



Florida Department of Environmental Protection

Florida *Green School Designation* Best Management Practice



INDOOR AIR QUALITY

Over the past few decades, clean air practices have become increasingly important, as their negative impact on our health becomes clearer. These changes have not only led to an increase in energy efficiency and reduced exposure to health-related liabilities but have also created positive impacts on the “bottom line” and lessen health risks within schools.

Indoor pollution sources that release gases or particles into the air are the primary causes of indoor air quality problems. According to the U.S. Environmental Protection Agency (EPA), indoor air quality can be up to ten (10) times worse than the quality of outside air. There are many sources of indoor air pollution. These include combustion of fuel such as oil, gas, kerosene, coal and wood; building materials and furnishings as diverse as deteriorating insulation, wet or damp carpets, and furnishings made of certain pressed wood products; products for cleaning and maintenance, central heating and cooling systems and humidification devices.

The EPA has recognized and promotes the importance of clean air practices. The following Best Management Practices (BMPs) are recommended for establishing clean air programs at green schools.

General Indoor Air Quality Best Management Practices

Make indoor air quality a top priority

Facility management should make indoor air quality a top priority because it can impact many areas of operation. Not only are students impacted by poor air quality but so are employees, equipment efficiencies and insurance premiums.

Eliminate any cause of mold or mildew

The most common causes of mold and mildew problems are leaks, condensation and poor ventilation. According to the EPA, the key to preventing mold and mildew growth is to control the amount of moisture in a given area. This can be accomplished through:

- Quickly finding and repairing any leaks in the building. In large facilities, the search for leaks should be a continual process.
- Watching for condensation and wet spots.
- Keeping heating, ventilation and air conditioning (HVAC) drip pans clean.
- Properly venting moisture-generating appliances to the outside.
- Maintaining low indoor humidity. Indoor humidity should be between 35 and 55 percent.
- Performing regular inspections and maintaining any necessary logs.
- Drying and cleaning any wet or damp spots as soon as possible.



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To help decrease the use of harmful chemicals, develop a Preventative Maintenance (PM) Plan that reports evidence of leaks, water damage and pests

Water residue causes mold and mildew, which can be harmful to anyone exposed. By stopping pests early, you eliminate the need for harmful chemicals.

Develop a plan for providing for and improving the indoor air quality of the school

A written indoor air quality plan should be an integral part of any school's environmental plan. The indoor air quality plan should outline the overall air quality goals of the facility, highlight air quality issues and concerns, and set specific air quality improvement targets based on those concerns.

Communicate indoor air quality policies to students, parents, and faculty and staff, vendors, suppliers and contractors

Demonstrate the school's commitment to good indoor air quality by clearly communicating any policies to all students, parents, employees, vendors, suppliers and contractors to increase adoption of the facility's policies and plans.

Remove classroom pets and, instead, replace with animal "showcase"

Certain people are sensitive to animal fur, dander, body fluids and animal waste products and may experience allergic reactions to these irritants. Removing permanent classroom pets increases air quality.

Maintain a 100 percent smoke-free facility

Eliminate smoking from all indoor areas of the school. Position all outside smoking areas away from doors, windows, intake fans, air return ducts and sitting areas.

Indoor Air Quality Best Management Practices related to Chemicals

Use environmentally preferable cleaners, whenever feasible

Switch from using traditional cleaners to cleaning products that do not contain nitrilotriacetic acid (NTA), chlorine bleach, phosphates, artificial dyes and imitation fragrances. Environmentally preferable cleaners have been shown to reduce liability costs associated with insurance, increases both employee satisfaction and retention and lower the rate of lost-time accidents.

Properly label, store, track and dispose of all chemicals

Proper management of all chemical materials reduces the likelihood of hazardous exposure to students, guests, staff and the environment. In most cases, this is required by regulation. Read and publicly post each chemical's Safety Data Sheet (SDS) or have them available in a common area for review when needed.

Integrated pest management is used to control pests

According to the U.S. Centers of Disease Control (CDC), integrated pest management is a coordinated system of managing pests that combines inspection, monitoring, treatment and evaluation, with special



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emphasis placed on the decreased use of toxic agents for control and treatment. The use of integrated pest management will reduce the reliance on generally applied toxic agents from pest control and substitute it with pest-specific controls.

Regularly test for hazardous substances such as radon, carbon monoxide, lead and asbestos

Develop a testing schedule for hazardous substances. Track results and immediately correct any issues that are found.

Use low or no volatile organic compound (VOC) paints and finishes

The use of paints and finishes with high levels of VOCs have been shown to cause temporary health problems including headaches, nausea and dizziness. However, long term exposure, such as that experienced by professional painters, can include major respiratory problems and damage to the liver and kidney. The benefits of low or no-VOC content paints and finishes are wide and varied. These benefits include lower disposal and cleanup costs, reduced amounts of hazardous wastes and toxic fumes, less personal exposure and decreased environmental air pollution.

Eliminate or reduce the use of deodorizers, chlorofluorocarbon (CFC) products and aerosols in classrooms, common areas and office spaces

Using deodorizers and aerosols with fragrances can lead to respiratory distress in part of the general population. Instead of using these products to mask distasteful odors such as cigarette smoke, mold or mildew, it is better to remedy causes of odors so that there is not a risk of recurrence. Products containing CFCs have been directly linked to depleting the ozone layer. Any CFC containing products should be recovered, recycled and properly disposed.

Indoor Air Quality Best Management Practices related to Equipment

Properly maintain heating, ventilation and air conditioning (HVAC) systems by doing the following:

- Prepare and follow a preventative maintenance plan.
- Maintain HVAC system maintenance logs.
- Ensure that HVAC systems are regularly checked for mold, mildew, obstructions to air flow (blocked vents) and clean drip pans.
- Clean all drip and condensation pans regularly.

Use HVAC air filters with a Minimum Efficiency Reporting Value (MERV) of 8 or better

The use of MERV 8 or better filters will improve the indoor air quality of your school. So as to not generate unneeded waste, do not replace old filters with MERV 8 filters all at once. The facility should prepare a written schedule for gradually replacing the traditional filters with those that have a rating of MERV 8 or better.

Clean air handling units and coils at least once per year

Dust, mold and mildew all thrive in the dark, most environments found in HVAC systems. Regular



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cleaning of these units will lead to improved air quality.

Verify that HVAC units are properly drained

Liquid and condensation drainage from HVAC units should be directed into the sanitary sewer not to stormwater drains. Drainage pipes should be checked for blockages, leaks and mildew/algae growth regularly.

Use dehumidifiers to remove excess moisture in wet areas

Dehumidifiers remove excess moisture from the air and can assist in reducing the likelihood of mold and mildew growth. Drip pans and drainage systems should be emptied, cleaned and inspected regularly.

Properly vent exhaust fans

If possible, all exhaust fans should vent to the outside. Improperly vented fans can lead to increased moisture related issues, higher levels of indoor air pollutants and an increase in energy consumption.

Regularly clean all fans, vents and indoor grates throughout the facility

Regular cleaning will eliminate the build-up of respiratory irritants. It is important to remember that while cleaning, proper Personal Protection Equipment, such as masks, gloves and safety glasses should be used.

Outdoor Air Quality Best Management Practices

Begin a habitat restoration project

Construct, install or enhance the school site with habitat restoration projects. This can be done through planting a schoolyard habitat that educates students on the watershed and local ecosystem. Some examples are native plant gardens, trees, butterfly gardens, wetlands, meadows or even a plant-release program.

Utilize your school grounds to create an Outdoor Learning Center where classes can take place

This provides students with hands-on experience and the opportunity to learn about the local ecosystem and problem-solving techniques.

Capture Florida's plentiful rainfall with installation of rain barrels

Rain barrels are used to catch runoff during storms and store the water to be used in the school garden and surrounding landscape. Classes can decorate these barrels.

Find innovative ways for the school to offset any carbon emissions. Work toward becoming climate and carbon neutral

Demonstrating carbon and climate neutrality is one of the leading ways to show environmental commitment. Neutrality can lead to increased publicity, exposure and marketing opportunities while reducing environmental degradation. To become carbon and climate neutral, a school must either reduce



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emissions which have been linked to global climate change or purchase carbon credits and green tags. Carbon credits and green tags can be purchased through a variety of not-for-profit organizations dealing with reforestation and renewable energy issues.