead detected in the air in Midlothian harmful to children?**

ATSDR believes that exposures to lead in the air from 1993 to 1998 could have harmed the health of children who lived or regularly played in a localized area just north of the Gerdau Ameristeel fence line. The estimated health effect of these exposures could have been a slight lowering of IQ levels (1-2 points) for some children living in this area. These past lead air exposures were not above the EPA standard at the time but were above the current standard.

Since 1998, lead levels in this localized area have greatly decreased. As a result, estimated childhood blood lead levels are below the Centers for Disease Control's (CDC) reference level (currently 5 µg/dL).

In other areas of Midlothian available data does not indicate that the lead levels in air, currently or in the past, have occurred above EPA's current standards.

**Were the levels of carbon monoxide, nitrogen dioxide, or hydrogen sulfide detected in Midlothian harmful to people's health?**

Based on available air monitoring data and other information, the levels of carbon monoxide, nitrogen dioxide, and hydrogen sulfide were found to be below levels considered to be protective of human health by the EPA, the World Health Organization (WHO), or ATSDR.



**For more information:**

If you have questions about this document or ATSDR's ongoing work on the Midlothian facilities, please call ATSDR at 1-800-CDC-INFO (1-800-232-4636) and ask for information about the "Midlothian, Texas evaluations." If you have concerns about your health, you should contact your health care provider.