

Health and Safety Guide for K-12 Schools in Washington State – 2024 Update of the 2003 Edition

References:

[WAC 246-366-080: Ventilation](#)
[Chapter 51-52 WAC: STATE BUILDING CODE ADOPTION AND AMENDMENT OF THE 2021 EDITION OF THE INTERNATIONAL MECHANICAL CODE](#)
[2021_WSEC_C_2ndEd_012824.pdf \(wa.gov\)](#)
[School Indoor Air Quality Best Management Practices Manual \(wa.gov\)](#) (IAQBMP)
[Indoor Air Quality Tools for Schools Action Kit | US EPA](#)
[Indoor Air Quality Design Tools for Schools | US EPA](#)
[Reference Guide for Indoor Air Quality in Schools | US EPA](#)
[Managing Asthma at School | US EPA](#)
[Building Air Quality Guide: A Guide for Building Owners and Facility Managers | Indoor Air Quality \(IAQ\) | US EPA](#)
[DOSH Directive \(WRD\) 10.10 - Indoor Air Quality \(wa.gov\)](#)
[WSU Energy Program > Home](#)
[WSU Energy Program > Publications and Tools](#) Public Facilities Support – Indoor Air Quality
[Schools | Washington State Department of Health – Air Quality](#)
[Indoor Air Quality | Washington State Department of Health](#)
[Asthma and Schools | Washington State Department of Health](#)
[Taking Asthma Care to School \(osp.k12.wa.us\)](#)
[Ventilation Can Reduce Exposure to Respiratory Viruses in Indoor Spaces | CDC](#)
[Prudent Practices in the Laboratory: Handling and Management of Chemical Hazards, Updated Version | The National Academies Press](#)
[Washington Sustainable Schools Protocol \(2018\) OSPI](#)

F. Indoor Air Quality		WAC or other Code Reference	Standard/ Recommended Practice	Review Plan	Reason for Change
F 001	<p><u>Ventilation.</u></p> <p>(1) All rooms used by students or staff shall be kept reasonably free of all objectionable odor, excessive heat or condensation.</p> <p>(2) All sources producing air contaminants of public health importance shall be controlled by the provision and maintenance of local mechanical exhaust ventilation systems as approved by the health officer.</p> <p>All sources producing air contaminants of public health importance shall be controlled by the provision and maintenance of heating, ventilating, and air conditioning (HVAC) systems as approved by the health officer in conformity with the Washington State Building Code and ASHRAE Standards in effect as of the date of construction.</p>	<p>51-13-304 & I.3-4</p> <p>246-366-080</p> <p>296-62-075</p> <p>RCW 19.27- UBC</p>		X	Actual code language.
F 002	<p>Incoming outside fresh-air levels meet <u>zone outdoor airflow requirements and procedures</u> listed in the state adoption of the IMC Chapter 4 <u>Ventilation and Table 403.3.1.1 Required Outdoor Ventilation Air</u>. ASHRAE 62 (latest adopted version) Table 2.2 Institutional Facilities-Education. Classrooms, music, libraries, auditoriums =15 cfm/person. Laboratories and Shops = 20 cfm/person.NOTE: Since 1991 new construction/HVAC remodels have been required to meet ~15 cfm/person OA for classrooms, ~20 cfm/person OA for office, laboratories, shops, and art rooms.</p>	<p>RCW 19.27</p> <p>ASHRAE 62</p> <p>51-52-400</p>		X	

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F 002a	<u>21 cfm/person outside air for classrooms is recommended for health and productivity.</u>		<u>WSSP IEQ 3.0.2 World Health Organization DOH</u>	X	
F 003	The Washington State Ventilation and Indoor Air Quality Code (WAC 51-13) adopted in 2000, contains specific minimum ventilation requirements for "Offices" and "Educational Facilities" in Table 3-4. NOTE: <u>IMC Chapter 4 Ventilation and Table 403.3.1.1 Required Outdoor Ventilation Air Footnote 9 for Offices recommends local exhaust for "some" office equipment. (e.g., photocopier and laminators).</u> <u>Footnote g: Mechanical exhaust is required and recirculation from such spaces is prohibited. For occupancies other than science laboratories, where there is a wheel-type energy recovery ventilation (ERV) unit in the exhaust system design, the volume of air leaked from the exhaust airstream into the outdoor airstream within the ERV shall be less than 10 percent of the outdoor air volume. Recirculation of air that is contained completely within such spaces shall not be prohibited (see Section 403.2.1, Items 2 and 4). This applies to art classrooms, locker/dressing rooms, science laboratories, sports locker rooms, and wood/metal</u>	<u>51-13 Section 304 & Table 3-4</u> <u>51-52-403.1.1</u>		X	
F 004	There shall be a <u>An on-demand, mechanical exhaust ventilation system providing emergency air evacuation/purge is recommended additional air exchange as required by WISHA and the WA Ventilation Code for chemical areas such as photo darkrooms, storerooms, science labs (and other appropriate areas) with exhaust directly to the outside. i.e., 20 cfm per person.</u> <u>"Locate room purge buttons at the exits in laboratories with chemical hoods. For most laboratory buildings, activating the room purge button shuts down or minimizes supply air while increasing exhaust ventilation. In the event of a chemical spill, activating the purge system will help ventilate the resulting chemical vapors more quickly."</u>	296-62-075 <u>51-13 Section 304 & Table 3-4</u>	<u>Prudent Practices 9.B.7 Safety Equipment and Utilities</u> <u>9.C.6.4 Room Purge Systems</u>	X	
F 005	NOTE: <u>Make-up air must be provided to science labs, art rooms, health rooms, restrooms, and career and technical areas in amounts at a rate approximately equal to exhaust air when the ventilation rate is increased. Since these areas should always be operated under pressure that is slightly negative to the surrounding zones, supplied make-up air flow should not exceed slightly less than exhaust air flow to maintain negative pressure.-</u>	<u>ASHRAE</u> <u>UBC</u> <u>UMC</u>		X	

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F 006	All building exhaust stacks shall be located to prevent the exhaust from reentering the building, i.e., away from occupied areas, openable doors and windows, and air intakes.	WBC UMG 51-52-0501		X	
F 007	Carbon dioxide levels in occupied areas should be routinely monitored as needed, according to ASHRAE suggested methods. <u>Suggest: Maintain Carbon dioxide levels indoors according to ASHRAE recommendations</u> Levels above 800 parts per million (ppm) suggest the need to bring more fresh outdoor air into the space.	ASHRAE 62-89	ASHRAE 62-89 CDC EPA DOH		
F 008	Occupied instructional areas in schools may not be set below 65 degrees F during school hours. The entire facility inhabited by students and employees shall be heated during school hours to maintain a minimum temperature of 65 degrees Fahrenheit except for gymnasiums which shall be maintained at a minimum temperature of 60 degrees Fahrenheit. 79 degrees F is the maximum recommended temperature for occupied instructional areas. (Thermal comfort criteria according to ASHRAE 55). Note: The code does not address maximum temperature in schools. Based on ASHRAE 55, 80 degrees F is the maximum recommended temperature for occupied instructional areas. for additional recommendations <u>Recommended winter temperatures of 68-72 deg F @ RH 40-60%</u> <u>Recommended summer temperatures of 75-78 deg F @ RH 40-60%</u>	246-366-090 ASHRAE 55-1992 2023 WSEC 302.1	ASHRAE 55 WSSP IEQ 5.0	X	
F 009	School buildings should have baseline profiles established for key IAQ indicators including temperature, humidity, <u>carbon dioxide, carbon monoxide, air flow rate, and suspect source contaminants e.g., pollen, dust, mold, formaldehyde, VOC's (volatile organic compounds)</u> radon, etc. -This baseline data will assist in finding problems when IAQ complaints arise.		OSPI and DOH IAQBMP EPA IAQ TfS		
F 010	Walk-off mats should be placed at all entrances to the building. They should be long and deep enough to thoroughly clean off moisture and debris from modern deep-tread footwear. Mats should have suspension loops so they can be taken outside and hung-up and hosed-off as needed.		OSPI and DOH IAQBMP EPA IAQ TfS	X	
F 011	It is recommended that all school vacuum cleaners include HEPA filtration to effectively capture dirt and dust particles (and all other asthma triggers such as pollen) and avoid redistributing them into the air. <u>Change HEPA filters as recommended by the manufacturer.</u>		EPA IAQBMP EPA IAQ TfS		
F 012	All rooms used by students or staff shall be kept reasonably free of all objectionable odor, excessive heat, or condensation	246-366-080 51-52-403.3.1.1		X	

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F 012a	Upholstered furniture such as couches and overstuffed chairs should be avoided in schools. since they often harbor dirt, dust, mites, and other common asthma triggers and are difficult to clean.		DOH IAQBMP EPA IAQ Tfs		
F 013	Ozone generators used for air cleaning may should not be used in occupied areas. When used in emergency restoration, areas must be unoccupied and areas, these areas should be completely ventilated to remove the ozone and secondary contaminates prior to occupancy. Require monitoring to verify the ozone has dissipated below outside levels.		EPA OSPI and DOH IAQBMP EPA IAQ Tfs & NAAQS		
F 014	NOTE: -A building commissioning report on all newly constructed school buildings should document meeting minimum or higher outside air requirements where required & where elected to be included in the design. All schools should follow the minimum Commissioning and Operations recommendations in the WSSP.		OSPI and DOH 2023 WSSP E 4.0 & 4.1, IEQ 3.0, 3.1, 3.2, 3.3, & 3.4	X	
F 015	NOTE: -The Environmental Protection Agency (EPA) published "Building Air Quality" in December 1991. It is a guide for Tools for Schools provides information building owners and facility managers to diagnose, mitigate and prevent IAQ problems.		EPA	X	
F 016	NOTE: Information on heating, ventilation, and air conditioning (HVAC) operations and maintenance is included in EPA's "Building Air Quality" along with appendices on IAQ measurements, forms and IAQ checklists. This manual is a 'must' for school IAQ maintenance staff and should be readily available for use. www.epa.gov/iaq/largebdgs/baq_page.htm www.epa.gov/iaq/largebdgs/baq_page.htm https://www.epa.gov/sites/default/files/2014-08/documents/iaq.pdf Schools should complete and follow a written IAQ management plan consistent with EPA Tools for Schools		EPA	X	
F 017	NOTE: The Environmental Protection Agency first published the "IAQ, Tools for Schools, Action Kit" in September 1995. It is a guide for IAQ coordinators, health officers, teachers, administrators, and school support staff.		EPA		
F 018	NOTE: -DOH and OSPI published the "School IAQ Best Management Practices Manual" (IAQ-BMP) in February 1995. This guide should be consulted by school staff, designers, teachers, government agencies, and parents. The manual can be downloaded from the DOH web site at: www.doh.wa.gov/ehp/ts/iaq.htm		OSPI and DOH IAQBMP		

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F 019	<p>NOTE: EPA has recently published a new guide for IAQ in new school buildings titled "IAQ Design Tools for Schools." www.epa.gov/iaq/schooldesign/start.html</p> <p><u>The EPA "IAQ Design Tools for Schools" guidance provides strategies for key school construction and renovation issues, including checklists and information on controlling pollutants and sources, HVAC, and moisture control.</u></p>		EPA		
F 020	<p>NOTE: The Department of Labor & Industries WISHA <u>Division of Occupational Safety and Health (DOSH)</u> has published <u>Washington Regional DOSH Directive (WRD) #10.10</u>. This document directs <u>DOSH WISHA</u> inspectors when they are investigating IAQ complaints. This document can be downloaded from L&I's website at: http://www.lni.wa.gov/wisha/regs/wrds/wrd1010.htm</p>		<u>WISHA DOSH Directive 10.10</u>	X	
F 021	<p>NOTE: Washington State University's Cooperative Extension <u>Energy Program</u> <u>has resources and publications on school publishes an electronic newsletter relating to Indoor Air Quality, issues in northwest schools at:</u> http://www.energy.wsu.edu/buildings/IAQ.htm</p>		<u>WSU Energy Extension Program</u>		
F 022	<p>NOTE: EPA's website on "Managing Asthma at the Indoor Environment" School <u>provides valuable information relating to IAQ issues in schools. at:</u> http://www.epa.gov/iaq/asthma/index.html</p>		<u>OSPI and DOH EPA</u>	X	
<u>F 022a</u>	<p><u>The DOH Asthma and Schools website has numerous resources, including state regulations and the AMES (Asthma Management in Educational Settings) manual – Taking Asthma Care to School</u></p>		<u>DOH OSPI</u>		