INDOOR AIR QUALITY WORKSHOP FOR STATE AND LOCAL OFFICIALS/2000

Meeting Report

Environmental Law Institute
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Indoor Air Quality Workshop for State and Local Officials/2000

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I. Introduction

On March 24 and 25, 2000, the Environmental Law Institute (ELI) convened a workshop for state and local indoor air quality (IAQ) officials from around the United States. This was the second such workshop convened by ELI; the first took place 18 months earlier, in October 1998. This workshop, as well as the first meeting, was sponsored by the U.S. Environmental Protection Agency's Indoor Environments Division.

Officials from 24 states and 6 local (county/city) governments participated in the workshop, along with representatives from the U.S. Department of Housing and Urban Development (HUD), the Centers for Disease Control and Prevention (CDC), and three offices within the U.S. EPA. In addition, the U.S. Green Building Council participated in a workshop session on incorporating indoor air quality issues into green building activities.

The central purpose of the meeting was to provide an opportunity for officials from around the country to share ideas, questions and strategies on building sustainable indoor air quality programs. It is evident from the discussions at the meeting that IAQ programs continue to evolve, and to serve as the "front lines" for addressing indoor environmental problems with creativity and dedication. Programs share many institutional challenges – particularly with respect to obtaining adequate financial resources – and focus on many of the same key IAQ problems. These areas of common concern were the basis for the workshop sessions, during which participants presented models for reducing risk, ideas for leveraging resources, and opportunities for expanding partnerships.

This summary aims to capture the range of ideas presented at the meeting and to describe the key themes that were interwoven throughout the two-day meeting. Section II presents the overarching themes of the workshop, while Section III highlights the presentations and discussions from each session. Finally, Section IV describes the recommendations made by workshop participants for continuing the collaboration and communication among programs established at the meeting.

II. Overarching Themes

Many of the themes that were sounded at the first meeting in October 1998, were again at the core of the workshop discussions and presentations. *Coordination and communication* among the various agencies that address IAQ from different institutional perspectives is still an important goal, given the fragmentation of authority and programs in the field of indoor air quality. The development of *new partnerships* to leverage resources and increase the audiences for risk communication also continues to be a central aim of IAQ programs.

The following themes capture some of the principal issues discussed at the meeting and reflect the direction in which many IAQ programs are moving.

Increasing the focus on asthma, school IAQ and mold. While IAQ programs vary in their scope and specific activities, many programs have increased their focus on three inter-related, yet distinct areas: reducing indoor triggers of asthma; improving indoor air quality in schools; and reducing exposure to mold contamination. This intensification of activity in recent years is due to a number of factors, including political support and leadership on the issues at the federal, state and local levels; greater awareness of the problems; and development and dissemination of information and tools to address the problems. Although the need for financial resources continues to pose a considerable challenge, IAQ programs have taken advantage of federal funding programs at EPA, HUD and CDC and will continue to do so as those programs evolve.

Putting IAQ in the broader public health context. Because indoor air quality is a multi-faceted field, great possibilities exist to link IAQ with other related issues, thereby opening new doors for creating partnerships and establishing new initiatives. Asthma provides one focal point for such efforts. In addition, emerging areas such as green buildings, urban air toxics and safe drinking water present new avenues for advancing indoor air quality.

Utilizing a diversity of approaches. A number of new IAQ laws have been enacted in recent years – particularly IAQ in schools – and new legislative measures are likely to be considered in the coming years. However, indoor air quality continues to be a largely non-regulatory field, and programs are making effective use of a variety of strategies for changing behavior in this area – *e.g.*, through public outreach and education, training, technical assistance, data collection, and research.

Adapting to evolving science and technology. Scientific and technical uncertainties pose challenges for programs in designing effective risk communication and other activities. While continued research and data collection are important, current scientific and technical information provides a basis for adopting prevention-based approaches to addressing many IAQ problems.

Addressing social justice considerations. Indoor air quality, as a public health issue, has a social justice component. IAQ programs need to continue efforts to ensure that education, technical assistance, and other activities meet the needs of traditionally underserved communities. In developing effective responses to certain problems, such as asthma, it is important to avoid "blaming the victim."

III. Workshop Discussion Highlights

Steve Page, Director of EPA's Office of Radiation and Indoor Air, opened the meeting by praising the states and agencies in attendance for their individual and collaborative efforts, and encouraging the development of new partnerships and networks. He added that EPA is aware of the many challenges faced by state and local IAQ programs and that the Agency is working to increase the focus on these problems across the nation. He emphasized that new issues, such as urban air toxics and radon in drinking water, will increase the opportunities for IAQ programs to establish partnerships. In the area of asthma, an important challenge is to provide a strong environmental component to the effort to ensure better access to health care.

The following workshop sessions highlighted a number of issues that are of increasing concern to state and local IAQ programs. Participants discussed the wide range of activities currently underway to address these problems at the federal, state and local level.

A. New Asthma Initiatives

The first session of the workshop focused on new initiatives that address asthma through activities to reduce exposure to indoor air pollution. Representatives from state and local programs and the Centers for Disease Control and Prevention discussed the different approaches their programs have taken in this area.

PRESENTATION HIGHLIGHTS

Will Service, North Carolina Department of Health and Human Services, spoke about North Carolina's asthma initiative. The Health Department created a task force to focus on four aspects of asthma management: surveillance, medical management, education, and environmental intervention. The environmental intervention component has developed a four-county study of low-cost environmental interventions in residences. This effort aims to build the capacity of local health departments, including training local health professionals in identification of asthma triggers, as well as interventions and inspections for these triggers. Local governments are being funded through money that has been used historically for local childhood lead poisoning prevention initiatives and has been expanded to allow use for asthma projects. The task force is also working to increase physician awareness of asthma and its triggers and to establish a physician referral program. The asthma task force has developed partnerships with a variety of institutions to increase local capacity and broaden its effectiveness.

Lisa Cauldwell, Marion County (Indiana) Health Department, has been working on asthma since local hospitals identified asthma as a problem in a needs assessment in 1995-96. The health department established the Asthma Community Development Group. This initiative has established partnerships with staff in hospitals and schools. For instance, the group has worked with respiratory therapists on identifying and eliminating asthma triggers, and plans to use the respiratory therapists to disseminate this information to their patients. The group has also conducted extensive outreach in schools, including teachers and other staff, school custodians, children, and parents. The health department also offers school walk-throughs. The group plans to focus on physicians in the upcoming year and to work with groups that are addressing tobacco use prevention. The group recently received funding from the National Heart, Lung, and Blood Institute. The county health department believes its efforts have an effect statewide because the group has technical ability and expertise that other county health departments lack.

Laura Oatman, Minnesota Department of Health, discussed the process of forming the state's asthma coalition. The coalition's mission is to help people with asthma, medical professionals, organizations, and others interested in asthma through an information exchange network. The coalition seeks to reduce the morbidity and mortality of Minnesotans who have asthma and increase the quality of their life. The coalition aims to develop a state asthma plan and to garner broad

support for the plan by obtaining significant statewide input through a series of eight regional summits and a statewide summit. Following the statewide summit, the coalition will launch the plan. A number of divisions within the Health Department have been involved in the effort, which is funded through a CDC grant for a full-time coordinator. The coordinator is housed at the American Lung Association, which is funding part-time staff in each region.

Stephen Redd, Centers for Disease Control and Prevention, discussed his agency's work on asthma issues and noted that there exists considerable enthusiasm, as well as funding, for asthma-related research and projects inside and outside the government. Increased awareness of the extent of asthma problems has lead to a growing focus on obtaining data on asthma, including its causes and its prevalence. Toward this end, CDC has provided grants for asthma surveillance programs in a number of states, and the agency plans to increase the number of state grantees. CDC is also providing funding to universities and other non-governmental entities to conduct research on asthma intervention. This year CDC will provide grants for emergency department surveillance and intervention programs. It appears likely that CDC funding for local programs to provide screening, outreach, and education will increase.

KEY THEMES FROM PRESENTATIONS AND DISCUSSION

Asthma as a "hook" for increasing IAQ activities. Greater attention to asthma at the federal, state and local levels is reflected in the significant increase in asthma-related activities initiated by IAQ programs over the past two years.

Diversity of approaches. The many asthma initiatives cover a wide spectrum of approaches, including education, research/data collection, and environmental intervention.

Educating health professionals. There are many different people who can work with state and local health departments to "carry the message" on the importance on addressing indoor environmental triggers – from respiratory therapists and physicians to school nurses and social workers.

Social justice considerations. To be successful in all communities, public health programs addressing asthma and the indoor environment should take social justice issues into account and avoid "blaming the victim."

B. Funding Resources: A Lunchtime Discussion

During lunch on the first day of the workshop, participants had an opportunity to share informally their ideas for financial and other resources that might benefit IAQ programs.

Financial Resources. Approximately three-quarters of the state programs attending the workshop receive state or local funding and nearly half receive federal funding. One program reported receiving non-governmental funding. The following is a list of funding sources that participants have utilized or are exploring for their own programs:

State/Local:

- State Department of Education (for technical assistance to schools)
- State environmental education or pollution prevention grants
- Tobacco settlement money
- Local tax assessments
- State research funds

Federal:

- NIH research grants
- EPA regional mini-grants
- HUD Healthy Homes Initiative grants
- CDC tobacco control grants
- Clean Air Act, Section 105 money
- National Heart, Lung & Blood Institute grant for asthma coalitions
- Preventive services block grant to state (Healthy People 2010 asthma goal)

Other:

- Non-profit or professional organization mini-grants (*e.g.*, NACO)
- Private companies (*e.g.*, pharmaceutical companies/asthma)

Participants also discussed the extent to which the IAQ program staff work with other state/local agencies. In some cases, IAQ staff work directly with and are funded by other programs (*e.g.*, hazardous waste clean-up programs). One participant also suggested the possibility of IAQ staff donating time to other funded state programs to increase the opportunities for receiving funding from those programs in the future.

Non-financial resources. Given relatively small funding for IAQ program activities, programs make creative use of non-financial resources. Among the ideas shared during this session were the following.

Partnering to leverage human resources and in-kind services/equipment

- local hospitals
- extension services
- occupational health clinics
- private companies (pharmaceutical, chemical manufacturers)
- HMOs
- parent, teacher organizations

Materials/Information

- National Pesticide Network – toll free number to answer questions (1-800-858-7378)
- Bureau of Primary Health Care [Health Resources and Services Administration] - www.bphc.hrsa.gov
- Master Home Environmentalist program through the American Lung Association (ALA): volunteer-based program provides free home IAQ assessments (contact: Amy Duggan, EPA Region 10)

- Massachusetts Health Officers Association series of articles on chemical storage in schools, ventilation systems, etc. (http://people.ne.mediaone.net/mhoa/newslttr.htm)
- Region 5 Tools for Schools information
- ALA videos and publications generally, including "Second Hand Smoke in Children: Conducting Public Outreach Programs" (Pub. #IAQ-0129 through IAQ Clearinghouse – 1-800-438-4318 or iaqinfo@aol.com)

C. Developments in Federal Indoor Environment Programs

In the afternoon sessions on the first day of the workshop, presenters from three EPA offices – the Indoor Environments Division, the Office of Children's Health Protection, and the Office of Pesticide Programs – as well as CDC and the Office of Housing and Urban Development discussed their programs' activities related to indoor environmental quality.

PRESENTATION HIGHLIGHTS

Mary Smith, EPA Indoor Environments Division, discussed recent successes and ongoing initiatives within the Indoor Environments Division (IED). The Division has a number of initiatives related to asthma, including the recently released National Academy of Sciences report that addresses asthma triggers, and the recent commitment of the Ad Council to develop a public service announcement. Future work on asthma will focus on ensuring that environmental interventions are included in strategies to combat asthma. There will be a Notice of Funding Availability for community-based, in-home education pilot programs. Environmental tobacco smoke (ETS) is another central issue at IED, and the Division has developed a successful television public service announcement as well as other print materials to promote the idea of smoking only outside of the home. IED is also providing grants to states to work on tobacco use prevention, and working with partners such as the ALA to conduct outreach to the public. IED is focusing on Tools for Schools (TfS) implementation and promotion, and hopes to develop incentives programs to increase school participation. Later this year the Division expects to circulate for comments a draft Tools for New Schools document. In the area of radon, important progress has been made with the adoption of radon resistant new construction techniques in an appendix to the new (2000) International Residential Code. There will likely be an increase in work on radon in the indoor environment, and an increase in opportunities for new partnerships, when the radon in drinking water rule is enacted. IED will also continue its survey of residences, schools, and commercial buildings to develop a risk ranking of indoor toxics, and is looking for other sources of data to augments its studies.

Stephen Redd, Centers for Disease Control and Prevention, discussed CDC's non-asthma indoor environment programs. CDC researches the health effects of exposure to environmental tobacco smoke, carbon monoxide and molds. CDC has used several studies to document the health effects of environmental tobacco smoke, including the National Health and Nutrition Survey (NHANES) which found an association between the highest levels of ETS exposure and asthma and absences from school. CDC has also conducted a study in Fresno, California of asthmatic children exposed

to ETS, which found a reduction in urgent office visits if exposure to ETS was controlled. CDC also studies carbon monoxide, which is the most common cause of death by poisoning in the US. A study in New Mexico concluded that use of detectors can prevent many of the cases of unintentional carbon monoxide poisoning. New technologies are being developed to detect carbon monoxide, and milder cases may be detected. CDC's work on mold has focused on the internal and external review of the MMWR report on pulmonary hemorrhage (AIPH) in infants. The review identified problems in case identification, the association of hemorrhage with fungi and damage, and the methods of analysis. The review recommended that the following steps be taken to investigate AIPH: 1) Establish a standard epidemiologic case definition; 2) Conduct surveillance for AIPH; 3) Develop a standard for investigating cases and clusters; and 4) Investigate risk factors for AIPH. CDC is also looking at mycotoxicosis and allergic diseases and mold. The variability in mold and types of mold exposures makes it difficult to study.

Bettina Fletcher, EPA Office of Children's Health Protection (OCHP), discussed OCHP's efforts to address indoor environmental issues from the children's health perspective. In the past few years there have been a number of high level federal efforts on children's health, including an Executive Order on the Protection of Children from Environmental Health Risks signed by President Clinton in 1997, creating the Task Force on Environmental Health Risks and Safety Risks to Children. The task force has involved 15 departments and agencies and has examined cancer, asthma, developmental disorders, and injuries. At EPA, OCHP has developed guidance for rule writers on incorporating children's health in environmental standards and is developing a children's health valuation workbook for use in cost-benefit analysis. EPA has, in partnership with the Department of Health and Human Services, established eight research centers to study children and their communities around the country. EPA has also funded eleven child health champion grants around the country and developed a Children's Environmental Health Yearbook of agency activities. EPA works internationally on children's health, and sponsored the First International Conference on Children's Health and the Environment in 1998. EPA is also working with the World Health Organization to encourage countries to adopt programs to protect children's health. EPA would like to work with partners around the country, including state programs and youth programs, to expand the reach of its activities.

Anne Lindsay, EPA Office of Pesticide Programs (OPP), explained that OPP has been traditionally a licensing program, and thus its mission is very different from the rest of EPA. While EPA's determination of product safety has focused on dietary exposure, chlordane is an example of a pesticide that was taken off the market because of problems with chronic indoor air exposure. The Food Quality Protection Act of 1996 gave the Agency greater ability to look at all avenues of pesticide exposure, and specifically requires the consideration of food, residential, and drinking water exposure, as well as aggregate exposure. EPA is examining pesticides approved between 1947 and 1996 under the new considerations. This examination will be prioritized by human health significance, and organophosphates are the first to be reconsidered. Ultimately, the office plans on doing cumulative risk assessment on all organophosphates. EPA has worked extensively with state and local partners – health and environmental departments – to combat misuse of methylparathion, and has worked with community networks to get information to vulnerable populations. Another recent crisis for OPP has been Allercare, which was voluntarily recalled by the manufacturer after producing an unusual number of respiratory problems in pets and people. In addition to OPP's licensing function, the office is engaged in a number of voluntary efforts. One focus is on working

with school officials to improve pest control approaches. The office is also working with pesticide manufacturers to encourage disclosure of "inert" ingredients that may cause health effects.

Ellen Taylor, Department of Housing and Urban Development, Office of Lead Hazard Control, discussed HUD's Healthy Homes Initiative. This program is designed to bring HUD's indoor environments work beyond lead control to include other high priority concerns such as asthma. The Healthy Homes program focuses on cost-effective assessment and control measures, through grants that fund demonstration projects, research, and education and outreach. The program has received $10 million in funding each year for the past two years and hopes to maintain this level of funding. Of this amount, $4.5 million will fund demonstration grants and $3.5 million will fund the development of protocols to address housing-related hazards. In general, activities funded by these grants aim to build local capacity and encompass a variety of issues and problems, including innovative pest management, protocols for lead clearance and other allergens, asthma pilot studies, and landlord-tenant interventions. To build momentum for the program, education and coordination are needed, particularly between the housing community and the health community. HUD is involved in other federal efforts relating to housing and health, such as the PATH initiative, a public-private partnership in which EPA, HUD, the Departments of Energy and Defense, and the National Institute for Standards and Technology are working with the construction industry. HUD is also conducting survey research on lead and allergens in housing.

Terry Allan, Cuyahoga County (OH) Board of Health updated participants on the county's mold and moisture control project funded under HUD's Healthy Homes Initiative. The project's goal is to remediate 150 units that will be recruited through the county's lead program and childhood hospital centers. The units will be selected on the basis of feasibility and eligibility requirements that address income, interest, and children in the home. The program will distribute carbon monoxide and smoke detectors, conduct indoor allergen surveys, and sample air and humidity in the home. The program requires six months of environmental and clinical assessment in the units.

KEY THEMES FROM PRESENTATIONS AND DISCUSSION

Diversity of approaches. The federal government addresses indoor environmental issues – particularly asthma-related issues – from the diverse perspectives and disciplines reflected in different agencies and offices.

Coordination. Coordination of federal programs that address the indoor environment continues to be critical in order to leverage resources and maximize benefit to the public.

Resources. In addition to informational resources, federal offices manage a number of funding programs that are open to state and local IAQ programs, and funding for asthma-related programs is likely to increase in the near future.

D. IAQ in Schools

The second day of the workshop began with presentations that described current federal, state and local approaches to improving IAQ in schools.

PRESENTATION HIGHLIGHTS

Michele Guarneiri, U.S. EPA Indoor Environments Division, discussed the Agency's Tools for Schools (TfS) program. The TfS kit contains information to help schools develop indoor air quality plans. EPA continues to expand the materials included in the kit, and will be developing an asthma companion piece, TfS case studies, a road map to implementation, and a CD ROM of a school walk-through in the near future. EPA is working across the country with its cooperative partner network to encourage school implementation of the kit, and is conducting a strategic education campaign and developing incentives to reward schools for implementing the kit. EPA encourages states to work on TfS with regional EPA offices as well as local partner organizations, and to strategically recruit schools in a way that encourages broader participation.

Sheila Batka, U.S. EPA Region V, discussed the regional approach to IAQ. In each region, the IAQ program may be in a different office; in Region V, the IAQ program is in the air office. She primarily works with partners in the region, and because she is in the air office works with partners dealing with a variety of air concerns who need technical assistance with IAQ issues. At the regional level EPA offices can work together to convey each other's messages; for instance in Region V IED worked with the Energy Star program on energy efficiency and indoor air in schools. Regional offices may also address unique regional concerns. In Region V, regional teams address environmental justice concerns in cities including Chicago and Detroit. Like headquarters, regional offices work with partners to leverage their resources. Regions also support national partners and their training programs, and will provide training to partners who need it. The regions hope to provide information to states about headquarters and national partner activity, and hope that the states will provide them with information about activities at the state level.

Mandy Burkett, Ohio Department of Health, described the work of two state bodies -- the Ohio Indoor Air Quality Coalition, and the more recently established School Environments Task Force. The Coalition has formed a Schools Committee, which is chaired by a school facility manager and promotes implementation of TfS. The chair has been able to promote TfS with educational organizations that traditionally have not focused on IAQ concerns. The committee has organized more than 50 TfS training sessions in the past three years, as well as offered Open Airways training to nurses and sanitarians. It has also provided training for school facility managers and school business officials, and has included cost/benefit information and resources available for IAQ improvements. The second body, the School Environments Task Force, was initiated by the Governor and addresses all environmental concerns in schools. It has been able to involve the state School Facilities Commission and has addressed the use of carpeting and radon-resistant techniques in school construction. The Task Force has established a toll-free schools hotline, conducted training for sanitarians and school nurses, and revamped the school inspection list. The Task Force also succeeded in getting radon resistant new construction in the requirements for new schools.

Bernie Bloom, D.C. Department of Health, discussed the school IAQ improvement process initiated by Montgomery County (Maryland) Public Schools (MCPS). The school district's IAQ efforts were motivated by several factors, including increased complaints and loss of worker's compensation cases related to IAQ. In 1997, MVPS established an IAQ Process Action Team that included staff of the county's environmental agency, school officials, parents and unions. Over a six-month period the team developed a report with a list of organizing principles and 55 specific recommendations; as of this time about one-third of the recommendations have been adopted by the school district. Now $1.5 million is allocated for IAQ improvements annually, and an IAQ team has been hired by the school district to perform IAQ maintenance. A number of significant design and maintenance issues have been a focus of this process, including the use of ventilation systems that control relative humidity, the achievement of acoustic quality and the restriction on bringing harmful substances into schools. In one school with serious mold problems, along with poor student attendance and high teacher turnover, parents and facility management came together to bring about rapid action. Following repairs, which included the installation of new equipment to provide ventilation and dehumidification, the school's test score ranking went from 248 to 41 (out of 834) and morale improved considerably. In Montgomery County, management attitude, pressure from the teachers' union, and legal pressure all played a role in bringing about change.

Tobie Bernstein, Environmental Law Institute, discussed state legislative developments on IAQ in schools. Existing laws in this area fall into four general categories: specific contaminants; general authority/research; standards/guidelines; and school construction funding requirements. Pesticides are the most common subject of IAQ and schools legislation, and there have been a number of bills on this topic lately. The laws include notice requirements, restrictions on applications and requirements or recommendations for using integrated pest management. There are also a number of radon-specific laws, which generally include testing requirements or radon-resistant new construction requirements. Few states have enacted standards for IAQ in schools, although Texas adopted broad voluntary guidelines. Schools have been the most common subject of IAQ legislation introduced over the past two years. Among newly enacted legislation, laws regulating pesticide use in school were most common. West Virginia enacted a broader law regulating a number of IAQ aspects of school maintenance and construction. Virginia established a task force to identify existing IAQ standards and guidelines. Many more bills on the subject were introduced, but not enacted, by legislatures around the country, particularly in New York, Minnesota, Vermont and California. Some of these measures were more far-reaching than existing legislation, including provisions for IAQ standards and for an IAQ ombudsman. It is likely that states will take legislation in a new direction in the future, as they seek to address the growing concern over IAQ problems in schools.

KEY THEMES FROM PRESENTATIONS AND DISCUSSION

Multiple levels of action. Activities to improve IAQ in schools are taking place at many different levels, through the provision of education and guidance to school personnel, through grassroots change within individual schools systems, and through legislative efforts.

Linking issues. Efforts to improve school IAQ have been linked with related issues such as energy efficiency, noise and ambient air quality.

Increasing legislative activity. Schools have been the primary focus of legislation on indoor environmental quality, and the coming years will likely see a range of new approaches as well as greater use of existing legal authorities to address IAQ in schools.

E. Effective Risk Communication for Preventing and Controlling Mold: Breakout Session

The following questions were discussed in small "breakout" groups. The results were presented at a plenary session that followed the small group discussions. After each question is a summary of the responses from the breakout groups.

Question 1: a) List the principal audiences for your current risk communication activities on mold issues.

Each group identified numerous audiences for current risk communication on mold issues. The audiences most commonly addressed are: (1) the medical community; (2) school administrators/staff; and (3) local public health agencies. Other audiences that were identified by more than one group include: renters, IAQ consultants, and property/facility managers. In addition to these audiences, the following were among those listed by the breakout groups:

- community opinion leaders
- inspectors
- real estate professionals
- architects
- building owners
- employees
- parents
- flood victims
- pregnant women
- prisoners
- litigants
- owners of manufactured housing

Question 1: b) In what ways do you currently carry out risk communication on mold issues to these audiences?

The risk communication activities most commonly cited by the groups are: (1) individual consultations; (2) distribution of fact sheets and other literature; (3) web site development; and (4) training. Other vehicles mentioned by groups include:

- media coverage

- public service announcements
- emergency response activities
- public meetings/presentations
- hotlines
- inspections
- home/neighborhood shows
- mass mailings to local partners

During the plenary session, participants also identified risk communication activities they would like to be doing, given more time and resources. These include:

- implementing strategies to reach underserved communities
- developing web sites
- developing guidance documents for local health departments and others
- building response capacity in local health departments
- developing protocol for flood clean-up
- educating landlords

Question 2: *a) Identify the key technical elements that provide the foundation for, and should be incorporated into, an IAQ program's risk communication activities on mold issues.*

The groups discussed various types of technical information that can benefit the public in understanding how to address mold issues. The groups agreed on a number of key themes to include in risk communication efforts:

- Health Effects: address concerns of sensitive populations, infants
- Prevention: address basic moisture control and other preventive measures
- Assessment: address (limited) circumstances in which sampling is appropriate
- Remediation: address *when* to remediate (what are levels of concern); *who* should remediate (when and how to select a professional); and *how* to provide for worker/occupant protection

Question 2: *b) Do scientific or technical uncertainties in this area pose any significant problems for IAQ programs in developing or carrying out risk communication activities? Identify specific problems and indicate whether they apply generally or to particular audiences.*

The groups identified a number of uncertainties that pose a challenge to effective risk communication in this area. These include:

- questions about health impacts and the broad spectrum of human responses to molds
- conflicting expert guidance on the issue and a lack of measurable standards
- lack of tools for evaluating and testing sites and exposures
- questions about remediation techniques and occupant/worker safety
- lack of certification criteria for technical professionals

These uncertainties affect the way in which IAQ program activities are implemented. Nevertheless, while the groups agreed generally that scientific and technical uncertainties exist and must be addressed, participants generally endorsed the use of the precautionary principle in approaching the problem. One group put it this way: "Mold should not grow indoors; if there is mold, it should be remediated." Another group suggested that rather than focus on the scientific uncertainties, programs should emphasize a prudent avoidance approach. Some participants recommended the development of a guidance document for health and housing departments that would support this type of approach while offering practical advice for decision makers. In light of the uncertainties that exist and the amount of attention focused on the issue currently, some participants also recommended that more extensive research be undertaken to address and provide guidance on underlying issues such as: dose/response; remediation effectiveness; and occupant and worker safety during remediation.

F. Green Buildings, Healthy Buildings: Opportunities for Linking Health and Environmental Protection

This session explored efforts to design and construct buildings that protect both health and the environment. Presentations described efforts to integrate health and environmental issues – to prevent pollution indoors and out – in the public and private building sectors.

PRESENTATION HIGHLIGHTS

Katy Hatcher, EPA ENERGY STAR® Buildings Program, explained that the term "green buildings" is broad and encompasses many different aspects of environmental protection. The ENERGY STAR® Buildings Program aims primarily to reduce fossil fuel energy consumption in order to combat issues of smog and climate change. In this respect, there is tremendous opportunity for change in the way buildings are designed. The program establishes a rating system for commercial buildings – including schools and office buildings – that can help building owners compare their buildings' energy performance to the top 25% of buildings nationwide. Buildings that achieve a score of 75 or higher (average buildings score about 50) receive the label ENERGY STAR® Building. The rating system is mainly for existing building renovation, whereas new construction should aim higher. The program provides a web-based benchmarking tool, and requires an engineer to verify performance in order to receive the label. The program incorporates criteria related to IAQ – general industry standards on ventilation and thermal conditions – as required elements, thereby emphasizing the compatibility of IAQ and energy efficiency and discouraging owners from sacrificing IAQ for greater efficiency.

Steve Keppler. U.S. Green Building Council (USGBC), discussed the USGBC green building rating system, called LEED™ – Leadership in Energy and Environmental Design. As a not-for-profit organization with a diverse membership and consensus-driven process, USGBC has developed LEED™ to promote sustainable new construction and renovation of commercial buildings (including schools, hospitals) or high rise residential buildings. The rating system emphasizes integration and encourages a collaborative design process that takes into account environmental and economic factors. Buildings can attain LEED™ certification on four different levels of

achievement, depending on the number of points they receive for meeting program criteria. Program criteria fall into five key areas, including indoor environmental quality. Buildings must meet general industry ventilation standards (ASHRAE 62-99) and control environmental tobacco smoke. Other features – CO_2 monitoring; increased ventilation effectiveness; construction IAQ management plan; low-emitting materials; indoor chemical pollutant source control; controllability of systems; thermal comfort; and daylighting – garner additional points toward certification. Since the program was piloted in December 1998, 40 buildings have used the system, and twelve certification applications are under review. Users include the U.S. EPA, the federal General Services Administration, the Navy, Arlington County (VA), the City of Seattle and King County (WA).

Jed Waldman, California Department of Health Services, discussed green building as an emerging field for IAQ programs. In light of the tremendous amount of new construction of public buildings in California, the IAQ Section in California's Department of Health Services (DHS) has sought to influence the way in which state buildings are designed and constructed. A key opportunity has been the creation of a task force to assist the state's Department of General Services in fulfilling a 1998 legislative mandate to incorporate green building issues – including IAQ – into a new state building project. DHS has advocated for strong IAQ criteria in the RFPs, including specification of low emitting materials and sources; use of 90% PM filtration; and commissioning for ventilation. DHS also has ensured consideration of health impacts of certain green practices, such as using recycled paint, use of CO_{20}-controlled ventilation, and in-office paper composting. The green building task force has provided a key opportunity to change the way in which the Department of General Services approaches buildings. The task force continues to exist, though it has not yet been chartered. An executive order is being crafted to provide a mandate for a green building council to guide all state efforts. DHS is continuing its efforts to change building practices, including the revision of furniture specifications to include low emission criteria.

KEY THEMES FROM PRESENTATIONS AND DISCUSSION

New opportunities for preventing pollution. The growing "green building" movement provides an opportunity for IAQ officials to affect significant change in how buildings are designed and constructed and to establish new partnerships to promote indoor environmental goals.

Linking health and environment. Health and environmental protection are compatible goals in new construction, however there is an important role for IAQ programs to ensure that public health is not overlooked when decisions are made about energy efficiency and other sustainable design features.

IV. Conclusion: Looking to the Future

In the final session of the workshop, participants discussed how to continue effective communication of ideas and information among IAQ programs.

Ongoing electronic communication. As they did at the 1998 workshop, participants expressed strong interest in the establishment of a list serve that would facilitate informal, ongoing communication among federal, state and local IAQ programs. Among the other ideas generated by participants were the further development of web sites for state and local IAQ programs; the development of a "mega" web site hosted by EPA/IED to provide links to state and local sites, as well as to other federal agency activities; and the creation and distribution of a quarterly or semi-annual newsletter.

Future meetings. Participants were enthusiastic in their support of a third workshop to continue the dialogue on advancing IAQ programs in the coming years. While some feel that annual meetings are ideal, others recommended a two- or three-year interval between meetings. Most participants indicated that it would be appropriate to hold the third meeting in 18 months.

Dissemination of materials. Workshop participants identified a number of issues on which additional information is needed – either through dissemination of existing materials or development of new materials. These include: (1) examples of successful Tools for Schools implementation experiences; (2) mold fact sheets and guidance documents; (3) models for legislative and policy development; and (4) rental housing code provisions addressing IAQ.