



School Renovation and Construction: What you Need to Know to Protect Child and Adult Environmental Health

Healthy Schools Network, Inc.

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Hazards to Children During Renovation and Construction

Schools must provide a healthful, safe learning environment which promotes attendance and achievement. Construction and renovation projects conducted while school is in session severely test this responsibility and often present unnecessary risks to children and staff. Some environmental hazards that can occur during school renovation and construction include:

- * Lead-contaminated debris
- * Asbestos fibers and fiber glass
- * Wood, sheet rock, cement dust, and dust contaminated with lead/asbestos/molds
- * Fumes from construction equipment (diesel fuel from heavy machinery)
- * Fumes from toxic products (paints, sealers, glues, varnishes or urethanes, roofing tar)
- * Excessive, loud noises
- * Fumes from new furnishings and equipment (copiers, carpets, new particle board or plywood)



Specifically, these materials can include materials which are known to harmful to human health, including children's health:

- * Volatile Organic Compounds (VOCs) (glues, paints, floor finishes, other construction materials)
- * Polybrominated Diphenyl Ethers (PBDEs) (materials with halogenated flame retardants, including foams and finishes)
- * Polyvinyl chloride (PVCs) plastics (flooring, plumbing, wall coverings and partitions)
- * Polychlorinated biphenyls (PCBs) (caulk and fluorescent light ballasts, typically in older buildings constructed or renovated from the 1950's through 1978)
- * Lead (paint in schools constructed or renovated before 1978, soil); the US Environmental Protection Agency enforces the Renovation, Repair and Painting (RRP) Rule, which requires that contractors be certified in lead-safe work practices before renovating, repairing or painting schools, daycares or homes where lead paint will be disturbed; contractors are also required to take steps to minimize the exposure of occupants to lead-contaminated dust by containing the work area, using methods that produce the least amount of dust, and thoroughly cleaning the area after the work is finished
- * Mold (ceiling tiles, drywall, carpets, carpet pads and other building materials)

School occupants at higher risk for health problems include all children, pregnant women and those with chronic illnesses or impaired immune systems. *(Sources: Institute of Medicine, Climate Change, the Indoor Environment, and Health; Healthy Building Network; Collaborative on Health and the Environment, Learning and Developmental Disabilities Institute; US Environmental Protection Agency, Mold Remediation in Schools and Commercial Buildings, PCBs in Caulk in Older Buildings, and Renovate Right: Important Lead Hazard Information for Families, Child Care Providers, and Schools)*

This guide details the New York State regulations schools must follow during renovation and construction to protect children and adults from hazards. Parents or others who care about the health and safety of children must be informed about the law and vigilant about its implementation.

Children's Health is Affected by Their Environment

Why you Need to Pay Attention!

Children's health is uniquely affected by the environment. Today, children are growing up with complex toxic environmental threats to health ranging from asthma-inducing air pollution to toxic chemicals. Children are not just little adults and are especially vulnerable to environmental risks because:

- * Their bodies are still developing
- * They proportionately eat, drink and breathe more per pound of weight than adults
- * They are exposed to more environmental threats
- * They are less able to identify or protect themselves from exposures to environmental hazards

There is growing evidence that contaminated indoor air can produce verbal, perceptual, motor and behavioral disabilities in children. It can also cause hearing impairments, irritability and developmental delays. Children who are asthmatic, allergic, chemically sensitive or are health-impaired may need special protection to promote optimal health and learning. Children may be in school up to 10 hours a day, and they outnumber adults in school settings. Schools are, on average, four times more densely occupied than office spaces. No school is required to report pupil illness or injury. Schools are not required to hire school nurses. *(Sources: American Academy of Pediatrics Council of Environmental Health, Pediatric Environmental Health, 3rd Ed.; US Environmental Protection Agency, IAQ Tools for Schools)*

The Rights of Children and Parents to Healthy, Safe Schools

- * Every child has a right to an environmentally safe and healthy learning environment that is clean and in good repair. Schools should serve as role models for environmentally responsible behavior.
- * Every child, parent and school employee has a "right-to-know" about environmental health issues and hazards in their school environment.
- * School officials and appropriate public agencies should be held accountable for environmentally safe and healthy school facilities.
- * Schools should serve as role models for environmentally responsible behavior.
- * Federal, state, local and private sector entities should work together to ensure that resources are used effectively and efficiently to address environmental health and safety conditions.

(Source: Guiding Principles for Improving the Environmental Quality of Schools, adopted by New York State Board of Regents, 1994)



New York State Laws on School Renovation and Construction

In 1999, New York State adopted new regulations known as the "Comprehensive Public School Safety Program." Within these regulations, the Uniform Safety Standards provide some health protection for children and other school building occupants during renovation and construction. The Board of Education of each school district, including New York City, and each Board of Cooperative Educational Services (BOCES) is required to ensure that all school building-level renovation and construction plans, specifications, or other work in occupied facilities complies with health and safety procedures. The "checklist" on the next page provides a specific list of actions that must be taken in schools. *(Source: Comprehensive Public School Safety Program, Part 155 Regulations, New York State Education Department, February 2010)*

Comprehensive Public School Safety Program: CHECKLIST of Uniform Safety Standards During Renovation and Construction (Source: Comprehensive Public School Safety Program, Part 155 Regulations, New York State Education Department, February 2010)

- Pre-construction notification of parents, staff, and the community two months in advance of a construction project of \$10,000 or more to be conducted while school building is occupied. If the project is an emergency, notice must be provided as soon as practicable. Notice may be met by publication in district newsletters, direct mailings, or holding a public hearing on the project.
- Pre-construction testing and planning so that safety is addressed in bid specifications; all areas to be disturbed during renovation or demolition must be tested for lead and asbestos and procedures to protect occupant health must be included in the final construction documents for bidding.
- Monitoring of construction and maintenance activities for compliance with minimum requirements of a certificate of occupancy and to ensure there are no safety violations. (Investigations and response to complaints related to health and safety as a result of construction and maintenance activities.)
- Health and Safety (H&S) Committees, which include representatives from district officials, staff, bargaining units and parents must be created in every school district.
- Procedures must be established for involvement of the H&S Committee to monitor construction to include the project architect, construction manager, and the contractors. In large cities (one million or more), procedure for protecting health and safety during construction must be submitted to the Commissioner of Education for approval. The H&S Committee must also be involved in the investigation and response to complaints.
- The District Emergency Plan must be updated to accommodate the construction process, including an updated emergency exit plan, with, if necessary, temporary exits. Provisions must be made for an emergency evacuation and relocation or release of students and staff in the event of a construction incident
- Fire drills must be held to familiarize students and staff with temporary exits and revised emergency exits.
- General safety and security standards, including:
 - Construction materials must be stored in a safe and secure manner;
 - Fences must be maintained around supplies and debris;
 - Gates must be locked unless a worker is in attendance to prevent unauthorized entry;
 - Overhead protection and warning signs must be provided;
 - Workers must wear identification badges.
- Separation of construction areas from occupied spaces must occur for those construction areas under the control of a contractor.
- Provisions must be made to prevent the passage of dust and contaminants into occupied parts of the building and periodic inspections must be made to prevent exposures to these materials. Gypsum board must be used in areas where fire could occur, and heavy-duty plastic may be used only for a vapor, fine dust or air infiltration barrier, and not to separate occupied spaces from construction areas. All occupied parts of the building affected by renovation must be cleaned at the close of the day and all school buildings must maintain health, safety and educational capabilities while classes are in session.
- Maintenance of exiting and ventilation requires plans and specifications for isolating equipment, materials, people, dust, fumes, odors, and noise during construction, and details how adequate ventilation will be maintained.
- Fire and hazard prevention, including no smoking on school property, assurance that equipment does not block exits, and fire extinguishers and smoke alarms maintained.
- Noise abatement to assure construction operations do not exceed 60 decibels in occupied spaces (i.e. isolating students from jackhammers and power saws).
- Control of chemical fumes, gases, dust and other contaminants. Bid specifications must allow time for “off-gassing” of volatile organic compounds, specifically in glues, paints, furniture, carpeting, wall coverings and drapery.
- Building materials or furnishings which “off-gas” chemical fumes or other contaminants must be aired out in a well-ventilated, heated warehouse before these are brought to the school for installation, of “off-gassing” period must be scheduled between installation and use of the space. If work generates toxic gases that cannot be contained, it must be done while school is not in session. Material Safety Data Sheets must be located on site for all products used during construction.
- Asbestos and lead abatement protocols must be in compliance with state and federal law.
- Testing and mitigation of radon must be conducted.
- Post construction inspections must be conducted. An opportunity for a walk-through inspection by the H&S Committee must be provided to confirm that the area is ready to be reopened for use.

Laws in Other States

A few other states have laws in place on renovation and construction in school settings.

- In **Connecticut**, General Assembly Chapter 173 Section 10-291, requires that renovation plans incorporate the guidelines in the Sheet Metal and Air Conditioning Contractors National Association's publication entitled "Indoor Air Quality Guidelines for Occupied Buildings Under Construction" or similar subsequent publications, <http://www.cga.ct.gov/2011/pub/chap173.htm>. The state Department of Health has also developed "Guidelines for Alternation, Renovation, or Construction in Occupied Buildings," http://www.ct.gov/dph/lib/dph/environmental_health/eoha/pdf/construction_in_occupied_buildings.pdf. In addition, the state Department of Construction Services has developed high performance building guidelines, including 18 mandatory requirements for new construction and renovation in public schools, http://www.ct.gov/dcs/lib/dcs/bdc/pubs/0450_capital_projects_high_performance_buildings_guidelines.pdf.
- The **Massachusetts** School Building Authority's Regulations, 963 CMR 2.04, requires design and construction standards for Indoor Air Quality. The regulations require schools to contain dusts, gases, fumes and other pollutants during construction if the school is occupied while renovation/construction is taking place. Containment procedures must be consistent with the "Indoor Air Quality Guidelines for Occupied Buildings Under Construction" published by the Sheet Metal and Air Conditioning Contractors National Association, http://www.massschoolbuildings.org/sites/default/files/edit-contentfile/Guidelines_Forms/Statutes_Regulations/MSBA_Regs_program_04_16_10.pdf
- The **New Jersey** Department of Labor law Chapter 100, Subchapter 13, requires that public employers have a written compliance plan addressing indoor air quality issues, including protecting indoor air quality during renovation and construction, relating to confining air contaminants, cleaning and airing-out construction areas before re-occupancy, checking products prior to selecting materials to see if materials contain volatile organic compounds (VOCs), and giving advance notice of construction, <http://www.state.nj.us/health/peosh/iaq.shtml>. Although this law applies to employees only, parents always have a right to request copies of written policies and procedures from public school districts.
- In **Vermont**, Section 6131 of State Education Law requires that school boards are required by law to adopt a plan addressing indoor air quality during all phases of school construction. The plan must provide for the containment and exhaust of pollutants, including dust and volatile organic compounds (VOCs). If possible, the plans should specify a minimum one-week period between the end of construction and building occupancy, to allow for off-gassing of construction materials, <http://www.education.vermont.gov/new/html/board/rules.html>.

Eliminate Dangerous Conditions for Children: *Take More Steps Than the Law Requires*

No child should be forced to drop out of school because of discomfort or poor health created by school renovations or construction. **Dangerous conditions and other hazards are avoidable. While the current law as cited in this guide is a good first step, there are additional actions you can take to provide better protection for children.** The following guidelines have been recommended to the New York State Board of Regents and endorsed by the Healthy Schools Network, Inc:

- School officials must accommodate (e.g. relocate) those individuals affected by noxious emissions from construction that cannot be isolated from building occupants.
- Schools must conduct environmental site audits for new building construction, including adjacent land, to identify potential environmental health hazards.
- Schools must use construction materials and school supplies that are less toxic and less hazardous to building occupants.
- School buildings, when designed or renovated, should use design principles and construction materials that further the goals of conserving energy, ensuring good indoor air quality, pest-proofing, radon-proofing, ease of maintenance (e.g. durable, hard-surface flooring) and include other factors contributing to positive learning environments. (See the Healthy Schools Network "Guide to School Design: Healthy and High Performance Schools.")
- Schools should consider creating "chemically clean" or environmentally safer classrooms (portable or within schools) for asthmatic, allergic or chemically sensitive students who have not been able to attend classes within their school buildings.

CHPS High Performance Schools Guidelines

In addition, the New York State Education Department, Office of Facilities Planning (NYSED) and the New York State Energy Research and Development Authority (NYSERDA) developed the **NY-CHPS High Performance Schools Guidelines**. These guidelines exist as an appendix of the NYSED Manual of Planning Standards for educational facilities in New York State, http://www.p12.nysed.gov/facplan/NYSERDA/NY-CHPS_Ver_1-1_Feb_07.pdf

In New York State, the Hampton Bays Middle School in Hampton Bays, Long Island, became a NY-CHPS Verified school building in April 2010. Some of the features which earned this school its recognition were efforts to protect indoor air quality by controlling construction pollution, using low emitting materials, and designing air intakes and returns to minimize levels of particulate and volatile organic compounds in the air.

In addition, other states have developed criteria for high performance school design, which may include recommendations relating to indoor air quality and construction materials. Other states which have adopted CHPS criteria are California, Colorado, Hawaii, Massachusetts, the Northeast (New Hampshire, Rhode Island, Connecticut, Maine and Vermont), Texas, Virginia and Washington. Currently there are over 85 completed CHPS schools across the county, and an additional 300 schools are in the process of seeking CHPS recognition. (Sources: NYSED & NYSERDA *NY-CHPS High Performance School Guidelines*, 2007; Collaborative for High Performance Schools, *The CHPS Criteria*, 2012)

NEED HELP?

Email or call us at 518-462-0632. The Healthy Schools Network maintains the *Healthy Schools/Healthy Kids Information and Referral Services* by offering hands-on guides, fact sheets and information packets on a wide variety of school health and safety issues.

More Resources:

US Environmental Protection Agency, “IAQ Tools for Schools”, a self-help kit for resolving indoor air quality problems in schools; also contains a Renovation and Repair Checklist, <http://www.epa.gov/iaq/schools/>

US Environmental Protection Agency, *Public Health Levels for PCBs in Indoor School Air*, recommended PCB reference levels for children through adults in school settings, <http://epa.gov/pcbaincaulk/maxconcentrations.htm>

US Environmental Protection Agency, *Renovate Right: Important Lead Hazard Information for Families, Child Care Providers, and Schools*, information about lead, health effects, sources of lead in homes, daycares and schools, and lead-safe renovation regulations, <http://www.epa.gov/lead/pubs/renovaterightbrochure.pdf>

US Environmental Protection Agency, *Mold Remediation in Schools and Commercial Buildings*, guide for preventing, identifying, and safely remediating mold and moisture problems in schools, http://www.epa.gov/mold/mold_remediation.html

Collaborative for High Performance Schools, *Operations Report Card*, an online tool to help schools understand how their buildings are performing. Also provides suggestions on how to improve building performance, <http://www.chps.net/dev/Drupal/orc>

Sheet Metal and Air Conditioning Contractor’s National Association, Inc., *Indoor Air Quality Guidelines for Occupied Buildings Under Construction*, November 1995, http://asc67.org/ASC_Previous_Problems/R7/Commercial/2007/Student%20Disk/14.4%20SMACNA%20Guidelines.pdf

National Institute of Occupational Health and Safety (NIOSH), *Good Practice Guidelines for Maintaining Acceptable Indoor Environmental Quality During Construction and Renovation Projects*, November 2005, http://www.peer.org/docs/doi/05_21_12_niosh.pdf

State Examples:

Database of State Indoor Air Quality Laws, Environmental Law Institute, February 2012, http://www.eli.org/Buildings/iaq_databases.cfm

Preventing Indoor Air Quality Problems During Construction and Renovation, Workplace Safety and Health Program, Massachusetts Department of Labor, <http://www.mass.gov/lwd/docs/dos/mwshp/hib388.pdf>

Renovation & Construction in Schools: Controlling Health and Safety Hazards, Public Employees Occupational Safety and Health Program, New Jersey Department of Health, March 2004, <http://www.state.nj.us/health/eoh/peoshweb/schoolsren.pdf>

Envision—Promoting Healthy School Environments, Vermont Department of Health, <http://healthvermont.gov/enviro/envision.aspx>

Available from the Healthy Schools Network:

Access to Decision-Making Fact Sheet: Using the NYS Open Meetings Law

Asthma and the Environment Fact Sheet for Parents and Schools

Guide to School Design: Healthy and High Performance Schools

Guide to School Health and Safety Committees: How to Promote Child and Adult Environmental Health Protection

Guide to School Renovation and Construction: What You Need to Know to Protect Child and Adult Environmental Health



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