

KEYS TO SUCCESS in SCHOOL ENVIRONMENTAL HEALTH PROGRAMS

Report from the Great Lakes Center for Children's Environmental Health/Region 5 Pediatric Environmental Health Specialty Unit

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Introduction

Children spend much of their time at school and are especially vulnerable to environmental exposures in the school setting and beyond, due to their higher intake of contaminants per body weight, developing organs that are susceptible to damage, and the tendency to play close to the ground, where many chemicals concentrate. There are almost no national standards or requirements governing school environmental health conditions. Laws and policies protecting children from environmental exposures at school vary from state to state and town to town, as do informational and technical assistance resources. So children are often not sufficiently protected from chemicals and contaminants in the school environment. The results can be causation and exacerbation of illnesses like asthma and allergies, missed school days – for teachers and staff, too - and increased costs to school districts for remediation of environmental problems.

Many schools and school districts have successfully developed and implemented programs, policies, and practices to create a healthy school environment. This report looks at school success stories from the U.S. Environmental Protection Agency's (EPA) Region 5 states in three critical areas of school environmental health quality: **integrated pest management**, **indoor air quality**, and **chemicals management**. It particularly seeks to identify factors that helped to get the programs off the ground and be implemented.

This analysis of examples of successful implementation of school environmental health programs (healthy schools campaigns) can be used by school districts and parents to guide their efforts and increase the likelihood of successful implementation.

Three Key Areas of School Environmental Health

Integrated Pest Management

Integrated Pest Management (IPM) is a strategy that focuses on long-term prevention of pests through proactive strategies like sealing cracks through which pests enter and ensuring that food is put away. In IPM, pesticides are used only after monitoring indicates they are needed, they are used according to established guidelines, and they are selected and used so as to minimize risks to human health and the environment – for example, sticky strips are recommended instead of sprays because they do not expose people to chemicals.

Routine spraying of pesticides is not IPM. According to the California Department of Public Health, “Until recently, routine spraying was thought to insure against insect infestations, and building managers hired pest control companies to spray whether or not pests were present. Pest management experts now agree that this approach doesn’t work and it creates health and environmental risks.” The U.S. General Services Administration, which manages all federal office buildings, states, “Scheduled spraying of pesticides in the absence of pests is irresponsible, ineffective, and expensive.”

School pesticide laws vary from state to state. For example, Illinois requires each school to develop and implement an IPM program when economically feasible, while Indiana does not have such a requirement but provides a model IPM policy that it encourages schools to adopt. It is important to become familiar with state and local pesticide laws and policies before embarking on a campaign for healthier pest control practices.

Indoor Air Quality

Indoor Air Quality (IAQ) refers to the air quality within and around buildings and structures, especially as it relates to the health and comfort of building occupants. Understanding and controlling common pollutants indoors can help reduce health outcomes such as wheezing, allergies, and headaches. Indoor environmental quality (IEQ) refers to the quality of a building’s environment and may include lighting, humidity, and damp conditions, in addition to air pollutants. IPM and chemicals management are major components of IAQ and IEQ. Programs to address IAQ and IEQ vary by state, city, and school district. Some may have specific requirements, so researching these is an important first step in understanding a school environmental health issue.

Chemicals Management

Schools may purchase, use, and store a variety of chemicals, both for building use (such as cleaners) and classroom use, especially in science and art classes. “Chemicals management” in schools typically addresses classroom chemicals as opposed to building chemicals. King County, Washington’s *Rehab the Lab* website includes a list of about 1,000 chemicals found in schools. Classroom chemicals may pose health or safety risks, be unclearly labeled, or be improperly stored. Often, there is no system for tracking and managing such chemicals, and no department or person in charge.

Steps to improve chemicals management include inventorying the existing stock of chemicals; removing those that are hazardous, outdated, or no longer needed; and developing and implementing a system to track purchase, storage, use, and disposal, and develop an emergency plan in case of a spill or leak. Long-term goals should include using fewer, and safer, chemicals. There may be requirements for school chemicals management at various levels of government, including federal – like the Occupational Safety and Health Administration’s hazard communication rule – state, local (such as building or fire codes), and school district.

The next section includes examples of successful implementation of healthy schools campaigns in schools in Region 5 (Minnesota, Wisconsin, Illinois, Indiana, Michigan, and Ohio). The goal of these examples is to provide guidance and tips that may increase the likelihood of success of healthy schools programs.

Methods

Telephone interviews were conducted with staff from districts and schools, government agencies, university experts, and parents in four of the Region 5 states. Topics covered were school success stories including steps taken, challenges, and lessons learned; existing research and resources for school IPM, IAQ, and chemicals management; and remaining policy and practice needs. Five school implementation examples were chosen for this report because they included methods commonly used by successful campaigns.

EXAMPLE 1

Indoor air quality in Lake Zurich Community Unit School District 95, Lake Zurich, Illinois

An elementary school was closed due to mold overgrowth resulting from flooding. When a building connected to the closed school was re-opened for use, parents had many concerns. In addition to mold, they were worried about additional contaminants and hot temperatures in classrooms. Parents felt mistrustful of the school district. They contacted the state public health department and the U.S. EPA Region 5 office; both provided advice and assistance. U.S. EPA Region 5 recommended using the model plan from its Tools for Schools program to develop an IAQ management plan tailored to the school.

Parents decided to pursue this path, and a new school district facilities and grounds manager was instrumental in addressing their concerns. A plan was developed and adopted by the school district. It aims to reduce the levels of indoor air pollutants in schools through preventive measures such as routine maintenance activities, periodic building evaluations, and IAQ-specific policies; providing and maintaining adequate airflow by repairing and maintaining ventilation equipment; and responding to IAQ-related concerns promptly and communicating results. Monitoring includes temperature, relative humidity, carbon monoxide and carbon dioxide levels, and mold growth. The plan addresses numerous areas of IAQ; it includes an IPM program, lead policy, anti-idling policy (to protect against exhaust fumes entering school buildings), and more. The facilities and grounds manager is designated as IAQ Coordinator for the district. An IAQ checklist was created for use by the facilities department to ensure that all items in the management plan are addressed. Teams were formed at every school in the district to represent parents, students, and staff.



The facilities and grounds manager aims to make use of Tools for Schools consistent throughout the school district, and uses it as an educational tool to teach the facilities team the importance of IAQ and how it can improve the learning environment. He does this through use of resources, trainings, and meetings, including EPA webinars, reviews of data, conducting twice-yearly inspections, and working with staff on writing and implementing work orders.

Keys to success of this campaign

- parents asking questions and requesting assistance from the state public health department and the U.S. EPA Region 5 office
- guidance and support from experts at the two agencies
- formation of teams representing parents and school leadership
- a knowledgeable and responsive facilities and grounds manager
- use of Tools for Schools as a framework for development of an IAQ plan
- adoption of a written IAQ management plan that includes measurable goals
- communication of IAQ testing results to teams and via website.

This experience demonstrates that, regardless of specific concerns, a school should put in place a program to proactively and systematically address IAQ. The facilities and grounds manager now monitors air quality, reports results to school teams, and posts the information to the school district website. He can issue a work order for immediate inspection if data indicate any concerns. The team mechanism helped to address the mistrust, giving parents a voice and a mechanism for obtaining information.

Some participants in these efforts would like to make additional progress, including connecting environmental and health data.

EXAMPLE 2



Integrated Pest Management in Milwaukee Public Schools (MPS), Milwaukee, Wisconsin

A director in MPS's facilities and maintenance department saw a need to educate other building engineers in the school district in pesticide use prevention. As a result, several staff in the department accessed a pesticide education program at a local vocational college. They decided to make this program a requirement for all school district engineers, and worked with the City of Milwaukee to do so. A department manager also worked closely with Wisconsin state agencies to create an IPM program for MPS. The manager became involved with U.S. EPA Region 5 and EPA's Tools for Schools program, which includes IPM as one of

seven key technical solutions for effectively managing IAQ risks. School staff worked with EPA on a condensed version of Tools for Schools, which was then made a requirement for MPS engineers.

In 2001, the school board voted to adopt a pesticide policy. Buy-in from the school district administration was critical. The school district superintendent was very supportive of building operations and embraced the policy. Prior to the vote, the superintendent met with the board's finance and personnel committee about the cost of the policy and was told there would be no cost; the only initial expense was a manual and education for employees, but once that was made a job requirement, employees incurred the cost.

MPS continues to make use of low-cost/no-cost information resources, including a free training class that uses a manual from the University of Wisconsin-Extension, the outreach arm of the University of Wisconsin system. Current IPM program costs are for employment of two pest control staff who are able to proactively address any issues that arise. The facilities department obtains the information necessary to replace all U.S. EPA-registered pesticides with products that are just as effective but contain no toxic chemicals. The department worked with both the school district nursing staff and the City of Milwaukee's health department to develop a bedbug protocol.

Keys to success of this campaign

- adoption of an IPM policy
- buy-in by the school board, superintendent, and other administrators
- support from the state in development of the IPM policy and outreach to teachers and principals, and from outside experts
- the ability to show that the policy would incur low or no cost
- the school district's agreement to include pest knowledge in school operation staff engineering exams, which required discussion with the union

As part of the program, school staff, including food service workers and others, are educated about IPM and their role in making it successful. "Changes don't happen overnight," says one manager. "It is a never-ending process of education," particularly as staff retire and others are hired. Part of training is having custodians keep an eye out for sources of contaminants. For example, recently a custodian observed that a teacher had brought in a can of Raid, not allowed under the IPM plan and MPS's hazardous chemicals safety plan (which prohibits anyone from bringing in a pesticide), showing how the two environmental programs dovetail to reduce children's exposures.

EXAMPLE 3

IPM in Franklin Township Community School Corporation, Marion County, Indiana

The Indiana Department of Environmental Management awarded a grant to the Purdue University Department of Entomology in cooperation with Indiana University, the State Chemist's Office, and other professionals with experience in IPM. The group developed a pilot program to educate schools and child care facilities about IPM, providing on-site assistance, free workshops, and materials. The state provides a model IPM policy that it encourages schools to adopt.



The buildings and grounds supervisor for the Franklin Township school district received a visit from the State Chemist, who explained IPM to him. The supervisor took a class through Purdue University's Extension program and worked with a non-profit Indiana organization, Improving Kids' Environment. The schools began to integrate IPM, requiring IPM training for all custodial, maintenance, and grounds staff. Training resources included *SafeSchools.com*, which includes several school environmental health and safety programs in addition to IPM.

Now the schools seldom apply chemical pesticides indoors. Instead, they try to understand how the pest got in, remove what it was attracted to, and monitor results. The supervisor communicates with the school district's Chief Financial Officer about the IPM program, and as needed with other staff, such as the school nurse when issues of bedbugs or head lice arise. The buildings and grounds supervisor also serves as both IPM and IAQ coordinator.

Keys to success of this campaign

- extensive State of Indiana and non-profit educational, outreach, and training resources
- the requirement for all relevant staff, including custodians, maintenance, and grounds staff, to have training in IPM principles and practices

Challenges include teachers bringing their own products into the school for addressing pest issues; an IPM program can ensure this doesn't happen.

EXAMPLE 4

IEQ and IPM, Glendale-River Hills School District, Glendale, Wisconsin

In the early 2000s, the director of facilities and a custodian were asked by a sustainability consultant to consider Leadership in Energy & Environmental Design (LEED) green building certification for the district's buildings. They were concerned about the costs. Around 2010, the U.S. Green Building Council, which administers the LEED program, offered grant money to cover the cost of the LEED application fee. With that assistance, the school district spent about \$20,000 to apply for a LEED Gold for Existing Buildings rating for implementing sustainability throughout its operations and maintenance programs.



The LEED process includes a range of policies and involves carrying out many IAQ checks. The school board adopted more than 10 policies that went along with LEED certification; these set standards for IPM, green cleaning, purchasing, and more. Around the same time, the State of Wisconsin established an IEQ in Schools Task Force which developed a model IEQ management plan. Critically for buy-in from the superintendent and school board, the school district found that with simple measures, they started saving money. The administration was pleased with the results. For example, the district's ENERGY STAR score (a program run by U.S. EPA) for energy efficiency rose significantly.

Two Glendale-River Hills middle school teachers of science and social studies started introducing these sustainability and environmental health concepts into the educational curriculum. The school district participated in the State of Wisconsin's Green and Healthy Schools Wisconsin program, which supports and encourages schools to create safe learning environments and prepares students to understand, analyze and address the major environmental and sustainability challenges now and in the future through resources, recognition, and certification. The school district's efforts led to numerous awards, including being named a Green Ribbon School by the U.S. Department of Education.

In addition to financial savings, the facilities director tracked attendance of sixth and seventh graders for two years during the period of these efforts (starting with baseline attendance, and factoring out anomalies like flu in winter), noting a 22 -25% improvement in attendance during that period. This also impressed the school board. An existing system is used to track the number of students and teachers who are out sick, who is attending a conference, etc. And with the significant cost of hiring substitute teachers, teacher absenteeism has a genuine economic cost.

Glendale staff suggest that schools ask these questions about an environmental health initiative they are considering: Does it help the learning environment? Does it make economic sense? Is it the right thing to do?

Keys to success of this campaign

The facilities director continues to communicate about the initiatives, attending every school board meeting, as well as meetings of a buildings and grounds committee. He is proactive, which is critical to any program. If the department gets a complaint, they address it immediately. The mantra: “Investigate, fix, communicate.”

- support of the superintendent and other administrators
- a facilities director who “gets it”
- having written policies - while LEED provided the impetus in this case, written policies are needed in all cases
- the ability of the facilities manager to show that the costs of the program were reasonable, including applying for and received grants and experiencing energy savings from the start
- demonstrating that the green and healthy initiatives led to better attendance

EXAMPLE 5

Chemicals management in Milwaukee Public Schools (MPS), Milwaukee, Wisconsin

A safety specialist with a background in chemical compliance in the private sector started work with MPS, aiming to make the schools safer by reviving a chemical hygiene committee and ensuring it operated effectively. He developed a multidisciplinary committee that included staff from the facilities and maintenance, environmental compliance, science, and art departments. The committee focuses on classroom, or curriculum, chemicals. The committee developed a chemicals management plan based on OSHA’s laboratory standard.

Toward the end of the process of developing the plan, the safety specialist recommended a chemicals audit of the schools. As a large school district with numerous high schools, manpower was a challenge. Most school districts have someone who wears multiple hats in the facilities, environment, health, and safety areas, so it can be more difficult to focus on chemical safety in the classroom. Nevertheless, an audit was conducted and many chemicals were disposed of.

How could a smaller school district accomplish this? First, review OSHA’s laboratory safety standard, which is a basic chemical safety management plan. Second, appoint someone to be the chemical hygiene officer at every school - with a focus on high schools, which typically have significant chemical inventories (MPS did find a few hazardous chemicals in grade schools). Third, make sure the chemical hygiene officer receives appropriate training. Fourth, establish a management committee.



Developing an inventory of chemicals in storage: the Milwaukee plan includes a chemical classification system, with five classifications. The plan includes tracking results of audits and chemicals removed. This allows the chemical hygiene officer to stay up to date on the inventory. “The key is controlling the inventory,” according to MPS’s safety specialist. “That is the whole game.”

The funds that the school district spent to dispose of old chemicals “are peanuts”, says the MPS point person for the effort. “What if there was a \$2 million fire” or a student suffering from overexposure to a chemical? The district’s approach was that while the state didn’t mandate this effort, it was necessary to prevent potential problems.

Keys to success of this campaign

- establishment of a multidisciplinary chemical hygiene committee
- development of a chemicals management plan and chemical inventory
- appointment and training of chemical hygiene officers

Summary Steps to Success

Research the laws and policies that apply

This information can typically be found on state or local environmental or public health agency websites, or by calling the agencies. Then find out who at the school or school district is responsible for applying the policies or managing the program, such as pest or chemicals management. Call and ask the responsible party what practices are followed.

Grow a group

Discuss the issue with parents, school staff, teachers, and others. A group effort can be more effective than an individual effort.

Take advantage of no-cost/low-cost information, education, and technical assistance resources

Articles, case studies, reports, and webinars from the U.S. Environmental Protection Agency, state environment and health departments, non-profit organizations, and state universities - including extension programs of public universities - address these topics and are often available free of charge. Look at websites; call and ask for assistance. Staff from these programs may also be able to meet with you and provide technical assistance free of charge.

The “Resources” section below lists reports and websites with information on these school environmental health topics.

Seek high-level support

The key to successful adoption and implementation is “support from the top on down,” including the superintendent, principal, and building staff, says one expert. “It’s really about getting people on board. And addressing issues successfully.” Don’t be afraid to reach out directly to the superintendent, principal, school board members, chief financial officer – the ones who make the decisions and write the checks.

In making your case, focus on success, benefits, and return on investment of programs

School administrators may not believe, for example, that IPM can really control pests. And it can be challenging to convince school administrators and staff to expend time and effort addressing environmental health issues when they are often dealing with budget cuts, doing more with less, and pressure to improve test scores.

Point to other school districts that have had success with these initiatives. Ask an agency or non-profit expert to meet with you and school decision makers. Forward case study reports and articles demonstrating that these programs are effective, save money over the long run, and can reduce absenteeism and improve academic performance. For example, many reports and articles demonstrate that IPM controls pests more effectively than routine spraying, costs less, can reduce absenteeism, and has health benefits like fewer asthma problems.

Develop a written policy

A written policy helps to ensure that everyone has the same understanding of the plan, ensures continuity when there is a change in personnel, assists with tracking implementation, and helps with communicating implementation activities and results.

Build a team; make the program part of the culture

Teams, or committees, help ensure broad involvement, cooperation, buy-in, and communication. They should include - in addition to high-level administrators and facilities and custodial staff - school nurses, teachers, and parents. The committee should meet regularly as development, implementation, and assessment take place to track steps taken and outcomes.

In successful programs, the environmental health activities become part of the school culture. For example, one facilities manager included a state university IPM expert on the agenda of a teacher education day.

Advocate for state and local laws, policies, and resources to protect environmental health at school – and ideally a national law that provides uniform protections and practices

The current patchwork is inefficient, ineffective, and does not adequately protect children’s environmental health at school. Call or meet with your local representatives to explain the benefits of healthy schools.

The Great Lakes Center for Children's Environmental Health at the University of Illinois at Chicago School of Public Health is the ATSDR/EPA-funded Pediatric Environmental Health Specialty Unit for Federal Region 5. The Center aims to promote the environmental health of children in Region 5 (Illinois, Indiana, Michigan, Ohio, Minnesota and Wisconsin) by serving as an information resource for health care professionals and the general public on children's environmental health issues; providing consultation to public health and environmental agencies on children's environmental health issues; training pediatricians, environmental and occupational medicine physicians, medical toxicologists, and other health professionals in the principles of children's environmental health; and promoting sound local, regional, and national policies that protect children's health and the environment and that promote environmental justice.

Resources

Florida Department of Environmental Protection, School Chemical Cleanout Campaign (SC3):

<http://www.dep.state.fl.us/waste/categories/hazardous/pages/schoolchemicals.htm>

Healthy Schools Network, Inc. See especially “What You Can Do” and “Lessons Learned: A National Report”:

<http://www.healthyschools.org/>

IPM Institute of North America: <https://ipminstitute.org/>

King County, Washington, Rehab the Lab: Creating Safer School Labs:

<http://www.hazwastehelp.org/educators/rehabthelab.aspx>

Midwest Pesticide Action Center: <http://midwestpesticideaction.org/>

School Pesticide Reform Coalition and Beyond Pesticides, Safer Schools: Achieving a Healthy Learning Environment through Integrated Pest Management,

<http://www.beyondpesticides.org/assets/media/documents/schools/publications/IPMSuccessStories.pdf>

U.S. Environmental Protection Agency, Creating Healthy Indoor Air Quality in Schools (includes IAQ Tools for Schools Action Kit): <https://www.epa.gov/iaq-schools>

U.S. Environmental Protection Agency, Indoor Air Quality for Schools Case Studies: <https://www.epa.gov/iaq-schools/indoor-air-quality-schools-case-studies>

U.S. Environmental Protection Agency, State School Environmental Health Guidelines:

<https://www.epa.gov/schools/state-school-environmental-health-guidelines>