

**Web Conference Summary
How to Involve Students in Your IAQ Program**

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PARTICIPANTS

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AGENDA

- Welcome and Introductions – Stephanie Lamster, U.S. EPA
- Presentations
 - Shelley Harding, Director of Student Achievement, East Valley School District, Spokane, Washington
 - Shannon Stookey-Flahavin, 7th Grade Science and Math Teacher, East Valley Middle School, Spokane, Washington
 - Shelly Rosenblum, Environmental Engineer//IAQ TFS Coordinator, U.S. EPA Region 9, San Francisco, California
- General Question and Answer Period – All presenters
- Closing Remarks – Stephanie Lamster, U.S. EPA

WELCOME AND INTRODUCTIONS

Stephanie Lamster welcomed participants to the call. She noted that integrating a school's IAQ program into classroom curriculum and involving students in an IAQ program are great ways to empower and educate students while simultaneously improving IAQ. The topic areas covered in IAQ programs range from environmental science, chemistry, statistics, math, and beyond. Many schools across the country have achieved great success by involving students in their IAQ programs.

This Web conference offered three speakers the opportunity to share their experiences involving students in IAQ projects and ideas for developing classroom activities to help students learn about IAQ. Shelley Harding and Shannon Stookey-Flahavin from East Valley School District in Spokane, Washington, are both actively involved with a student group called the Air Quality Controllers who EPA honored with a Special Achievement Award in December 2004. Shelly Rosenblum from EPA Region 9 in San Francisco, California, has developed several products as examples for how staff can integrate IAQ into classroom learning activities.

Shelley Harding

Shelley Harding is the Director of Student Achievement for East Valley School District. For her presentation, she shared how one group of students has made a positive difference in their school district. Indoor air quality impacts the physical health of many students, as well as teachers and staff who assist them in the learning. It also affects the ability of students to learn and adults to teach them, so the journey to attain and maintain healthy indoor air quality is important.

District Superintendent, Dr. Michael Jones, first heard about the *Indoor Air Quality Tools for Schools (IAQ TFS)* Program through the American Association of School Administrators (AASA) who was offering grants to implement the *IAQ TFS* Program. Dr. Jones applied for and received

a grant from AASA to implement the *IAQ TfS* Program. As a participant in this grant project he was motivated to ensure student achievement was not adversely impacted by poor IAQ in the schools. He also wanted to engage students in the work to inform them of IAQ and its potential impacts. He wanted to involve students so they could educate others in the district about no- and low-cost ways to improve air quality in schools.

The East Valley School District was fortunate to be at low risk for poor IAQ. The staff wanted students to be involved in helping to identify proactive steps to maintain good air quality. Ms. Harding believes that making the connection between and among students and staff was best accomplished with students as the leaders. Students have a unique voice and a strong interest in a healthy environment.

As the project administrator Ms. Harding wanted students to identify low- and no-cost ways to improve air quality in the district. She recruited Ms. Stookey-Flahavin to support the project at East Valley Middle School. She worked with the students to use checklists and set up the project design. Students consulted with district staff and local IAQ experts to learn about IAQ and maintenance practices. They conducted an experiment with two vacuums to test the efficiency with which each picked up dust. The students reported their results to maintenance and custodial staff and earned credibility with the maintenance staff. The students were provided with a radon test kit to set up at schools in support of the district's radon testing activities.

Using information they collected from checklists, the students wrote an IAQ manual, which included results from the tests they conducted, a previous audit of the buildings, and their no- or low-cost suggestions for ensuring good air quality in the schools. They presented this information to Ms. Harding and the school's board or directors. Through their work on this project, the students and staff realized that networking is crucial to the survival of any worthwhile project.

Part of the AASA grant provided a stipend for Ms. Stookey-Flahavin, since she spent time after school hours to help students with their research and report preparation. The students' manual was duplicated, prepared in binder format, and provided to each school site so it could be updated periodically with data from new audits. With part of the grant money, the district purchased backpack vacuums. These new vacuums are more efficient than the previously used models.

In the fall of 2004, students and their teachers met with principals, custodial representatives, student leadership groups, and representatives from each school site's adult safety committee and presented the IAQ manual. These meetings provided a forum for communicating the importance of good IAQ and encouraging participation from students. Each student in the group earned high school science lab credit as a benefit of participating in the project.

Ms. Harding noted one of the barriers to any change is a lack of consensus among stakeholder groups. To create consensus among students and staff, the student group shared information on certain factors that affect health in school buildings and suggested changes that would help to create a cleaner and safer indoor environment. These suggestions include removing dusty couches, dusting more frequently, and not spraying perfume and hair spray in the hallways.

In closing, Ms. Harding noted that the student group was presented with a Special Achievement Award at the 2004 *IAQ TfS* Symposium. The spokesperson for the student group, now a

sophomore at East Valley High School, shared part of his story that clearly communicated the value of student participation and ownership in IAQ work.

“I have seen first hand the rippling effect it has when a young person encourages participation and good habits concerning indoor air quality. When I told my mom about my project she was interested to learn what I had learned. Over the next few days she came back from work with questions and comments from other people she had talked to about my project. It was amazing. I had sparked interest in my community. It may seem strange to you to see a young person sincerely pursue a technical, typically adult, boring issue but who better to get involved than the youth. We have creative potential; it only has to be inspired.”

Shannon Stookey-Flahavin

Shannon Stookey-Flahavin, 7th grade Science and Math teacher at East Valley Middle School, is working with a new group of 28 students for the next phase of the project. This project is funded by a grant from the Washington State Department of Health and the Centers for Disease Control and Prevention to address the issues of asthma and IAQ. East Valley School District is one of three districts in the state who received a grant. Participating students, from two middle schools in the district, have committed to providing 40 hours each to the project. The group has one facilitator, as well as a teacher advisor at each school.

As part of the grant-funded project, East Valley is using a computerized absenteeism system that records the reason for each student absence. They are also creating a survey to assess symptoms affecting asthma. The system is also being used to record health room visits, reasons for each visit to the health room, the classroom from which each student is coming, and symptoms. Students are also collecting and storing data on temperature, humidity, carbon monoxide, carbon dioxide, and air particulates from four schools.

The participating students received training on IAQ and are collecting data with \$12,000 worth of IAQ monitoring equipment purchased by the district. Students collected data for two weeks then organized the data. Many guest speakers have visited the group to provide more information about IAQ. These speakers have been impressed with the students' ability and interest to learn about the issue. In addition, school staff have been incredibly impressed with the students' ability to learn about IAQ and their adeptness handling technical IAQ equipment.

Students have also conducted research on IAQ, asthma, and symptoms caused by a building with poor IAQ. They have created a presentation about asthma and IAQ. This student group has met with the first student group to ask questions and learn more about their experiences. They have conducted walkthroughs using the Kit and will present their findings to the school board before the end of the school year.

In closing, Ms. Stookey-Flahavin noted that the data are not yet final. At the time of the Web conference, students had been collecting data for two weeks. They are compiling a cumulative report and organizing the data for the report so it can be useful and easy to access in the future. East Valley School District continues to have great success with involving students in the IAQ project.

Shelly Rosenblum

Shelly Rosenblum is an Environmental Engineer and the *IAQ TfS* Program Coordinator for EPA Region 9 in San Francisco, California.

Getting schools in California to implement *IAQ TFS* has been a great challenge, particularly due to budget issues in the schools. EPA wants to help schools involve students in IAQ projects by blending IAQ into everyday activities and by incorporating IAQ issues into curricula. Such efforts will get students involved and educate teachers and students about IAQ.

Mr. Rosenblum has spoken with teachers across the country and Canada and has learned about different activities involving students. Working with the National Education Association, he has developed a Yahoo listserv (available at <http://groups.yahoo.com/group/StudentandTeacherIAQActivities>) that is dedicated to teachers and other staff working on IAQ issues. This resource allows members (currently about 90) to post messages, download and access files and information on activities for students. Citing one example from the listserv, staff in one school district modified the teacher checklist (from the *IAQ TFS Kit*) and created a math activity for students to evaluate the data collected in their school.

As teachers begin to involve students in IAQ activities, both the students and their teachers will learn about the built environment, where people spend 90 percent of their time. Several factors related to IAQ can become interesting and important topics for science clubs, teachers, and staff to explore.

Schools can use the *IAQ TFS Kit* to develop simple learning tools, such as a comic book. EPA has developed a draft comic book as an example. Students and staff can create an illustrated manual of how to conduct a walkthrough and common IAQ problems that might be discovered during a walkthrough (such as allergens, food, dusty couches, and other sources of indoor pollution). Such a manual with simple illustrations can be appropriate for fourth graders or even as an overview of the issue for school officials.

Mr. Rosenblum has also created a description and outline of a project for middle or high school students to learn about IAQ. EPA has also created a ten-minute presentation and a one-page fact sheet that students can use to learn the basics about IAQ and then share more specific information to school groups and administrators using the presentation slides.

Mr. Rosenblum also suggested an in-school field trip to help students learn about factors affecting the built environment. After the in-school field trip, students can use what they learned to suggest how building occupants can alter their behaviors to create a healthy indoor environment.

In closing, Mr. Rosenblum noted that EPA is developing many resources for students and teachers to learn about IAQ. (The resources that Mr. Rosenblum mentioned during his presentation are available for download from the listserv.) Getting students involved is a start to making changes globally and sharing the messages about the importance of good indoor air quality.

QUESTION AND ANSWER SESSION

Sandy Neville, Building Connections: She attended the 2004 Symposium and encouraged the local district to implement the *IAQ TFS Program*. Her daughter is entering middle school in the fall and she has chemical sensitivity. How do you educate the children that perfume and aftershave is a problem? Are they receptive to the messages? How do you get students and parents to change their perceptions?

Shelly Rosenblum: It is hard to change attitudes. People don't realize that when we add things to the air we're adding it to our bodies. There is no good easy way to change perception. You can open students' eyes to more obvious things that people add to the environment and explain how it affects the air quality and then open their eyes to more specific things, like spraying perfume and air fresheners. Communicate that the less we add to the environment the better. Bringing the message down to the kids' level, such as through the comic book, can help to change behaviors.

Shannon Stookey-Flahavin: East Valley had success with having kids educate each other. Students met with other student leaders to make the environment better by working together. Kids will learn that products such as air fresheners are not good for IAQ and will communicate that message with other students. Having students educate each other is more effective than receiving these messages from adults.

Barbara Spark, EPA Region 9: In East Valley, how much funding was needed for the project and the stipends for the leaders. For the current study, the equipment purchased was pretty expensive. Was this funding provided in the grant or did the district already have this equipment?

Shelley Harding: East Valley was able to provide one small stipend through the AASA grant (which was the first phase of this project). That stipend was similar to that of other East Valley committee stipends.

The current CDC/Washington Department of Health grant is for about \$45,000. This funding was first used to purchase computers for clinics. East Valley trained secretarial staff, clinicians, and nurses on how to use the system (which is connected to the state student data system) to record why students were sick or why they were visiting the clinic. The second part of the grant was used to establish a model air quality monitoring system and process. The district purchased monitoring equipment for the students to use and also paid stipends for three staff. Ms. Harding also worked on this project as part of her established duties of improving student achievement.

In public education, creative projects are often grant-dependent. This project at East Valley is no exception. To date, no district dollars have been spent on these projects (other than time for Ms. Harding and the maintenance staff).

Barbara Spark: The holy grail is to figure out how to continue doing these things without needing special funding. That needs institutionalization, and you're essentially piloting these projects.

Shelley Harding: Funding is always more forthcoming when stakeholders are getting their needs satisfied. East Valley wrote and implemented the project in a way that created a broad base of support to institutionalize these types of projects.

Greta Eckhardt, HMFH Architects, Inc. (text question): Have any of the school programs dealt with the use of pesticides that can become airborne and cause IAQ issues? This might tie in nicely with understanding ecology in a biology class.

Shelly Rosenblum: Integrated pest management (IPM) is a major part of indoor air quality and the IAQ TFS Program. EPA does have a well-developed IPM program that should be used by schools. More information about EPA's IPM program may be found at:

<http://www.epa.gov/pesticides/ipm>.

Michael Casanova, Lee County (FL) Facilities Management: Question for Shelley Harding. Do you have a list of equipment the students are using?

Shelley Harding: We are using a Q track system that is an integrated instrument measuring air quality in four parameters. For the particulate collector, the district is using a Met 1 HHPC 6.6 handheld system. The systems are easy to use and collect massive amounts of data quickly.

Shelly Rosenblum: The Q track system is an integrated measuring instrument, usually handheld, that measures carbon dioxide, carbon monoxide, temperature, and relative humidity. This system costs about \$4,000 and includes calibration kit and software for downloading and printing data on the four parameters.

Joan Phillips-Trimmer, Chatham County Public Health Department (text question): Someone mentioned that they were putting together a computerized system for recording absences. Is this a Windows-based database? Has it ever been tested? Could I see it to see if we could duplicate it in our school system? Also, I would like a copy of your application for youth participants?

Shelley Harding: Shannon just put together a small document that describes to parents the students' involvement and to get their approval for students to continue participating throughout the project's duration. She would be happy to share that with you.

To record absences, East Valley uses a system called Skyward. Data entry and reports include absences and a clinic visit codes for why students are absent and why they visit the clinic. As a result of this grant, East Valley's data will be compiled with information from other districts in the state. To the extent possible, models will be developed for where problems are likely to occur in buildings, why students miss school, and what schools can do to mitigate problems before they occur.

Julie Linderman, California Department of Health (text question): Have the programs recorded impact data (i.e., measurable improvement in IAQ at schools)?

Shannon Stookey-Flahavin: East Valley's schools are already very healthy, so improvements are difficult to measure. The students' efforts have convinced school administrators and staff that maintenance staff must have adequate time to conduct activities that insure good IAQ, such as regular vacuuming and dusting. The greatest improvements at East Valley include awareness of IAQ and its effects. Building occupants are also making more of an effort to improve the environment, such as removing dusty couches, using better vacuums, and removing clutter. However, East Valley does not have data to indicate that their buildings are healthier than they were before the project.

Shelly Rosenblum: When you are involved in a program, you see the obvious improvements. However, trying to document measurable data doesn't parallel the experience of building occupants who have experienced improvements. The lack of telling data is a great frustration to many involved with IAQ programs.

Pat O'Donnell, Milwaukee Public Schools: What do you plan on doing with your absentee information and how are you going to correlate that to some of your measurements? Do you have any preliminary information that you've gathered from this absenteeism information?

Shelley Harding: The preliminary information is interesting and includes some unexpected implications. So far the data indicate a vast difference among schools and classrooms in how many children come to the clinic and when they visit. East Valley has not yet developed any protocols for correlating absentee data with student achievement.

Pat Shafer, Lincoln Education Association: Shannon, is it possible to get from your district the details of the types of data related to asthma you collected, how you collected it, and analyzed it?

Shannon Stookey-Flahavin: East Valley used two different machines to collect the data but have not yet mastered the organization piece. At the time of the Web conference, students were collecting baseline measurements and had collected the health plans of students with asthma. When these students are absent or visit the clinic during the school day, students collect that information.

CLOSING REMARKS

Stephanie thanked participants and Shelley Harding, Shannon Stookey-Flahavin, and Shelly Rosenblum for sharing their experiences and ideas for how to involve students in an IAQ project and the benefits of working with students on an IAQ project. She hopes that everyone has been inspired by the discussion about involving students and hopefully the resources mentioned by Shelly Rosenblum will help participants to get started with implementing student IAQ projects in their schools.