Implementing *IAQ TfS*:
Proper Building Maintenance for Summer Months
Web Conference Summary
July 14, 2004

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AGENDA

- Welcome and Introductions – Robin Anderson, U.S. EPA
- Presentations
  - Odette Mina – Director of Occupational Health and Safety Services at Spotts, Stevens and McCoy, Inc.
  - Vickie Angell – Program Management Analyst and Radon Grants Project Officer for U.S. EPA Region 7
- General Questions and Answer Period – All presenters
- Closing Remarks – Robin Anderson, U.S. EPA

SUMMARY

Robin Anderson welcomed guests, discussed the goals of these Web conferences, and provided an overview of the two previous Web conferences. The February Web conference introduced this technology and sought input from participants on the topics they would like to discuss during future calls. During the April Web conference, several guest speakers shared their experiences in resolving the disconnect between school districts/administration and school personnel.

For this Web conference, the two guest speakers graciously agreed to share their experiences helping schools to maintain good IAQ during the summer months.

Odette Mina

Odette Mina is currently Director of Occupational Health and Safety Services for Spotts, Stevens and McCoy, Inc., a 72 year-old consulting engineering firm. Ms. Mina has extensive experience working with Pennsylvania schools and overseeing hundreds of indoor air quality investigations and sampling, working with school administrators, teachers and teachers unions, as well as physicians to identify factors and building problems contributing to occupant discomfort and IAQ-related complaints. In addition, she has managed mold remediation projects that include performing assessments, preparing remediation specifications, overseeing contractors, and performing final inspections and clearance testing. Ms. Mina's primary focus is to educate schools on the benefits of developing an indoor air quality management program. IAQ Management Programs are designed to improve the air quality through the process of identifying and eliminating factors that negatively impact the air quality, developing policies and procedures for all factors that affect the air quality (e.g., construction in occupied buildings), as well as development of standardized operating procedures for operation, cleaning, and maintenance of a school building and ventilation system during all seasons. Ms. Mina, a member of the American Industrial Hygiene Association (AIHA) has twenty years' experience in the field of health and safety. She holds a Bachelor Degree in Chemistry and a Master in Business Administration.

The following is a summary of Ms. Mina's presentation:

> The operation and maintenance of school buildings over the summer months effects IAQ throughout the school year. Frequently asked questions about IAQ include: How to get started? How to get schools ready for upcoming school year? How to operate HVAC systems in the summer months? What type of cleaning and maintenance is necessary? How to evaluate resources to accomplish tasks? How to prioritize tasks to accomplish what is necessary? Does staff have proper training?
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> The approach to summer building maintenance requires different considerations for existing

buildings and buildings undergoing renovations (or new buildings). For existing buildings, the key is to identify optimum operating settings for the HVAC system. This will control humidity and moisture throughout the summer. Many schools struggle with mold problems over the summer months, and these problems are directly related to operation and maintenance of the HVAC system.

Each school should define and develop standard operating procedures for cleaning the HVAC system. Ms. Mina recommends a team approach to accomplish consistency in maintenance procedures. For this, the team must be properly trained, and the staff must be prepared for proper cleaning of the system. This includes taking the system apart, vacuuming, steam cleaning, etc., as appropriate.

Another important method for improving IAQ is to establish cleaning procedures. This includes selecting environmentally friendly cleaning chemicals (i.e., products that will not adversely affect IAQ), conducting a review of cleaning products, and establishing methods for evaluating new products.

In order to prepare a building for the upcoming school year, school districts must establish standardized cleaning and maintenance procedures at the district level. In addition, custodial and maintenance staff in all buildings must receive training. Each school must adopt and implement proper cleaning procedures and be sure that adequate resources are available to complete the tasks outlined in the plan.

In order to prepare new and renovated school buildings for the upcoming school year, procedures must be in place to ensure that no problems arise during construction. In particular, schools must:

- Assess construction activities.
- Ensure renovation/new construction is contained in areas that are not occupied.
- Evaluate material safety data sheets (MSDS) for products and new building materials (i.e., look for green label products) and understand products used. Have this information available if/when complaints may be received during the school year.
- Consider the need for testing/ventilation with products that may off-gas.
- Notify contractors that visual inspections will be completed with IAQ in mind. (These inspections may be completed with internal or third-party personnel.)
- Protect the HVAC system during construction and renovation activities. (If properly protected, costly problems and cleanups may be avoided.)
- Be sure construction area is cleaned of all dust and excess construction products before area is occupied.

Schools must remember that sampling and monitoring can provide information about any glaring problems, but it is not a panacea.

Ms. Mina mentioned that the most common problem in schools with which she works is moisture/humidity control. Humidity control is the key to eliminating and preventing mold. A key to maintaining good IAQ is humidity control and proper operation and maintenance of the school's HVAC system. Since every system and school is different, each school must determine their own criteria for operation and maintenance by evaluating the system. Each school must also determine procedures to control humidity and to protect the building from mold problems. Humidistats and dehumidifiers can help to maintain optimum operating conditions for controlling humidity. Often schools turn off the HVAC system during summer months to conserve energy. However, such a situation could lead to mold problems for which cleanup tends to be costly.

In addition, schools should be mindful of cleaning activities that may require adjustments to HVAC systems, especially wet vacuuming carpets. When carpets are cleaned, the HVAC system must be

running, along with additional fans, ventilation, and dehumidifiers as necessary to maintain humidity below 60 percent.

In summary, schools should take proactive measures to improve and maintain good IAQ during the summer months. This includes protecting the entire school from mold and preparing the building for the upcoming school year with standardized cleaning and maintenance procedures. In order to be effective, custodial and maintenance staff must understand the building and its systems. Schools must work to identify optimum parameters for operating systems during every season. This will help to minimize IAQ problems and complaints.

Prior to the summer months, schools should identify cleaning and maintenance tasks and determine the available resources for completing these tasks (i.e., ensure that adequate funding is available to complete all identified tasks). Schools should identify methods for addressing problems cost-effectively. In some instances, this may include hiring an outside professional/expert for whom references and credentials have been checked. Schools should also train each member of the custodial and maintenance staff to ensure that everyone is aware of proper procedures.

Vickie Angell

Vickie Angell celebrates 31 years of federal service this year, having spent the last 15 years with EPA's Region 7 in Kansas City, Kansas. She joined the Indoor Air Program in September 1998, as a Program Management Analyst and Radon Grants Project Officer. She has been a leader in children's health issues by coordinating and developing creative approaches to outreach and by supporting other regional programs' activities. She has been recognized for her innovative ideas, which include the development of a Regional Outreach Strategy, regional partners listserve, Iowa Healthy Schools Initiative, Regional Health Department Initiative, kids Web page resource card, EPA Region 7 Indoor Air Program Branch business card resource, and the Summer Tips Checklist. Ms. Angell also represents her division on various workgroups and volunteers at Earth Day observances and various community projects.

A summary of Ms. Angell's presentation follows:

Ms. Angell created a Summer Tips Checklist (in the form of a magnet) in the Fall of 2003. This idea arose as she was searching for new and innovative approaches to outreach. She chose to focus on summer tips because this is a good time to establish and reevaluate cleaning and maintenance practices. During the school year, facilities staff tend to be bombarded with requests and small daily emergencies. This hectic daily routine does not lend itself to the practice of planning or thinking/acting proactively. When school is not in session (i.e., during the summer months), schools generally have more time for planning and considering alternatives to potential problem areas. Many schools use this time to think proactively and develop and implement strategies that will result in good IAQ when school opens in the Fall.

Ms. Angell and her colleagues often promote the *IAQ TfS* Program to school nurses, teachers, and, occasionally, principals. With the development of the Summer Tips magnet, they took a new approach by targeting building maintenance personnel. These magnets were developed in the Fall of 2003 and were mailed to all Region 7 school building managers in April (before school ended for the summer). Region 7 includes Iowa, Kansas, Missouri, and Nebraska.

EPA is always looking for new ways to promote its *IAQ TfS* Program. They often receive an influx of complaint calls when school opens. These complaints include health problems, odors, student respiratory problems, and off-gassing. The problems can often be traced to improper maintenance and cleaning practices, as well as poor ventilation. Therefore, Ms. Angell developed the Summer

Tips checklist and focused on these areas for which complaints were most often received. Ms. Angell chose to place this information on a magnet that will be seen or handled repeatedly. The magnet serves as a visual reminder of proper maintenance procedures for building maintenance staff. It also reminds them of the *IAQ TfS* Program. The attached pdf file contains the Summer Tips checklist.

For additional information or to receive a copy of the Summer Tips magnet, contact Vickie Angell at angell.vickie@epa.gov. To receive a copy of the Summer Tips magnet, be sure to include your mailing address.

See the attached PowerPoint file for additional detail about the information presented by EPA and the guest speakers.

EPA Resources

Asthma Management in Schools: www.epa.gov/iaq/schools/asthma/index.html
Information on developing an asthma management plan in schools; part of the *IAQ TfS* Kit.

Asthma Research Strategy: www.epa.gov/ord/htm/researchstrategies.htm#rs02
Copies of EPA draft and completed research strategies and plans for IAQ and other programs.

Chalk Alert: www.epa.gov/pesticides/health/illegalproducts/chalk.htm
Information on a toxic insecticide chalk that looks like ordinary chalk.

Energy Star: www.energystar.gov
Energy efficiency information for schools, other buildings, and products.

Environmentally Preferred Cleaning Products: www.epa.gov/oppt/epp/cleaners/select
Contains lists of environmentally preferred products.

Healthy School Environments Web Portal: http://cfpub.epa.gov/schools/index.cfm
Contains a wide array of school-related references and information; best and most inclusive of the references listed.

Indoor Air Quality Design Tools for Schools: www.epa.gov/iaq/schooldesign/
Guidance for IAQ in design of renovations and new schools to ensure high performance learning.

Indoor Air Quality Building Education and Assessment Model:
www.epa.gov/iaq/largebldgs/ibeam_page.htm
Designed for large commercial buildings, but EPA is working to include school-specific information in the upgrade.

Mercury: State School Programs: www.epa.gov/epaoswer/hazwaste/mercury/school.htm
Most state programs are enacted through legislation, but some have alternative programs.

Mold Remediation in Schools and Commercial Buildings:
www.epa.gov/mold/mold_remediation.html
Guidance for cleaning mold in schools.

Office of Children's Health Protection: http://yosemite.epa.gov/ochp/ochpweb.nsf

Information on environmental risks to children.

Pest Control in Schools: www.epa.gov/pesticides/ipm/brochure
Information on establishing an integrated pest management program.

Radon in Schools: www.epa.gov/iaq/radon/pubs/schoolrn.html
Information on radon testing.

Safe Drinking Water: www.epa.gov/safewater/kids/index.html
Information about children and how they are affected by drinking water standards.

Sunwise School Program: www.epa.gov/sunwise
Teaches how to protect students from overexposure to the sun and UV rays.

Tools for Schools Action Kit: www.epa.gov/iaq/schools/tools4s2.html

To obtain copies of EPA resource materials, contact the National Service Center for Environmental Publications at www.epa.gov/ncepihom/ordering.htm or 1-800-490-9198 or 513-489-8190. An operator is on duty Monday through Friday from 7:30 am until 5:30 pm EST.

Other Resources
Mercury in Schools: www.mercuryinschools.uwex.edu/
EPA-funded project developed and maintained by the University of Wisconsin.

National Pesticides Information Center: www.npic.orst.edu/
A clearinghouse of information funded by EPA and run by Oregon State University.

American Lung Association: www.lungusa.org/
A significant partner for addressing asthma issues; runs the Open Airways for Schools program.

Centers for Disease Control & Prevention: www.cdc.gov/
Includes new reports and information on health-related issues.

Cleaning & Maintenance Management Online: www.cmmonline.com
Information on environmental issues, best practices, cleaning and maintenance.

National Education Association: www.nea.org
One of EPA's partners in education.

Occupational Safety & Health Administration: www.osha.gov
Health and safety standards for the workplace.

Question and Answer Session

During the presentations, seminar participants were able to ask questions of the presenters online. Following the presentations, some of the questions were addressed by the guest speakers. A summary of this information is presented below. Additional questions are also addressed in this summary.

Laurie Walters: How can we determine what cleaning chemicals are environmentally friendly? Does someone have a list?

See Vickie Angell's and Odette Mina's presentation (attached) and summary (above) for information about environmentally preferred cleaning products.

A school may not need to discontinue use of previously purchased cleaning products. First, review the MSDS to determine if the product will pose a problem for IAQ. When using any cleaning products, ventilation is the key to reducing IAQ-related complaints and problems.

Theresa Spurling-Wood: How can I get the school's administration to be involved in TfS without them feeling they are going to be responsible should there be a legal complication?

This was the topic of the April Web conference. The summary of that conference provides additional information, and it was sent to everyone on our distribution list. If you would like a copy of this summary, please send a request to IAQTraining@cadmusgroup.com.

Theresa Spurling-Wood: How can I print the slides?
Kim Luzius: Can I get a copy of the PowerPoint presentation?

A file containing the presentation is included with this summary.

Shelly Rosenblum: What kind of sampling and monitoring was the speaker referring to? What does that cost? What contaminants are being evaluated?

For most construction-related activities, sampling should focus on the most common contaminants (i.e., VOCs, particulates, humidity, formaldehyde, etc.). Direct-read equipment is the best way to ensure compliance with standards (i.e., state standards and ASHRAE recommendations). This equipment can take readings in all areas (both in the construction areas and in other areas) and provide immediate results. Odette Mina suggested focusing on typical contaminants and testing directly whenever possible (because laboratory analysis is costly and limited). Some laboratory work may be necessary if no direct-read equipment is available for a particular contaminant.

Shelly Rosenblum: As a professional cleaner, what kind of flooring is easiest and cheapest to clean?

Depending on the facility, the best flooring will vary. Carpeting is not necessarily costly to clean and maintain. However, carpet cleaning is time consuming and must be done properly.

The upcoming Fifth Annual *IAQ TfS* Symposium (December 2-4, 2004, in Washington, DC) will have a session dedicated to flooring choices. For more information or to register, visit http://www.iaqsymposium.com/.

Jane Laping: How do we determine optimum temperature and humidity levels for unoccupied buildings over the summer? We have very hot and humid summers in Houston, Texas.

As a rule of thumb, buildings should be maintained at 68 to 75 degrees Fahrenheit with 30 to 60 percent humidity. Dehumidifiers can help to control humidity. If outdoor air is not humid, opening windows may help to circulate air and maintain optimal temperature and humidity.

Shelly Rosenblum: Do you have guidance for hiring a professional?

When hiring consultants or other outside professionals, be sure to look at and verify credentials and to ask questions. Some examples include: educational background, experience in schools, number and variety of projects related to IAQ, nature of past projects, methods for conducting investigations, sampling methods, procedures for conducting visual inspections, approach to proactive evaluations. In addition, be sure to check references of previous clients to determine if others were satisfied with the work.

Theresa Spurling-Wood: Can we get a list of everyone in the meeting?

A list of attendees is included at the beginning of this summary.

Shelly Rosenblum: What are examples of cleaning fiascos you've seen (e.g., moisture left in carpeting producing mold, etc.)?

One of the biggest fiascos Ms. Mina has seen was related to unit ventilators. Because the school was not aware that routine cleaning and maintenance was necessary, this became a significant cleanup project in a fairly large district. After the district received several complaints, they opened the unit ventilators and discovered mold. Though the clean up required significant time and expense, a routine cleaning and maintenance plan would have prevented the problem.

Another common problem occurs when schools clean their carpets, do not run the ventilation system, then close the building for the summer. This often causes mold problems that are not discovered until the buildings are reopened in the fall. To avoid these types of problems, the ventilation and HVAC systems must be operated to maintain proper humidity levels.

Shelly Rosenblum: Do you recommend dehumidifiers after mopping and wet-vacuuming or is constant outside airflow better?

Dehumidifiers can help to control humidity. If outdoor air is not humid, opening windows may help to circulate air and maintain optimal temperature and humidity.

Dan Tranter: What specific characteristics or red flags do you look for on a chemical's MSDS or other product spec descriptions?

Look first and foremost for VOCs because they are typically found in cleaning products. Also look for health effects listings. This is necessary because some MSDS do not specify ingredients in order to protect trade secrets. If this is to change, users must contact manufacturers to let them know that product ingredient information is necessary. Information on product ingredients helps to identify products that may cause problems, particularly with sensitive populations.

Shelly Rosenblum: Did you say that some of the cleaners contain formaldehyde? Which cleaners are those?

When Ms. Mina mentioned formaldehyde during her presentation, she was not referring to cleaners. Instead, she mentioned formaldehyde because many new materials brought into schools for renovations (e.g., furniture, carpeting, etc.) contain formaldehyde. Consequently, many of these products off-gas formaldehyde. With proper ventilation, the formaldehyde will dissipate.

Alex Bako: Are you aware of any state legislation that requires periodic testing or IAQ monitoring in public schools?

Ms. Mina is not aware of any such legislation. However, her work is primarily in Pennsylvania where she is most familiar with regulations. The primary focus of monitoring is evaluating a building to identify any factors that are causing or may potentially cause an IAQ problem. Testing is a small portion of this diagnostic work, and it rarely provides information about the source of a problem. Instead, testing is primarily a source of information for teachers and staff members because they often are curious about the data. However, Ms. Mina is not aware of any requirements to test. Schools should use their judgment to determine if (and how much) testing is necessary. For additional information on state legislation for IAQ monitoring in schools, please contact Ms. Tobie Bernstein of the Environmental Law Institute (ELI) at Bernstein@eli.org.

Theresa Spurling-Wood: Does the EPA have the MSDS ratings/interpretation for someone to be able to use MSDS with a clear understanding of what is on the label?

Unfortunately, EPA does not have this information available.

Vernesia Wilson: How can school districts get information on how much of a particular cleaning solution, chemical, etc. is safe to use around students and staff?

Ms. Mina suggests focusing on the ingredients and MSDS instead of quantities. Look specifically for low VOCs and the absence of ingredients with known health effects. Each person reacts differently to exposure, and some health conditions may aggravate responses. Therefore, a set quantity is difficult to determine. Instead, choose products that will minimize potential problems.

Susan Womble (EPA School Team Coach & IAQ Expert): Please clarify response about routine testing and mold testing.

Ms. Mina does not recommend routine testing. Each situation will dictate if testing is necessary. For instance, do not sample for mold if the problem and extent is clear without testing. However, testing may be necessary if hidden mold is suspected or if the client requests testing to have data to share with staff. Staff often want to know levels of contaminants, exposure prior to remediation, and the nature of exposure. Testing will help to answer these questions for the staff.

Once contamination and effected areas are identified, schools should bring in a contractor to complete remedial activities. Ms. Mina recommends that a third party provide oversight and ensure that proper remediation procedures are followed. When cleanup work is complete, the third party should conduct clearance testing to ensure that the remedial action was effective.

Ms. Mina recommends using direct-read equipment for VOCs and other common contaminants, especially if the renovation is occurring in an occupied building. When completed in conjunction with visual inspections, direct testing serves as an assurance to parents and staff. Additional measures include ensuring proper containment of construction areas (i.e., no cross contamination is occurring) and verifying that contractors are adhering to protocol.

Jane Laping: How can we get a list of the websites from the second presentation?

See above and see the attached Power Point presentation.

Theresa Spurling-Wood: It is difficult to have major downtime on mechanical equipment especially in the large districts with summer school sessions in Florida. Sometimes our best time for maintenance tasks is not summer, but winter break or spring break.

It is important to recognize that cleaning and maintaining mechanical equipment and ventilation systems is necessary. Every district should train their maintenance staff on routine inspections of their systems in order to establish the appropriate schedule and frequency for cleaning. Cleaning can take place at any time during the year, not necessarily over the summer months. The presentation referred to cleaning schedules that are typically followed in the Northeast. These schedules may not be suitable in other areas, such as Florida.

Shelly Rosenblum: How long should outside ventilation be left on after wet-vacuuming? Do you recommend that schools purchase humidity meters or other test equipment? Do you have a list of recommended equipment that you can provide to school officials?

Unfortunately, there is no specific schedule or recommendation for how long ventilation should run after wet vacuuming. However, areas must dry completely to avoid the potential for mold growth. In addition, temperature and humidity levels should be maintained in accordance with the ASHRAE standard to eliminate the potential for mold growth. Humidity meters would be helpful.

Cristina Schulingkamp: When is testing a school for mold worthwhile? necessary?

According to EPA's *Mold Remediation in Schools and Commercial Buildings* (http://www.epa.gov/iaq/molds/index.html), investigation and evaluation may be necessary if: the building has existing moisture problems; building materials have been wet for more than 48 hours; the building has hidden sources of water; the humidity is too high; building occupants report musty or moldy odors; building occupants report health problems; building materials or furnishings are

visibly damaged.

If visible mold growth is present, sampling is not necessary. In some situations sampling should be included as part of a site evaluation. These situations include cases that involved litigation, instances where the source of mold is unclear and when health concerns are a problem.

Additional information on this topic may be found in the American Conference of Governmental Industrial Hygienists (ACGIH) book called *Bioaerosols: Assessment and Control* (available at http://www.acgih.org/store/ProductDetail.cfm?id=349).

Shelly Rosenblum: Do you have any specific cleaning protocols that school maintenance personnel can use? Do you have protocols for cleaning specific kinds of surfaces or materials?

For cleaning protocols, school maintenance personnel should refer to the Coordiantors' Guide of the *Indoor Air Quality Tools for Schools* Kit. This guide is provides good housekeeping practices that school maintenance personnel will find helpful.

Kim Luzius: I was not able to get Vickie's email before the slide changed. Can you send it to me?

Vickie Angell's e-mail address is Angell.Vickie@epa.gov.

Eileen Senn: Does EPA have model protocols or standard operating procedures for schools during the summer months and for re-opening schools?

Please refer to the Tools for Schools Kit for good housekeeping practices to be administered throughout the year. EPA believes that regular application of these recommendations will safeguard against unique indoor air qualities problems that may arise during the summer months.

Cristina Schulingkamp: If a school has a mold problem and wishes to test for mold is there one test that provides valuable information at low cost?

If a school is attempting to determine if a substance is mold or soot, then an inexpensive tape sample can be examined under a microscope. If mold (or what is suspected to be mold) is visible, swab samples can be collected to confirm the presence, concentration, and type of mold. To determine airborne contamination, spore trap air sampling is a good way to screen. These samples can be analyzed in 24 hours to provide spore counts and predominant species. Other useful testing/sampling is usually much more costly.

EPA's *Mold Remediation in Schools and Commercial Buildings* (http://www.epa.gov/iaq/molds/index.html) suggests that sampling should be conducted by professionals with specific experience in designing mold sampling protocols, sampling methods, and interpretation of results. Sample analysis should follow analytical methods recommended by the American Industrial Hygiene Association, the American Conference of Governmental Industrial Hygienists, or other professional guidelines. Types of samples include air samples (a snapshot of conditions at the point the sample is taken), surface samples, bulk samples (i.e., chunks of carpeting, insulation, wall board, etc.), and water samples from drain pans or cooling towers.

Shelly Rosenblum: Is there a Cleaning Industry Organization that can provide additional guidance?

You may find additional helpful information from the National Air Duct Cleaning Association, the Carpet and Rug Institute, and the Ashkin Group for green cleaning practices.

Dan Tranter: What do you think of Green Seal certified cleaning and maintenance products?

Currently, several certification programs claim to identify and promote products and services that

minimize negative outcomes to the environment and to the public. The quality and content of these programs vary. For example, some programs certify a product based on the ability to recycle or to minimize a product's impact on ozone depletion but do not consider IAQ issues. Some programs may effectively limit toxicity of product content, but might not test emissions under normal use conditions. EPA's Indoor Environments Division has not specifically assessed Green Seal or similar programs for their effectiveness or adequacy with regard to IAQ and related health issues.

Generally, preferable cleaning and maintenance products contain chemicals with low known toxicity and emit low levels of contaminants into the air under common use scenarios. However, these selection considerations should be used in conjunction with other important individual factors such as how often the product will be used, time and exposure factors, how the product will be used, whether it will be used in occupied or unoccupied spaces, the manufacturer's use instructions, etc. Although Green Seal and other similar programs may be helpful to consumers in making product choices, EPA recommends that consumers investigate any program with respect to their individual needs. In doing so, consider factors such as how and what product impacts are included in the certification (e.g., recycling ability, indoor emissions, toxicity, etc.) and how well the certification test methods fit your needs. Using a product certification program as the only selection factor in choosing a product should be done with caution.

Alex Bako: To what extent can in-house maintenance staff be used to clean mold contamination?

For small cleanups, in-house maintenance staff may conduct the cleanup activities if they are properly trained. EPA's *Mold Remediation in Schools and Commercial Buildings* (http://www.epa.gov/iaq/molds/index.html) details guidelines for remediating building materials with mold growth. The document also details methods for responding to water damage to prevent mold growth.

Eileen Senn: Do experts think there can ever be such a thing as a Permissible Exposure Limits for mold? Do EPA experts believe that the concept of Permissible Exposure Limits for mold is viable? Personally, I do not since health effects vary so much from person to person and mold levels vary so much from day to day and place to place.

A PEL is currently not feasible and is not likely to be crafted in the future.

Theresa Spurling-Wood: Does the EPA have a guideline for the health effects from the mycotoxins from mold?

EPA does not have a guideline or acceptable level for the health effects from mycotoxins. However, research on mycotoxins is ongoing. For additional information on mycotoxins, see a new report from the National Academy of Sciences (NAS) called *Damp Indoor Spaces and Health* (http://books.nap.edu/catalog/11011.html).

Pages 40-42 of EPA's *Mold Remediation in Schools and Commercial Buildings* (http://www.epa.gov/iaq/molds/index.html) discuss potential health effects of exposure (especially through inhalation) to molds and mycotoxins. These potential health effects may include allergic reactions, asthma, hypersensitivity pneumonitis, irritant effects, opportunistic infections, or other immunological effects.

Theresa Spurling-Wood: I want to thank you for this conference. It has been a wonderful experience.

CLOSING REMARKS

Robin Anderson thanked Odette Mina and Vickie Angell for their enlightening and interesting presentations. The next *IAQ TfS* Web conference will be held in September. Several teachers will share their experiences in opening their classrooms with good IAQ.

ATTACHMENTS:
Presentation
Summer Tips Checklist