



Building Design, Maintenance, and Operations

Cleaning Products



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Good sanitation and proper cleaning are necessary steps to provide a healthy school environment for teachers, staff, and students. Cleaning products, however, can introduce indoor air quality (IAQ) concerns into the school environment and endanger human health. For example, chemicals found in cleaning products can cause health problems, including eye/nose/throat irritation and headaches. Many cleaning products can also release volatile organic compounds (VOCs) into the environment. Health effects associated with VOCs include nasal congestion, upper respiratory irritation, headache, nausea, fatigue, and dizziness. Finally, some cleaning products can be toxic, corrosive, or flammable, presenting a safety risk if used or stored improperly. Due to these health and safety risks, many schools are realizing the importance of the proper selection, storage, and use of cleaning products in providing a good indoor environment.

Schools can easily develop a program that minimizes their use of and occupants' exposure to cleaning products that pose a health, safety, and environmental concern. First, schools can select products with positive environmental attributes, such as: low toxicity, biodegradability, low VOC content, and reduced packaging to reduce harmful impacts to building occupants, improve IAQ, and reduce water and air pollution. This step can be accomplished while simultaneously maintaining cleaning effectiveness. Second, schools can reduce the quantity of harmful chemicals used in their buildings and the frequency with which those chemicals are applied. Third, schools can schedule cleanings when the school is unoccupied and has sufficient ventilation. For more information about cleaning programs and the importance of maintaining good IAQ, schools and districts should refer to the U.S. Environmental Protection Agency's (EPA) *Indoor Air Quality Tools for Schools (IAQ TFS)* Program.

The Environmentally Preferable Purchasing (EPP) tool is an additional resource provided by EPA that schools should utilize when developing a cleaning program as part of their efforts to improve overall IAQ. EPP emphasizes four product phases: manufacturing, transport and packaging, use, and disposal. Each is an important factor to consider for schools making cleaning product purchasing decisions. Additional information about EPP is available at <http://www.epa.gov/oppt/epp/index.htm>.

The schools featured in this case study have adopted cleaning programs that incorporate good IAQ with practices and policies regulating the use and purchase of cleaning products. These programs include:

- ▶ Removing all caustic products;
- ▶ Providing teachers with one, non-toxic cleaning product for use in classrooms;
- ▶ Banning the use of cleaning products with VOCs and heavy metals;
- ▶ Allowing the use of only water-based cleaning solutions or products manufactured from renewable resources, such as citrus; and
- ▶ Using cleaning products that are biodegradable and meet EPA's EPP guidelines.

These practices have helped schools create and maintain safer and cleaner learning environments.

Bellingham School District, Bellingham, Washington

While implementing its IAQ management program, Bellingham School District discovered how essential maintenance and housekeeping are to an effective IAQ program. Bellingham recognized, however, that housekeeping and maintenance operations can also become a source of pollutants. In response, Bellingham adopted a Green Housekeeping Program, a regimen that utilizes products that impact the environment less than conventional cleaning agents. These “green” products posed comparatively less risk to human health and the environment and helped to create a cleaner, healthier, and more productive indoor environment.

The Green Housekeeping Program is based on information from seminars sponsored by the Northwest Air Pollution Authority (NWAPA) on chemicals and their potential health effects. To jumpstart their program, Bellingham School District sent members of its staff to trainings offered by NWAPA. In the 2003-2004 school years, Birchwood Elementary became the first school to implement the Green Housekeeping Program, followed by Happy Valley Elementary. Birchwood Elementary also hosted a Healthy High Performance Cleaning Workshop for seven participating schools in Washington State.

By implementing the Green Housekeeping Program, the District reduced the number of cleaning products in their inventory from over 20 to about six, eliminating seldom-used and possibly caustic or hazardous materials from shelves and custodial closets. Approved cleaning products now meet or exceed specific green standards, according to manufacturer certifications. Teachers are provided one all-purpose, non-toxic cleaning product in the classroom, making it easy to identify unapproved products. These improvements diminished the potential for unauthorized or improper use of dangerous chemicals.

Switching to green chemicals cost the District between \$5,000 and \$6,000 annually, an increase of 5 percent over prior practices. Though Bellingham does not have a dedicated IAQ budget, the purchase of green products is funded through the District's existing supply budget. EPA recognized Bellingham School District's efforts to improve IAQ in October 2003 with an *IAQ TFS* Excellence Award.

Radnor Township School District, Wayne, Pennsylvania

Radnor Township School District in Wayne, Pennsylvania, developed a new cleaning policy program to minimize exposure of school occupants to indoor pollutants. This program banned the use of cleaning products that contain VOCs and heavy metals. In an effort to select less toxic products, only water-based cleansers, such as those made with citrus, are allowed. The cleaning policy program was implemented upon completion of a new elementary school, which was lauded for its environmentally friendly green design. In 2001, the school won the Governor's Award for Environmental Excellence for Energy Efficiency.

In October 2003, Radnor Township School District received an *IAQ TFS* Excellence Award at the U.S. EPA's 4th Annual *Indoor Air Quality Tools for Schools* National Symposium, in recognition of the District's dedication to improving IAQ in its schools.

Adams Twelve Five Star Schools, Thornton, Colorado

Adams Twelve Five Star Schools in Thornton, Colorado, successfully negotiated with the teachers' union to implement standard procedures to ensure IAQ issues are handled expeditiously in their school district. As part of the negotiation, the District received IAQ education and training from EPA Region 8 and the University of Tulsa and adopted community stakeholder communication strategies. In addition, the District decided to phase out the use of all cleaning supplies which are not recommended under EPA's EPP program. The District also piloted the use of biodegradable low- and no-VOC cleaning products in half of their schools; all pilot schools were very satisfied with these products. Following the pilot, the District stocked only low- and no-VOC cleaning products beginning in the 2003-2004 school year. The District's team was instrumental in developing and communicating their IAQ program, and EPA recognized Adams Twelve Five Star Schools for its exemplary efforts with an *IAQ TFS* Excellence Award in October 2003.

Summary

Schools can develop a cleaning program that minimizes the introduction of products that pose a health, safety, and environmental concern. The schools featured in this case study have each found methods to identify and utilize district-approved cleaning products as a routine component to their custodial program. Further, schools that use cleaning products containing compounds that may pose a risk can still limit teacher, staff, and student exposure by:

- ▶ Increasing ventilation during product application or use;
- ▶ Applying the cleaning products only when school is not in session; and
- ▶ Reducing the frequency and amount of product application.

In addition, schools can ensure that all cleaning products are used and stored according to manufacturers' instructions. For example, certain cleaning products give off harmful fumes and should be stored in a separate, well-ventilated room.

By developing an IAQ program that integrates proper maintenance and custodial services with cleaning products that pose limited risk, schools can provide a healthier indoor environment to teachers, staff, and students. Schools and districts can easily develop strong, effective IAQ and cleaning programs by using *IAQ TFS* as well as utilizing the EPP resource. For more information about the impact of cleaning products on IAQ, schools should refer to EPA's Web site at www.epa.gov/iaq/voc.html.