



Center for Green Schools
at the U.S. Green Building Council

School District Indoor Air Quality Management Plan Toolkit

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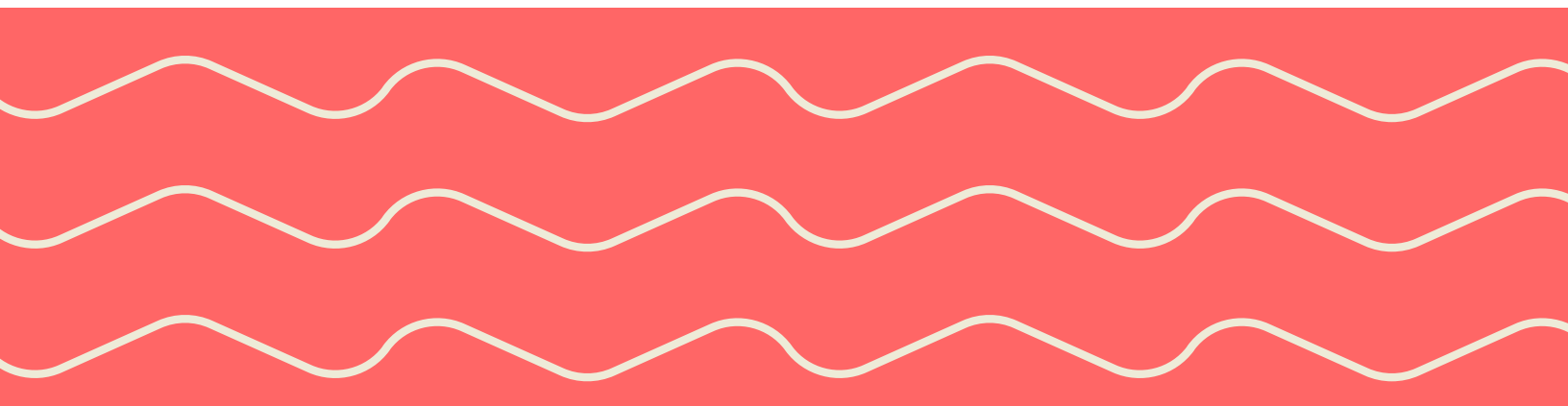


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Introduction

BACKGROUND

Each day, over 50 million people in the U.S. spend a significant amount of their time attending or working in a school, yet many schools do not have programs to address indoor air quality (IAQ). A 2016 CDC [School Health Policies and Practices Study](#) (SHPSS) found that less than half of the 740 surveyed school districts had implemented an IAQ management program. Furthermore, [only six states](#) require school districts to adopt and implement an IAQ management program. This lack of formal planning is concerning, as exposure to poor IAQ in schools has been associated with [adverse health and respiratory effects](#), [increased absenteeism](#), [worsened academic performance](#), and [teacher turnover](#) and well-being.

WHAT IS AN INDOOR AIR QUALITY MANAGEMENT PLAN?

A comprehensive school IAQ management plan outlines the policies and procedures enacted by a school district to prevent and respond to incidents that impact indoor air quality through operations and maintenance practices, staff training, communications, and compliance with local and federal regulations. Because many of these school decisions and procedures are determined at the school system level, an IAQ management plan is most effective when developed from the system level rather than by individual schools. Some school systems establish their IAQ plans as approved school board policies, while others create them as internal guidance documents. Regardless of how the plan is approved, the IAQ plan must be a regularly updated written document accessible by all district staff, tailored to the school district's operations and resources, and aligned with its organizational mission.

The COVID-19 pandemic underscored the importance of prioritizing IAQ in schools. It prompted updated ventilation guidelines to reduce viral transmission, inspired advancements in continuous air quality monitoring, and highlighted the significance of documenting and communicating IAQ practices. Additionally, IAQ impacts from increased frequency in extreme weather events related to climate change have become increasingly noticeable and disruptive. Extreme heat events and drought can lead to more frequent wildfires, impacting thermal comfort and levels of particulate matter. More frequent storm and flooding events can result in costly moisture issues and increases in mold and other fungal contaminants indoors. School districts with existing IAQ management plans should consider revising them to incorporate recent lessons learned.



Lakeview Elementary School | LEED Silver | Sugarland, TX | Photo: © Slyworks Photography

ABOUT THIS TOOLKIT

This toolkit is designed to offer helpful resources for school systems in the development and implementation of a comprehensive, written IAQ management plan. While creating this toolkit, we gathered IAQ-related school board policies, plans, and communication materials from 24 school districts nationwide. The [EPA IAQ Tools for Schools Model IAQ Management Plan](#) and the [Minnesota Department of Health's IAQ Model plan](#), which expands upon the EPA's model, served as the foundation for developing the provided IAQ plan language, in addition to comprehensive IAQ plans from school districts such as [Orange County Public Schools](#), [Wylie Independent School District](#), and [Boston Public Schools](#). This toolkit complements these existing resources by incorporating updates and additions from school district plans and policies while providing resources and explanations for each section of the plan.

Download the **IAQ management plan template** that compiles all of the example language into an easy-to-edit document you can use to customize an IAQ plan for your district.

USING THIS TOOLKIT

This toolkit walks through each component of a comprehensive school IAQ management plan and provides background information, resources, and example language for districts to use when writing their plans. Users can also download this [IAQ management plan template](#) that compiles all the example language into an easy-to-edit document. When using the example plan language, placeholder text in brackets should be filled in, and edits should be made to reflect district procedures, policies, and regulations. Supplemental documents such as detailed standard operating procedures, checklists, and sample communications should be included where possible. Additionally, actual school district IAQ policies can be found for reference on the U.S. Department of Education's [Greenstrides](#) resource database.

If you are looking for additional research on the topics contained within this toolkit, the [School Health Research Library](#) and [Research Highlights](#) compile studies and key findings from new research about school building impacts on occupant health and performance. In addition, the [School IAQ Fact Sheet Series](#) provides more details about equipment and technologies that can impact IAQ in schools.

Disclaimer: The contents of this toolkit, usgbc.org and related websites are intended to provide helpful information to the general public. Further, USGBC does not guarantee the efficacy or sufficiency of the Model IAQ Plan Language in this toolkit. USGBC does not recommend, guarantee, endorse or assure the efficacy, sufficiency, safety or performance of any products, technologies or processes described in the toolkit, or that any will be nonhazardous or free from risk. USGBC specifically disclaims all responsibility for any liability, loss, or risk, personal or otherwise, incurred as a consequence, directly or indirectly, of the use or application of any product, technology or process contained in this toolkit or on usgbc.org. All materials, including texts, graphics, images, and audio, on usgbc.org are for informational purposes only and are not a substitute for medical diagnosis, advice, or treatment for specific medical conditions.



Florida Ruffin Ridley School | LEED Gold | Brookline, Massachusetts | Photo credit: @ Ed Wonsek

Comprehensive IAQ Management Plan Contents

PLAN OVERVIEW

In the overview of the IAQ plan, it is important to share why the district is prioritizing IAQ by stating how the plan aligns with the district's mission. If possible, reference specific language from the district's existing mission, vision, or strategic plan. This section should also include the overarching goals of the IAQ plan and an overview of intended benefits to health, learning, and building operations.



MODEL IAQ PLAN LANGUAGE

OVERVIEW

[School district's name] is committed to ensuring healthy, safe, and comfortable learning and working environments for all students and staff. To provide high quality learning environments in alignment with [school district's name] [mission/vision/strategic goal], the following IAQ management plan was developed as a guide to prevent, address, and monitor aspects impacting air quality in school buildings with the following goals:

- Minimize the levels of indoor air pollutants to reduce the likelihood of occupant health problems, including asthma, respiratory tract infections, and allergic reactions.
- Control temperature and humidity and maintain adequate ventilation rates by repairing and maintaining ventilation equipment, which will promote a comfortable and productive learning and working environment.
- Respond to IAQ-related concerns and problems in a prompt and thorough manner, and effectively communicate the progress of investigations and their resolution to all interested parties.
- Prevent indoor air quality problems through measures such as preventative maintenance and regular building inspections to avoid school closures, minimize liability risks, and foster a positive relationship among parents, teachers, and the school administration.

Resources

IAQ Backgrounder, U.S. EPA

Overview of why air quality in schools is essential and factors that affect school IAQ.

Making the Case for Proactive IAQ Management: Value Proposition Worksheet, U.S. EPA

Guide for creating an "elevator pitch" that aligns program goals with district priorities.

Case Studies for Effective IAQ Management in Schools, U.S. EPA

Successful school district case studies in implementing comprehensive IAQ programs.

IAQ COORDINATOR AND TEAM

IAQ Coordinator

Dedicating a point person, sometimes called an IAQ coordinator, to manage a comprehensive district-level IAQ plan is critical to the long-term success of the program and improvement strategies. Depending on the school district's size, structure, and resources, the IAQ coordinator may be a full-time paid staff member or a staff person with a related role in environmental health, risk management, or building maintenance who will act as the IAQ program lead. The coordinator's primary role should be to ensure that the policies and procedures within the IAQ management plan are adhered to and communicated appropriately and to ensure that incoming IAQ issues and concerns are addressed effectively and on time.



MODEL IAQ PLAN LANGUAGE

IAQ COORDINATOR

[School district's name] has identified [name of person/position] as the IAQ Coordinator for the district. The coordinator administers the IAQ Management Plan and reports to [identify administrator position, Board of Education, etc.]. The school administration and school board is committed to providing the necessary support to meet the school district's IAQ Management Plan objectives. The IAQ Coordinator has been trained through [list state, national, or other trusted training programs and certifications].

THE IAQ COORDINATOR'S RESPONSIBILITIES INCLUDE:

Acting as the key contact person within the district to respond to and address IAQ issues and concerns including acting as the authorized representative to respond to parents, community members, and state agencies.

Coordinating the development and management of the district's written IAQ Management Plan. This includes:

- Establishing and overseeing an IAQ Team
- Coordinating and documenting annual building walkthroughs and ventilation system inspections
- Coordinating the investigations of reported IAQ issues and concerns
- Modifying the IAQ Management Plan to fit the district's specific needs and objectives.
- Informing and educating staff about indoor air quality procedures and policies.
- Reporting updates about the progress of the IAQ Plan and an overview of needs to support the district's IAQ goals at least annually to the school board.
- Manage compliance with IAQ-related regulations, such as smoking, vaping, asbestos, lead, vehicle idling, mercury, and pesticide applications.
- Review renovation projects to determine whether they appropriately address IAQ concerns and are consistent with the IAQ Management Plan and other requirements.

IAQ Team

Establishing a district-level IAQ team can also be an effective strategy for implementing, communicating, and gaining buy-in around the plan. At a minimum, regular internal cross-departmental meetings about incoming IAQ concerns and implementing the IAQ plan are needed, as nearly all staff roles can impact IAQ. Some school districts may involve additional representatives, including teachers, custodians, school nurses, contractors, community experts, and parents.



MODEL IAQ PLAN LANGUAGE

IAQ TEAM

[School district's name] has established an IAQ Team to represent [list departments and represented participant types including staff, contractors, community experts, and even parents]. The IAQ Team assists the IAQ Coordinator by reviewing IAQ-related information and recommending IAQ policies to maintain and improve the air quality within district facilities and school buildings.

Led by the IAQ Coordinator, the IAQ Team is involved in the following efforts:

- Supporting the IAQ Coordinator to ensure good IAQ in all facilities and areas.
- Contributing to the IAQ Management Plan creation and implementation. The members distribute the IAQ checklists and the IAQ Backgrounder to the appropriate staff members.
- Meeting regularly [monthly, quarterly, biannually, or another timeframe] to review and resolve IAQ issues.
- Meeting [annually or as needed, indicate frequency] to review the IAQ Management Plan, which includes the completion of walkthrough inspections of school buildings, key building systems evaluations and the review of existing policies in the IAQ Management Plan.
- Meeting to evaluate and respond to IAQ concerns that have been reported to the district. The team takes steps or recommends measures to resolve the reported concern.
- Maintaining IAQ Team meeting minutes, reports, and other documents in the IAQ Management Plan.

Resources

Indoor Air Quality Team Charter, Boulder Valley School District, CO

Example outline of an IAQ team structure, membership, and meeting logistics.

Energy Committee, Davis School District, UT

Example district-level committee focused on energy efficiency while improving indoor air quality.

Advisory Committees for Healthy and Sustainable Schools, Center for Green Schools

Four school district case studies on establishing cross-sector teams for overseeing health and sustainability goals.

EPA IAQ Master Class Professional series, U.S. EPA

Ten 1-hour technical, web-based trainings for school staff executing an IAQ management program.



CASE STUDY: BOULDER VALLEY SCHOOL DISTRICT

Boulder Valley School District established a district-level IAQ team in 2017 comprised of facilities staff, teachers and school leaders, school nurses, community health professionals, and parents to respond to air quality complaints, prioritize improvement actions, and communicate best practices to stakeholders. Having this committee that reported to the Board of Education before the onset of the COVID-19 pandemic proved an important asset that enabled the district to disseminate various guidance and gather feedback from community and local experts. Boulder Valley has since moved the IAQ team to an on-call advisory role and has established a new Sustainability Advisory Committee that oversees progress toward healthy and sustainable schools.

BUILDING INSPECTIONS

Regular building inspections play a crucial role in proactively identifying IAQ problems that can significantly impact the health of students and staff. Establishing achievable building walkthrough procedures ensures that inspections are thorough and systematic, covering key areas prone to IAQ concerns, such as ventilation systems, chemical storage areas, and areas with potential moisture accumulation. Strategies for effective building walkthroughs may include creating digital checklists or integrating them into the work order system, training staff members to recognize signs of IAQ issues during walkthroughs, and scheduling regular inspections at predetermined intervals. Schools can proactively identify and address IAQ concerns by prioritizing regular building inspections, ultimately fostering a healthier learning environment for students and staff.



MODEL IAQ PLAN LANGUAGE

BUILDING INSPECTIONS

The indoor environmental quality and condition of school district buildings are evaluated by conducting a detailed inspection at least once every year. The inspections check the occupied spaces (classrooms, hallways, offices, kitchens) and other areas that may affect IAQ (exterior, roof, mechanical rooms, bathrooms, storage rooms, and boiler rooms) to identify problems related to ventilation systems, combustion appliances, cleaning and chemicals, pests, nearby pollutants, moisture, odors, and reported occupant concerns.

The annual inspections are conducted using a checklist that can be found within the IAQ Plan [in Appendix _]. Each building inspection is conducted by [the IAQ coordinator (preferred)/ building engineer/ maintenance manager/external consultant]. Following the completion of each inspection:

- Identified issues are reported promptly through the work order management system to be resolved.
- Identified issues or risks requiring more significant equipment replacement, consulting, or renovation are tracked for medium to long range planning.
- The IAQ Coordinator and IAQ team work together to ensure that identified issues are resolved in a timely manner.
- The IAQ Coordinator provides a report to each building's leadership with the inspection findings and status of resolution within 30 days of the inspection.
- Records of inspections and reports are kept in [state location]
- [Include if relevant: testing parameters such as carbon dioxide, carbon monoxide, temperature, humidity, moisture meter measurements, etc. to detect potential IAQ issues, and the guidelines used to interpret the measurements.]

Resources

Walkthrough Inspection Checklist, U.S. EPA

Checklist for conducting school walkthroughs for safety and environmental quality.

IAQ Preventative Maintenance Sample Equipment Inventory, U.S. EPA

Sample inventory sheet to gather equipment information that may be included in inspections.

Safety Inspection Checklists, NIOSH

Sample safety inspection checklists for a wide array of hazards.

Summer IAQ Walkthrough Checklist, Orange County Public Schools

Simple checklist with visuals that can be used by any school staff to document building conditions



CASE STUDY: ORANGE COUNTY PUBLIC SCHOOLS

Since 2014, Orange County Public Schools in Florida has significantly decreased the occurrence of mold growth events during the summer months by engaging school principals in weekly building inspections through a **Google form**. While schools are largely unoccupied over the summer, school administrators play an essential role in reporting moisture concerns like high humidity, odors, leaks, and signs of mold growth. As a result, the district has increased the percentage of minor custodial and maintenance repairs by 27%. The increase indicates that the district is identifying and making repairs before they become an indoor air quality concern.

VENTILATION AND FILTRATION SYSTEMS

Ventilation and filtration systems are pivotal in creating optimal learning and working environments, as they impact thermal comfort, moisture levels, and indoor pollutant levels. [Research](#) has demonstrated that classroom under-ventilation in the U.S. is far [too common](#) and is associated with increased [infection transmission](#), higher [absenteeism rates](#), and exacerbated [asthma symptoms](#). Additionally, effective filtration systems capture particulate matter and allergens, mitigating the risk of respiratory issues and allergies. To ensure proper operation of ventilation systems, school districts can take several steps, including conducting regular preventative maintenance, evaluating ventilation performance, upgrading and changing filters, and providing supplemental HEPA air cleaners where necessary.



MODEL IAQ PLAN LANGUAGE

VENTILATION AND FILTRATION SYSTEMS

Preventative Maintenance: HVAC System

- Annual preventative maintenance of heating, ventilation, and air conditioning (HVAC) systems is conducted in accordance with manufacturer recommendations and industry standard practice, including ASHRAE's "Standard Practice for the Inspection and Maintenance of Commercial HVAC Systems."
- Preventative maintenance activities are conducted using a checklist that can be found in [Appendix in this document/link/physical location] and submitted through the work order management system. Identified issues that could not be addressed during the maintenance visit are reported for repair.
- A schedule of seasonal and building-level maintenance tasks can be found in [Appendix in this document/link/physical location]. Maintenance staff are notified of required, scheduled preventative maintenance tasks [time frame: daily, weekly, bi-weekly] through [team meetings/work order system alerts/ email]
- Licensed contractors are hired to perform preventative maintenance activities including [ex. annual chiller maintenance and filter replacements] and all other preventative maintenance tasks are completed by [school district's name] staff.

Resources

[Comprehensive Maintenance Plan, Montgomery County Public Schools, MD](#)

Example annual report of district maintenance goals, planned actions, and summary of resources.

[IAQ Tools for Schools: Preventative Maintenance, U.S. EPA](#)

Planning, assessment, and making the case tools for school preventative maintenance procedures.

[Reopening Schools Guidance, ASHRAE](#)

Equipment-specific checks and verifications to complete throughout the school year.



MODEL IAQ PLAN LANGUAGE

VENTILATION AND FILTRATION SYSTEMS

Preventive Maintenance: Filtration

- Ventilation systems will utilize filters rated as MERV 13 or higher wherever compatible with the existing equipment as determined by a professional mechanical engineer.
- Where MERV 13 filters cannot be used, filters will have a MERV rating of 8 or higher.
- Filters are replaced according to manufacturer recommendations or at least once per year.
- Filters are inspected as part of routine preventative maintenance at least twice per year including checking for over-loading, moisture, and damage or gaps that could allow for by-pass of air flow.

Resources

School IAQ Fact Sheet: HVAC Filtration, Center for Green Schools

Fact sheet on how filters work and their effectiveness in preventing viral transmission.

Heating, Ventilation and Air-Conditioning Systems, IAQ Design Tools for Schools, U.S. EPA

Considerations around filter efficiency, pressure drop, and gaseous contaminants.



MODEL IAQ PLAN LANGUAGE

VENTILATION AND FILTRATION SYSTEMS

Portable Air Cleaners

- [School district's name] has placed portable air cleaners in [select: all rooms, all classrooms, nurses/health offices, band and choir rooms, gym, and workout rooms].
- Portable air cleaners selected must use high efficiency HEPA filters.
- Portable air cleaners will not utilize any additive technologies including ionization and oxidation.
- Device noise levels will not exceed [__] dB when running at full power.
- Portable air cleaners will be UL 2998 certified for Zero Ozone Emissions
- Schools can contact the IAQ Coordinator to request portable air cleaners. The IAQ Coordinator will review the applicable room sizes to select a device with an acceptable clean air delivery rate (CADR).

Resources

School IAQ Fact Sheet: In-room Air Cleaners, Center for Green Schools

Guidance on selecting and operating in-room air cleaners in classrooms.

School IAQ Fact Sheet: Electronic Air Cleaners, Center for Green Schools

Overview of types of electronic air cleaner technology and how they work.

Standard 241, ASHRAE

Includes testing requirements for manufacturers to certify air cleaning systems.

Air purifier guidance, Boston Public Schools, MA

Example of guidance districts can provide to school staff when installing portable air cleaners.

CONTINUOUS INDOOR AIR QUALITY MONITORING

Technology advancements have made air quality sensors more widely available and less expensive. Implementing continuous indoor air quality monitoring enables schools to make data-driven decisions for targeted interventions and effectively prevent long-term IAQ issues. Setting targets or action thresholds for measured IAQ parameters can be an effective strategy for promptly and efficiently taking corrective actions and providing transparency when communicating about goals and expectations related to IAQ programs.

Currently, there are no comprehensive federal regulations for indoor air quality, with the exception of indoor exposure limits for radon. The following standards and guidelines can provide a starting point for school districts considering target ranges for IAQ parameters. However, targets can be customized based on criteria, including but not limited to, the local climate, baseline outdoor air quality measured, district goals and resources, and building and equipment conditions. It is important to note that some referenced standards, such as those for particulate matter, are health-based exposure recommendations, while other parameters, like CO₂, may serve as indicators for ventilation performance. Example thresholds from school districts with continuous monitoring, such as Boston Public Schools and Montgomery County Public Schools, and others that include IAQ targets in school board policies, like Seattle and Portland Public Schools, have been included for reference.



University of Florida | LEED Platinum | Gainesville, Florida | Photo: © University of Florida

EXAMPLE IAQ THRESHOLDS

TEMPERATURE

- [ASHRAE 55-2020](#):
68°F – 74°F winter; 72°F – 80°F summer
- [Boston Public Schools](#): > 78°F as “high”
- [Seattle Public Schools](#):
68°F heating; 76°F cooling
- [Portland Public Schools](#):
68°F heating; 74°F cooling
- [Montgomery County Public Schools](#):
68°F – 76°F

RELATIVE HUMIDITY

- [ASHRAE 62.1-2016](#): < 65% RH for mechanical systems with dehumidification capability
- [ASHRAE 62.1-2019](#): max dew point of 60°F in mechanically cooled buildings
- [Boston Public Schools](#): > 60% as “high”, 15-min average
- [Montgomery County Public Schools](#):
30% – 70%

CARBON DIOXIDE (CO₂)

- [Boston Public Schools](#): > 2,000 ppm as “high”, 15-min average
- [Montgomery County Public Schools](#):
< 1,200 ppm as “ideal for cognitive performance and proper ventilation”
- [OSHA](#): 5,000 ppm, 8-hour average; health-based exposure limit
- [ASHRAE 62.1-2022 Addendum ab](#): 600 ppm above ambient only for implementing CO₂ demand control ventilation (DCV)
- [ASHRAE 2022 position document on CO₂](#):
“ASHRAE Standard 62.1 has not contained a limit value for indoor CO₂ since the 1989 edition.”

CARBON MONOXIDE (CO)

- [WHO](#): 4 µg/m³, 24-hour average; health-based exposure limit
- [EPA NAAQS](#): 9 ppm 8-hr average; health-based exposure limit
- [Boston Public Schools](#): > 4 ppm, instantaneous response actions and notification
- [NIOSH](#): 35 ppm, 8-hour average; health-based exposure limit
- [OSHA](#): 50 ppm, 8-hour average; health-based exposure limit

PM_{2.5}

- [WHO](#): 15 µg/m³, 24-hr average health-based exposure limit
- [EPA NAAQS](#): 35 µg/m³, 24-hr average; health-based exposure limit
- [Boston Public Schools](#): > 35 µg/m³ as “high”, 15-min average

PM₁₀

- [WHO](#): 45 µg/m³, 24-hr average health-based exposure limit
- [EPA NAAQS](#): 150 µg/m³, 24-hr average health-based exposure limit
- [Boston Public Schools](#): > 150 µg/m³ as “high”, 15-min average



INDOOR AIR QUALITY MONITORING

[School district's name] has installed [#] indoor air quality sensors across [# of schools; space types]. Installing sensors across the district enables [school district's name] staff to monitor and analyze real-time indoor air quality parameters to take proactive action in implementing IAQ improvements, communicate about school air quality to the community, and propose investments in HVAC systems in district buildings.

Each sensor is recording the following IAQ measures:

- Temperature
- Relative Humidity
- Carbon Dioxide (CO₂)
- [Others as applicable (carbon monoxide, particulate matter, VOCs)]

Outdoor air quality parameters are utilized as a baseline for comparison in establishing acceptable IAQ parameter levels. Outdoor air quality is measured at [# sites/location names with outdoor air sensors]. [School district's name] IAQ monitoring data is publicly available on the district website]

[School district's name] [department name(s), position title(s)] staff actively monitor IAQ parameter levels daily and are alerted to elevated levels. An exceedance is a measured indoor air quality level that is above stated elevated levels, but does not directly indicate impacts to occupant health and safety.

[Measured Indoor Air Quality Parameter or Pollutant, i.e. temperature, humidity, carbon dioxide, particulate matter]

- Typical/Recommended:
- Low:
- High:
- Exceedance Response:
- Referenced Guidelines and Recommendations:

SENSOR CALIBRATION AND MAINTENANCE

All indoor and outdoor air quality monitors will be calibrated [annually, according to manufacturer recommendations] and as needed. For CO, CO₂, airborne particulates, temperature, and relative humidity, annual calibration will be completed utilizing reference devices.

In the event an indoor and/or outdoor air quality monitor loses connection to the cloud-based management system or provides readings outside of the acceptable performance range for a given parameter, a service notification shall be generated for repair. [A school district staff member, contractor name, or other] will respond within [#] school days to initiate repair and recalibration of the affected monitor(s).

Resources

Low-Cost Air Pollution Monitors, U.S. EPA

Guidance on performance and selection of low-cost air quality sensors.

Air Sensor Toolbox, U.S. EPA

Latest science on the performance, operation and use of air sensor monitoring systems.



CASE STUDY: BOSTON PUBLIC SCHOOLS

Boston Public Schools (BPS) has been nationally recognized for its efforts to install nearly 4,500 IAQ sensors across all district classrooms measuring temperature, humidity, PM_{2.5}, PM₁₀, carbon dioxide, and carbon monoxide that are displayed in real-time on an online dashboard. Additionally, BPS developed and published an [IAQ Monitoring and Response Action Plan](#) and [fact sheets](#) in partnership with Boston University.

ASBESTOS HAZARD EMERGENCY RESPONSE ACT (AHERA) MANAGEMENT

Asbestos, once commonly used in building materials, has been linked to severe respiratory diseases, including lung cancer and mesothelioma. Recognizing these risks, federal regulations such as the [Asbestos Hazard Emergency Response Act](#) (AHERA) mandate that schools inspect their facilities for asbestos-containing materials and develop comprehensive management plans to ensure their safe containment or removal. Compliance with these regulations involves regular inspections, proper labeling of asbestos-containing materials, employee training, and prompt response to any damage or deterioration that could release asbestos fibers into the air. By adhering to stringent asbestos regulations and implementing effective management practices, K-12 schools can protect the health and safety of students, teachers, and staff while maintaining a conducive learning environment.



MODEL IAQ PLAN LANGUAGE

ASBESTOS MANAGEMENT

Asbestos is a mineral fiber that can be found in some building materials. If these materials are damaged or disturbed, they may release asbestos fibers into the air. In compliance with federal law, [School district's name] has developed and maintains an Asbestos Hazard Emergency Response Act (AHERA) Management Plan that describes the location and condition of asbestos-containing building materials and documents the removal and repairs. The AHERA Management Plan can be found at [location].

Asbestos Containing Materials, if present, are inspected by Environmental Compliance every six months. Damaged asbestos containing material is assessed, documented, and/or removed by a licensed asbestos contractor and monitored by a licensed asbestos consultant. All buildings are reinspected for asbestos-containing material every three years.

[School district's name] posts an annual asbestos notification [on the district website, Welcome Back booklet] for families and staff to review. All contractors must review and sign the AHERA Management Plan before conducting any work in district buildings.

Resources

[Asbestos and School Buildings](#), U.S. EPA

Requirements and resources for school asbestos management plans.

[AHERA Designated Person's Self Study Guide](#), U.S. EPA

Guidance for designated persons in schools to comply with federal asbestos regulations.

MERCURY

While mercury use in products has dramatically declined, there are still sources of mercury that can be found in schools, including, but not limited to, older glass thermometers, thermostats, science equipment, batteries, and fluorescent (CFL) lighting. Mercury-containing polymer floors, typically found in gymnasiums from the 1990s or earlier, can also be a source of mercury vapor. Exposure to mercury can take place through skin contact or the inhalation of vapors and can cause serious health problems, including permanent brain and kidney damage. Because of the severe health impacts and difficulty with clean-up, CDC recommends that schools establish a policy to identify, remove, and properly dispose of sources of mercury to prevent spills and exposure.



MODEL IAQ PLAN LANGUAGE

MERCURY

Elemental mercury and mercury-containing instruments are not permitted on school grounds. [School district's name] does not permit the purchasing of elemental mercury or mercury containing teaching aids such as thermometers and barometers. Mercury-containing light bulbs and thermostats shall be removed and replaced with non-mercury containing equipment wherever possible and new lighting and thermostats will be free of mercury. In the event of a spill, school staff will follow [state pollution control, or other agency] guidance and students will be removed from the affected area.

Resources

What to Do When Mercury Spills at School, Agency for Toxic Substances and Disease Registry

Instructions in case of mercury spills to limit student and staff exposure.

Mercury in Schools, NYS Department of Health

Guidance for various school staff, inventory templates, and disposal guidance.

Don't Mess with Mercury Videos, Agency for Toxic Substances and Disease Registry

Short videos for school staff, students, and community members about the sources and dangers of mercury.

RADON

Radon is a colorless, odorless, naturally occurring gas that can seep into buildings through the surrounding soil. Radon is a serious environmental health concern and is the second leading cause of lung cancer in the U.S. A nationwide survey of radon in schools by the U.S. EPA estimates that nearly one in five schools have short-term radon levels above the recommended level of 4 pCi/L. The risk of radon exposure depends on the composition of the land that a building sits upon; to understand the level of risk for a particular area, consult the radon maps from the CDC or through your state's radon office. School systems can take action to protect students and staff from radon exposure by routinely testing all school buildings. Schools' radon testing and mitigation regulations vary by state, and your state radon office can advise on state-specific recommendations.



MODEL IAQ PLAN LANGUAGE

RADON

Radon is a naturally occurring gas that can enter any building from the underlying soil. Radon testing is [voluntary/required by law] and [school district's name] tests for radon at least every [#] years. Radon testing and mitigation is conducted by licensed individuals between November and March during normal school day operation in all rooms in contact with the ground and in 10% or more of upper floor rooms. Follow-up testing is completed in rooms that have radon ≥ 4 pCi/L using a continuous radon monitor, whenever possible, to evaluate levels during occupancy. If elevated radon is confirmed, mitigation is completed, and the buildings are re-tested to verify radon reduction.

Further information, including [radon test results and mitigation] conducted in district buildings, can be found in [state the location].

Resources

Radon in Schools, U.S. EPA

Guidance on when, how, and why to test for radon in schools.

Radon in Schools: Overview of State Laws, Environmental Law Institute

Overview of state laws that address radon in schools.

Radon Barriers, IAQ Design Tools for Schools, U.S. EPA

Design strategies for high radon potential areas.

Protocol for Conducting Measurements of Radon in School and Commercial Buildings, ANSI/AARST

Standard of practice for measuring radon concentrations in non-residential buildings.

ANTI-IDLING

School bus idling pollutes the air and can significantly impact health, especially in children with developing respiratory systems. Diesel exhaust is designated “carcinogenic to humans” by the International Agency for Research on Cancer and contains high levels of particulate matter that can lodge deep into the lungs. Schools can take action to reduce the amount of air pollution caused by idling vehicles by establishing anti-idling policies for school buses and cars. A 2013 study found an anti-idling campaign at a Cincinnati school was able to cut average fine particulate matter ($PM_{2.5}$) concentrations outside the school by 75%. Contrary to popular belief, engine idling emits more dangerous emissions than restarting an engine. Even in cold weather, bus engines do not need more than a few minutes to warm up. Idling also causes twice the wear on internal parts compared to driving at regular speeds and unnecessarily wastes fuel. In addition to implementing anti-idling policies, school systems may consider transitioning from diesel to electric school buses, which have zero tailpipe emissions. Supplementary heaters, powered by electricity or diesel, can be used to warm buses in colder climates while using significantly less fuel than idling.



MODEL IAQ PLAN LANGUAGE

ANTI-IDLING

Delivery and bus pickup and drop off zones have been located away from building outdoor air intakes to ensure that exhaust fumes do not enter the facility. [School district's name] prohibits buses and cars from idling while waiting to pick up or drop off students. Buses shall idle no longer than the time required to bring engines to proper operating temperature and to defrost all windows, generally 3-5 minutes. School bus drivers should be provided an indoor waiting space to keep warm to reduce the need for idling. The school district's anti-idling policy is located in [location].

Resources

Idle-Free Schools Toolkit, U.S. EPA

Information to run an effective idling reduction campaign at a school.

School Bus Idling Policy, U.S. EPA

A template schools can use to develop a school bus idling policy.

Vehicle Idling at Schools: Overview of State Laws, Environmental Law Institute

Overview of state laws that address radon in schools.

School Bus Electrification, World Resources Institute

Guidance on transitioning to an electric school bus fleet.

TOBACCO AND VAPE-FREE SCHOOLS

While smoking tobacco products has been banned in K-12 public schools since 1994, the use of e-cigarettes, which often contain highly addictive and harmful chemicals, has significantly increased. As of 2023, all states prohibit the sale of e-cigarettes to under-aged persons, and 19 states have banned indoor use of e-cigarettes in public buildings. School system policies around smoking and e-cigarettes can further prohibit the use of these products on district property, vehicles, and at school-sponsored events.



MODEL IAQ PLAN LANGUAGE

TOBACCO AND VAPE-FREE SCHOOLS

[Law or school district's name] prohibits tobacco use in all district facilities, on district property, and in district vehicles. These prohibitions apply to all employees, students and visitors at any school-sponsored instructional program, activity or athletic event held on or off district property. The prohibition includes lighted or heated product containing, made, or derived from nicotine, tobacco, and/or marijuana, that is intended for inhalation or chewing.

Resources

Tobacco-Free District Model Policy Language, American Lung Association

Model policy prohibiting the use of all tobacco products.

Freedom From Nicotine and Tobacco: Guide for Schools, World Health Organization

Step-by-step guide for implementing a tobacco-free school policy.

MOLD AND MOISTURE

Moisture problems in school buildings, caused by issues like roof and plumbing leaks or excess humidity, often result from delayed maintenance. Temporary structures like trailers and portable classrooms are especially prone to mold and moisture problems. In all cases of mold issues, it is essential to address the source of the moisture before completing mitigation to prevent recurrence. Implementing routine inspections and training staff and teachers to prevent, identify, and report moisture and mold issues are crucial for swift corrective action to protect student and staff health.



MODEL IAQ PLAN LANGUAGE

MOLD AND MOISTURE

[School district's name] staff pay close attention to water intrusion and microbial growth during the walkthrough inspections, buildings systems evaluations, and preventive maintenance. The maintenance staff have received basic training about identifying moisture problems. School staff are expected to report and address problems in a prompt manner.

In all situations, the underlying moisture problem must be corrected prior to remediation to prevent recurring mold growth. Relative humidity should generally be maintained at levels below 60% indoors to inhibit mold growth.

Non-porous materials (e.g. metals, glass, and hard plastics) can usually be cleaned. Semi-porous structural materials (e.g. wood and concrete) can be cleaned if structurally sound. Porous materials (e.g. ceiling tiles, insulation, carpet, sheet rock) with more than a small area of mold growth must be removed and discarded. Damp or wet materials must be dried within 48 hours (preferably within 24 hours). Porous materials contaminated with sewage or overland flooding are always replaced. Mold growth should be removed from non-porous surfaces with a strong brush and non-ammonia containing detergent and thorough drying.

Remediation projects greater than 10 sq. ft. and that cannot be handled by district staff should be contracted to a professional. Large-scale remediation projects may require specific control and protection measures.

Resources

IAQ Tools for Schools Reference Guide Appendix H: Mold and Moisture, U.S. EPA

Guidance on mold sources and identifying and correcting moisture problems.

Preventing Occupational Respiratory Disease from Exposures Caused by Dampness, NIOSH

Guidance for schools, including an inspection checklist.

Water Response - IAQ Management Plan, Wylie ISD

Additional sections in plan include procedures for water damage restoration and response.



Green Street Academy | LEED Platinum | Baltimore, Maryland | Photo: © Tom Holdsworth Photography

CLEANING AND CHEMICALS

INTEGRATED PEST MANAGEMENT

Integrated pest management (IPM) is an effective strategy for pest control, emphasizing the reduction or elimination of pesticide usage through preventive measures. IPM works by obstructing pests' access to school buildings, targeting their fundamental survival needs such as food, water, and shelter. Moreover, [a 2005 study](#) in North Carolina found that 44% of dust samples in conventionally treated schools had detectable concentrations of cockroach allergen compared to 14% from IPM-treated schools. IPM is a proven strategy for creating healthier school environments, and the association between pest exposure and asthma has been widely documented. According to a [National Cooperative Asthma Study](#), 37% of children with asthma in the United States are allergic to cockroach allergens. School systems planning to implement IPM programs may find higher initial costs due to necessary building repairs but may yield [long-term cost savings](#) from reduced chemical use. Successful IPM implementation hinges on the education and commitment of all teachers, administrators, and staff to mitigate pest sources actively.



MODEL IAQ PLAN LANGUAGE

Integrated Pest Management

Integrated Pest Management (IPM) is a comprehensive strategy for controlling pests, aiming to reduce the frequency and magnitude of both pesticide use and pest problems. The school district's IPM plan can be found at [link or physical location].

(If applicable) [State name] laws and regulations require all school districts to implement an integrated pest management program. [Include state specific requirements followed by the school district].

Strategies within the district's IPM plan include:

- [School district's name] utilizes non-chemical options for pest control wherever possible.
- Individuals that apply certain pesticides must be properly licensed by the [State] Department of Agriculture including district staff and contractors.
- Pesticides are only applied indoors during unoccupied times and with fresh air supply air set to 100% outdoor air. If pesticides are applied outdoors, by an air intake, this work is also done during unoccupied times and the intake is turned off.
- Landscaping is maintained to reduce pest harborage, including pruning shrubs and trees that are touching walls.
- [School district's name] provides staff training and resources on the IPM plan and their role in IPM.
- Parents and staff are notified about the application of pesticides except those listed by the EPA as Minimum Risk Pesticide Products.
- Eating in classrooms is limited as much as possible and food must be sealed in hard sided containers.

Resources

Integrated Pest Management Tools, U.S. EPA

Implementation resources for schools, from model policies to sample contract language.

School District IPM Policies: Model Policy and Examples, CA Dept. of Pesticide Regulation

IPM in Schools: Overview of State Laws, Environmental Law Institute

List of state regulations addressing IPM in schools.

CHEMICAL MANAGEMENT

Safely storing chemicals in schools and school district buildings is essential to protecting student and staff health. Many chemicals are stored throughout school buildings, including cleaning and maintenance products in storage areas, science labs, art rooms, and career and technical education (CTE) workshops. Schools can minimize the risk of student and staff exposure to hazardous chemicals by establishing procedures for conducting inventories, proper storage and disposal of chemicals, and purchasing the smallest quantities of chemicals. Ensuring staff are routinely trained on chemical management procedures—especially emergency response—is critical to an effective chemical management plan. Additionally, spaces where chemicals are stored and actively used should have adequate ventilation and exhaust to the outside.



MODEL IAQ PLAN LANGUAGE

CHEMICAL MANAGEMENT

[School district's name] is committed to promoting safe learning and working environments and has implemented a comprehensive effort to address chemical use, storage, and disposal procedures, as well as the prevention of accidents and spills.

- Applicable staff participate in annual safety training, and students and staff are instructed on necessary safety and evacuation procedures annually.
- Science and lab classes are only conducted in appropriately equipped rooms that include adequate lighting, proper ventilation, fire safety equipment, first aid kits, safety showers, emergency eyewash stations, and spill kits.
- Each school must maintain a chemical inventory updated at least annually and shared with the district [department names].
- Chemicals must be safely stored in minimum quantities in accurately labeled containers in locked locations.
- Expired chemicals and hazardous materials ready for disposal must be disposed of in accordance with federal and state regulations. Contact [district department name] for disposal.

Resources

Toolkit for Safe Chemical Management in K-12 Schools, U.S. EPA

Templates, tips, and tools for chemical management in K-12 schools.

Managing Your Chemical Inventory Part 1, Part 2, Part 3, NSTA

Guidance for maintaining school science chemicals.

GREEN CLEANING

Green cleaning involves using products and practices less harmful to human health and the environment than traditional cleaning products. Conventional cleaning products often contain high levels of volatile organic compounds (VOCs), which have been associated with the development of childhood asthma. Green cleaning products can be identified through third-party certifications such as GreenSeal and EPA Safer Choice. Characteristics of green cleaning products can include ingredients that have neutral pH levels and no known carcinogens, low VOC content, minimal packaging, and formulations designed to use less water and energy. Complementary green cleaning practices should be implemented alongside these safer products, including staff training on chemical use, storage, and disposal, proper equipment selection and operation, and scheduling cleaning activities when spaces are unoccupied.



MODEL IAQ PLAN LANGUAGE

GREEN CLEANING

To ensure that cleaning practices contribute to improved indoor air quality, [school district's name] has implemented the following guidelines.

PRODUCT SELECTION AND STORAGE

- Custodial staff shall only use cleaning agents approved by the district for school use. All products must be clearly labeled according to OSHA requirements. Bottles of cleaning agents must be tightly closed when stored. Products should be stored in rooms with local exhaust ventilation.
- Environmentally preferable products are used for general cleaning purposes, such as Green Seal certified, EPA Safer Choice (Design for the Environment) or equivalent products, where cost and performance are comparable to conventional cleaning products.
- Ammonia-based cleaning agents and chlorine-containing cleaners (such as bleach) must never be mixed because this generates toxic gases.
- Use of disinfectants for cleaning shall be limited to food service areas, the clean-up of biological and bodily wastes, and “high touch areas” (when directed). All disinfectants must be premixed, registered by the U.S. EPA, and have a Hazardous Materials Identification System (HMIS) rating of 2 or less.

CLEANING METHODS AND COMMUNICATION

- All material safety data sheets should be stored in an area available to all staff, and the location of this information is communicated in the district's “Employee Right to Know” annual training.
- Teachers and other staff are encouraged to minimize clutter, to ensure rooms are easier to clean and to minimize dust collecting surfaces.
- HEPA-filtered vacuum cleaners are used to clean carpeting and entry mats.
- All carpets must be cleaned with hot water extraction at least twice a year. Carpet may not be cleaned during summer months unless it can be dried within 24 hours.
- Most cleaning is completed during unoccupied times. Pollutant-releasing activities are restricted by time of day, week, or year. For example, the waxing of floors will be performed [on Friday afternoons or vacations, to ensure that gases are removed by the time classes resume].
- Large walk-off mats must be used to trap dirt and moisture at building entrances. These mats are cleaned according to manufacturers' guidelines to ensure optimal performance.
- Staff are not permitted to bring any cleaning products, pesticides, air fresheners, or other chemicals into schools.

Resources

Healthy Green Purchasing for Asthma Prevention, Center for Green Schools

A policy guidebook for schools on selecting and purchasing healthier products.

Green Cleaning in Schools: Overview of State Laws, Environmental Law Institute

Green Cleaning Program, NY Department of General Services

Step-by-step guides, training, and product lists for implementing a green cleaning program.

CONSTRUCTION AND RENOVATION

Taking steps to protect indoor air quality during school building construction and renovations can impact the health of learning space occupants and long-term cost savings. School districts undertaking building renovations can proactively shield building materials and equipment from moisture and debris, which could otherwise compromise IAQ. Additionally, if renovation activities must occur during operating hours, efforts should be made to isolate them from occupied spaces. Furthermore, planned building upgrades present an ideal opportunity to address longstanding indoor environmental issues, enhance ventilation and filtration systems, and opt for healthier materials.



RESEARCH ON SCHOOL RENOVATIONS AND IAQ

A **2021 study** of 29 Mid-Atlantic schools assessing IAQ pre and post-renovations, including HVAC upgrades and window replacements, found significant decreases in indoor CO₂, particulate matter, and CO levels, in addition to improved thermal comfort.



MODEL IAQ PLAN LANGUAGE

CONSTRUCTION AND RENOVATION

[School district's name] considers IAQ when planning construction and renovation projects. Proposed renovations are evaluated in relation to the school's history of IAQ findings and concerns reported. In addition, the presence of lead, asbestos, and other possible hazards are evaluated prior to renovation, and school staff comply with relevant regulations.

To the extent possible, major renovations are performed when school is not in session and steps are taken to protect IAQ during renovation activities:

- If renovation projects must be performed while school is in session, the return air from any area being renovated is isolated from the main ventilation system.
- Ensure that the work areas are under negative pressure using a smoke tube. Plastic sheeting and local exhaust ventilation may be used to minimize the distribution of contaminants produced by construction activities.
- Absorptive materials stored on-site and installed are protected from moisture damage.
- Ventilation systems are not operated unless filters of MERV 8 or higher are installed.
- All filters are replaced immediately before occupancy.
- Cleaning operations are more frequent during and after renovation.
- After completion, additional ventilation may be used to air out chemicals that may off-gas from new materials.

Resources

[Construction Indoor Air Quality Management Plan LEED credit, USGBC](#)

Strategies for preoccupancy construction IAQ management.

[Energy Savings Plus Health Guide, U.S. EPA](#)

IAQ guidelines for school building upgrades.

BUILDING MATERIALS AND FURNISHINGS

Building materials and furniture can be significant sources of indoor air pollutants, emitting or off-gassing substances throughout their lifespan. Additionally, schools can choose furnishings and finishes known for their durability, ease of cleaning, and resistance to moisture damage, thus preserving IAQ and yielding long-term cost savings. Schools may consider seeking out third-party certifications, such as [CRI's Green Label](#), [GreenGuard](#), [EPA Safer Choice](#), and [Cradle to Cradle](#), to select products with low volatile organic compounds (VOCs) and free of formaldehyde.



MODEL IAQ PLAN LANGUAGE

BUILDING MATERIALS AND FURNISHINGS

The use of environmentally preferable building materials and products are specified in renovation and construction projects wherever possible and where cost and quality are comparable to conventional materials. This may include programs such as EPA Safer Choice (aka, Design for the Environment), Green Guard, Green Seal, Carpet and Rug Institute Green Label, and ANSI 208 certified.

Resilient flooring is used for high traffic areas including classrooms, hallways, cafeterias, art rooms, restrooms, and anywhere liquid spills are likely. Only latex, water-based, low-VOC paints may be used; using paints that contain mercury or lead is prohibited. Painting and drying should only occur when the area of the building is unoccupied and properly ventilated.

Resources

Healthy Green Purchasing for Asthma Prevention, Center for Green Schools

A policy guidebook for schools on selecting and purchasing healthier products.

Controlling Pollutants and Sources: Indoor Air Quality Design Tools for Schools, U.S. EPA

Guidance from the EPA about selecting low-VOC emitting materials in schools.

Material Ingredients LEED credit, USGBC

Lists third-party certification programs certifying healthier materials.

STAFF EDUCATION AND COMMUNICATION

Ensuring optimal IAQ in school buildings requires the active involvement of all district employees. Trained employees familiar with the IAQ management plan are more likely to adhere to best practices and promptly identify and report potential issues. Staff education on IAQ should be tailored to their specific roles and responsibilities. Moreover, transparent communication with staff and the school community is crucial for fostering trust and garnering support for IAQ improvement initiatives. Proactive communication regarding the district's IAQ plan, contents, and objectives helps establish expectations and facilitates communication channels before school emergencies.



MODEL IAQ PLAN LANGUAGE

STAFF EDUCATION

All district employees play an important role in maintaining and improving air quality since their behavior can affect the quality of the air present in school buildings. [School district's name] provides an annual IAQ training session, as part of the [name of training program, such as health and safety, employee right to know]. The [IAQ Coordinator or another qualified person] performs the training.

In addition to the general training, staff receive specific training related to their roles:

- Teachers: animals, food, plants, furniture, clutter, cleaners, air movement/unit ventilators, reporting leaks, reporting IAQ concerns, cleaners
- Bus drivers: anti-idling
- Custodians: cleaning, moisture, chemicals, problem identification and reporting
- Grounds: pesticides, chemicals, grass clippings away from unit vents
- Facilities staff: ventilation, operations, maintenance, moisture

COMMUNICATION

In order to develop and maintain the trust of the community and staff, the IAQ Coordinator and other designated district employees communicate with relevant parties in a prompt, honest and courteous manner until the issue is resolved. When an IAQ concern is addressed or resolved, the IAQ Coordinator will report the measures taken and the resolution of the identified concern to the appropriate parties. The IAQ Coordinator is prepared to answer staff and parents' basic questions, and the IAQ Team and Coordinator will inform staff and parents annually about how to access the district's IAQ Plan, how to report IAQ concerns, how to contact the IAQ Coordinator, and scheduled pesticide applications.

Resources

[IAQ Tools for Schools Communications Guide](#), U.S. EPA

[Green Classroom Professional Certificate](#), Center for Green Schools

The GCP certificate program provides pre-K-12 school staff with the knowledge to identify what supports or impedes healthy and environmentally sustainable learning spaces.

[Example Concern Reporting and Investigation Form](#), U.S. EPA



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EMERGENCY RESPONSE

During emergencies at school district locations, established protocols are crucial for safeguarding the health and safety of students and staff. Indoor air quality-related school emergencies may encompass gas leaks, chemical spills, sudden mold outbreaks, and infectious disease outbreaks. Clearly outlining procedures for evacuation, notifying authorities, providing medical attention, and implementing mitigation steps tailored to each type of emergency is essential for ensuring a prompt and coordinated response.



MODEL IAQ PLAN LANGUAGE

EMERGENCY RESPONSE

Emergencies are defined as situations that require immediate action and could pose a threat to the health and safety of building occupants. IAQ-related emergencies include the following:

- Widespread and sudden complaints of headaches and nausea or combustion odors
 - » Report to the Facilities department for prompt investigation of cause.
- Chemical spills or gaseous leaks of hazardous materials
 - » Report major spills to the Facilities department for prompt response. If a spill is an immediate hazard, the school's evacuation protocol will be followed.
- Confirmed infectious air borne disease outbreak (e.g., Legionnaire's, measles, coronavirus)
 - » Follow [school district's name] protocols for [protocol name: e.g. rapid response and outbreak prevention], including monitoring illness rates and surface disinfection.
- Wildfire or outdoor air pollution event
 - » Close doors and windows and limit time spent outdoors including recess. Turn on portable air filtration units, if available.

Emergencies are determined on a case-by-case basis, using the above definition as a general guideline only. If doubt exists about whether exposure to a specific hazard constitutes an emergency, a precautionary approach may be used where the matter is handled as an emergency. Details of the [school district's name] emergency preparedness and response plan can be found in [state location].

Resources

Introduction School Emergency Response Plan, DC Public Schools

Example comprehensive district emergency response plan.

Emergency Communications Toolkit, WA Department of Health

Templates, checklists, and fact sheets for preparing emergency response communications.