WHAT DO WE MEAN?

Physical Environment (aka Safe Environment) describes the school building and physical space around the school, school grounds, and the land on which the school is built. Safe environment includes two components: (1) the physical environment of the school and (2) promoting a safe environment for students and staff.

The physical environment includes consideration of factors such as lighting, ventilation, air quality, and temperature during normal operating hours and during times of construction or renovation. The U.S. Environmental Protection Agency outlines five major components of a comprehensive school environmental health program which align with the WSCC’s definition of the physical environment.

1. Utilize effective cleaning and maintenance practices to ensure that district buildings and equipment are clean and safe for students and staff to use.
2. Prevent mold in school buildings through control of moisture and dampness in school structures.
3. Protect students and staff from exposure to toxins in school buildings and on school grounds including mold, air pollution, pesticides, and chemicals in cleaning products.
4. Address and improve air quality and ventilation on district buildings and grounds; this includes ensuring access to fresh air along with minimizing exposure to toxins in the air such as vehicle exhaust from vehicle traffic near the school.
5. Establish a comprehensive pest management program while simultaneously limiting student and staff exposure to harmful pesticides.

In addition to preventing and responding to environmental health, a safe environment also considers other threats to the school environment including violence, crime, traffic accidents, injuries, and other emergencies. Therefore, an essential component to the school physical environment is the establishment of a comprehensive school safety plan which includes physical and psychological safety measures, crisis plans, and school safety response teams. Physical safety is focused on the physical structures of the school environment which include natural access control (i.e., locked doors) and surveillance (i.e., security cameras). Psychological safety measures focus on the promotion of emotional and behavioral well-being of students and staff by promoting school climate and connectedness. The development of school safety teams requires collaboration between school personnel, emergency responders, and community resources. Crisis plans include protocols and procedures for the school crisis team and delineated roles and responsibilities of how to respond effectively to a threat.
WHY IS IT RELEVANT TO CHILD OUTCOMES?

Physical Health Outcomes

The school environment is associated with a variety of physical health outcomes. Exposure to toxins, pollutants, chemicals, or poor water quality while at school can affect the development and growth of bone, muscle, and other organs during childhood and adolescence. Despite regulations and recommendations, previous research has documented that some schools do not meet these environmental standards. For example, one study evaluating air quality in California elementary classrooms found that over half of the classrooms sampled did not meet the state standards for ventilation. This is significant as previous research has documented connections between indoor air quality and coughing, wheezing, lung inflammation, and asthma. In addition, the physical structures available in the school environment may also affect physical activity, which may then in turn impact physical health outcomes. Additional research has documented relationships between features of the area around the school—such as sidewalks, crosswalks, and bike lanes—and active transport of walking or biking to school.

Social, Emotional, and Behavioral Outcomes

Previous research has documented interactions between aspects of the school physical environment and student outcomes. For example, a relationship between school climate and physical environment has been documented—specifically, school climate was found to mediate the relationship between school facilities and student academic outcomes. Another component of the school physical environment is school safety and protecting students and staff from threats. Given that crisis events (e.g., shootings, natural disasters) are associated with increases in psychological distress and decreases in sense of psychological safety, the development of a school safety team and a comprehensive crisis response plan may help to promote student and staff feelings of psychological safety and improve outcomes if the event a crisis occurs.

Academic Achievement

The relationships between the school physical environment and academic outcomes are primarily indirect effects of the impact of the school environment on physical health. That is, the school environment may affect physical health by causing or exacerbating illness (e.g., through poor indoor air quality or ventilation). This may in turn lead to an increase in absences and missing academic content, which can in turn affect grades and academic achievement. It is important to note that it is not possible for these studies to determine if these relationships are due to poor environmental health in the school, community, homes, or a combination of settings. However, given that previous studies have documented that classrooms may not meet environmental standards, the school environment may contribute to negative effects of poor environmental health (e.g., exposure to mold, lead, toxins, or poor air quality). In addition, previous work has established a relationship between aspects of the school environment (e.g., air quality) with student attention, ability to focus, and academic achievement.
The strategies provided here summarize a review of available evidence and best practice recommendations in this domain.* Strategies are grouped by anticipated resource demand for implementation (e.g., funding, time, physical space, training, materials).

**Level 1: Low resource demand**

**Improve air quality**
- Outdoor air quality can be improved by reducing exposure to vehicle exhaust, such as through implementation of a no-idling policy on school grounds or by partnering with community stakeholders to reduce idling of cars near school grounds.9, 18
- Indoor air quality can be addressed through increasing ventilation, ensuring adequate air flow, and increasing access to fresh air.19, 24

**Promote student and staff involvement in the physical environment**
- Schools can encourage members of the school community to improve and maintain the physical environment.12
- Examples may include encouraging students and staff to keep shared spaces clean, engaging in recycling programs, preventing graffiti and other damage to school property, and offering extracurricular and volunteer activities related to environmental health.24

**Level 2: Moderate resource demand**

**Change seating options**
- Relationships exist between improvements in seating options and both improved posture5 and decreased sedentary behavior.21
- Factors such as seat height, slope of desk, lumbar support, adjustability, and access to standing desks can be considered when selecting seating options.5, 21

**Monitor and respond to the physical environment**
- Despite environmental standards and recommendations, schools may not meet expectations for air quality19 water quality,15 and ventilation.14
- Schools can take steps to regularly monitor aspects of the physical environment (e.g., presence of mold or moisture, air and water quality, temperature, humidity), and create a response plan to address concerns.

**Create a school safety team**
- A comprehensive school safety team should include a variety of stakeholders (e.g., parents, community members, first responders, etc.)3
- Schools should develop and practice crisis prevention and response plans with all stakeholders according to routine plans.

**Level 3: High resource demand**

**Change playground designs**
- Previous research has documented increased physical activity resulting from a multi-component recess intervention design including both playground markings (for games and other activities) and physical structures.4,10
- Playground activities and equipment should include options that match the preferences and developmental level of students in each grade level to encourage participation in recess activities and physical activity.

**Provide school safety training for all staff including school resource officers (SROs)**
- Preliminary evidence suggests that the presence of SROs may be associated with increased use of exclusionary discipline (e.g., suspension, seclusion, restraint).11
- Administrations can invest in training all staff—including SROs—on proactive, positive behavior management strategies to ensure consistent implementation.

*For more information about the systematic review process used to identify evidence-based practices, please refer to our overview brief which can be found here.*
ADDITIONAL RESOURCES

PHYSICAL ENVIRONMENT RESOURCES

School Buses and Healthy Schools
U.S. Environmental Protection Agency
https://www.epa.gov/schools-transportation/school-buses-and-healthy-schools
This website includes information and resources related to reducing exposure to vehicle exhaust on school grounds.

Sensible Steps to Healthier School Environments
U.S. Environmental Protection Agency
This 2012 document identifies common environmental health concerns and steps school leadership can take to respond; also includes an assessment to evaluate current facilities and operations.

State School Environmental Health Guidelines
U.S. Environmental Protection Agency
https://www.epa.gov/schools/appendix-model-program-state-school-environmental-health-guidelines#LinkTarget_5779
This 2012 guide includes tiered recommendations for implementation of each of the five components of a school environmental health program.

Topics in School Environmental Health: Overview of State Laws
Environmental Law Institute
https://www.eli.org/buildings/topics-school-environmental-health-overview-state-laws
This 2017 document provides a review of state laws related to school environmental health including mold, vehicle idling, building ventilation and other topics.

SAFE ENVIRONMENT RESOURCES

A Framework for Safe and Successful Schools
National Association of School Psychologists
This 2013 framework, jointly created by multiple organizations with representation from a variety of stakeholders, provides evidence-based practices for promoting school safety.

Guide for Developing High-Quality School Emergency Operations Plans
Readiness and Emergency Management for Schools Technical Assistance Center
This website provides detailed guidance related to developing school-based emergency preparedness and response plans.

PREPaRE Training Curriculum
National Association of School Psychologists
https://www.nasponline.org/professional-development/prepare-training-curriculum
The 2016 PREPaRE curriculum includes materials and information about training options for school crisis prevention and intervention.

School Safety and Crisis Webpage
National Association of School Psychologists
This webpage includes multiple resources related to preventing and responding to school crisis events tailored to different audiences including parents, teachers, and administrators.

School Safety Resources
National Education Association
http://healthyfutures.nea.org/wpccategories/school-safety/
This webpage includes fact sheets related to environmental health and school safety.
SOURCES

The walls speak: The interplay of quality facilities, school climate, and student achievement. *Journal of Educational Administration, 46*, 55-73.


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