

# EPA Schools Monitoring Initiative Fact Sheet

## December 2012 Update: Acrolein Monitoring Results

Summary: This document provides an update to EPA's April 2010 information about *acrolein* monitoring outside 40 schools in 16 states. Acrolein is a widespread pollutant that, at elevated concentrations, can irritate your eyes, nose and throat. Children and adults with asthma and allergies may be more sensitive to these effects. Acrolein comes from fires, industries, and things we use every day, such as cars and trucks. It also can form when other pollutants react in the air.

EPA, states and local air quality agencies remain concerned about acrolein in the outdoor air and are working to reduce this pollutant across the country. However, results of a short-term laboratory study conducted in 2010 raised significant questions about the consistency and reliability of acrolein monitoring results. In light of this uncertainty, EPA decided not to use acrolein data in evaluating the potential for health concerns from exposure to air toxics in outdoor air from the initial School Air Toxics Monitoring Project. Instead, EPA determined improvements could be made in the current method for sampling and analyzing acrolein, and decided to implement these improvements in 2011 by re-sampling the air at two schools (Enterprise High School, Enterprise, MS and Temple Elementary School, Diboll, TX) near stationary sources which emit acrolein.

### What We Learned:

- Acrolein is one of the most difficult chemicals to measure in the air, because it is highly reactive. This means it can react easily with other chemicals to form other compounds that complicate laboratory analysis.
- As the schools monitoring project progressed in 2009, some of EPA's state and local partners noticed that different monitors located at the same schools were showing different results. The discrepancies in those results were big enough that EPA agreed they needed to be examined further.
- To check the differences, EPA worked with several state and local air quality agencies to conduct a short-term laboratory study to examine whether monitoring results were affected by the type of canister used to collect the air quality sample or how that canister is cleaned in preparation for sample collection.
- Based on the results of these initial tests, we found:
  - Not using heat to clean canisters may affect acrolein monitoring results (making results somewhat higher); and
  - Results can be affected by the amount of time that passes between the time canisters are prepared to take air quality samples and the time those samples are analyzed
- In addition, when EPA's contract lab and participating state and local air quality labs analyzed samples containing a known level of acrolein, the results varied significantly. EPA conducted additional tests to further understand these results. Based on the results of both the short-term laboratory tests and the past information on variability in acrolein analysis among labs, EPA concluded that additional work was needed to improve the accuracy of acrolein sample collection and acrolein analysis.

### What Improvements has EPA Made to the Method:

The current methodology for the sampling and analysis of acrolein is EPA Compendium Method TO-15. Some variability is allowed in implementing this method, however to decrease bias regarding high or lower than expected acrolein results EPA did the following:

- EPA used a specific type of canister (fused silica lined) which was less likely to allow chemicals to react within the canister. Then each canister was tested for a period of 3 weeks after being cleaned and prior to being used in the field to ensure no positive bias of acrolein (pollutants reacting to create more acrolein).
- Canisters were also spiked with a known concentration of acrolein and tested for acrolein over a 3 week period to quantify determine how much of the acrolein might react and form another compound resulting in less measurable acrolein in the canister or a negative bias.
- Additional quality assurance steps were also employed to ensure the quality of data for the re-monitoring. The result of these improvements yielded high quality data and provided increased confidence in the acrolein measurements.

EPA implemented these improvements when conducting re-sampling at the two schools near stationary sources which emitted acrolein.

### What this Means for Health:

- **Acrolein remains an issue.** The questions raised by the preliminary laboratory tests were not significant enough to lessen our concern regarding levels of acrolein the outdoor air, including in areas around schools.
- **EPA will continue its work to reduce acrolein in the air.** Since 1990, EPA has taken a number of steps to reduce acrolein levels through regulations to reduce smog, and to limit air toxics emissions from industries and mobile sources.

### Next Steps:

- EPA will continue to make improvements to acrolein monitoring and analysis methods as part of our continuing effort to accurately measure levels of this pollutant in the air.
- In addition, we will evaluate promising new technologies for measuring acrolein that may provide accurate data in near real time.

### Questions & Answers

**Q: Why is acrolein hard to measure in the air?**

**A:** Acrolein is a highly reactive chemical compound. Depending on what other chemicals are present, acrolein can react with those chemicals and form other compounds that complicate analysis. Also, other chemical compounds can react to form acrolein, potentially even within canisters used for collecting air quality samples.

**Q: Should I change my child's school because of acrolein?**

**A:** No. While we have not completed monitoring at most schools, recent monitoring data indicate that acrolein is likely elevated in most areas of the country, not just at schools.

**Q: I have questions about asthma. Where can I get help?**

A: Several nonprofit organizations can help you locate asthma care services in your community.

- Allergy and Asthma Network Mothers of Asthmatics (1-800-878-4403; on the Web: [www.aanma.org](http://www.aanma.org))
- American Lung Association (1-800-LUNG USA or 1-800 586-4872; on the Web: [www.lungusa.org](http://www.lungusa.org))
- Asthma and Allergy Foundation of America (1-800-7 ASTHMA or 1-800-727-8462; on the web: [www.aafa.org](http://www.aafa.org))

**Q: Why haven't you made improvements in the monitoring method before?**

A: We have made several improvements, but we need to do more. Enhancements in monitoring technology have improved the accuracy of acrolein monitoring over the last several years. With improved analytical instruments available, EPA in 2006 added acrolein to the list of pollutants measured as part of its National Air Toxics Trends Stations (NATTS). The schools project has further increased scrutiny of acrolein monitoring results, which, in turn, has highlighted areas where we need to make additional improvements.

**Q: How can you ensure the results are accurate?**

A: If the enhancements to the method described have been implemented, we feel we can accurately measure acrolein in the air.

**Q: Why did EPA release acrolein data if they suspected the measurements were not accurate?**

A: We made the 2009 data public out of a commitment to transparency. We will not use the 2009 acrolein data as we evaluate the possible health concerns from air toxics at the monitored schools.

We have determined that the monitoring methods in place at that time did not provide data of sufficient quality for us to evaluate the potential for health concerns from acrolein exposures at individual schools. However, we remain concerned about acrolein, and are therefore working towards improving our measurement of acrolein in the air.

**Where can I find out more about the monitoring at my school?**

Please visit [www.epa.gov/schoolair](http://www.epa.gov/schoolair) .