

Preliminary Significant Analysis

Chapter 246-366 WAC
Primary and Secondary Schools
and
Chapter 246-366A WAC
Environmental Health and Safety
Standards for
Primary and Secondary Schools

June 2009

DRAFT

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Preliminary Significant Analysis

Chapter 246-366 WAC *Primary and Secondary Schools* and Chapter 246-366A WAC *Environmental Health and Safety Standards for* *Primary and Secondary Schools*

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Executive Summary

Approximately 1 million children attend schools in Washington State. The State Board of Health (the board) has authority to establish rules for environmental health and safety in all schools and has done so since the 1960s. The current framework in chapter 246-366 WAC, Primary and Secondary Schools, has been in place since 1971 when the last comprehensive revisions to the rules were made. These rules apply to 295 public school districts with approximately 2,300 school facilities as well as approximately 450 private schools. They are administered by schools and local health jurisdictions.

In 2003, the board asked the Department of Health (the department) to begin a rulemaking process in response to growing concerns that the rules were generally outdated and no longer adequate to address indoor air quality, drinking water, and safety in areas such as laboratories and playgrounds. The board and department have spent four years working with stakeholders representing parents, teachers, school districts and local health (See Appendix A.) This proposed chapter revision would repeal the current chapter 246-366 WAC and replace it with new chapter 246-366A WAC.

Children are more vulnerable to hazards in the environment than adults. Children spend approximately 1,300 hours a year in school which is why it is critical that schools are designed and maintained to protect children. The board has been careful not to duplicate building codes or rules of other agencies. This proposal adds requirements only for those areas where building codes and other rules do not adequately address the health and safety needs of children.

The board proposal includes:

- **Water quality testing.** From December 2004 until June 2005, the Office of the Superintendent of Public Instruction (OSPI) and the department jointly implemented a grant program to partially reimburse Washington elementary schools for the cost of testing for lead in their drinking water. A total of 7,728 samples were submitted by 455 different schools. Of the 7,728 samples collected, 559 or 7.2 percent were at or above 20 parts per billion. In sampling by Seattle schools, copper levels were found to exceed the action level of 1.3 milligrams per liter 1 percent of the time. The proposal requires sampling drinking water fixtures for lead and copper, and when excessive levels are found, schools must address the problems. **The department estimates 30 percent of schools may have one or more drinking water fixtures that exceed 20 ppb of lead.**¹

¹ Washington State Department of Health data from 2004-2005 initiative to sample drinking water in schools

- **Indoor air quality.** According to the “Burden of Asthma in Washington State,” there are 120,000 children with asthma in Washington. Poor indoor air quality means higher levels of allergens and asthma triggers leading to increased respiratory symptoms as well as lost school days. The proposal includes several measures to help improve indoor air quality: (1) A new section on moisture and mold prevention; (2) Upgrading carpets, if used, to tightly woven, water impervious backed carpet that is easily cleanable and helps prevent mold; (3) Revised heating and ventilating standards. **Total asthma related costs for Washington school children: \$252,960,000 per year.**
- **Safety on playgrounds, laboratories, and shops.** National data indicate an estimated 2.2 million children ages 14 or younger sustain school-related injuries each year with 200,000 emergency room visits for playground injuries. Further, laboratories and shops pose a risk to older children. Information from Utah indicates that approximately 7 percent of school injuries occur in shops. The proposal includes new sections to require that playgrounds, laboratories, and shops are constructed and maintained to minimize these risks. **Medical spending due to school injuries in Washington State: \$43,000,000 per year.**
- **Annual inspections.** The current rule requires periodic inspections. The proposal increases this requirement to annual inspections to identify and correct health and safety issues.

The rule was reorganized to make a clear distinction between construction requirements, required for new and remodeled facilities, and operation requirements, required for all schools. The costs for construction requirements are shown as an increase in the per square foot construction costs. The operation and maintenance costs are shown as a per student increase.

Construction costs for the new requirements:

School Type	Size of Representative School (sq/ft)	Total Additional Cost	Additional Cost per Square Foot
Elementary	65,000	\$317,850	\$4.89
Middle/Junior	95,000	\$519,650	\$5.47
Senior High	225,000	\$960,750	\$4.27

The following table identifies operation and maintenance start-up and ongoing costs on a per school and per student basis. Start-up costs reflect the one-time costs for water quality sampling, ventilation system retrofit, and policy development; although actual implementation dates for these requirements will vary depending on school type. Ongoing costs include those related to annual inspections, playground operation and maintenance, laboratory and shop operation and maintenance, and heating and ventilation operation and maintenance.

Operation & maintenance costs for the new requirements:

School Type	Start-up Cost per School	Start-up Cost per Student	Annual Ongoing Costs per School	Annual Ongoing Costs per Student
Elementary	\$13,400	\$27.40	\$9,042	\$18.49
Middle/Junior High	\$11,812	\$17.17	\$7,239	\$10.52
Senior High	\$14,838	\$10.29	\$9,868	\$6.84

Conclusion

The following analysis demonstrates that the qualitative and quantitative benefits of improving water quality; indoor air quality; playground, laboratory, and shop safety; and increasing the frequency of inspections to ensure compliance with these rules will help provide a healthier and safer environment for children in Washington State. These improvements translate into measurable benefits attributed to lower societal costs of illness and injury. Based on this analysis, the board and the department conclude that the benefits of the requirements proposed in chapter 246-366A WAC outweigh the costs.

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Introduction

Approximately 1 million children attend schools in Washington State. The State Board of Health (the board) is required to establish rules for environmental health and safety in all schools and has done so since the 1960s. The current framework in chapter 246-366 WAC, Primary and Secondary Schools, has been in place since 1971. These rules apply to 295 public school districts with approximately 2300 school facilities as well as approximately 450 private schools. The rules are administered by local health jurisdictions.

In 2003, the board asked the Department of Health (the department) to begin a rulemaking process in response to growing concerns that the rules were generally outdated and no longer adequate to address indoor air quality, drinking water, and safety in areas such as laboratories and playgrounds. The board and the department have spent four years working with stakeholders representing parents, teachers, school districts and local health. This proposed chapter revision would repeal the current chapter 246-366 WAC and replace it with the new chapter 246-366A WAC. (See Appendix A for a detailed description of the rulemaking process and list of stakeholders.)

As required by RCW 34.05.328, this "significant analysis" examines the probable benefits and costs, both quantitative and qualitative, to determine that the benefits of the proposed rules outweigh the costs.

Brief Description of the Rule

The current rule, chapter 246-366 WAC, establishes minimum environmental health and safety standards for schools in Washington State. The specific objectives of the proposed revisions are to protect students and users of school facilities from environmental hazards by:

- Delineating responsibilities of the school boards and officials, the local board of health and health officer, and the state department;
- Improving indoor air quality;
- Improving mold and moisture prevention and remediation
- Improving water quality;
- Improving playground safety; and
- Improving safety in laboratories and shops.

During the rulemaking process, concerns were expressed that the current chapter was outdated and vague in some areas. One identified problem was construction requirements mixed in with operation and maintenance requirements. As a result, this proposal will repeal the current chapter 246-366 WAC and replace it with chapter 246-366A WAC. The new chapter has been reorganized and rewritten to clarify those requirements that are construction related and those that are a part of ongoing operation and maintenance of facilities. Many parts of the current chapter have been reorganized and rewritten for clarity, but have not significantly changed. (Please see Appendix B for a cross-walk of the current rule compared to the proposed rule.)

Necessity of Significant Analysis

Certain proposed requirements in the following sections of chapter 246-366A WAC require significant analysis:

- WAC 246-366A-005 Applicability
- WAC 246-366A-020 Responsibilities – General

WAC 246-366A-030	Site assessment, review, and approval
WAC 246-366A-040	Construction project review
WAC 246-366A-060	General construction requirements
WAC 246-366A-065	General operation and maintenance requirements
WAC 246-366A-070	Moisture control, mold prevention, and remediation
WAC 246-366A-080	Safety – Animals in school facilities
WAC 246-366A-090	Heating and ventilation – Construction requirements
WAC 246-366A-095	Heating and ventilation – Operation and maintenance requirements
WAC 246-366A-125	Restrooms and showers – Operation and maintenance requirements
WAC 246-366A-130	Water quality monitoring – Lead
WAC 246-366A-135	Water quality monitoring – Copper
WAC 246-366A-140	Water quality monitoring – Other drinking water contaminants
WAC 246-366A-150	Playgrounds – Construction and installation requirements
WAC 246-366A-155	Playgrounds – Operation and maintenance requirements
WAC 246-366A-160	Laboratories and shops – Construction requirements
WAC 246-366A-165	Laboratories and shops – Operation and maintenance requirements
WAC 246-366A-190	Complaints

However, many proposed changes are not substantive and are intended to provide clarity, eliminate redundancy, or are procedural. Many sections of the existing rules are being reordered to improve readability. Other changes are consistent with other Washington State rules and statutes. For the sections of the proposed rule listed below, no significant analysis is required:

WAC 246-366A-001	Introduction and purpose
WAC 246-366A-015	Guidance for rule implementation and compliance
WAC 246-366A-050	Preoccupancy inspection of construction projects
WAC 246-366A-100	Noise control – Construction requirements
WAC 246-366A-105	Noise control – Operation and maintenance requirements
WAC 246-366A-110	Lighting – Construction requirements
WAC 246-366A-115	Lighting – Operation and maintenance requirements
WAC 246-366A-120	Restrooms and showers – Construction requirements
WAC 246-366A-170	Variances
WAC 246-366A-175	Temporary emergency waivers for disaster situations
WAC 246-366A-180	Appeals

The proposal also adds a number of new definitions to WAC 246-366A-010, Definitions. To the extent they are significant, they are included in the analyses of the section in which they are used.

Statutory Goals and Objectives

The statute that provides the basis for the general goals and specific objectives of the proposed rules is RCW 43.20.050(2) which states: "In order to protect public health, the board shall:

(c) Adopt rules controlling public health related to environmental conditions including but not limited to heating, lighting, ventilation, sanitary facilities, cleanliness and space in all types of public facilities including but not limited to food service establishments, schools, institutions, recreational facilities and transient accommodations and in places of work..."

The general goal of the RCW as it pertains to chapter 246-366A WAC is to protect public health in Washington State by addressing environmental conditions that pose a health or safety concern in school settings. This is particularly important as children are more susceptible to environmental hazards than adults due to their smaller size, rapid growth and development, and lack of awareness of potential hazards that comes with maturity. Washington State has a long history of regulating environmental health and safety conditions in schools. The current chapter 246-366 WAC is largely based on a board rule adopted March 11, 1960. Protecting school children from illnesses, injuries, and hazardous exposures is the responsibility of the adults that care for them. Since education is compulsory in Washington State, this responsibility lies primarily with the state.

Necessity of Rulemaking

The rule is needed to achieve these goals and objectives because they are not addressed in other state statutes or rules. The department and the board have been very careful not to duplicate the rules of other agencies with this proposal, but rather have identified areas where other codes such as, building codes, plumbing codes or Department of Labor and Industries' (L&I) rules governing workplaces, do not adequately protect children from environmental hazards.

Alternatives to Rulemaking

One alternative to rulemaking would be to place these standards in guidance. For many items considered by the School Rule Development Committee, the department and the board, guidance was determined to be appropriate. The standards contained in this proposal are considered to be minimum standards necessary for health and safety in school facilities. No alternative to placing them in rule would ensure they are implemented consistently across the state.

Consequences of Not Adopting the Rule

These proposed rules establish minimum standards to protect children's health and safety in schools. The consequences of not adopting these proposed rules would be to rely on outdated rules that do not reflect current best practice and standards to protect the health and safety of children while in school.

Probable Benefits and Costs of the Rule

Probable Benefits

Public health agencies have long faced a challenge in describing the benefits of their regulations because public health rules generally produce an indirect benefit by preventing adverse health outcomes. As such, for this analysis, the department has gathered information about various health risks facing children in schools in an effort to quantify how large the risk may be. Where possible, the costs associated with the current levels of illnesses and injuries are presented along with assumptions about what level of prevention may be achieved through the proposed regulation.

The proposal contains provisions interspersed throughout the chapter intended to reduce the risks from the major areas of concern in schools (indoor air quality, water quality, and safety). For example, in order to improve indoor air quality, the proposal establishes a new

section on moisture and mold prevention and it makes changes to heating and ventilating standards. To avoid restating the benefits repeatedly throughout the analysis, the major benefit areas are described here in the overall benefit section.

The proposal also establishes new provisions for administrative actions such as inspections, record retention and availability, and open communication. These types of requirements also contribute to the overall benefits by providing a framework to ensure environmental health and safety issues are addressed.

In addition to these overall benefits described here, the specific benefits of individual sections are considered in the section-by-section analysis beginning on page 20.

Improved Indoor Air quality

Several sections of the proposed chapter are intended to improve indoor air quality. These sections include:

- 246-366A-020 – Responsibilities – General
- 246-366A-030 – Site assessment, review and approval
- 246-366A-040 – Construction project review
- 246-366A-050 – Preoccupancy inspection of construction projects
- 246-366A-060(5) and (6) – General Construction Requirements
- 246-366A-065(5) and (11) – General operation and maintenance requirements
- 246-366A-070 – Moisture control, mold prevention and remediation
- 246-366A-080 – Safety- Animals in school facilities
- 246-366A-090 – Heating and ventilation – Construction requirements
- 246-366A-095 – Heating and ventilation - Operation and maintenance requirements
- 246-366A-160(6), (7) and (8) – Laboratories and shops – Construction requirements
- 246-366A-165(2), (4), (5), and (8) – Laboratories and shops – Operation and maintenance requirements

The benefits of improved indoor air quality are a reduction in respiratory illness and infections, allergies, and asthma symptoms. The rules' benefits in terms of potential costs avoided for asthma are highlighted here.

Prevalence and Costs of Asthma

According to the United States Environmental Protection Agency (EPA), indoor air pollutants can "cause or contribute to health problems, including asthma, respiratory tract infection and disease, allergic reactions, headaches, nasal congestion, eye and skin irritations, coughing, sneezing, fatigue, dizziness, and nausea." Further EPA studies of human exposure to air pollutants indicate that indoor levels of pollutants are higher than outdoor levels. This is of particular concern considering students immune systems are still developing and students spend most of their school time indoors. Children face greater environmental health risks than adults because they breathe a relatively greater volume of air for their size, compared to adults.²

Poor indoor air quality plays a key role in the development and/or exacerbation of asthma. Asthma is a chronic inflammation of the airways with reversible episodes of obstruction, caused by an increased reaction of the airways to various stimuli. Asthma breathing problems usually happen in "episodes" or attacks, but the inflammation underlying asthma is continuous. According to the American Lung Associations' *Asthma*

² Mendell and Heath, *Do indoor pollutants and thermal conditions in schools influence student performance? A critical review of the literature*, Indoor Air, Vol. 15, p. 27, 2004.

and *Children Fact Sheet, 2007*, asthma is a widespread chronic disease among school children affecting an estimated 6.8 million children under 18 years of which 4.1 million suffered from an asthma attack or episode.

Uncontrolled, untreated or under-treated asthma may reduce quality of life and prevent a child from leading a fully active life and can be potentially life-threatening. Asthma ranks among the top 10 most prevalent health conditions causing limitation of activity. Asthma also can affect academic performance because of missed school days as well as missed sleep. Asthma is the leading cause of school absenteeism due to chronic illness. American school children missed more than 14 million school days in 2002 and 12 million school days in 2003 because of asthma exacerbated by poor indoor air quality. Many people who develop asthma also have allergies, particularly those whose asthma begins in childhood. Asthma has also been associated with depression and suicidal thoughts among young people.³

Asthma is the third leading cause of hospitalization among children under the age of 15. Approximately 32.6 percent of all asthma hospital discharges in 2005 were in those under 15; however, only 27.8 percent of the U.S. population was less than 15 years old.⁴ In 2005, there were approximately 679,000 emergency room visits due to asthma in this age group. Asthma can be a life-threatening disease if not properly managed. In 2004, 3,816 deaths were attributed to asthma out of which 141 were children less than 15 years of age.⁴ Death rates due to asthma are approximately three per million per year.

The annual direct health care cost of asthma is approximately \$14.7 billion. Indirect costs (e.g. lost productivity) add another \$5 billion, for a total of \$19.7 billion dollars. Prescription drugs represented the largest single direct cost, at \$6.2 billion.⁴ According to a University of Washington analysis, it costs nearly three times more to provide health care for a child with asthma than a child without asthma.⁵

The findings of the 2004 study, *The Burden of Asthma in Washington State*, which investigates the overall impact of asthma in Washington State, suggest that an estimated 400,000 Washington adults and 120,000 youth have asthma. Between 7 percent and 10 percent of middle/junior high and senior high school -aged children have asthma.⁶

Average yearly health care costs for a child in 1987 were \$468 without asthma and \$1129 with asthma, for a difference of \$661.⁷ From 1987 to 2007, the Consumer Price Index shows a 187 percent price increase. The yearly health care costs for a child with asthma are \$2,108 in 2007 dollars. These costs are not borne by the schools, but by the students and their families.

³ Centers for Disease Control and Prevention, National Center for Chronic Disease Prevention and Health Promotion, *Healthy Youth! Health Topics: Asthma*, December 7, 2007

⁴ American Lung Association, *Asthma & Children Fact Sheet*, 2007 <http://www.lungusa.org>

⁵ Lozano, Paul; Sullivan, Sean; Smith, David; and Weiss, Kevin; Department of Pediatrics at the University of Washington, Seattle, *The Economic Burden of Asthma in U.S. Children: Estimates from the National Medical Expenditure Survey*, *Journal of Allergy, Clinical Immunology* 104: 957-63, November 1999.

⁶ Dilley, J.; Pizacani, B.; Macdonald, S.; and Bardin, J.; *The Burden of Asthma in Washington State*; Olympia, WA; Washington State Department of Health, 2005

⁷ Wang LY, Zhong Y, Wheeler L.; Centers for Disease Control and Prevention; *Direct and indirect costs of asthma in school-age children*; *Preventing Chronic Disease*, Vol. 2, No. 1; January 2005

The annual cost to care for Washington school children with asthma is \$252,296,000 (\$2,108 X 120,000). Various studies on the expected impact of measures to improve indoor air quality suggest a reduction in symptoms ranging from 20-80 percent.⁸ The department cannot be certain of the reduction in costs associated with the rule changes, though at least a modest reduction can be expected. In keeping with this assumption, the department estimates a decrease in asthma-related illness from 1 to 10 percent that could result in an avoided cost of \$2,529,600 to \$25,296,000 in 2007 dollars.

Asthma may be the area where school indoor air quality has the greatest impact, and it is the condition for which it is easiest to estimate cost impacts, but it is not the only area where facility improvements that increase indoor air quality can result in better health and cost savings. Various studies have also shown 20-80 percent improvements in symptoms related to colds, flu, and sick building syndrome.⁸ Schools in Washington State are occasionally closed down or have to go through major repairs and renovations because of indoor air problems. In 2000, for example, Artondale Elementary in Gig Harbor was closed for two months for a thorough cleaning because of indoor air problems at a cost to the Peninsula School District of \$400,000.

Increased Safety

The sections of the proposal that are intended to increase safety by reducing injuries include:

- 246-36A-060(4) and (7) – General construction requirements
- 246-366A-065 (1) and (2) – General operation and maintenance requirements
- 246-366A-080 – Safety –Animals in schools facilities
- 246-366A-150 – Playgrounds – Construction and installation requirements
- 246-366A-155 – Playgrounds – Operation and maintenance requirements
- 246-366A-160 – Laboratories and shops – Construction requirements
- 246-366A-165 – Laboratories and shops – Operation and maintenance requirements

The benefits of increased safety requirements are a reduction in injuries related to potentially hazardous conditions. The rules' benefits in terms of potential costs avoided for injuries associated with playgrounds, laboratories, and shops are highlighted here.

Prevalence and Costs of Injuries – Playgrounds

Play is a vital component of healthy child development and playgrounds provide an opportunity for children to develop motor, cognitive, perceptual, and social skills. Unfortunately, playgrounds are often the sites of unintentional injuries.

Public attention about school safety often focuses on school violence. However, school-age children are more likely to sustain an unintentional injury than to be the victim of an intentional injury while at school. According to an Oregon study, playground equipment-related injury is the most common school-related injury among children under 14 years of age.⁹

The leading cause of playground equipment-related fatalities is strangulation.¹⁰ Strangulation accounts for nearly half of all playground equipment-related deaths. Nonfatal playground injuries are most often due to falls.⁹ The majority of nonfatal

⁸ Kats, Gregory; Braman, Jon; *Greening America's Schools: Costs and Benefits*; October 2006 www.cap-e.com

⁹ Oregon State Department of Human Services; *Oregon Safe Kids, Schools and Playgrounds*; September 22, 2007

¹⁰National SAFE KIDS Campaign (NSKC); *Playground Injury Fact Sheet*; Washington, DC; NSKC, 2004

injuries related to playground equipment take place on public playgrounds, including schools.¹¹ In a 2000 survey, U.S. playgrounds received an overall grade of C when rated on the presence of physical hazards and behavioral elements, including supervision and age-appropriate design.¹²

An estimated 2.2 million children ages 14 and younger sustain school-related injuries each year in the United States.¹³ Emergency departments treat more than 200,000 children ages 14 and younger for playground-related injuries.¹¹ Children ages 5 to 9 have higher rates of emergency department visits for playground injuries than any other age group.¹³ Most of these injuries occur at school.¹⁴

Falls are the most common mode of playground injury and account for approximately 80 percent of all playground equipment-related injuries.¹⁵ Falls also account for 90 percent of the most severe playground equipment-related injuries (typically head injuries and fractures) and 24 percent of playground-related fatalities.¹² Head injuries are involved in 75 percent of all fall-related deaths associated with playground equipment.¹⁵ Falls are also the most frequent causes of school-related injuries requiring hospitalization.¹⁶

The cost of these school playground-related injuries is high. The total annual cost of these injuries (including medical spending, lost quality of life, and future earnings) exceeds \$74 billion. Medical spending alone is estimated to be \$2 billion each year.¹² Using a ratio of the 2008 projected population of Washington State children ages 5 to 14 years (863,837, OFM 2006) and the US population (39 million, US Census 2000), the \$74 and \$2 billion national annual estimated costs for school-related injuries translates to \$1.6 billion and \$43 million for Washington State.

The department assumes there will be a modest improvement in playground safety as a result of the proposed requirements related to playground equipment and fall protection that will provide a benefit to Washington families in terms of financial and societal costs avoided.

Prevalence and Costs of Injuries – Laboratories and Shops

The Utah Student Injury Report (Knight et al. 2000) found that “during the five-year period from 1992 to 1996, 7.1 percent of school injuries in Utah (1,008 of 14,133) occurred in shop class. Equipment use accounted for 88.4 percent of these injuries... Missing covers for belts of belt-driven equipment and missing blade guards are common hazards in vocational shops. Appropriate safeguards include training, close supervision, selection of safety equipment including covers and guards, and meticulous maintenance of equipment... Projectiles, falling objects, and heated objects are common hazards in physical science classes, although these dangers can also be present in other specialized classrooms. Physics assignments that may result in flying objects or debris require the use of impact-resistant (ANSI Z87.1) safety glasses by all occupants of the room. Earth

¹¹ Tinsworth D, McDonald J. Special Study: *Injuries and Deaths Associated with Children's Playground Equipment*; Washington DC; U.S. Consumer Product Safety Commission; 2001.

¹² Oregon State Department of Human Services Oregon; *Oregon Safe Kids, Schools and Playgrounds*; September 22, 2007

¹³ Centers for Disease Control and Prevention, National Center for Injury Prevention and Control, Division of Unintentional Injury Prevention; *Playground Injuries: Fact Sheet*; July 05, 2007

¹⁴ Phelan KJ, Khoury J, Kalkwarf HJ, Lanphear BP; *Trends and patterns of playground injuries in the United States: Children and adolescents*; *Ambulatory Pediatrics*; 2001; 1(4):227–33

¹⁵ National SAFE KIDS Campaign (NSKC); *Playground Injury Fact Sheet*; Washington, DC; NSKC, 2004

¹⁶ National SAFE KIDS Campaign (NSKC); *School Injury Fact Sheet*; Washington, DC: NSKC, 2004.

science activities that involve chipping, breaking rock, or grinding also require the use of safety glasses.”¹⁷

“Life threatening injuries can happen in the laboratory. For that reason, students need to be informed of the correct way to act...”¹⁸ “Improper chemical management poses health and safety risks to students and school employees. Health, learning, and behavior risks to students are of particular concern, as children are more vulnerable than adults to chemical exposures because their bodily systems are still developing; they eat more, drink more, and breathe more in proportion to their body size; and their behavior can expose them more to chemicals than adults...It only takes one chemical incident, such as a spill, explosion, or chemical exposure, to *break the trust with the community*...Despite their useful purposes, chemicals can be dangerous to students and staff when managed improperly. Some chemicals that are persistent in the environment and bioaccumulate through the food chain can make exposure during childhood and adolescence especially dangerous.”¹⁹

New and updated requirements for emergency eye washes and showers, gas and electrical shut-offs for stationary equipment, and source collection and mechanical exhaust ventilation for air contaminants in laboratories and shops will provide an increased level of protection for students against the safety and health hazards that exist in these portions of the educational facility.

The department cannot predict the lower frequency or severity of injury due to the increased levels of safety provided by the proposed requirements for laboratories and shops and so is unable to quantify the financial benefit associated with these proposed changes. The department assumes there will be a modest improvement in safety that will provide a benefit to Washington families in terms of financial and societal costs avoided.

Improved Water Quality

The sections intended to improve water quality include:

246-366A-130 – Water quality monitoring – lead

246-366A-135 – Water quality monitoring – copper

246-366A-140 – Water quality monitoring – other drinking water contaminants

The benefits of improved water quality are a reduction in neurotoxicity in children and associated adverse health effects. The rules’ benefits in terms of potential costs avoided for impaired physical and mental development related to lead in drinking water are highlighted here.

Prevalence and Costs of Exposure to Lead

From December 2004 until June 2005, the Office of the Superintendent of Public Instruction (OSPI) and the department jointly implemented a grant program to partially reimburse Washington elementary schools for the cost of testing for lead in their drinking water. A total of 7,728 samples were submitted by 455 different schools. Of

¹⁷ Ed. Howard Frumkin, MD, DrPH; Robert J. Geller, MD; I. Leslie Rubin, MD; with Janice Nodvin; *Safe and Healthy School Environments*; Oxford University Press; 2006, p 108-109

¹⁸ Consumer Product Safety Commission; Centers for Disease Control and Prevention; Department of Health and Human Services, National Institute for Occupational Safety and Health; *School Chemistry Laboratory Safety Guide*; October 2007; DHHS Publication No. 2007-107; p 6

¹⁹ Environmental Protection Agency; *Chemical Management Resource Guide for School Administrators*; December 2006, EPA 747-R-06-002; p 3 and 24

the 7,728 samples collected, 559 or 7.2 percent were at or above 20 parts per billion. The EPA strongly recommends that water outlets in schools that provide water for drinking or cooking meet a standard of 20 parts per billion or less of lead. Testing water in schools is important because children spend up to 1,300 hours per year in these facilities and consume water while there.

Exposure to lead can cause adverse health effects and impair physical and mental development. It can cause hearing and learning disabilities, behavioral problems such as hyperactivity and short attention span, and, at very high levels, seizures, coma, and even death. Exposure to lead is a particularly significant health concern for young children whose growing bodies tend to absorb more lead than the average adult. Repeated exposures to small doses of lead can increase the likelihood of adverse health effects and permanent reduction in mental capacity.

While lead in paint in older housing is the most common source of lead exposure, drinking water can also serve as a source of exposure to lead. Although lead concentrations leaving a water treatment plant are generally low, corrosive water can result in lead leaching from lead pipes within a distribution system or from lead solder used to connect pipes.

Groups of children with moderate lead levels in pre-school years, who were followed to adolescence, were seven times more likely to drop out of high school. Their odds of a significant reading disability were six times higher than for children exposed to lower lead levels. Children exposed to higher lead levels were also shown to have problems with attention and fine motor skills, lower class standing, increased absenteeism, and lower vocabulary and grammatical-reading scores, even after controlling for other variables.²⁰ Early childhood lead exposures increase the likelihood of aggressive behaviors and arrests later in life.²¹

Blood lead level (BLL) is measured in micrograms of lead per deciliter of blood ($\mu\text{g}/\text{dl}$). In 1991, the CDC set the "level of concern" at 10 micrograms per deciliter (10 $\mu\text{g}/\text{dl}$). The adverse health effects and intellectual impairment due to BLL below 10 $\mu\text{g}/\text{dl}$ had been a concern before 1991, when the CDC established 10 $\mu\text{g}/\text{dl}$ as a level of concern.²² Now, not only is there overwhelming evidence of adverse health effects at 10 $\mu\text{g}/\text{dl}$, but it is increasingly apparent that the rate of decline in intellectual impairment is greater at BLLs below 10 $\mu\text{g}/\text{dl}$ than above.²³

One study by R.L. Canfield suggests that overall, every 1 $\mu\text{g}/\text{dl}$ increase in blood lead results in a decrease of 0.87 IQ points. For BLLs below 10 $\mu\text{g}/\text{dl}$, a 1 $\mu\text{g}/\text{dl}$ increase results in a 1.37 IQ decrease.²³ Such a fall in average IQ is consistent with several

²⁰ Needleman, HL; Gatsonis, C; *A Low-level Lead Exposure and the IQ of Children: A Meta-analysis of Modern Studies*; Journal of the American Medical Association; February 1990; Vol. 263, No. 05

²¹ Wright, JP; Dietrich, KN; Ris, MD; Hornung, RW; Wessel, SD; et al; *Association of prenatal and childhood blood lead concentrations with criminal arrests in early adulthood*; PLoS Med. 2008; 5(5): e101 DOI: 10.1371/journal.pmed.0050101

²² Needleman, A; Bellinger, D; *The health effects of low level exposure to lead*. *Ann Rev Public Health*; 1991; 12:1; 11-40.

²³ Canfield, RL; Henderson, CR Jr.; Cory-Slechta, DA; Cox, C; Lusko, TA; Lanphear, BR; *Intellectual impairment in children with blood lead concentrations below 10 $\mu\text{g}/\text{dL}$* ; *N Engl J Med* 2003; 348:1517-27

meta-analyses and reviews of other lead studies.^{24 25} Several independent investigators have also concluded that BLLs below 10 µg/dl are harmful.^{26 27}

Another study indicates that ongoing exposure to lead has a strong association with IQ deficits in older children, and that not all health effects attributable to lead exposure are a result of exposure at an early age. This study demonstrates that preventing lead exposure in children aged 4 to 7 is as important as preventing exposure during the first two years of life.²⁸ These studies, as well as the meta-analyses, confirm that a threshold for the adverse health effects of lead exposure cannot be calculated.

While the department cannot know how much lead a child may receive as a result of drinking water in school, there is clear evidence that as many as 30 percent of schools do have fixtures that leach lead. Lead causes a number of adverse health effects and impaired mental development and provides no benefit. Reducing children's exposure to lead will help prevent the adverse health effects associated with this toxin.

Prevalence and Costs of Exposure to Copper

Children are more susceptible to the effects of excess copper than adults because they are smaller and metabolic capacity is less developed. Ingesting copper can cause nausea, abdominal pain, vomiting, and for sensitive individuals kidney disease and liver damage. Copper is a contaminant that most commonly enters drinking water through corrosion of copper plumbing within buildings.

Schools in this country have identified drinking water with excessive levels of copper in amounts that may have caused gastric symptoms in children and that put certain susceptible persons at risk of health problems. In limited school sampling in Washington 15 of 3,300 samples were above the Safe Drinking Water Act copper action level of 1.3 mg/L. The only way to know if there are excessive levels coming from pipes and fixtures is to test for it. Once corrective actions are taken the problem is not expected to reoccur. Use of copper water pipes for electrical grounding is the most frequent cause of excessive leaching of copper into drinking water.

The benefit of the proposed rule is prevention of exposure to copper by sampling water and taking corrective action when necessary.

Benefits – Conclusions

The three major problems identified by the rule review and the School Rule Development Committee included: Indoor air quality; safety for playgrounds, laboratories and shops; and drinking water quality. The benefits related to the rule changes that address these problems are:

²⁴ Lanphear, BP; Homung, R; Khouryl; Yolton, K; Baáhurst, P; Bellinger, D; et. al.; *Low-level environmental lead exposure and children's intellectual function: An international pooled analysis*; Environmental Health Perspective; 2005; 113:894–9

²⁵ Needleman, HL; Gatsonis, C; *A Low-level Lead Exposure and the IQ of Children: A Meta-analysis of Modern Studies*; Journal of the American Medical Association; February 1990; Vol. 263, No. 05

²⁶ Chiodo; Jacobson, SW; Jacobson, JE; *Neurodevelopmental effects of postnatal lead exposure at very low levels*; Neurotoxicol Tentol; 2004; 26:359–71

²⁷ Selevan, SO; Rice, DC; Hogan, KA; Euling, SY; Pfahles-Hutchens, A; Bethel, J; *Blood lead concentration and delayed puberty in girls*; N Engl J Med; 2003; 348:1527–36

²⁸ Aimin Chen; Kim N. Dietrich; James H. Ware; Jerilynn Radcliffe; and Walter J. Rogan; *IQ and Blood Lead from 2 to 7 Years of Age: Are the Effects in Older Children the Residual of High Blood Lead Concentrations in 2-Year-Olds?*; Environmental Health Perspectives; May 2005; Vol. 113, No. 5

Improved indoor air quality: \$25,296,000 annually;
Increased safety: \$43,000,000 annually; and
Improved water quality: Improved physical and mental development measured in I.Q. points.

The following section-by-section analysis further demonstrates that the qualitative and quantitative benefits of the changes discussed above, as well as other proposed rule changes, will provide a healthier and safer environment for children in Washington State. These improvements translate into benefits attributed to lower societal costs of illness and injury.

Before any further consideration of benefits is provided, a discussion of the overall costs follows.

Probable Costs

This proposal presents several challenges for determining implementation costs.

- For most rule proposals the department assumes there is general compliance with the current rule. The costs associated with current rule implementation costs are the base against which proposed changes are measured. However, the department recognizes that only nine of thirty-five local health jurisdictions have a school environmental health and safety program providing active implementation of chapter 246-366 WAC. Therefore, many requirements are perceived to be entirely new by some schools and local health jurisdictions. Therefore incremental costs identified here may appear to be under reported.
- Many of the changes proposed for this rule simply add language to the rule to reflect current practices. Other proposed changes will apply in limited situations, such as notifying parents and staff if there is a serious mold problem. Thus, the impact of the proposed changes will vary from school to school based on current practice and specific circumstance. Therefore, a simple total of all new costs identified would over report the costs to any individual school.

Throughout this document we have tried to add these issues into the discussion of the cost assumptions.

School Construction Costs:

Department staff compared the existing rule requirements with those in the proposed rule to identify new construction requirements. Department staff prepared a document that identified the changed requirements and expected impacts associated with each new requirement by rule section. The department contracted with Eric Meng, Studio Meng Strazzara, to provide likely cost estimates based on the department's assumptions about the significant changes in the proposed rule. These estimates were based on three representative schools: a 65,000 square foot elementary; 95,000 square foot middle/junior high school; and 225,000 square foot senior high school. The estimates also include 12 percent contractor markup costs and 23 percent district construction overhead costs.

Construction cost estimates prepared by The Robinson Company for the Puget Sound Schools Coalition (PSSC) were also considered in preparing this analysis. There were differences between the estimates provided by The Robinson Company and those cited in this analysis due in part to differing underlying assumptions such as representative school sizes and contractor markup and district overhead rates. Even so, the information provided

by PSSC has been helpful and greatly appreciated in developing a complete and thorough analysis of costs.

Based on these assumptions and those specifically described in the section-by-section analysis below, the department estimates an increased construction cost for each type of school as follows:

Elementary:	\$317,774 per new school or \$4.89 per square foot;
Middle/Junior High:	\$519,388 per new school or \$5.47 per square foot; and
Senior High:	\$960,692 per new school or \$4.27 per square foot.

(See Appendix C, Construction Costs, for further detail.)

According to *Construction Bid Summaries from 1989 - 2007* available on the OSPI web site, the average new school construction costs in 2007 for each type of school were:

Elementary:	\$16,033,725 or \$274.91 per square foot (58,324 square feet average);
Middle/Junior High:	\$21,278,427 or \$225.94 per square foot (94,177 square feet average); and
Senior High:	\$26,299,133 or \$249.91 per square foot (105,235 square feet average).

Comparing the assumed cost increases of the proposed rule for new schools to the average 2007 cost results in increases for each type of school as follows:

Elementary:	1.8 percent cost increase per square foot;
Middle/Junior High:	2.4 percent cost increase per square foot; and
Senior High:	1.7 percent cost increase per square foot.

School Operation and Maintenance Costs:

Department staff compared the existing rule requirements with those in the proposed rule to identify newly required operation and maintenance activities. Department staff prepared a survey tool that identified the changed requirements and expected impacts associated with each new activity by rule section. Department staff contacted staff of 15 school districts to request assistance in gathering cost estimates for the identified activities. Eight people from school districts throughout the state agreed to participate in the survey. Department staff provided the survey tool to these volunteers and followed-up with them two days later via telephone interviews. Participants provided both cost estimates and assumptions for those estimates for most activities.

The department recognizes that schools are currently doing many activities of the proposed rule on a voluntary basis. It is important to note that school district staff provided cost information for some activities in the proposed rule they currently perform voluntarily. Schools were asked to calculate the costs of these activities because they are new requirements and there will likely be a percentage of schools in the state that do not currently do these activities and so would experience added costs due to the new requirements in the proposed rule. There are also several sections where schools indicated that they were already performing the required activities, but were unable to estimate the costs of those activities.

Cost estimates varied due to several factors such as school age and condition, hourly wage levels of staff performing activities, and type and size of school (elementary, middle/junior high, or senior high). When wage and benefit information was not provided by the respondent, the department assumed an hourly rate of \$45 for custodial staff, \$70 per hour

for facility managers, and a benefits rate of 35 percent. These figures are based on the highest rates of compensation provided by respondents to the survey. To calculate a single cost estimate, the department averaged the range of costs provided by respondents. It then combined the costs of individual requirements to estimate a total for operation and maintenance costs as presented in the following table.

The following table identifies operation and maintenance start-up and ongoing costs. Start-up costs reflect the one-time costs for water quality sampling, ventilation system retrofit, and policy development; although actual implementation dates for these requirements will vary depending on school type. Ongoing costs include those related to annual inspections, playground operation and maintenance, laboratory and shop operation and maintenance, and heating and ventilation operation and maintenance.

School Type	Start-up* costs total per school	Start-up costs per student	Annual Ongoing costs per school	Annual Ongoing costs per student
Elementary	\$13,400	\$27.40	\$9,042	\$18.49
Middle/Junior High	\$11,812	\$17.17	\$7,239	\$10.52
Senior High School	\$14,838	\$10.29	\$9,868	\$6.84

See Appendix D, Operation and Maintenance Costs, for further detail.

According to *School District and ESD Financial Reporting Summary for Fiscal Year 06-07*, available on the OSPI web site, the average operation and maintenance cost in 2007 for all school types was \$750.35 per student.

Comparing the assumed operation and maintenance start-up cost increases of the proposed rule to the average 2007 costs results in increases for each type of school as follows:

- Elementary: 3.7 percent cost increase per student;
- Middle/Junior High: 2.3 percent cost increase per student; and
- Senior High: 1.4 percent cost increase per student.

Comparing the assumed operation and maintenance ongoing cost increases of the proposed rule to the average 2007 costs results in increases for each type of school as follows:

- Elementary: 2.5 percent cost increase per student;
- Middle/Junior High: 1.4 percent cost increase per student; and
- Senior High: 0.9 percent cost increase per student.

Local Health Jurisdiction Costs

The department conducted a workshop in November 2007 to provide a forum for discussion of the rule requirements and determine the related costs to local health jurisdictions. As a result, the department received estimates associated with the increased inspection and program requirements from several local health jurisdictions that currently have active school environmental health and safety programs.

Although local health jurisdictions have the authority to recover their implementation costs through fees, the department assumes not all costs will be recovered. This is especially true for those local health jurisdictions without active school programs and for all local health jurisdictions that provide technical assistance services in their ongoing efforts to maintain a collaborative working relationship with schools. The total costs reported by local health jurisdictions ranged from \$10,000 to \$56,000.

Section-by-Section Analysis

The costs provided below are derived from data collected from schools, local health jurisdictions, the PSSC, and Eric Meng. For a detailed description of costs, please see Appendix C for construction related costs and Appendix D for operation and maintenance related costs.

Section 001: Introduction and Purpose

INTENT: These rules are intended to provide for the environmental health and safety of school facilities. It is not the intent of these rules to establish protection exclusively for certain subsets of people using those facilities, nor to regulate the behaviors or qualifications of users beyond what is minimally necessary for environmental health and safety.

BACKGROUND: The board is required to establish environmental health and safety rules for school facilities. RCW 43.20.050(2) states that “to protect public health, the board shall...(c) Adopt rules controlling public health related to environmental conditions including but not limited to heating, lighting, ventilation, sanitary facilities, cleanliness and space in all types of public facilities including but not limited to ... schools...”²⁹ The rules have been on the books since the 1960s and the existing framework was established in 1971. This rulemaking is part of the continuing effort to keep these rules up to current health and safety standards. These standards are intended to protect health and therefore do not attempt to include the more stringent requirements needed to achieve optimum student learning.

PUBLIC HEALTH BENEFIT: According to the School Health Policies and Programs Study 2006:

A child typically spends about 1300 hours in a school building each year, and teachers and other staff are there even longer.... Many school buildings are in poor condition and present environmental conditions that inhibit learning and pose unnecessary, increased health risks to students and staff.... Poor indoor air quality (IAQ), diesel exhaust emitted from school buses, hazardous materials, pesticides, contaminated drinking water, and lead are environmental hazards that sometimes are found in schools and can adversely affect the health, attendance, and academic success of students, as well as the health of teachers and other staff.”³⁰

SIGNIFICANT CHANGES: There are no significant changes this section, and no increased cost associated with implementing the proposed rule compared to the existing rule.

Applicability—Section 005

INTENT: This section affirms that the rules apply to schools, explicitly including pre-schools that are part of a K-12 school facility. This section clarifies that the construction sections

²⁹ Available at <http://apps.leg.wa.gov/RCW/default.aspx?cite=43.20.050>

³⁰ Available at http://www.ashaweb.org/journal_schoolhealth.html#shpps

apply to existing portions of facilities only when those portions are involved in a remodel, renovation, or addition.

BACKGROUND: This is a new section. In the existing rule, applicability is determined by the definition of "schools":

"School" - Shall mean any publicly financed or private or parochial school or facility used for the purpose of school instruction, from the kindergarten through twelfth grade. This definition does not include a private residence in which parents teach their own natural or legally adopted children.

The proposed rule includes preschools that are part of a K-12 school. It more clearly excludes:

- 1) Private residences used for home-based instruction as defined by RCW 28A.225.010(4);
- 2) Facilities hosting educational programs where educational instruction is not a primary purpose, including, but not limited to, detention centers, jails, hospitals, mental health units, or long-term care facilities;
- 3) Private facilities where tutoring is the primary purpose; and
- 4) Public or private post-secondary education facilities providing instruction to students primarily enrolled in secondary school.

The board and the department explicitly chose not to list all laws and regulations related to the school environment, but it did choose to cross-reference its own rules. It also wanted to make it clear the new rule was not intended to negate, compromise, or duplicate other rules. Schools would not be required to retrofit in order to meet the new construction requirements. If, however, a change to an existing facility triggers a building code requirement during the overhaul of a regulated system throughout the facility, for example, adding an addition requires a retrofit of the entire school's HVAC system rather than the installation of a new system serving only the addition—then these health and safety rules would apply to those whole systems because they would become part of the construction project.

Public health rules do not require vesting; however, there is recognition that these rules could add to the price of new construction, and need to specify when a project is far enough along that it should be grandfathered. For construction projects underway on the effective date of the new rules, the environmental health and safety rules in effect when a complete building permit application is submitted will apply.

SIGNIFICANT CHANGES: Applying these rules to pre-schools that exist in K-12 school facilities is identified as a significant rule change.

COST ASSUMPTIONS: The application of these rules to those portions of K-12 school facilities used for pre-school instruction may increase the inspection time needed for annual inspections.

PRELIMINARY COST ESTIMATES: Local health jurisdictions identified that there may be an additional hour of inspection time for pre-school instruction areas. This would most likely be passed on to schools as a fee – ranging from \$100-\$200/hour.

CONCLUSION: Children under the age of five are the most vulnerable to the potential environmental hazards in school facilities. Therefore, the department and the board find

the benefits of applying these rules to pre-school instructional areas in K-12 schools to outweigh the costs.

Definitions—Section 010

INTENT: This section provides an explanation for the terms used in the rule. The definitions establish the meaning of terms as used in this rule, regardless of how they may be defined in other regulations or sources.

SIGNIFICANT CHANGES: While there are changes to this section—terms added and deleted and updated definitions—the significance of the term and definition is more accurately reflected and addressed in the sections of the rule where the term is used.

COST ASSUMPTIONS: The cost assumptions are addressed within the sections where the term is used.

Guidance for Rule Implementation and Compliance—Section 015

INTENT: This section establishes that the Health and Safety Guide for K-12 Schools in Washington (the K-12 Health and Safety Guide) is the principal source of guidance for schools and local health jurisdictions in the application of the health and safety rules. This provides both parties with an established and consistent source of additional information to be used for complying with and applying the rules.

BACKGROUND: The K-12 Health and Safety Guide was created in December 2000, updated in January 2003, and is scheduled to be updated following adoption of this rule.

PUBLIC HEALTH BENEFIT: The best crafted rules can not possibly address all of the possible health and safety hazards that may be present in a school facility. The existence of up-to-date, science-based supporting information is essential for schools to comply with the requirements and for local health jurisdictions to apply the requirements.

SIGNIFICANT CHANGES: There are no significant changes proposed for the K-12 Health and Safety Guide provisions of the existing rule, WAC 246-366-140. This section simply rearranges and restates the requirement for the department and OSPI to continue to update the K-12 Health and Safety Guide. There are no new regulatory requirements and no increased cost associated with implementing this section of the proposed rule compared to the existing rule.

Responsibilities—General—Section 020

INTENT: This section is aimed at preventing accidental injuries and reducing environmental exposures in primary and secondary schools in Washington State by requiring annual inspections and by establishing clear responsibilities for school officials, local health officials and the department. The proposed language clarifies that school officials are responsible to “Maintain conditions within the school environment that will not endanger health and safety.” Local health officers are responsible for assuring that inspections are conducted annually and to consult with school officials on ways to fix existing and potential hazards.

This section promotes openness and accountability; provides for notification when hazards exist; and encourages proactive communication.

BACKGROUND: Currently, local health officers are required to make periodic inspections of each school within the local health jurisdiction and forward a copy of the findings and recommendations for any corrections to the school board and administrator of the school. The requirement for periodic inspections has been interpreted differently throughout the state. The frequency of inspections by local health ranges from annual to only upon opening a new facility. Nine of 35 local health jurisdictions currently provide routine inspections and consultative visits of schools, covering approximately 35 percent of the children in kindergarten through twelfth grade. Complaints to the board in past years have raised concerns that school environmental health and safety issues are not receiving enough attention by local health in Washington State. Local health jurisdictions that are most active with schools have demonstrated success in helping prevent and correct safety and health hazards. Local boards of health have authority under RCW 70.05.060(7) to implement fees for providing services to the community, such as conducting school consultative and inspection programs. School inspection programs are typically fee-based.

PUBLIC HEALTH BENEFIT: Children are more vulnerable than adults to environmental hazards for several reasons, including their rapid physical development, higher metabolism, and age-related behaviors. "In recent years, scientists have increasingly realized that children are especially vulnerable to the effects of hazardous environmental exposures..."³¹ "Children breathe more air, eat more food, and drink more water per pound of body weight than do adults. Certain behaviors, such as tactile exploration and hand-to-mouth contact, increase the probability of some exposures. As a result, environmental health scientists and regulators have recognized the need to exercise special caution in protecting children from potentially hazardous exposures – setting margins of safety to minimize children's exposures, avoiding the use of potentially toxic chemicals near children..."³²

Prevention of injury and health problems through environmental controls is an established science shown to protect and improve health. Annual inspections provide an opportunity to identify and mitigate health and safety concerns before they become more dangerous and costly to address. The proposed rule would require that school inspections are more consistently conducted across the state, helping to better ensure that the health and safety requirements of these rules are met, with oversight by trained environmental health and safety specialists. *Safe and Healthy School Environments* (page 363) reports that a survey of the Los Angeles Unified School District in 2005 found nearly 40 percent of the schools were out of compliance with applicable health and safety regulations. It states that "safety inspections of the entire school campus, including all buildings and classrooms, should occur at least annually" (page 112) and that "the successful use of routine inspections to improve school health and safety involves a three-step process: (1) identify school safety standards, (2) evaluate compliance with the applicable standards, and (3) implement corrective action to achieve compliance with the standards" (page 364).

NATIONAL STANDARDS AND PRACTICES: There are currently no federal rules for school environmental health and safety inspection. However, there are federal guidelines for addressing some common school environmental health problems including mold from excessive moisture and lead from drinking water fixtures. National and international building codes and fire safety codes have been adopted in Washington by state and local agencies.

³¹ Ed. Howard Frumkin, MD, DrPH; Robert J. Geller, MD; I. Leslie Rubin, MD; with Janice Nodvin; *Safe and Healthy School Environments*; Oxford University Press; 2006; p. 5

³² National Research Council 1993; Lanphear et al. 2005

These are enforced primarily by local building officials. Local environmental health professionals would review schools for requirements in this proposed school rule that are not addressed by building officials, including ongoing operations and maintenance issues.

SIGNIFICANT CHANGES: The proposed rule clarifies that school officials are responsible to help identify and take actions to correct potential environmental health hazards in schools. School officials would be required to mitigate health hazards and notify the local health officer, faculty, parents and students as appropriate for the hazard. The requirement that school officials share information with the public pertaining to the condition of school facilities would help parents know when precautions are necessary to protect their child's health while attending school.

Beginning one year after the effective date of the rules, the local health officer's designee, an environmental health professional, would need to conduct an inspection of each school at least once each year, recommend actions, consult with school officials, recommend follow-up actions for violations of this rule, and re-inspect if necessary to confirm that corrections have been made. The local health officer would have authority to approve a program that designates a school official or other qualified person to conduct the required annual inspection two out of every three years. The department would be required to report every three years to the board on variances granted by local health officers and the status of the rule's implementation. The department would provide technical assistance and training to local health and school personnel.

COST ASSUMPTIONS:

Schools will likely incur expenses to implement the proposed changes for the following items:

- 1) Identify, assess and mitigate environmental health and safety hazards in their schools.
- 2) Annual inspections. Costs to have school personnel or the local health officer perform inspections and to have school staff work with inspectors during and after inspections.
- 3) Inform local health officer, parents and faculty about imminent health hazards and actions taken to correct. (Not including mold, lead/copper in drinking water which are specifically called out in other sections) Assume one per year per school.
- 4) Retain for at least 6 years records about school inspections, site assessment, school and playground plan review.
- 5) Preparing an annual report for the public and the school board about environmental health and safety conditions in the schools.

Local health jurisdictions will likely incur expenses to implement the proposed changes for the following items:

- 1) Establish or maintain a School Environmental Health and Safety program, with the capacity to provide annual inspection of school facilities, and various consultative services required in these rules. While local health jurisdictions may charge fees for program-related services, it is understood that fee structures rarely capture all program-related expenses. This requirement may not result in an additional expense, depending on a health jurisdiction's current practice for providing school-related environmental health and safety services and inspections.

PRELIMINARY COST ESTIMATES:

Schools:

- 1) Annual inspections – Periodic inspections are currently required. There will be increased inspection costs to schools depending on what the current “periodic” frequency of inspections has been. Costs will be passed on as fees from local health jurisdictions. However, it should be noted that some local health jurisdictions do not currently charge a fee for inspections.
Direct costs for school employees to work with inspectors:
Range \$350 - \$1050
(Please see cost estimates for local health jurisdictions/fees below.)
- 2) Address imminent health hazards and inform staff and parents; assume 1 incident per school per year.
\$225 - \$675 per incident
- 3) Record keeping requirements: Time/Cost Estimates - range of costs per school per year identified:
\$ 157 – \$1,100 for staff time
(Some schools identified a need for a filing cabinet, which is reflected in this range.)
- 4) Prepare annual report: Time/Cost Estimates – range identified for staff costs per year:
\$70 to \$1,500

Local Health Jurisdictions:

Cost to establish or maintain a School Environmental Health and Safety program, with the capacity to provide annual inspection of school facilities, and various consultative services required in these rules.

- 1) Annual inspections –Increased costs will vary depending on the current inspection program of the local health jurisdiction.
- 2) Hourly rates for inspections range from \$100 to \$200 hour with time for inspections varying by size and type of school.
Elementary: 4 hours – \$693 average cost per school
Middle/Junior High: 4-6 hours - \$950 average cost per school
Senior High: 8 hours – \$1,387 average cost per school
- 3) Other costs not recovered through fees include staffing and training materials related to starting a school program. In addition to these other costs, the department assumes there will be unspecified ongoing costs to provide technical assistance and maintain collaborative working relationships with schools that will not be recovered through fees ranging from \$10,000 to \$56,000 per year depending on the needs of the schools within the local health jurisdiction.

CONCLUSION:

This section revises and expands the administrative framework established in the current chapter. The department and the board consider the increase to annual inspections to be critical for implementation of this chapter and necessary for realizing the benefits of the other sections of the rule. The record keeping and reporting requirements in the proposal allow parents and other interested parties to be aware of issues facing their children. Therefore the qualitative benefits outweigh the costs associated with this administrative framework.

Site Assessment, Review and Approval—Section 030

INTENT: The intent of this section is that local health officers and environmental health specialists continue to review school sites so they can apply their expertise to helping schools identify and either avoid or mitigate threats to health and safety. It maintains a longstanding requirement for review and approval of sites by local health officers or their designees, while providing additional clarity about what is expected of schools during a site assessment and of local health jurisdictions during site review and approval. It is also the intent that site reviews conducted under authority of this rule be completed in a timely fashion and focus specifically on the environmental health and safety of school facilities that will occupy the site.

BACKGROUND: Since at least 1960, local health officers or their designees have been required to review and approve school sites for health and safety. Since 1973, a noise assessment has been required for proposed school sites. Most local health jurisdictions conduct site reviews currently and may charge fees to schools for these services.

PUBLIC HEALTH BENEFIT: Early identification of environmental issues reduces the risk of adverse impacts to student health and safety. Secondarily, it may avoid unnecessary remediation costs and allow for more cost-effective mitigation. Actual examples of ways that local health reviews protect health and safety and prevent unnecessary costs include:

- A local health official denied approval of a proposal to build a private school at the end of the runway serving a small airfield. The place where planes would have turned around at the end of the runway was immediately adjacent to the proposed playground.
- A school that failed to obtain a site review for an athletic facility tore up its own drainfield.
- A school district decided against purchasing land for a future school after a local health official doing a site visit informed them that the property, which could not be served by sewer, would not accommodate a septic system that could meet the school's needs.
- A school district built astride a swale on a piece of property with a high water table, and the school experienced constant problems with water intrusion.

Potential risks related to school siting also include contaminated soils and proximity to highways. The Department of Ecology Area Wide Soil Contamination Project³³ reports that soil in many areas of the state are contaminated with lead and arsenic, mostly from metal smelter emissions, arsenical pesticides, and leaded gasoline. As part of the Area Wide Soil Contamination Project, the department along with the Department of Ecology has sampled soil at 118 schools and daycares in the central region of the state. When schools are identified with contamination levels that potentially expose children are found, Department of Ecology has been assisting schools with cleanup activities. Just in the central region of the state, 18 schools will have been cleaned up by the end of summer 2008 and there are another 19 identified for cleanup. Children are at particular risk from soil contamination because they often play in the soil and are likely to put their hands in their mouths.

California has banned new school construction within 500 feet of busy roads and freeways in response to the respiratory and asthma impacts from vehicle exhaust. According to *Safe and Healthy School Environments*, "We have known for years that breathing high levels of air pollution (ozone, particles, and other pollutants) can cause acute changes in health, such

³³ Available at http://www.ecy.wa.gov/programs/tcp/area_wide/AW/toolbox_chap4.html

as nasal congestion, irritated eyes, coughing, chest tightness or congestion, wheezing, and inability to breathe deeply.”³⁴

The school rule development committee identified a need to consider environmental health and safety issues associated with surrounding land uses in site approval. Site approval methods vary throughout the state due to a lack of specific direction in the existing rule.

NATIONAL STANDARDS AND PRACTICES: There are currently no federal standards or guidelines for school siting. The Energy Independence and Security Act of 2007 requires the U.S. Environmental Protection Agency (EPA) to issue school site selection guidelines within 18 months of enactment. The guidelines must address hazardous substances and pollution exposures, transportation availability, energy efficiency and use as an emergency shelter. A site review under authority of this rule would not address the last three items. The EPA has developed a standard for an assessment of commercial property that has become the norm for environmental due diligence. This type of assessment is called a phase I environmental site assessment (Phase I ESA)³⁵ and is based on American Society for Testing Materials (ASTM) Standard #1527-05 (November 2005).³⁶ According to the national School Health Policies and Programs Study 2006, “More than half of states and one third of districts required phase I environmental site assessments before constructing a new school facility, although one third of districts had no new facilities planned.”³⁷

SIGNIFICANT CHANGES: The proposed rule gives more specificity to assessment requirements, specifies the documentation that must be provided, and requires schools to make the records available to the public. A Phase I ESA that meets the requirements of the ASTM Standard #1527-05 is required for developing school facilities on undeveloped property, or property previously used for other purposes, and for establishing a school in all or part of an existing structure previously used for other purposes. For other projects, a consultation between school officials and the local health officer is required to determine the scope of the site assessment, review, and approval process. If the site assessment procedure indicates that hazardous materials may be present, soil sampling and analysis may be required. Current requirements for site assessment for excessive noise are unchanged. Health officers would no longer be responsible for determining adequate property size. They would provide written approval or describe site deficiencies needing mitigation to obtain local health officer approval, within 60 days of receiving a complete request, unless the school officials and the local health officer agree to a different timeline.

COST ASSUMPTIONS:

Site assessment is required in the current rule. Incremental cost increases for schools will likely be incurred when implementing the proposed changes for the following items:

- 1) Contracting for a Phase 1 Environmental Site Assessment for new school sites and establishing schools in all or part of existing structures. For many schools this requirement will not result in an additional expense because a site assessment is currently required and current practice is the Phase 1 ESA or something very similar.
- 2) Soil sampling, if needed based on site assessment findings.
- 3) Consulting with the local health officer regarding site development, assessment, review, and approval.

³⁴ Ed. Howard Frumkin, MD, DrPH; Robert J. Geller, MD; I. Leslie Rubin, MD; with Janice Nodvin; *Safe and Healthy School Environments*; Oxford University Press; 2006; p. 144

³⁵ Available at http://epa.gov/brownfields/aai/aai_final_rule.pdf

³⁶ Available at http://www.astm.org/cgi-bin/SoftCart.exe/DATABASE.CART/REDLINE_PAGES/E1527.htm

³⁷ Available at http://www.ashaweb.org/journal_schoolhealth.html#shpps

Local health jurisdictions will likely incur expenses to implement the proposed changes for the following items:

- 1) Reviewing a Phase 1 Environmental Site Assessment report and conducting a site inspection. Some or all of these expenses may be passed on to schools thru fees.
- 2) Consulting with schools officials regarding site development, assessment, review, and approval.

PRELIMINARY COST ESTIMATES:

Schools:

- 1) Contracting for Phase 1 ESA – The cost will likely vary with the size, previous use, and location of the site. Average estimates are provided:

Elementary:	\$7,700
Middle/Junior High:	\$9,700
Senior High:	\$14,700
- 2) Soil sampling if the Phase 1 ESA shows it is necessary: Up to \$10,000
- 3) Consulting with local health officers: \$6,480

Local Health Jurisdictions:

Cost associated with requirement for Phase 1 ESA – Local health jurisdictions indicated a range of cost impacts from the requirement for a Phase 1 ESA. Some indicated that a Phase 1 ESA could actually reduce their time and effort in review. Others indicated a cost increase ranging from \$300 to \$1,500 per site assessment.

CONCLUSION:

There are potential safety/injury, air quality, and exposure concerns that need to be considered before siting a school. The current rule requires a site assessment, and some schools have indicated that they currently use the Phase 1 ESA. However, the costs currently being incurred by schools to meet the site assessment requirement are variable and indeterminate. The proposed rule specifies a Phase 1 ESA site assessment and so the full cost of the assessment rather than an incremental increase is identified here. The department and the board find that the benefits of avoiding children’s exposure to the many possible hazards outlined above outweighs the incremental increase in cost presented by the Phase 1 ESA.

Construction Project Review—Section 040

INTENT: The intent of section 040 is that local health officers and environmental health specialists continue to review construction plans so they can apply their expertise to helping schools identify and either avoid or mitigate threats to health and safety. It maintains a longstanding requirement for review and approval of plans by local health officers or their designees. It is also the intent that plan reviews conducted under authority of this rule be completed in a timely fashion and focus specifically on issues addressed in rule.

BACKGROUND: Since at least 1960, local health officers or their designees have been required to review and approve school construction plans. Since the 1970s, OSPI has not released state school construction funds without written plan approval from the local health officer. Preoccupancy inspections are also required as part of the existing rule related to plan review. The proposed rule divides plan review and preoccupancy inspections into two sections. All local health jurisdictions in the state conduct school plan reviews currently, although the level of review varies. Some reviews are comprehensive; others may focus on specific aspects such as the adequacy of commercial kitchens. The basic framework for the

rule is similar to what has been in place since 1971. The local health officer retains the same level of discretion over the scope of the review. A perception exists that there is unnecessary overlap with local building official plan review. These rules add some requirements in addition to building and mechanical codes, and emphasize some parts of those codes that might not get the full attention of building inspectors. These rules are intended to not be redundant with state building codes.

PUBLIC HEALTH BENEFIT: The purpose of the plan review and preoccupancy inspection requirements is to have local environmental health specialists review construction projects for health and safety risks. The public health benefit for this section derives from the rationale for the construction-related sections throughout the rule. Environmental health specialists report to the local health officer and are trained to assess and prevent public health risks in areas such as indoor air quality, exposure to hazardous materials, injury prevention, and control of zoonotic diseases (human diseases of animal origin). They bring a necessary and unique perspective to plan review. Early identification of environmental conditions that may adversely impact student health and safety allows more cost-effective development of necessary mitigation measures. *Safe and Healthy School Environments* states, "Appropriate architectural design of the physical plant in schools and daycare centers can decrease the risk of infections...surfaces should be nonporous and easily cleaned by disinfectants."³⁸ Local environmental health specialists are trained to assess facility designs that impact infection control and assist with cleaning.

SIGNIFICANT CHANGES: The proposed rule provides more specific direction to local health officers related to approval of building plans. These new provisions require the local health officer to provide written approval or describe construction plan deficiencies needing correction to obtain local health officer approval of building plans, within 60 days unless school officials and the health officer agree to a longer time period. The scope of building plan review by the local health officer is limited to environmental health and safety issues as identified in this rule and is not intended to duplicate local building official review. There is language designed to encourage consultation between schools, local public health, and building departments as early in the planning process as possible to improve coordination, limit disruption, and control costs. The proposed rule suggests a threshold that would exclude minor alterations, and possibly minor additions, from plan review unless the alterations involve a lab or shop. The current proposal would apply to projects consisting of more than 5,000 square feet of floor area or having a value of more than 10 percent of the total replacement value of the school facility. Review and approval of playground plans is handled separately in section 150.

COST ASSUMPTIONS:

Schools will likely incur expenses to implement the proposed changes for the following items:

Conducting a pre-planning conference with project planners and inviting the local health officer. The department assumes schools already have pre-development planning meetings in their existing construction process. This requirement may not result in an additional expense, depending on a school's current practice for meeting with project planners and regulatory officials.

Local health jurisdictions will likely incur expenses to implement the proposed changes for the following items:

³⁸ Ed. Howard Frumkin, MD, DrPH; Robert J. Geller, MD; I. Leslie Rubin, MD; with Janice Nodvin; *Safe and Healthy School Environments*; Oxford University Press; 2006; p. 428-9

- 1) Participating in pre-planning conferences with project planners. This requirement may not result in an additional expense, depending on a Local Health Jurisdiction's current practice for meeting with school officials and project planners.
- 2) Training on the new construction related requirements of the rule.

PRELIMINARY COST ESTIMATES:

Schools

Pre-planning meetings/coordination is estimated at \$3,460 per project for all school types. Although the department assumes predevelopment meetings already occur and inviting the local health officer to take part in a meeting would not be an additional cost, the cost identified here reflects one meeting of the various design professionals that schools hire.

Local Health Jurisdictions

- 1) Pre-planning meetings/coordination: No additional costs identified.
- 2) Training on construction requirements: Costs range from \$5,000 to \$18,000

CONCLUSION: Construction review is in the current rule. The proposal directs school officials to include local health officials in pre-planning meetings. This allows health and safety issues to be identified and addressed during construction planning period, after which adjustments become much more costly. The department and the board find that the benefit of involving local health in pre-planning meetings outweighs the cost of including them.

Preoccupancy Inspections—Section 050

INTENT: The intent of section 050 is to allow local health officers to verify construction conformity with these rules.

BACKGROUND: Preoccupancy inspection by the local health officer for new schools, additions, and renovations has been in the existing rule since 1963.

PUBLIC HEALTH BENEFIT: The purpose of the preoccupancy inspection is to have local environmental health specialists review construction projects for health and safety risks. The public health benefit for this section is based on the value of limiting exposure to potential health and safety hazards that may exist in newly constructed school facilities. Inspecting prior to allowing occupancy provides school officials with the opportunity to address identified imminent health hazards before exposing staff and students.

SIGNIFICANT CHANGES: A preoccupancy inspection is required by the current rule. The proposal expands and adds specificity to the administrative process of preoccupancy permits. While primarily procedural in nature, the cumulative impact of the new requirements of the proposal could increase the time to conduct a preoccupancy inspection.

COST ASSUMPTIONS: The department assumes the new requirements of the proposed rule will increase the time for a preoccupancy inspection by up to 1 hour for an elementary, 3 hours for a middle/junior high, and 5 hours for a senior high school.

PRELIMINARY COST ESTIMATES:

Costs to Schools

The costs for preoccupancy inspections will most likely be charged to schools in the form of increased inspection fees. Local health jurisdictions have identified their hourly fees range

from the \$100-\$200/hr. For purposes of this analysis, the department uses the \$200/hr rate.

Elementary:	\$200
Middle/Junior High:	\$600
Senior High School:	\$1,000

CONCLUSION: A preoccupancy inspection helps ensure students are not exposed to imminent health and safety hazards in newly constructed school facilities. The department and the board find that the benefit of inspecting schools prior to student occupation outweighs the cost of inspection.

General Construction Requirements—Section 060 General Operation and Maintenance Requirements—Section 065

INTENT: The intent of section 060 is to update existing requirements and add some new requirements to meet current best practice standards to protect student health through general construction of the school facility. The proposed rule is intended to provide clarity to construction requirements and separate construction requirements from operation and maintenance requirements. Construction requirements in the proposed rule that are not in the existing rule will not be applied retroactively – other than in a manner similar to how the building codes are applied to an alteration or addition.

The intent of section 065 is to update operation and maintenance requirements in the existing rule. Some new requirements are added to meet current best practice standards to protect student health. Health concerns addressed by these changes are asthma, allergies, and other adverse health effects associated with poor indoor air quality and exposure to chemicals and other hazardous substances.

BACKGROUND: The basic requirements in section 060 have been in place since 1960. The proposed rule provides more specific requirements related to environmental health and safety issues than the building codes and emphasizes some parts of those codes that might not get the full attention of building inspectors. The proposed rule would continue to provide requirements for construction contained in the existing rule that help provide for environmental health and safety regarding non-slip surfaces of steps, cleanable flooring, pest (vermin) control, sufficient space for safe storage of instructional equipment, and control of excessive sunlight. The proposed rule *does not* require routine installation of window screens to control insects.

The proposed rule adds a performance standard for fall protection. The L&I Core Safety Rules cover certain fall hazards, but are designed to protect only employees (WAC 296-800-260, Floor openings, floor holes, and open-sided floors). Section 410 of the International Building Code (IBC) relating to stages and platforms does not address fall protection from stages. Fall injury incidents have highlighted the need for protection from falls that can result in serious head injuries, disability, or death.

The L&I Core Safety Rules are designed to protect employees. They require a workplace free from recognized hazards that are likely to cause serious injury or death (WAC 296-800-11005). Employers are required to make workplaces safe, provide and require the use of safety devices and safeguards...and to do everything reasonably necessary to protect the life and safety of employees (WAC 296-800-11010). These proposed rules contain similar provisions that school officials keep school facilities safe for students.

The proposed requirements in section 065 continue long standing environmental health and safety requirements for the general operation, maintenance, and safety of school facilities. The existing operation and maintenance requirements include keeping school facilities clean and in good repair; controlling pests; and storing and using toxic substances safely. There also is a provision that students have views of daylight for at least half the day.

Under the Employer Chemical Hazard Communication rule, WAC 296-800-170, schools are required to have a Material Safety Data Sheet (MSDS) for each hazardous chemical used in the school. The MSDS indicates the appropriate uses, safe procedures, and first aid for the chemicals. Indoor air quality and student health are at risk if unauthorized chemicals are brought in. The proposed rules would require school officials to ensure that only safe and appropriate chemicals are used and procedures are followed for cleaning, maintenance, pest control; and for arts, science, career, and technical instruction.

Certain insect and animal pests are of public health significance because they can transmit diseases to humans. Safe pest management involves construction measures to exclude pests; maintenance; removal of food, water, and nesting materials; and judicious use of pesticides.

PUBLIC HEALTH BENEFIT: The requirements in proposed rule section 060 can benefit all users of school facilities by providing an environmental health perspective to school facility construction to help prevent health and safety risks. "Conventional schools are typically designed just to meet building codes—that are often incomplete. Design of schools to meet minimum code performance tends to minimize initial capital costs but delivers schools that are not designed specifically to provide comfortable, productive, and healthy work environments for students and faculty...Not surprisingly, a large number of studies have found that schools across the country are unhealthy."³⁹

Insect and animal pests are potential vectors of infectious diseases that can be transmitted to humans. Rodents are carriers of hantavirus. Bats are the natural reservoir for rabies in this state. Mosquitoes carry viral diseases. Bird droppings can contain pathogenic bacteria and fungi. Mosquito breeding places can be minimized by construction that prevents pooling. This rule section would require schools be constructed to minimize exposure to such pests. This provision is not intended to require windows be screened.

Although not prohibited by the proposed rule, carpets are a significant concern for indoor air quality. Carpets can be difficult to maintain; contribute to airborne dust and other allergy/asthma triggers when dirt and dust is not removed by cleaning; and contribute to mold growth when not properly dried. Carpeting specifications should consider ease of cleaning and drying, as well as low off-gassing of volatile organic compounds from the carpet and any pads or glues used. The Environmental Protection Agency (EPA) states: "Carpet ... acts as a reservoir for dust, dirt, pollen, mold spores, pesticides, and other materials which may originate indoors or be brought into the indoor environment from outside...can trap a significant amount of particles...inadequate maintenance can allow large quantities of dust and debris to build up in carpet. Some studies indicate that poorly maintained carpet can release significant quantities of particles into the air during the course of daily activity." It states that: "moisture trapped below a carpet...can result in mold growth and the release of mold spores and mold metabolic products...into indoor air." It further states that: "If carpet is specified, select a carpet that ...can be easily cleaned and

³⁹ Gregory Kats; *Greening America's Schools*; October 2006; p. 4 www.cap-e.com

maintained, is constructed to prevent liquids from penetrating the backing layer where moisture under the carpet can result in mold growth, and can be easily removed without the use of toxic chemicals...⁴⁰

The requirements in proposed rule section 065 would help ensure healthy and safe environments at school facilities. Students, staff, and school visitors could benefit from the protections provided. "Many school buildings are in poor condition and present environmental conditions that inhibit learning and pose unnecessary, increased health risks to students and staff."⁴¹

It is important for public health that school facilities be clean. It is particularly important to keep carpeting clean to avoid indoor air quality problems.

The control of weeds and pests using least hazardous methods would reduce the use of pesticides. Exposure of children to herbicides and other pesticides is a serious health issue. In general, least hazardous response to pest problems means sanitation, prevention of access to food sources, and structural repair to close off pest entry.⁴²

SIGNIFICANT CHANGES: Some construction-related provisions in the existing rules have been removed from the proposed rule because they are adequately addressed by building codes. These include ceiling height restrictions and hand rail requirements for stairways, which are addressed in the International Building Code (IBC). Also, requirements have been modified to not require exterior measures for sun control.

Proposed new requirements include performance standards for flooring materials and fall prevention. Flooring must be appropriate for the intended use, cleanable, and able to be dried effectively to inhibit mold growth. Woven carpets with impervious backing are mentioned as allowed, when appropriate. Fall prevention measures are required for specific locations and heights such as orchestra pits; retaining walls, balconies, and similar drop-offs to a lower floor. Retaining walls, inadequate railings, half-walls, etc., have been observed in schools as potential "attractive nuisances" where children have easy access to heights from which a fall could result in serious injury or death. The rule requires appropriate construction measures that might discourage risky behavior by students. The age of children and type of risk would be considered when determining the most appropriate preventive measure.

The current rule, WAC 246-366-050(5) specifies "The premises and all buildings shall be free of insects and rodents of public health significance and conditions which attract, provide harborage and promote propagation of vermin." The proposal restates and divides this direction into the construction requirements of -060 and the operation and maintenance requirements of -065. The proposal eliminates the language "be free of" and replaces it with direction to "design school facilities to minimize conditions," and "Control conditions

⁴⁰ Environmental Protection Agency, Indoor Air Quality Design Tools for Schools, www.epa.gov/iaq/schooldesign/controlling.html#Carpet

⁴¹ Chaney, B; Lewis, L; *Public School Principals Report on Their School Facilities*, Fall 2005. Washington, DC: US Department of Education, National Center for Education Statistics; 2007. NCES 2007-007 In: Jones, SE, Axelrad, R, Wattigney, WA, Healthy and Safe School Environment, Part II, Physical School Environment: Results From the School Health Policies and Programs Study 2006, Journal of School Health, October 2007, vol. 77, no. 8, p. 545

⁴² *Pediatric Environmental Health*, 2nd Ed.; American Academy of Pediatrics; 2003; p. 468-469

that attract..." The department does not consider this a significant change from the current rule and therefore benefits and costs are not considered.

Another provision new to this rule would specify that health rooms meet certain construction provisions, such as surfaces that can be easily cleaned and sanitized, a handwashing sink, and an adjoining restroom. However, the rule does not require schools to have health rooms.

Proposed new provisions in section -065 include requiring safe use and storage of hazardous materials; selecting supplies and procedures that reduce exposures to hazardous materials; allowing use of only cleaners, pesticides, art supplies, or hazardous materials approved by school officials; and requiring immediate clean-up and disinfection of areas contaminated by sewage.

The proposed rule adds a requirement to notify the local health officer when a sewage back up is large enough to affect more than the restroom of a building. This is to help ensure the most appropriate clean-up methods are used in all areas of the building to reduce the possibility of contamination of food and water and to reduce exposure to students and staff.

Finally, a provision is added to require that all upholstered furniture be purchased or approved by school officials.

CONSTRUCTION-RELATED COST ASSUMPTIONS: Schools will likely incur expenses to implement the proposed changes for the following items:

- 1) Selecting carpet that is easily cleanable and can be dried effectively to inhibit mold growth, where carpet is selected. This may not be an additional expense, depending on a school's current practice when specifying flooring materials.
- 2) Meeting the fall hazard reduction requirements of these rules. This may exceed the minimum building code requirements, but may not be an additional expense, depending on a school's current practice when designing safe school facilities.
- 3) Meeting the health room requirements of these rules, when schools opt to provide a health room in school facilities constructed after the effective date of these rules. This may not be an additional expense, depending on a school's current practice for providing and designing health rooms for new school construction, addition or alteration.

OPERATION & MAINTENANCE-RELATED COST ASSUMPTIONS: Schools will likely incur expenses to implement the proposed changes for the following items:

- 1) Researching manufacturer's instructions for product use and hazards resulting from use. Selection of products and establishing procedures to assure that exposure to hazardous materials is reduced and that only school official-approved products are used.
- 2) Notifying the local health officer when sewage backups outside of restrooms occur.
- 3) Allowing only upholstered furniture that school officials have purchased or approved.

**PRELIMINARY COST ESTIMATES:
CONSTRUCTION RELATED COSTS**

- 1) Potential increased costs for carpet upgrade:

Elementary:	\$64,350
Middle/Junior High:	\$78,375
Senior High:	\$148,500

- 2) Meeting the fall hazard requirements: This cost will vary widely and depend on the hazards and topography of a particular site. The costs here are estimated based on the increased railing requirements of a sample school - 1,000 linear feet of railing on exterior retaining walls at \$55 per foot, warning strips on stages and open metal railings for orchestra pits in high schools.⁴³

Elementary:	\$48,233
Middle/Junior High:	\$64,184
Senior High:	\$82,350
- 3) Potential health room costs, if schools choose to provide a health room.

Elementary:	\$56,416
Middle/Junior High:	\$57,790
Senior High School:	\$57,940

OPERATION & MAINTENANCE COSTS

- 1) Assure that school official-approved products are used: Most schools identified that they already do this activity, but identified a range of costs for compliance from \$375 to \$3278 per year.
- 2) Notify local health officer when sewage backups outside of restroom areas occur. It is estimated that this might occur 1 time a year per school. Range of staff costs identified \$6-\$250. This range reflects the costs associated with a 15 minute phone call up to a site visit from the local health officer.
- 3) Assure only school official-approved upholstered furniture is used in schools. Most schools already have this in policy, however for those schools that do not, this requirement could require up to 4 hours of custodial time to audit a building in a year. Range of costs identified:

\$73 - \$1500

(This range does not include costs to dispose of any unauthorized furniture.)

Moisture Control, Mold Prevention and Remediation—Section 070

INTENT: The intent of section 070 is to require rapid control of moisture problems in schools that can lead to mold growth as well as timely mold remediation and notification of affected individuals. Mold growth is an indicator of damaging water intrusion or condensation and can contribute to respiratory health problems. Moisture control is the key to mold prevention.

BACKGROUND: The Environmental Protection Agency (EPA) has stated: "Concern about indoor exposure to mold has been increasing as the public becomes aware that exposure to mold can cause a variety of health effects and symptoms, including allergic reactions... Mold spores waft through indoor and outdoor air continually. When mold spores land on a damp spot indoors, they begin growing... Mold can produce allergens that can trigger allergic

⁴³ Meng provided estimates for orchestra pit railings for schools of all three grade levels, but they are included in these figures for high schools only. Orchestra pits have become a common feature of high schools only in the past ten years. They are beginning to show up in some middle schools and junior highs, partly in response to community needs, but are not yet considered elements of a "typical" middle or junior high school. They were not included by PSSC.

reactions or even asthma attacks in people allergic to mold. Others are known to produce potent toxins and/or irritants.”⁴⁴

The existing rule does not address mold or moisture intrusion. The board has received extensive testimony about the adverse health effects of mold. Some of this has come from teachers and from the parents of students who have been exposed to moldy conditions in schools that might be linked to adverse health outcomes.

PUBLIC HEALTH BENEFIT: Mold is a known allergen and asthma trigger. Some molds also produce toxic byproducts that are released into the air. Damp environments can allow mold growth in 24-48 hours leading to respiratory health problems. Any resulting mold growth needs to be properly remediated for the health of students, staff, and visitors. Exposure to mold can cause symptoms that include sinus congestion, sneezing, sore throat, cough, skin irritation, shortness of breath, headache, watery eyes, fatigue, and severe asthma reactions in sensitive individuals.

The Institute of Medicine’s (IOM) Committee on Damp Indoor Spaces and Health⁴⁵ stated that: “Homes and other building should be designed, operated, and maintained to prevent water intrusion and excessive moisture accumulation when possible. When water intrusion or moisture accumulation is discovered, the source should be identified and eliminated as soon as practicable to reduce the possibility of problematic microbial growth and building material degradation. The most effective way to manage microbial contaminants, such as mold, that are the result of damp indoor environments is to eliminate or limit the conditions that foster its establishment and growth.”

The IOM committee further stated that: “When microbial contamination is found, it should be eliminated by means that not only limit the possibility of recurrence but also limit exposure of occupants and persons conducting the remediation. Disturbance of contaminated material during remediation activities can release microbial particles and result in contamination of clean areas and exposure of occupants and remediation workers. Containment during clean-up (through the erection of barriers, application of negative air pressure, and other means) has been shown to prevent the spread of microbial particles to non-contaminated parts of a contaminated building. The amount of containment and worker personal protection and the determination of whether occupant evacuation is appropriate depend on the magnitude of the contamination.”

The IOM committee concluded “that excessive indoor dampness is a public-health problem. An appropriate public health goal should thus be to prevent or reduce the incidence of potentially problematic damp indoor environments, that is, environments that may be associated with undesirable health effects, particularly in vulnerable populations.”

SIGNIFICANT CHANGES: The proposed rule requires that school officials:

- Visually monitor for water intrusion and moisture accumulation;
- Begin corrective action within 24 hours of discovering water intrusion or moisture accumulation to prevent and limit mold growth; and
- Take specific actions when mold growth is suspected or observed, including
 - Eliminating the cause of moisture and drying the affected areas;
 - Investigating the extent of the mold growth;

⁴⁴ Environmental Protection Agency; *Mold Remediation in Schools and Commercial Buildings*; EPA 402-K-01-001, March 2001

⁴⁵ Institute of Medicine, Committee on Damp Indoor Spaces and Health; *Damp Indoor Spaces and Health*; 2004; p. 12-14

- o Limiting student exposure;
- o Using recognized mold remediation procedures; and
- o Informing staff, students, and parents of the conditions and plans and time frame for remediation if the affected surface area is greater than 10 square feet. (The 10 square feet threshold for mandatory notification is based on EPA remediation guidance.)

COST ASSUMPTIONS: Schools will likely incur expenses to implement the proposed changes for the following items:

- 1) Integrating frequent visual observation of the school facility for signs of water intrusion or moisture accumulation into the routine school operations by staff and faculty.
- 2) Beginning corrective action within 24 hours in response to water intrusion, moisture accumulation or mold growth. Depending on the timing of the event relative to the standard work week, this could result in overtime costs.
- 3) Responding to water intrusion and moisture accumulation (Control water and dry facility)
- 4) Remediating mold growth
- 5) Notifying staff, students, and parents about mold remediation.

These requirements may not result in additional expenses, depending on a school's current practice for monitoring their facility for and responding to water intrusion, moisture accumulation or mold.

PRELIMINARY COST ESTIMATES:

- 1 – 3) Schools identified that they are already observing facilities and responding to water intrusion. The requirement to begin corrective action in 24 hours may require some increase in overtime work if problems are discovered over a weekend. Range of costs identified:
\$120 - \$2,583
- 4) Remediation of mold growth beginning within 24 hours of discovery – costs can vary widely depending on circumstances, from a phone call for technical assistance to staff receiving overtime wages for starting remediation work within the allowed timeframe. (The costs range from \$17 to \$1,060.) The department assumes the requirement to begin remediation quickly combined with the requirement to observe facilities and respond to water intrusion will help prevent large and costly remediation projects. The department; however, recognizes that some remediation projects can be large with schools reporting costs of up to \$300,000 in some cases.
- 5) Notify staff, students, and parents about remediation: Costs reflect time to develop a letter and respond to questions. Assume not more than 1 event per year. Range of costs identified:
\$55 - \$2,000

CONCLUSION: Since the last major revision of this chapter, the understanding of the health effects of mold has grown substantially. The proposal is intended to prevent mold from growing by requiring schools to monitor for moisture intrusion and to respond as soon as possible when it does occur. By helping to prevent mold, the proposal will help prevent the allergy and asthma impacts associated with mold. Further, it will also help prevent the potentially costly remediation necessary to address mold once it has been established. This new section is central to realizing reduced respiratory symptoms through improved indoor air quality. As such, the department and the board have determined the benefits of mold prevention outweigh the costs.

Animals in School Facilities—Section 080

INTENT: The intent of this section is to require school officials to develop written policies or procedures that specifically address the potential health and safety hazards associated with animals allowed in the school facility, including service animals that are regular visitors.

BACKGROUND: The existing rule does not specifically address animals in the school facility. School officials, staff, and parents have expressed concerns to department staff regarding the safety and health concerns related to animals in schools. The department has received requests about prohibiting animals in schools due to these concerns and also has received complaints when animals are prohibited in schools. Schools asked the board to address concerns about animals in this proposed rule and other stakeholders supported the request.

There are many areas in which animals might be found in schools; including as pets in elementary classrooms, in science classrooms, as teacher's pets, as service animals, for special education therapy, and even as school mascots that roam the facilities. Since 2000 the K12 Health and Safety Guide has provided guidance on animals in schools, based on the National Association of State Public Health Veterinarian's (NASPHV) *Compendium of Measures to Prevent Disease Associated with Animals in Public Settings*. NASPHV "understands the positive benefits of human animal contact. Although eliminating all risk from animal contacts is not possible, [they] provide recommendations for minimizing disease and injury. NASPHV recommends that...agencies use these recommendations to establish their own guidelines or regulations for reducing the risk for disease from human-animal contact in public settings."⁴⁶

Schools need to ensure that personnel providing animals for educational purposes are knowledgeable regarding animal handling and zoonotic disease issues.⁴⁴ Guide, hearing, or other service animals and law enforcement animals can be used when they are under the control of a person familiar with the specific animal and in accordance with recommendations from the sponsoring organizations.

PUBLIC HEALTH BENEFIT: Animals can play an important instructional role in the school setting. They can also present a risk of zoonotic disease (diseases which can be transferred from animals to humans), injuries, and allergic and asthmatic reactions. Animals require thoughtful attention to their care, including environment, climate, housing, food, exposure to other species (including humans), socialization, behavior, and appropriate clean-up of their wastes. Animals need to be kept clean and free of intestinal parasites, fleas, ticks, mites, and lice.⁴⁴

Animal waste has the potential for disease transmission and plans for allowing animals in schools need to specify effective provisions for cleaning and sanitation. "Cleaning and disinfection of all areas where animals have been present is necessary to prevent disease transmission."⁴⁴ "Infections with enteric bacteria and parasites pose the highest risk for human disease from animals in public settings. The primary mode of transmission for enteric pathogens is fecal-oral. Because animal fur, hair, skin, and saliva can become contaminated with fecal organisms, transmission can occur when persons pet, touch, feed,

⁴⁶ National Association of State Public Health Veterinarians, Inc.; *Compendium of Measures to Prevent Disease Associated with Animals in Public Settings*; Morbidity and Mortality Weekly Report; July 6, 2007; Vol. 56, No.; RR-5; p. 1

or are licked by animals... Animals carrying enteric organisms pathogenic to humans (e.g., *E. coli*, *Salmonella*, and *Campylobacter*) frequently exhibit no signs of illness and can shed these pathogens intermittently. Removing ill animals (especially those with diarrhea) is necessary but not sufficient to protect animal and human health. Antimicrobial treatment of animals cannot reliably eliminate infection and shedding of enteric pathogens or prevent re-infection.

Infections from animal bites are common and frequently require extensive treatment or hospitalization. Bacterial pathogens associated with animal bites include *Pasteurella*, *Francisella tularensis*, *Staphylococcus*, *Streptococcus*, *Capnocytophaga canimorsus*, *Bartonella henselae* (cat-scratch disease), and *Streptobacillus moniliformis* (rat-bite fever). Certain monkey species (especially macaques) kept as pets or used in public exhibits can be infected with herpes B virus, either asymptotically or with mild oral lesions. Human exposure through monkey bites or bodily fluids can result in a fatal meningoencephalitis.⁴⁷

"Psittacosis...is a bacterial infection of humans that can cause severe pneumonia and other serious health problems. It is caused by *Chlamydophila psittaci*... From 2000 through 2006, 125 human cases of psittacosis were reported to the CDC and most resulted from exposure to infected pet birds, usually cockatiels, parakeets, parrots, and macaws...Infected birds shed the bacteria through feces and nasal discharges, and humans become infected from exposure to these materials." Infected birds can appear healthy and shed the organism intermittently.⁴⁸

"Injuries associated with animals in public settings include bites, kicks, falls, scratches, stings, crushing of the hands or feet, and being pinned between the animal and a fixed object."⁴⁵ Animals may react strangely to classroom situations and it is important to have effective control methods.

There are many people who are allergic to animal dander or for whom animal fur, feathers, and dander may be asthma triggers. Plans to allow animals in schools must consider the need to protect students with allergies and asthma. "Parents should be informed of the benefits and potential risks associated with animals in school classrooms. Consult with parents to determine special considerations needed for children who are immunocompromised, who have allergies, or who have asthma."⁴⁹

SIGNIFICANT CHANGES: Section -080 would require school officials to develop a policy to prevent the spread of zoonotic disease, injuries, and allergic reactions if animals are allowed in school facilities.

COST ASSUMPTIONS: Schools will likely incur expenses to develop the required "animals in the school" policy, if such a policy does not already exist.

⁴⁷ National Association of State Public Health Veterinarians, Inc.; *Compendium of Measures to Prevent Disease Associated with Animals in Public Settings*; Morbidity and Mortality Weekly Report; July 6, 2007; Vol. 56, No. RR-5; p. 4-5

⁴⁸ National Association of State Public Health Veterinarians (NASPHV); *Compendium of Measures to Control Chlamydophila psittaci Infection Among Humans (Psittacosis) and Pet Birds (Avian Chlamydiosis)*; 2008; p. 1

⁴⁹ National Association of State Public Health Veterinarians, Inc.; *Compendium of Measures to Prevent Disease Associated with Animals in Public Settings*; Morbidity and Mortality Weekly Report; July 6, 2007; Vol. 56, No. RR-5; p. 19

PRELIMINARY COST ESTIMATES:

Cost to develop an animal policy. The department assumes policies will be developed on a district-wide basis with assistance and models from the department and OSPI. Range of costs identified per district \$400 to \$7,500. To estimate per school costs, the department assumes an average of eight schools per district (2,300 schools/295 districts).

CONCLUSION: While animals can play an important role in schools, they can also cause allergies, diseases, and injuries. The department and the board have determined the benefits associated with preventing the risks posed by animals in the classroom outweigh the costs of developing a policy.

Heating and Ventilation:**Construction Requirements—Section 090****Operation and Maintenance Requirements—Section 095**

INTENT: Indoor air quality (IAQ) issues in schools are important for student and staff health, productivity, and learning. The board heard testimony over the past 15 years that indicates IAQ issues are not being adequately addressed in some schools. This was a major reason the board directed the department to update the school environmental health and safety rules. The heating and ventilation sections of the rules are intended to provide more specific standards to help prevent school IAQ problems.

BACKGROUND: The International Mechanical Code (IMC), as adopted by Washington State (WAC 51-52) and the State Ventilation Code (WAC 51-13) specify the design of heating and ventilation systems in schools. Additional requirements in this proposed rule address special school environmental health issues not fully covered by the IMC. Schools have special use areas that can produce indoor air quality (IAQ) problems not adequately addressed by the building codes, including science laboratories; art and career and technical classrooms; health rooms; and copy or laminating machine workrooms. The IMC does not adequately address the issue of recirculation of air from such spaces as science laboratories; career and technical classrooms; and restrooms. This rule would focus school design professionals' attention to assure that the ventilation systems are designed to prevent the types of indoor air quality (IAQ) problems in schools that have resulted in health issues for students and staff. Health complaints in schools have been associated with such things as glass fibers, dust, and automobile exhaust. L&I rules are not designed to address these issues in schools, which could have even greater impact on students than adults.

The local health officer's designee, who reviews school plans and conducts pre-opening inspections from a health perspective, can address these issues in light of the planned uses for the rooms. Their perspective, based on public health protection strategies, enhances the oversight by the local building officials, identifying conditions or issues that may not be observed by expertise grounded in other professions.

PUBLIC HEALTH BENEFIT: Environmental exposures play an important role in the development and management of asthma. The main factors responsible for triggering asthma attacks and persistent symptoms are exposure to allergens, irritants, and respiratory infections. Common allergens include animal dander, dust mites, cockroaches, and molds. Respiratory irritants include diesel exhaust, ozone, fine particles, cleaning products, and solvents. "About 120,000 Washington youth are currently affected by asthma." "Poor air quality at school exacerbates asthma and is also associated with

decreased student attendance in the general population – air in or around schools may be affected by management of ventilation and filtration systems, cleaning practices, reduction of “idling” by school bus engines or other vehicles waiting to pick up students.”⁵⁰

School children spend a significant part of their growing years in school facilities. The chapter on schools in *Pediatric Environmental Health*⁵¹ states that “Exacerbation of respiratory symptoms, academic difficulties in achievement, attention, and focus; and behavioral problems...may be linked to the school environment...” (page 459) “Many problems with IAQ in schools are common to all large buildings. There are, however, other pollutants unique to schools including those released into the air from art and craft supplies, chemistry and biological laboratories, and wood and metal shops.” “The indoor air may directly influence a child’s learning by affecting alertness, attentiveness, and absenteeism...Indoor air pollutants can originate within the building or be drawn in from outdoors and may consist of particles, fibers, mists, molds, bacteria, and gases.”(page 461) “Prevention [of IAQ problems] provides the greatest overall health benefit [to children.]”(page 466)

SIGNIFICANT CHANGES: The proposed rule requires schools to situate fresh air intakes away from building exhaust vents and other sources of air contaminants of public health importance in a manner that meets or exceeds the requirements in chapter 51-52 WAC. Sources of air contaminants include, but are not limited to, bus and vehicle loading zones, parking areas, and areas where pesticides or herbicides are commonly applied.

The proposal requires ducted air returns and using non-friable material when lining ducts. The requirement for ducted air returns applies only when constructing a new school or adding to an existing school where ventilation systems are independent of existing systems.

The existing rule requires mechanical exhaust ventilation for sources of air contaminants of public health importance. In an effort to provide more clarity and specificity, the proposed rule requires schools to provide locations with mechanical exhaust ventilation that meets or exceeds the requirements in chapter 51-52 WAC for equipment or activities that produce air contaminants of public health importance. Equipment that may produce air contaminants of public health importance includes laminators, very high volume copiers and older copying technologies. The phrase “air contaminants of public health importance” is newly defined in the proposed rule. It is understood that with the greater specificity and the new definition, meeting the proposed rule may require some schools to provide mechanical ventilation in more situations than under the existing rule.

The proposed rule continues existing requirements that the minimum temperature in facilities occupied by students be maintained at 65°F, with the exception of gymnasiums, which must be maintained at a minimum of 60°F. School facilities constructed before the effective date of this proposed rule would be required to ventilate occupied areas of school buildings during school hours and school-sponsored events and strive to provide outdoor air ventilation according to chapter 51-52 WAC through proper maintenance of existing systems. School facilities constructed after the effective date of this proposed rule would be required to ventilate occupied areas of school buildings during school hours and school-sponsored events to provide outdoor air ventilation according to chapter 51-52 WAC.

⁵⁰ Washington State Department of Health; *The Burden of Asthma in Washington State: Executive Summary*; June 2005

⁵¹ *Pediatric Environmental Health*, American Academy of Pediatrics, 2nd Edition, 2003

Schools would be required to limit student exposure to air contaminants of public health importance from office equipment by placing equipment in appropriately ventilated spaces and providing instruction to users on how to operate and maintain equipment as recommended by the manufacturer. They would also be required to take corrective action when air contaminants of public health importance, such as vehicle exhaust, are drawn into the building or ventilation system.

CONSTRUCTION-RELATED COST ASSUMPTIONS: Schools will likely incur expenses to implement the proposed changes for the following items:

- 1) Situate air intakes to meet or exceed chapter 51-52 WAC so that air contaminants of public health importance are not drawn into the building.
- 2) For new construction, use only ducted supply and return air systems when mechanical ventilation systems are selected. Natural ventilation systems may be used.
- 3) Use only materials that will not deteriorate and contribute particulates or other air contaminants to the air stream when insulating the interior of air handling ducts.

OPERATION & MAINTENANCE-RELATED COST ASSUMPTIONS: Schools will likely incur expenses to implement the proposed changes for the following items:

- 1) Provide heat and ventilation during school sponsored events and strive to provide outdoor air ventilation meeting the standards of chapter 51-52 WAC.
- 2) Limit student exposure to air contaminants of public health importance produced by heat laminators, laser printers photocopiers and other office equipment by placing such equipment in appropriately ventilated spaces and providing instruction to users on how to operate and maintain equipment as recommended by the manufacturer. Providing mechanical exhaust ventilation for sources of air contaminants of public health importance is an existing rule requirement. On October 8, 2008 the SBOH eliminated proposed subsection 095(4) which would have restricted the use of laminators to locations with mechanical exhaust ventilation. Therefore the department no longer assumes a need for one ventilated workroom. The department assumes the remaining requirement can be met through no cost alternatives.
- 3) Preventative or corrective action when air contaminants of public health importance are likely to be drawn into the building.

PRELIMINARY COST ESTIMATES:

CONSTRUCTION RELATED COSTS

- 1) Cost estimates to situate air intakes to meet or exceed chapter 51-52 WAC so that air contaminants of public health importance are not drawn into the building are the same for all three types of schools: \$1,940.
- 2) For new construction, use only ducted air supply and returns; open plenum returns may not be used:
 - Elementary Schools – \$98,280
 - Middle/Junior High Schools – \$143,640
 - Senior High Schools - \$340,200
- 3) Use materials that will not deteriorate when insulating the interior of air handling ducts. Two options for compliance were identified: 1) Upgrade to Amtex no particulate liner; or 2) Add two duct sound chambers at each teaching station, restroom and private office.
 - Option 1) Upgrade insulation duct lining:

Elementary Schools - \$49,140
Middle/Junior High Schools - \$73,510
Senior High Schools - \$170,100
Option 2) Sound chambers
Elementary Schools - \$63,504
Middle/Junior High Schools - \$88,906
Senior High Schools - \$165,110

OPERATION & MAINTENANCE COSTS

- 1) Strive to meet chapter 51-52 WAC through proper maintenance including repairs and replacing filters. The department assumes no new additional costs for this activity.
- 2) Language restricting the use of laminators to locations with mechanical exhaust ventilation has been deleted by the SBOH. Therefore, the department no longer assumes a need to retro-fit older schools with mechanical exhaust ventilation systems and has eliminated the previously identified cost of approximately \$10,000.
- 3) Preventative or corrective action when air contaminants of public health importance are likely to be or are drawn into the building. There are a number of actions that will meet this requirement ranging from closing the windows for no new costs, to upgrading to a higher grade of filter and making sure they are replaced regularly. The proposal would not require schools to retrofit to provide an emergency air evacuation system. The costs for upgrading filters and changing them more regularly are provided here.

Upgraded filters: \$30.00 each

Additional maintenance labor to change the filters 5 times each year.

Elementary: \$600 (assumes 4 filters)

Middle/Junior High: \$1,200 (assumes 8 filters)

Senior High: \$2,400 (assumes 16 filters)

CONCLUSION: Addressing indoor air quality problems was identified as a primary need when the department and the board reviewed the rule in 2003. Poor indoor air quality causes increased asthma and allergy symptoms and other respiratory illness. Appropriately designed and maintained heating and ventilating systems are a key component to improving indoor air quality and can result in a 20 – 80 percent decrease in respiratory illness. The department and the board have determined the benefits associated with improving air quality outweigh the costs imposed by the construction, and operation and maintenance requirements of these sections.

Noise—Construction Requirements—Section 100 Noise—Operation and Maintenance—Section 105

INTENT: The intent of these two sections is to present noise control-related requirements when constructing school facilities, and for operating and maintaining existing school facilities.

BACKGROUND: The current rule requires that ventilation and mechanical noise sources be designed to not exceed the Noise Criterion-35 (NC-35) standard, and that the ambient noise in an unoccupied classroom with the mechanical systems operating not exceed 45 dBA (decibel measure, with the "A" weighted scale adjustment).

PUBLIC HEALTH BENEFIT: Control of ambient noise reduces stress and related health effects and ensures that staff will not disable ventilation systems to reduce noise and

therefore contribute to poor IAQ. *Safe and Healthy School Environments* identifies health impacts of noise in the school setting:

“Teachers and teacher assistants (paraprofessionals) suffer a higher rate of voice disorders than other working people. Smith et al. (1997) compared the frequency and effects of voice symptoms in teachers to a group of people employed in other occupations.”

“ ...the noise created by heating, ventilating, and air-conditioning (HVAC) systems, poor acoustic design in classrooms, and crowded classrooms may also contribute to teacher’s straining their voices to be heard (American National Standards Institute and Acoustical Society of America 2002.)

The impact of mechanical equipment noise on the classroom environment has been highlighted in *Classroom Acoustics*, published by the Technical Committee on Architectural Acoustics of the Acoustical Society of America, August 2000:

“High ambient noise from mechanical equipment such as noisy heating, ventilation and air conditioning (HVAC) systems is all too common in existing schools. This is a serious problem for teachers and students alike. Teachers must raise their voices to maintain the +10 dB signal-to-noise ratio necessary for good speech intelligibility. That results in many teachers taking several sick days each year as a result of vocal strain, costing taxpayers’ money that would have been better spent on quiet mechanical equipment. At the same time, students must either struggle to hear or else become distracted and stop paying attention. Mechanical noise is primarily the result of poor planning and can be difficult and expensive to fix in existing classrooms. However, excessive mechanical noise can be eliminated at little or no extra cost if the system is designed properly in the first place.”

SIGNIFICANT CHANGES: There are no significant changes proposed for the noise-related requirements of the current rule as presented in WAC 246-366, sections 100 and 105, and no increased cost associated with implementing the proposed rule compared to the existing rule.

Lighting—Construction Requirements—Section 110

Lighting—Operation and Maintenance Requirements—Section 115

INTENT: The intent of these two sections is to present lighting-related requirements when constructing school facilities, and for operating and maintaining existing school facilities.

BACKGROUND: Lighting intensity requirements, a part of the 1960 school health and safety rules, have been revised over the years, with the current lighting levels established in 1982.

PUBLIC HEALTH BENEFIT: Minimum lighting intensity, and the absence of glare and other lighting deficiencies, contribute to a healthy and safe school environment. Existing requirements recognize different lighting levels are needed throughout the school facility based of activity to assure a safe educational setting. Insufficient lighting, glare, and other lighting deficiencies can contribute to accidents, eye-strain and headaches.

SIGNIFICANT CHANGES: There are no significant changes proposed for the lighting-related requirements of the current rule as presented in WAC 246-366A-110 or 246-366A-115. The only proposed change to the current text is to update “special instructional areas” to include currently used terms.

Restrooms and Showers—Construction Requirements—Section 120

Restrooms and Showers—Operation and Maintenance Requirements—Section 125

INTENT: The intent of these two sections is to present plumbing-related requirements when constructing school facilities, and for operating and maintaining existing school facilities.

BACKGROUND: Plumbing-related requirements, a part of the 1960 school health and safety rules, have been revised over the years, with the current requirements established in 1982. Early requirements addressed many items currently addressed in building and plumbing codes. The remaining requirements in the proposed rule address items not covered in the plumbing code. The current rule already establishes when showers must be provided, when restrooms must be accessible, what restroom supplies must be provided and the maximum hot water temperature for showers and handwashing.

PUBLIC HEALTH BENEFIT: Providing for conditions in restrooms and showers that contribute to keeping facilities clean and dry is important to maintaining healthy spaces in schools. Ventilation helps control moisture accumulation and odors. Restrooms must be available for use of building occupants, and a maximum hot water temperature guards against scalding. Tempered water encourages hand washing by providing water that is warm enough to allow for a thorough washing while at the same time preventing scalding. Hand washing is the most basic public health measure to prevent the spread of communicable disease.

SIGNIFICANT CHANGES: There are no significant changes in the construction requirements of section -120. Proposed section -125 requires tempered water (between 85 and 110 degrees Fahrenheit) for those handwashing plumbing fixtures that do not allow the user to select water temperature. The proposal does not require schools to change to fixtures that mix water, but where they are already used, the temperature needs to be within the required range.

OPERATION & MAINTENANCE-RELATED COST ASSUMPTIONS: Schools will likely incur expenses to implement the proposed changes for the following items:

Adjusting handwashing plumbing fixtures that do not allow the user to select water temperature to provide tempered water. This requirement may not result in an additional expense, depending on the type of plumbing fixtures used in a school or a school’s current practice for setting water temperature at this type of plumbing fixture.

PRELIMINARY COST ESTIMATES:

OPERATION AND MAINTENANCE COSTS:

Assure tempered water in sinks that do not allow users to select temperature. The department assumes no additional costs because these units must be adjusted for temperature when they are installed. Respondents also indicated ongoing adjustments are needed and this activity is already common practice.

CONCLUSION: Tempered water encourages adequate hand washing because the water is warm enough to allow effective washing time. The department and the board consider hand washing to be a critical measure in preventing communicable diseases and determine the benefits of adjusting the fixtures to outweigh the costs.

Water Quality Monitoring for Lead—Section 130

INTENT: The intent of this section is to present the requirements for sampling drinking water for lead content. This section describes the frequency, timeline, and protocol for sampling water from plumbing fixtures used for drinking or cooking.

BACKGROUND: The current rule requires schools to provide drinking water from an approved source. Schools that receive their drinking water from a municipal or privately owned water supply are considered a customer of that water system and are not required by other rules to conduct water quality testing. Water systems that provide drinking water to schools test for lead and other contaminants in select locations throughout their distribution system. Schools on their system may or may not be part of the sampling sites. Because water quality problems at schools are often caused by plumbing conditions rather than the quality of the water being delivered, problems could go unnoticed.

From December 2004 until June 2005, OSPI and the department jointly implemented a grant program to partially reimburse Washington elementary schools for the cost of testing for lead in their drinking water. A total of 7,728 samples were submitted by 455 different schools. Of the 7,728 samples collected, 559 or 7.2 percent were at or above 20 parts per billion.

PUBLIC HEALTH BENEFIT: Exposure to lead is a significant health concern, especially for young children whose growing bodies tend to absorb more lead than the average adult. Excess amounts of lead in the body can damage the brain, kidneys, nervous system, and red blood cells. In children, lead has been associated with impaired mental and physical development as well as hearing problems. The harmful effects of lead in the body can be subtle and may occur without any obvious signs of lead poisoning.

Lead is a toxic substance with no acceptable safe exposure level. Reducing the amount of lead in drinking water is an important part of reducing a child's overall exposure to lead in the environment. The on-again, off-again water use patterns of most schools can result in elevated lead levels in drinking water. Water that remains stagnant in plumbing overnight, over a weekend, or during a vacation is in longer contact with lead-containing pipes, solders, and fixtures and may therefore contain higher levels of lead.

The benefit of the proposed rule is prevention of exposure to lead by sampling water and taking corrective action when necessary.

SIGNIFICANT CHANGES: The proposed rule requires sampling and testing water for lead levels at plumbing fixtures regularly used for drinking or cooking. For elementary schools, 100 percent of the fixtures will need to be sampled within the first two years, fifty percent each year.

For middle/junior high and senior high schools, a representative sample is required by identifying different types and ages of fixtures used in the building and sampling 25 percent of each type and age of fixture. For fixture types, at least these three types must be

sampled: drinking fountains, water coolers and faucets. For fixture age, at least these two ages must be sampled: fixtures manufactured before 1999, and those fixtures manufactured since January 1, 1999. Junior highs will need to be tested within three years of the effective date of the rule and high schools within four years.

The sampling procedure is repeated every five years, sampling 10 percent of each type and age that are a "very low lead" plumbing fixture and 25 percent of all other fixtures, by type and age.

If the sample results exceed 20.0 parts per billion, corrective action is required for all fixtures of the type and age generating an unacceptable sample. Corrective actions include: removing the fixture from service, providing bottled water, daily system flushing as only a temporary measure, and fixture replacement. The proposal further requires school officials to use a state-accredited laboratory to analyze all samples. Samples collected after September 1, 2003 may be used to meet the first round monitoring requirement under certain conditions.

School officials must notify staff, students, parents, and the local health officer within 5 business days of receiving lead sampling results exceeding 20.0 parts per billion. They must also retain records of water sampling activities and sample results, available for public review.

The requirements in this section apply to all school facilities.

COST ASSUMPTIONS: Schools will likely incur expenses to implement the proposed changes for the following items:

- 1) Sampling and analyzing fixtures regularly used for cooking and drinking according to requirements. This will mean 100 percent of such fixtures in elementary schools and 25 percent of such fixtures for junior high and high schools. The department assumes it will provide technical assistance to school districts in developing sampling plans so that hiring consultants will not be necessary. However, the sampling will require some planning time and probable overtime expenses because the samples must be done early in the morning before the water has been used. This expense will repeat on a five-year cycle.
- 2) Implementing corrective actions when sample results exceed 20.0 parts per billion. This could include expenses for bottled water as an interim measure before replacing the fixtures, and the cost of replacement fixtures and labor for removal of old fixtures and installation of new ones.
- 3) Notifying staff, students, parents, and the local health officer within 5 business days of receiving sampling results above 20.0 parts per billion lead.

PRELIMINARY COST ESTIMATES:

- 1) Sample collection and analysis:

Elementary Schools – Based on staff surveys and information from schools, the department assumes a large elementary school will have up to 50 fixtures regularly used for drinking and cooking. This does not include restroom sinks. All the fixtures will need to be tested at a cost of around \$30 per test. The sampling process may take up to 16 hours over several days to develop a sample plan, collect samples, and deliver or ship samples for testing. 16 hours @ \$45/hr.

50 x \$30/test = \$1500 lab costs
16 x \$45/hr = \$720 labor costs

Shipping/deliver costs will be variable and indeterminate depending on a school's distance to a particular lab. For purposes of this analysis the department assumes a cost of \$50.

Total costs for an elementary school: \$2,270

Middle/junior and senior high schools – Although middle/junior high and senior high schools are double and sometime triple the size and number of students of an elementary, the department's analysis does not show that drinking and cooking taps increase proportionately because elementary schools have a larger number of drinking fountains per student. A large high school might also have 50 drinking and cooking taps. For purposes of providing an example we have chosen a school with 48 drinking and cooking fixtures. The proposal will require 25 percent of the fixtures to be tested - 48 fixtures per school X 25 percent = 12 fixtures to be tested. Lead tests are approximately \$30 per test. The department assumes it will take about 1 day to develop a sample plan, collect samples and deliver or ship samples for testing – 8 hours @ \$45/hr = \$360.

Sampling - \$30 x 12 fixtures = \$360

Labor - \$360

Shipping/deliver costs will be variable and indeterminate depending on a school's distance to a particular lab. For purposes of this analysis the department assumes a cost of \$25.

Total per school - \$745

- 2) Costs for Corrective Action – Based on the results of the Governor's 2003 initiative to sample lead in school drinking water and the Seattle School District monitoring program, the department assumes up to 30 percent of schools will have problems with lead. Department staff further assume for the purposes of this analysis that schools will choose to replace fixtures if testing results are above 20.0 parts per billion. The department also estimates that as many as 10 percent of fixtures may need to be replaced. The costs for typical fixtures are:

Drinking fountain - \$150

Water cooler - \$470

Faucet - \$70

Assuming a worst case scenario that a school would need to replace 5 (10 percent x 50 fixtures) water cooler units, the cost would be 5 x \$470 = \$2,350. Additional labor costs would be in the range of 12 hours @ \$75/hr = \$900. However, the department assumes discounts would be available if fixtures were being replaced on a district wide basis and purchased in bulk. \$2350 + \$900 = \$3,250.

The replaced fixtures would need to be preconditioned and retested for a cost of \$500 (labor, sampling and shipping).

Total possible corrective action costs – \$3250 + \$500 = \$3,750.

- 3) Costs to notify staff, students, parents, and the local health officer within 5 business days of receiving lead sampling results above 20.0 parts per billion lead. Costs reflect time to develop a letter and respond to questions. Assume not more than 1 event per sampling cycle (every 5 years).

Range of costs identified: \$75 - \$2000.

CONCLUSION: This proposal was a major part of the rulemaking process. Of 7,728 samples submitted by 455 different Washington state schools, 559 or 7.2 percent were at or above 20 parts per billion. In addition, young children are most vulnerable to effects of lead (See above and Overview of Benefits). As a result, the department and the board have determined the benefits of testing fixtures and correcting identified problems outweigh the costs.

Water Quality Monitoring for Copper—Section 135

INTENT: The intent of this section is to present the requirements for sampling drinking water for copper content. This section describes the frequency, timeline, and protocol for sampling water from plumbing fixtures regularly used for drinking or cooking.

BACKGROUND: Schools that receive their water from a municipal or private water supply are not required by other rules to test regularly for copper. Unless a school is its own water system, there are no specific requirements that water coming out of the pipes of individual schools be tested for copper. Depending on the age of a school and the kind of pipes and fixtures used, there is a possibility that copper levels in drinking water could contain copper. The EPA has established the action level for copper at 1.3 milligrams per liter (mg/L) for copper.

PUBLIC HEALTH BENEFIT: Children are more susceptible to the effects of excess copper than adults because they are smaller and metabolic capacity is less developed. Ingesting copper can cause nausea, abdominal pain, vomiting, and for sensitive individuals kidney disease and liver damage. Copper is a contaminant that most commonly enters drinking water through corrosion of copper plumbing within buildings.

Schools in this country have identified drinking water with excessive levels of copper in amounts that may have caused gastric symptoms in children and that put certain susceptible persons at risk of health problems. In limited school sampling in Washington 15 of 3,300 samples were above the Safe Drinking Water Act copper action level of 1.3 mg/L. The only way to know if there are excessive levels coming from pipes and fixtures is to test for it. Once corrective actions are taken the problem is not expected to reoccur. Use of copper water pipes for electrical grounding is the most frequent cause of excessive leaching of copper into drinking water.

The benefit of the proposed rule is prevention of exposure to copper by sampling water and taking corrective action when necessary.

SIGNIFICANT CHANGES: The proposed rule requires that school officials must sample 25 percent of plumbing fixtures regularly used for drinking and cooking in all schools for copper content, following the same protocol as that for lead sampling. Repeat sampling for copper is not required.

School officials must notify staff, students, parents, and the local health officer within 5 business days of receiving copper sampling results above 1.3 mg/l copper. They must also contact the state Office of Drinking Water within this timeframe to consult about a corrective action plan. School officials must develop and implement an action plan in response to copper levels exceeding 1.3 mg/l.

The requirements in this section apply to all school facilities.

COST ASSUMPTIONS: Schools will likely incur expenses to implement the proposed changes for the following items:

- 1) Collecting and analyzing water samples is required for 25 percent of each type and age of fixture used regularly for drinking or cooking. School officials are encouraged to coordinate sampling for lead and copper so that analysis for both contaminants can be performed from a single sample.
- 2) Implementing corrective actions when sample results exceed 1.3 mg/l, based on a corrective action plan developed in consultation with the state Office of Drinking Water. Corrective action-related expenses could include the cost of bottled water as an interim measure, an automated flushing system or daily manual flushing.
- 3) Notifying staff, students, parents, and the local health officer within 5 business days of receiving copper sampling results above 1.3 mg/l copper.

PRELIMINARY COST ESTIMATES:

- 1) Sample collection and analysis of 25 percent of fixtures – Assuming a school coordinates their copper testing with the lead testing, the copper requirement will add an additional one time cost ranging from \$10 - \$20 per test.

Using the numbers developed for section -130 that assumes approximately 50 drinking water taps for elementary, middle/junior high and senior high schools, this would mean additional costs of up to:

50 fixtures x 25 percent = 12.5 (assume 12)

12 X \$20 = \$240 per school.

- 2) Corrective action. While bottled water or treatment would be options for corrective action, for copper issues, flushing can be effective. Based on the results of the Seattle School District's copper monitoring program, less than 1 percent of schools will have copper problems. For that 1 percent of schools, a flushing program could require 1 hour of custodial staff time per day. 25/hr x 180 school days per year = \$4,500.
- 3) Costs to notify staff students and parents. Costs reflect time to develop a letter and respond to questions. Assume not more than 1 event per year. Range of costs identified: \$75 - \$2,000.

CONCLUSION: The results of limited school testing show that copper issues occur less frequently than lead issues. However, the additional cost to add a copper test to samples already being collected for lead is relatively low. Therefore, the department and the board have determined that the benefits of sampling for copper and correcting problems when found outweigh the costs.

Water Quality Monitoring for Other Contaminants—Section 140

INTENT: The intent of this section is to establish the framework by which the local health officer may require sampling of drinking water when public health concerns exist about water contaminants other than lead or copper.

BACKGROUND: As with lead and copper, the current rule requires schools to provide drinking water from an approved source. Approval includes testing the system as a whole for a variety of contaminants. Not all contaminants can be detected at the source or in the system. For this reason, the proposed rule requires school officials to conduct sampling for

drinking water contaminants, corrective actions, and notification when directed by the local health officer to address public health concerns.

PUBLIC HEALTH BENEFIT: There may be other potential drinking water contaminants that could affect the health of children identified by the local health officer, such as the potential for excessive levels of cadmium from galvanized pipe. When the potential for these contaminants is identified, the local health officer would be able to require testing and appropriate remediation to protect children's health.

SIGNIFICANT CHANGES: School officials shall perform sampling for drinking water contaminants other than lead and copper, take corrective actions and provide notification when directed by the local health officer.

The requirements in this section apply to all school facilities.

COST ASSUMPTIONS: Schools will likely incur expenses to implement the proposed changes for the following items:

- 1) Sampling plumbing fixtures regularly used for drinking or cooking for drinking water contaminants other than lead or copper, when public health concerns exist and directed by the local health officer.

PRELIMINARY COST ESTIMATES:

The costs in this section are indeterminate but presumed to be low because they will apply only in cases where the local health officer has identified a problem. The department assumes the local health officer would very rarely require this testing.

CONCLUSION: There are other drinking water contaminants that may cause health problems in schools. This proposed section gives local health officers authority to require testing if there are public health concerns. The department and the board assume this will be infrequent, but that the benefits would outweigh the costs in those circumstances when public health concerns exist.

Playgrounds—Construction and Installation Requirements—Section 150
Playgrounds—Operation and Maintenance Requirements—Section 155

INTENT: The intent of these rules is to protect students from hazardous or unsafe conditions that can exist with playgrounds, playground equipment, and surfacing material under playground equipment. The existing rules contain no specific requirements for playground safety. This was identified by the School Rule Development Committee as a serious gap in the school environmental health and safety rules. The intent of these new sections is to increase safety protection for students and prevent accidental injury or death

BACKGROUND: The existing rule states that the existence of unsafe conditions that present a potential hazard are a violation of these regulations. The existing rules have required the department and OSPI to jointly prepare a guide for use in identifying violations of good safety practices. Section N of the K-12 Health and Safety Guide directs school personnel and local health officials to the Consumer Product Safety Commission (CPSC) and American Society for Testing and Materials (ASTM) for voluntary standards for playgrounds. The K-12 Health and Safety Guide recommends that local health agencies conduct plan review and routine inspections of playgrounds. CPSC first issued national standards for reducing the risk of serious life-threatening injuries at public playgrounds in 1981. Although

there are many schools voluntarily complying with the national standards, there is no regulation in Washington State requiring compliance.

In 1997, Spokane Regional Health District conducted comprehensive playground audits. Of the 18 participating elementary schools, 699 serious playground hazards were identified during the audit – such as lack of appropriate surfacing, head entrapments, and protrusions. By 2004, the schools had a correction rate of 90 percent. One of these school districts tracks injury data and reported that the number of elementary school equipment-related playground and school ground injuries, from 2002-2005, averaged less than one per school year. This school district participates in the Spokane Regional Health District self-inspection program. Three of its elementary schools participated in the 1997 audit when 178 serious playground hazards were identified. In 2004, only three serious hazards were identified, demonstrating a 98 percent correction.⁵²

PUBLIC HEALTH BENEFIT: There are identified national standards for reducing the risk of serious life-threatening injuries that, if applied, could help prevent injuries. Properly installed equipment, that is not adequately maintained, becomes a safety risk. “Approximately 10-25 percent of child and adolescent injuries occur at school...Most injuries (90 percent) to children and adolescents at school that result in hospitalization are unintentional, not the result of violence, and are most likely to occur on playgrounds, on athletic fields, or in gymnasiums. Such injuries are most frequently caused by falls and sports activities.”⁵³

Playgrounds are a high risk area for student injuries. Potential hazards include entanglement, punctures, entrapment, strangulation, and falls that can result in death or disability. “Tinsworth and McDonald (2001) analyzed the U.S. CPSC data files related to 147 deaths associated with playground equipment...that occurred between 1990 and 2000...Three causes of death predominate: strangulation (54 percent), falls to non-resilient surfaces such as asphalt (21 percent), and tip-over or collapse of equipment (16 percent). Strangulation usually results from clothing or cords becoming entangled or caught on the equipment, especially slides. Given these fatality statistics, efforts at reducing death on playgrounds should focus on three areas: appropriate clothing (no protruding cords), adherence to the CPSC guidelines, and good maintenance of equipment.”⁵⁴

CPSC addresses the importance of inspecting and maintaining playground equipment in its Handbook for Public Playground Safety, 1997, Section 7.2: “Inadequate maintenance of equipment has resulted in injuries on playgrounds. Because the safety of playground equipment and its suitability for use depend on good inspection and maintenance, the manufacturer’s maintenance instructions and recommended inspection schedules should be strictly followed.”

SIGNIFICANT CHANGES: The playground construction and installation requirements section 150 specifies that school officials must consult with the local health officer regarding installation, modification, or addition of playground equipment and fall protection surfaces. The local health officer could require review and approval of playground plans and equipment specifications and inspect playgrounds to verify that installation complies with

⁵² Reported by Julie Awbrey, Spokane Regional Health District

⁵³ Barrios, LC; Jones, SE; Gallagher, SS; *Legal Liability: The Consequences of School Injury*; Journal of School Health; May 2007; Vol. 77, No. 5; p. 274

⁵⁴ Ed. Howard Frumkin, MD; DrPH, Robert J. Geller, MD; I. Leslie Rubin, MD; with Janice Nodvin; *Safe and Healthy School Environments*; Oxford University Press; 2006; p. 90-93

requirements of this section. The proposed rule would require installation of playground equipment and fall protection surfaces that meet ASTM F 1487-01: Standard Consumer Safety Performance Specification for Playground Equipment for Public Use, and that are installed in a manner that is consistent with the manufacturer's instructions and CPSC's Handbook for Public Playground Safety, 2008. Implementing the ASTM and CPSC standards will improve the safety of newly installed equipment and help assure safe play, resulting in fewer and less severe playground injuries. The proposed rule also prohibits the use of chromated copper arsenate or creosote treated wood to construct or install playground equipment. The manufacture of chromated copper arsenate or creosote treated wood products for use around children has been banned by EPA in this country; but supplies may still exist.

The playground operation and maintenance requirements section 155 specifies that school officials must monitor and operate playgrounds so that surfacing and use zones are maintained and so that equipment is properly anchored and free of puncture, crushing, shearing, entanglement, and entrapment hazards. Chromated copper arsenate or creosote treated wood to repair or maintain playground equipment would be prohibited.

CONSTRUCTION-RELATED COST ASSUMPTIONS: Schools will likely incur expenses to implement the proposed changes for the following items:

- 1) Consulting with the local health officer regarding the need for and the scope of playground design and installation plan review and approval.
- 2) Preparing documents for plan review and payment of review fees, if required by the local health officer.
- 3) Selecting and installing playground equipment and fall-protection surfaces that meet the required standards. This may not be an additional expense, depending on a school's current practice when specifying playground equipment and fall-protection surfaces.

OPERATION & MAINTENANCE-RELATED COST ASSUMPTIONS: Schools will likely incur expenses to implement the proposed changes for the following items:

- 1) Monitoring and maintaining playground equipment and fall-protection surfaces to reduce injury risk. This may not be an additional expense, depending on a school's current practice for monitoring and maintaining playground equipment and fall-protection surfaces.
- 2) Local health may have increased costs for training and inspection kits to inspect playgrounds.

The department assumes these costs apply only to elementary schools. One respondent identified that some high schools may include playgrounds for associated daycare facilities. These costs are not included in the overall costs for all high schools.

**PRELIMINARY COST ESTIMATES:
CONSTRUCTION RELATED COSTS**

- 1) Consult with local health officer – If a new playground is being built along with a school, no additional costs for construction review. If playground is an addition to an existing school facility - \$800 meeting time.
- 2) Prepare documents for plan review \$500 - \$1,000
- 3) Increased costs for playground equipment that meets requirements compared to home-built kit equipment - \$20,866

OPERATION AND MAINTENANCE COSTS

Schools

Monitor and maintain playgrounds: Time/Cost Estimate per school per year. Most schools identified that they are already doing this activity. The range of costs per year identified for regular inspections:

\$360 – \$8,820 daily inspections Monday – Friday. This may take more time on Mondays as a result of weekend use.

Local Health Jurisdictions

Local health jurisdictions identified increased costs for training and inspection kits ranging from \$200 – \$5,000.

CONCLUSION: Playgrounds pose a significant risk of injury to children. In order to prevent injuries, playgrounds must be installed correctly and maintained. The proposal provides a standard for playground installation and helps assure maintenance by requiring schools to monitor playgrounds for hazards. The department and the board considered the additional costs posed by these two new sections and determined the benefits in terms of injury prevention outweigh the costs.

Laboratories and Shops—Construction Requirements—Section 160

Laboratories and Shops—Operation and Maintenance Requirements—Section 165

INTENT: The provisions in sections 160 and 165 of the proposed rule are intended to help prevent injuries and other adverse health impacts from hazards common to school instructional laboratories and shops. Laboratories include science laboratories for chemistry, physics, material science, and biology instruction, as well as art laboratories for print-making, photography, and ceramics instruction. Shops include metal-working, wood-working, construction, automotive, agricultural, and horticultural. Requirements that would apply only to “new construction” are separated from requirements that are operational and that would apply to all schools. These sections are intended to provide protections to students that are not provided by L&I rules.

BACKGROUND: Safety issues in school laboratories and shops have been identified by numerous risk managers and environmental health specialists. The existing school rules require chemistry laboratories to have an eyewash fountain and a shower head for flushing in case of chemical spills and clothing fires. However, the existing rules are insufficient to protect student health and safety. They relegate to guidance necessary safety practices for student laboratories and shops. They have provisions that if more than one laboratory is provided, one of each fixture will be adequate if the laboratories are in close proximity. “Close proximity” is not defined and “shower heads” is not adequately descriptive and allows for emergency showers that do not meet the standards established for employees in L&I rules. Students would be better protected by requirements that are similar to those that L&I has for employees. Chemical laboratories are not the only laboratories in schools where hazardous materials are used and where emergency showers and eyewashes should be installed. Schools use a large variety of hazardous chemicals in various instructional areas.

The 2006 International Mechanical Code (IMC, Section 3503.1.3, Flammable Gases – Emergency Shutoff) has new requirements for “manual or automatic emergency shutoff valves that can be activated at each point of use and at each source.” However, the IMC does not address the teaching situation where one teacher is responsible for supervising a classroom and needs to be able to act quickly to protect students from injury. In regards to

electrical shut-offs, L&I Core Safety Rules require employers to “identify disconnecting means...marked to show when it is open and closed and what equipment it controls, unless located and arranged so the purpose is obvious.” This does not adequately address the need for the teacher to be able to quickly shut down all stationary power equipment.

The International Mechanical Code (IMC), as adopted by Washington State (WAC 51-52) specifies the general design of ventilation systems in schools. These proposed school rule sections would focus school design professionals’ attention to assure added protections are provided to students in laboratories and shops. The local health officer’s designee, who reviews school plans and conducts pre-opening inspections from a health perspective, can address these issues in light of the planned uses for the rooms. This perspective, based on public health protection strategies, enhances the oversight by the local building officials.

PUBLIC HEALTH BENEFIT: The Utah Student Injury Report (Knight et al. 2000) found that “during the five-year period from 1992 to 1996, 7.1 percent of school injuries in Utah (1,008 of 14,133) occurred in shop class. Equipment use accounted for 88.4 percent of these injuries...Missing covers for belts of belt-driven equipment and missing blade guards are common hazards in vocational shops. Appropriate safeguards include training, close supervision, selection of safety equipment including covers and guards, and meticulous maintenance of equipment...Projectiles, falling objects, and heated objects are common hazards in physical science classes, although these dangers can also be present in other specialized classrooms. Physics assignments that may result in flying objects or debris require the use of impact-resistant (ANSI Z87.1) safety glasses by all occupants of the room. Earth science activities that involve chipping, breaking rock, or grinding also require the use of safety glasses.”⁵⁵

“Life threatening injuries can happen in the laboratory. For that reason, students need to be informed of the correct way to act...”⁵⁶ “Improper chemical management poses health and safety risks to students and school employees. Health, learning, and behavior risks to students are of particular concern, as children are more vulnerable than adults to chemical exposures because their bodily systems are still developing; they eat more, drink more, and breathe more in proportion to their body size; and their behavior can expose them more to chemicals than adults...It only takes one chemical incident, such as a spill, explosion, or chemical exposure, to break the trust with the community...Despite their useful purposes, chemicals can be dangerous to students and staff when managed improperly. Some chemicals that are persistent in the environment and bioaccumulate through the food chain can make exposure during childhood and adolescence especially dangerous.”⁵⁷

SIGNIFICANT CHANGES: The current rules require chemical laboratories in new construction to be provided with an eyewash fountain and a shower head. The proposed section -160 would require in the construction of new schools and new laboratories an emergency eyewash fountain and an emergency shower for each laboratory and shop where hazardous materials are used and the potential for chemical spills exists. The proposal also requires handwashing and drying facilities in each laboratory and shop, and emergency

⁵⁵ Ed. Howard Frumkin; MD, DrPH, Robert J. Geller, MD; I. Leslie Rubin, MD; with Janice Nodvin; *Safe and Healthy School Environments*; Oxford University Press; 2006; p 108-109

⁵⁶ Consumer Product Safety Commission; Centers for Disease Control and Prevention; Department of Health and Human Services, National Institute for Occupational Safety and Health; *School Chemistry Laboratory Safety Guide*; October 2007, DHHS Publication No. 2007-107; p 6

⁵⁷ *Chemical Management Resource Guide for School Administrators*; December 2006; EPA 747-R-06-002; p 3 and 24

shut-offs for gas and electricity. All stationary machinery in laboratories and shops would be required to have magnetic-type switches to prevent machines from automatically restarting upon restoration of power after an electrical failure or activation of the emergency shut-off. Mechanical exhaust ventilation would be required in hazardous material storerooms and in laboratories and shops where equipment or activities may produce air contaminants of public health importance. The requirement in proposed WAC 246-366A-160(7) to provide appropriate source capture systems is not considered to be a significant change because it is already required under current WAC 246-366-080.

Operation and maintenance requirements in section -165 would require school officials to select supplies and procedures that reduce exposure to hazardous materials. Use and storage of compounds that are considered shock-sensitive explosives and those that are lethal at low concentrations when inhaled or in contact with skin, would be prohibited. Additionally, school officials would be required to adopt safety procedures and ensure that students are instructed in the proper use of hazardous materials and equipment; to provide and require students to use appropriate personal protective equipment when exposed to potential hazards; and to provide situation-specific emergency and protective equipment during demonstrations with hazardous materials and with hazardous procedures. Mechanical exhaust ventilation for laboratory and shop equipment would be required to be used and maintained in accordance with manufacturer's recommendations.

CONSTRUCTION-RELATED COST ASSUMPTIONS: Schools will likely incur expenses to implement the proposed changes for the following items:

- 1) Installing emergency eyewashes in all laboratories and shops where hazardous materials are used or eye irritants are produced. Plumbing emergency eyewashes with warm (tepid) water.
- 2) Installing emergency showers in all laboratories where hazardous materials are used and the potential for chemical spills exist. Plumbing emergency showers with warm (tepid) water.
- 3) Installing hand-washing and drying facilities in each laboratory and shop.
- 4) Installing emergency shut-offs for gas and electricity provided to stationary machinery in each laboratory and shop.
- 5) Providing electro-magnetic power switches for stationary machinery to prevent machines from re-starting after an electrical failure or activation of an emergency shut-off switch.
- 6) Designing and installing air ventilation systems that do not recirculate air from a laboratory or shop to other parts of the school facility.

These requirements may not result in an additional expense, depending on a school's current practice for placement, design, and specifications for the required plumbing fixtures (emergency eyewash and emergency showers are required for new construction under the existing rules), utility shut-offs, machinery safety equipment, and ventilation systems.

OPERATION & MAINTENANCE-RELATED COST ASSUMPTIONS: Schools will likely incur expenses to implement the proposed changes for the following items:

- 1) Researching product hazard resulting from product use as described by manufacture's instructions. Selection of products and establishing procedures to assure exposure to hazardous materials is reduced and that only school official-approved products are used.
- 2) Adopting safety procedures and ensuring that students are instructed in the proper use of hazardous materials and equipment and provide and require students to use appropriate personal protective equipment when exposed to potential hazards.

- 3) Providing situation-specific emergency and protective equipment during demonstrations with hazardous materials and with hazardous procedures.

These requirements may not result in an additional expense, depending on a school's current practice for selecting, handling, and storing hazardous materials and for adopting and using safety procedures for the use of hazardous materials, including the provision and use of personal safety equipment for students

PRELIMINARY COST ESTIMATES:

CONSTRUCTION COSTS

- 1) Installing and plumbing eye washes:⁵⁸
 - Elementary: 2 eyewashes = \$6,384 (not included in construction cost totals)⁵⁹
 - Middle/Junior High: 7 eyewashes = \$22,344
 - Senior High: 11 eyewashes = \$35,112
- 2) Increased costs for installing and plumbing additional emergency showers:⁵⁷
 - Elementary: 2 showers = \$11,352 (not included in construction cost totals)⁵⁸
 - Middle/Junior High: 7 showers = \$39,732
 - Senior High: 11 showers \$62,436
- 3) Installing hand washing facilities:
 - Elementary: 2 sinks/towel dispensers = \$5,443
 - Middle/Junior High: 7 sinks/towel dispensers = \$19,051
 - Senior High: \$29,937
- 4) Installing emergency shut-offs for equipment – no new costs for gas.
 - Elementary: \$0
 - Middle/Junior High: 14 shut-offs = \$28,340
 - Senior High: 22 shut-offs = \$44,550
- 5) Providing electro-magnetic power switches for stationary machinery to prevent machines from re-starting after an electrical failure or activation of an emergency shut-off switch.
 - Elementary: \$0
 - Middle/Junior High: 30 switches = \$2,430
 - Senior High: 40 switches = \$3,240
- 6) The costs of designing and installing air ventilation systems that do not recirculate air from a laboratory or shop to other parts of the school facility are the same for all types of schools – \$4,536.

The total costs for this section including professional and district process review costs are:

Elementary: \$27,715
Middle/Junior High: \$116,433
Senior High: \$179,811

OPERATION & MAINTENANCE COSTS

- 1) Selecting products and establishing procedures to assure exposure to hazardous materials is reduced and that only school official-approved products are used.

⁵⁸ Meng provided initial estimates based on working rule draft that would have required plumbing of adequately sized drains. He later provided estimates for the drains themselves of \$1,128, which includes contractor markup and overhead. This amount, multiplied by the number of fixtures, has been subtracted from the estimates for eyewashes and emergency showers.

⁵⁹ Meng provided estimates for two emergency showers and two eyewashes per elementary school. PSSC, however, did not estimate a new cost for this item for elementary schools. The board and the department are not aware of any elementary school curricula that would necessitate these features, so their costs are not included in the total construction costs for an elementary school.

- No additional costs beyond those identified for section -065.
- 2) Adopting safety procedures and ensuring that students are instructed in the proper use of hazardous materials and equipment and provide and require students to use appropriate personal protective equipment when exposed to potential hazards.
Range of costs identified:
\$1,100 – \$1,500 for Middle/Junior High and Senior High Schools only.
 - 3) Providing situation-specific emergency and protective equipment during demonstrations with hazardous materials and with hazardous procedures.
Respondents indicated that they already provide this equipment for the students in laboratories and shops. Therefore, the department assumes no additional costs.

CONCLUSION: Laboratories and shops pose health risks to children through use of equipment and exposure to chemicals which can cause injuries and respiratory issues. The department and the board considered the additional costs posed by these two new sections and determined that the benefits of additional protective measures related to physical safety and indoor air quality in laboratories and shops outweigh the costs of these measures.

Variance—Section 170

INTENT: This section replaces WAC 246-366-020- Substitutions and WAC 246-366-150 – Exemptions, which are being repealed. It creates a process to allow alternative methods of meeting the requirements of these rules.

SIGNIFICANT CHANGES: This is not a significant change because it does not establish a new requirement; rather it allows for alternative ways to meet the requirements of the rules.

Temporary Emergency Waivers for Disaster Situations—Section 175

INTENT: If a natural or man-made disaster occurs and leaves a school facility unusable, an emergency waiver will allow schools to relocate temporarily into another facility that may not meet some of all of the requirements established in these rules.

SIGNIFICANT CHANGES: This is not a significant change because it does not create a new requirement for schools; rather it allows for a temporary relaxation of the rule requirements in an emergency situation.

COST ASSUMPTIONS: The department assumes this section will not increase costs. If needed, the section will most likely represent a cost savings to schools.

Appeals—Section 180

INTENT: This section restates the appeal rights related to decisions or actions of local health officers. It does not create new appeal rights.

SIGNIFICANT CHANGES: This is not a significant change because this section does not create a new requirement for schools or local health jurisdictions. It states in rule, a statutory right that currently exists.

Complaints—Section 190

INTENT: Schools currently handle complaints of many kinds. The intent of this section is to assure that schools develop a written procedure to respond to complaints regarding these health and safety requirements that is clearly articulated for students and parents.

SIGNIFICANT CHANGES: The requirement to develop procedures around complaints is a significant change and schools that do not already have a process will need to develop one. OSPI has a website describing processes for handling complaints to assist schools. The proposed rule closely follows that advice.

COST ASSUMPTIONS: Schools may incur a cost to develop a written description of their complaint process. The department assumes policies will be developed on a district-wide basis with assistance and models from the department and OSPI. To estimate per school costs, the department assumes an average of eight schools per district (2300 schools/295 districts). The department also assumes the addition of new requirements in other sections of the proposal may increase the kinds of complaints schools receive, however increased costs would be indeterminate.

PRELIMINARY COST ESTIMATES:

Cost to develop a complaint policy: Range of costs identified: \$516 - \$4,000.

CONCLUSION: A clearly articulated complaint process was a priority for many stakeholders involved in the rulemaking process. The process allows parents, teachers and others to identify children's health and safety issues that might otherwise go unobserved. The department and the board believe the benefits of having a process to describe how complaints will be addressed outweigh the costs of writing the procedures and addressing health issues.

Alternatives Considered

Department staff worked closely with the board and the public to minimize the burden of this rule. Throughout the course of the rule development many ideas were discussed. In addition to the consideration given to alternative rule frameworks, the following alternatives were considered but rejected as being more burdensome on the regulated community:

- Walk-off mats. Although they are considered to be an effective way to improve indoor air quality, walk-off mats were identified as a very high cost requirement when considering the costs state-wide and so the proposed rule does not include walk-off mats as seen in earlier versions of the proposal.
- Drains for emergency showers and eyewashes: The department has received anecdotal reports about schools not having proper drainage for emergency showers. This could result in showers not being properly tested, or even being disabled, in order to prevent flooding. In response to these reports, earlier versions of the proposal included a requirement that emergency showers and eyewashes be plumbed with drains adequate for the flow. Plumbing a waste drain adds about \$1,118 to the cost of installing an emergency shower or eyewash. As such, the board and department decided to rely on rule provisions requiring cleanup whenever there is water damage and annual inspections to promote testing instead of the requirement to have plumbed waste drains.

Other sections have been phased in to allow time for schools and local health jurisdictions to prepare and reduce their upfront costs by allowing them to spread the costs over several years.

- Inspections. The requirement for annual inspections has been delayed to September 2011 (one year from the effective date.)
- Duct lining upgrades and ducted air return requirements. The requirements in 246-366A-090(3) and (4) have been delayed until September 2013 to allow those school districts with bonds that pass before adoption of these rules to complete their projects before the requirements take effect.
- Water quality monitoring requirements. The water quality testing in sections 245-366A-130 and -135 are spread out over four years. Elementary schools and preschools located in public schools with the youngest and most susceptible children are to be tested in the first two years, middle/junior high schools by the end of the third year, and senior high schools are to be completed after four years.

Requirements for Private versus Public Entities

The rule does not impose more stringent performance requirements on private entities than on public entities.

Other Federal or State Law – Violations

The rule does not require those to whom it applies to take an action that violates requirements of federal or state law.

Other Federal, State, or Local Law - Differences

The rule does not differ from any applicable federal regulation or statute.

Other Federal, State, or Local Law - Coordination

Yes, the department conducted extensive research to be certain that the proposed rules are coordinated to the maximum extent practicable with applicable laws including those administered by the State Building Code Council, Office of the Superintendent of Public Instruction, and L&I. See Appendix E for a complete listing of agency laws and rules that the department reviewed to help ensure the proposed rules are coordinated with other federal, state, and local laws.

Preliminary Significant Analysis

Chapter 246-366 WAC Primary and Secondary Schools And Chapter 246-366A WAC Environmental Health and Safety Standards for Primary and Secondary Schools

June 2009

Appendix A – Rulemaking Process

Rulemaking Process

At its January 8, 2003 meeting, the board requested that staff prepare and submit a rule review document by July 2003 that included the following elements:

- Review of WAC 246-366, Primary and secondary schools, with respect to results achieved and outcome measures.
- Review of WAC 246-366 and other relevant rules with respect to identification of a responsible party during construction and capital improvement projects.
- The appropriateness and practicality of plan review requirements and the preoccupancy review process for new school construction or for school remodeling projects.
- The presence and usefulness of communication criteria related to health related school closures and remediation actions.
- The frequency and scope of inspections.
- A timeline and outline for any rule updates or revisions recommended in the rule review.

Board staff used past research, including "Survey of Four Local Health Department and School District Responses to School Indoor Air Quality Complaints," a "Summary of recommendations regarding how to improve the public health and school systems' responses to school IAQ problems," and a 1998 Department of Health (the department) review of WAC 246-366. Board staff obtained additional input, via e-mail and at a March 24, 2003 meeting, from a variety of individuals and organizations involved in school environmental health issues, including school district and local health jurisdiction staff.

The department rule review and everyone who provided input, except Spokane Regional Health Department staff, agreed that WAC 246-366 should be revised. Staff recommended that the revision of WAC 246-366 begin in July 2004 when completion of other rule revisions was expected.

The board and the department jointly developed the following rule development goals:

- Proactively protect children's health;
- Be based on the best available science;
- Ensure accountability between school districts, their communities, and local health jurisdictions;
- Support and promote current school districts, their communities, and local health jurisdictions;
- Present the least burdensome regulatory structure;
- Be compatible and consistent with existing related regulations (such as building codes); and
- Be realistic about resource limitations of schools and local health jurisdictions.

The department formed a School Rule Development Committee (SRDC) in November 2004 to advise the department and the board on proposed revisions to the board rules for primary and secondary schools. The SRDC consisted of representatives of local health jurisdictions, the department, the Office of the Superintendent of Public Instruction, school boards, school districts, administrators, facility maintenance operators, architects, students, parents, teachers, and community members. The

makeup of the SRDC captured a wide range of perspectives and interests relating to environmental health and safety in schools. A wider range of participation was achieved through the creation of workgroups to address the three principal areas identified as needing specific attention: Indoor Air Quality, Drinking Water, and Safety. These workgroups allowed the inclusion of persons with demonstrated technical expertise as well as those with long-standing interest and experience in working on the issues relating to these topics.

The members of the SRDC included:

Local Health Jurisdictions

Environmental Health Directors (Western Washington)	<i>Corrine Storey</i>
School Program Managers (Western Washington)	<i>Dave DeLong</i>
Environmental Health Directors (Eastern Washington)	<i>John Wolpers</i>
School Program Managers (Eastern Washington)	<i>Julie Awbrey</i>
University of Washington Public Health	<i>Karen VanDusen</i>

Schools

Washington State School Directors' Association	<i>June Sine</i>
Washington Association of School Business Officials	<i>Mary Sue Linville</i>
Washington Association of School Administrators	<i>Mimi Walker</i>
Washington Association of Maintenance & Operations Administrators	<i>Gary Jefferis</i>
Private Schools	<i>Ed Foster</i>
Office of the Superintendent of Public Instruction	<i>Brenda Hood</i>

Students/Parents/Teachers

Washington Education Association	<i>Mike Gawley</i>
Washington State Parent Teachers Association	<i>Diane McMurry</i>
School Nurses of Washington	<i>Janice Doyle</i>
Parent (with a child in school)	<i>Mark Cooper</i>
Student	<i>Mary Senn</i>

Architect

Council for Educational Facilities Planners International-NW (CEFPI-NW)	<i>Bill Chaput</i>
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The reference materials used by the SRDC were:

- Chapter 246-366 WAC, Primary and Secondary Schools;
- RCW 43.20.050 Powers and Duties of State Board of Health;
- State Board of Health Implementation Survey Report / WAC236-366 / Primary & Secondary Schools;
- Chapters 51-13 WAC, Ventilation and Indoor Air Quality;
- RCWs & WACs/ Other School-Related Laws and Regulations;
- School Environmental Health & Safety Program, Department of Health / Miscellaneous Materials;
- Local Health Jurisdiction School Environmental Health Program Survey / Department of Health (January 2004);
- Health and Safety Guide for K-12 Schools in Washington (January 2003);
- School Indoor Air Quality Best Management Practices Manual (November 2003);
- EPA Indoor Air Quality Tools For Schools;
- Asthma Management in Educational Settings Manual / Taking Care to School (Revised 9/2004);
- Environmental & Occupational Disease Epidemiology / Guidelines on Assessment and Remediation and Fungi in Indoor Environments – New York City Department of Health and Mental Hygiene (January 2002);
- Washington Sustainable Schools Protocol for High Performance School Facilities (WORKING DRAFT March 2004);
- Handbook for Public Playground Safety (CPSC Pub. 325); and
- Compendium of Measures to Prevent Disease and Injury Associated with Animals in Public Settings, 2004.

Between January and April, 2005, the workgroups addressed a range of issues and developed 101 suggestions for rule and guidance. The department staff consolidated those suggestions into 25 separate groupings for consideration by the SRDC. The SRDC voted on what should be in rule or guidance. As a final activity, the SRDC considered proposals on issues not covered by the three workgroups. During this process they added more proposals so in the end there were 48 groupings. Of the 101 workgroup proposals 99 were retained by the SRDC.

The 48 groupings proposed by the SRDC were presented to the State Board of Health Environmental Health Committee. Department staff used board recommendations to amend the primary and secondary school rules and wrote a first draft of the new rules. Staff presented the first draft on March 8, 2006 for board and public review. Fifteen workshops were held around the state in March and April to answer questions on the draft rule. After the public comment period, the Environmental Health Committee provided recommendations for future actions in a December 13, 2006 memo to the board. The memo included the following general guidance to simplify, clarify, and focus the draft rule:

- Remove guidelines and recommendations and include them in the Health and Safety Guide for K-12 Schools in Washington.
- Remove provisions that are redundant with other rules and laws.
- Remove provisions that are best handled by other agencies or organizations.
- Remove provisions regulating activities where multiple agencies or organizations are already providing sufficient oversight.
- Ensure all requirements are related to student health and safety.
- Keep rule provisions performance-based as much as possible and avoid mandating administrative structures.
- Review again the SRDC advisories regarding addressing specific issues in either rule or guidance.
- Keep rule provisions with broad agreement on their value such as shop safety.

Department staff, state agency representatives, the State Board of Health Environmental Health Committee, and board staff worked to incorporate public concerns into a second draft rule. Their work included:

- Further researching the requirements of various state agencies and the impact on environmental health and safety in schools;
- Drafting proposed changes to the existing rules;
- Reviewing draft text for consistency with the board's direction for creating the 2nd DRAFT rule; and
- Creating a companion report to identify where proposals developed by the School Rule Development Advisory Committee are addressed in the 2nd DRAFT rule.

On August 8th, 2007, the department presented the 2nd DRAFT of proposed updates to chapter 246-366 WAC, Primary and secondary school rules to the board. In order to begin getting cost information on various aspects of the rule proposal, the department invited schools and local health jurisdictions to share cost information at workshops in November 2007.

The department held 6-hour workshops on November 27th for local environmental health directors and on November 28th for school officials. The department asked the participants for cost estimates for implementing the provisions in the proposed second draft revision compared with provisions in existing school rules. Many of the participants also wanted to provide cost estimates for the totality of implementing the proposed rule in jurisdictions with non-existent or minimal school inspection programs. The workshops were facilitated by Mary Campbell, a private consultant. The department did not expect actual cost estimates would be developed at the workshops. Rather, the goal was to try to reach commonly understood assumptions about the impact of the rules. However, participants commented that the rule language was too vague to be able to determine what the costs would be.

During the 2008 Legislative session, the concern regarding vague language was heard by a number of legislators. In response, the board held a series of workshops to review proposed language for technical clarity. Key participants represented the following agencies and organizations:

- International Facilities Maintenance Association (IFMA)
- Local health jurisdictions (east and west)
- Office of Superintendent of Public Instruction
- Puget Sound Schools Coalition
- Washington Association of School Administrators
- Washington Association of School Business Officials
- Washington Education Association
- Washington Federation of Independent Schools
- Washington Association of Maintenance and Operation Administrators
- Washington State Association of Local Public Health Officials
- Washington State Parent Teacher Association
- Washington State School Directors' Association
- Department of Health
- State Board of Health
- Facilitator (architect contracted by the Office of the Superintendent of Public Instruction)

The proposal analyzed in this document reflects the culmination of five years of work by all these parties. The State Board of Health filed the proposal based on this work in July 2008 and held public hearings in August and September 2008. On October 8, 2008, it approved amendments to the proposal and then deferred a final vote on adoption until no later than June 2009 to allow the legislature to consider funding issues. The 2009 legislative session resulted in a state operating budget that includes a proviso prohibiting implementation of new health and safety rules for school facilities without funding. On June 10, 2009, the State Board of Health discussed this restriction to implementation of new or amended school facility rules by section 222, chapter 564 of the laws of 2009, and directed staff to revise the rule proposal to reflect legislative restrictions. It also directed staff to revise the proposal to maintain existing rules in chapter 246-366 WAC until new provisions of chapter 246-366A WAC could be implemented.

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<u>Existing Rule</u>	<u>Proposed Rule</u>
Chapter 246-366 WAC Primary and secondary schools Last Update: 12/23/91	Chapter 246-366A WAC Environmental Health and Safety Standards for Primary and secondary schools CR-102 Draft: 06/30/09
<u>246-366-001 Introduction.</u>	
<p>These rules and regulations are established as minimum environmental standards for educational facilities and do not necessarily reflect optimum standards for facility planning and operation.</p> <p>[New Section Proposed for Chapter 246-366 WAC] WAC 246-366-005 Purpose. The purpose of this chapter is to maintain minimum environmental health and safety standards for school facilities until the legislature permits full or partial implementation of chapter 246-366A WAC. To the extent funded or otherwise approved by the legislature, chapter 246-366A WAC is intended to replace or supersede this chapter or corresponding portions thereof as identified by the Washington state board of health.</p>	<p>246-366A-001 Introduction and purpose (1) The purpose of this chapter is to replace chapter 246-366 WAC with a more modern set of minimum environmental health and safety standards for school facilities to promote healthy and safe school environments. (2) Implementation of this chapter is subject to the state legislature providing funding to public schools in accordance with section 222 of the 2009-11 biennial operating budget, chapter 564 laws of 2009, or other form of legislative action. Unless and until the legislature approves full or partial implementation of this chapter, chapter 246-366 WAC shall take precedent and this chapter shall not be implemented or enforced in any manner. (3) It is the intent of the Washington state board of health to work with the legislature to develop a strategy and timeline for funding and implementation of this chapter.</p> <p>WAC 246-366A-003 Implementation. (1) Implementation of this chapter, in whole or in part, requires one or more of the following actions by the legislature: (a) Authorization of expenditures in the omnibus appropriations act for the expressed purpose of funding implementation for public schools; (b) Repeal, modification or expiration of statutory restrictions on implementation; or (c) Enactment of any statute or resolution authorizing implementation. (2) Within 31 days after the effective date of any law or legislative resolution that funds or otherwise approves full or partial implementation of this chapter, the state board of health shall provide notice of implementation by submitting an interpretive statement for publication in the Washington State Register in accordance with RCW 34.05.230. (a) The interpretive statement shall identify the legislative action being interpreted, the section or sections of chapter 246-366A WAC being implemented, the implementation date or dates for each section or sections, the corresponding section or sections of chapter 246-366 WAC that will be superseded, and a brief explanation of significant differences between the requirements of this chapter and the corresponding sections of chapter 246-366 WAC. (b) The state board of health shall maintain a roster of interested persons and shall send an electronic copy of the interpretive statement to each person on the roster as well as to the following agencies and organizations: (i) The Washington state code reviser; (ii) The Washington state department of health;</p>

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	<p>(iii) The Washington state office of superintendent of public instruction; (iv) Washington state local health jurisdictions; (v) Washington state professional associations representing school officials; (vi) The Washington federation of independent schools; (vii) Washington state labor organizations representing school employees; (viii) The Washington state association of local public health officials; (ix) The Washington state PTA; and (x) The Washington state legislature through the chairs of the fiscal, health, and education committees of both houses.</p> <p>(c) The office of superintendent of public instruction shall forward the notice of implementation electronically to school districts, school principals and private schools.</p> <p>(3) Unless otherwise specified in statute or state board of health rule, implementation dates, as set forth in the interpretative statements, shall be:</p> <p>(a) September 1 of the year following the year in which any statute or resolution allowing for implementation takes effect; or</p> <p>(b) When an earlier implementation date is necessary to direct the expenditure of funds allocated to implement the rule, no sooner than 31 days following publication of an interpretive statement declaring an earlier implementation date, provided that the earlier implementation date shall apply only to schools eligible for the funds.</p> <p>(4) The state board of health shall maintain a web page showing the sections of this chapter that have been or are scheduled to be implemented, the implementation dates, and the corresponding sections of chapter 246-366 WAC that have been or will be replaced or superseded.</p> <p>246-366A-005 Applicability</p> <p>(1) To the extent funded or implemented through legislative action, this chapter, or such portions thereof funded or approved as part of a phase-in or partial implementation, shall apply to all school facilities operated for the purpose of providing education at the kindergarten through twelfth grade (K-12) levels, and pre-schools that are part of such facilities except:</p> <p>(a) Private residences used for home-based instruction as defined by RCW 28A.225.010(4);</p> <p>(b) Facilities hosting educational programs where educational instruction is not a primary purpose, including, but not limited to, detention centers, jails, hospitals, mental health units, or long-term care facilities;</p> <p>(c) Private facilities where tutoring is the primary purpose; and</p> <p>(d) Public or private postsecondary education facilities providing instruction to students primarily enrolled in secondary school...</p>

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<u>246-366-010</u> Definitions.	
The following definitions shall apply in the interpretation and the enforcement of these rules and regulations: (1) "School" - Shall mean any publicly financed or private or parochial school or facility used for the purpose of school instruction, from the kindergarten through twelfth grade. This definition does not include a private residence in which parents teach their own natural or legally adopted children.	246-366A-010 Definitions (30) "School" means any public, religious-affiliated, or private institution for instructing students in any grade from kindergarten through twelfth grade.
(2) "Board of education" - An appointive or elective board whose primary responsibility is to operate public or private or parochial schools or to contract for school services.	246-366A-010 Definitions (31) "School board" means an appointed or elected board whose primary responsibility is to operate schools or to contract for school services and includes the governing body or owner of a private school.
(3) "Instructional areas" - Space intended or used for instructional purposes.	No corresponding definition in Chapter 246-366A WAC
(4) "New construction" - Shall include the following: (a) New school building. (b) Additions to existing schools. (c) Renovation, other than minor repair, of existing schools. (d) Schools established in all or part of any existing structures, previously designed or utilized for other purposes. (e) Installation or alteration of any equipment or systems, subject to these regulations, in schools. (f) Portables constructed after the effective date of these regulations.	246-366A-010 Definitions (4) "Construction" or "construction project" means any activity subject to state or local building codes.
(5) "Occupied zone" - Is that volume of space from the floor to 6 feet above the floor when determining temperature and air movement, exclusive of the 3 foot perimeter on the outside wall	No corresponding definition in Chapter 246-366A WAC

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(6) "Site" - Shall include the areas used for buildings, playgrounds and other school functions.	246-366A-010 Definitions (35) "Site" means any real property used or proposed to be used as a location for a school.
(7) "Portables" - Any structure that is transported to a school site where it is placed or assembled for use as part of a school facility	246-366A-010 Definitions (28) "Portable" means any relocatable structure that is transported to a school site and is placed or assembled there for use by students as part of a school facility.
(8) "Health officer" - Legally qualified physician who has been appointed as the health officer for the city, town, county or district public health department as defined in RCW 70.05.010(2), or his authorized representative.	246-366A-010 Definitions (23) "Local health officer" means the legally qualified physician who has been appointed as the health officer for the county or district public health department as defined in RCW 70.05.010, or his or her authorized representative, including, but not limited to, the environmental health director.
(9) "Secretary" - Means secretary of the Washington state department of health or the secretary's designee.	No corresponding definition in Chapter 246-366A WAC
(10) "Department" - Means Washington state department of health.	246-366A-010 Definitions (9) "Department" means the Washington state department of health.
246-366-020 Substitutions.	
The secretary may allow the substitution of procedures or equipment for those outlined in these regulations, when such procedures or equipment have been demonstrated to be equivalent to those heretofore prescribed. When the secretary judges that such substitutions are justified, he shall grant permission for the substitution in writing. Requests for substitution shall be directed to the jurisdictional health officer who shall immediately forward them, including his recommendations, to the secretary. All decisions, substitutions, or interpretations shall be made a matter of public record and open to inspection.	WAC 246-366A-170 Variances (1) School officials: <ul style="list-style-type: none"> (a) May request a variance from requirements in these rules from the local health officer if they wish to use an alternative to meet the intent of these rules. <ul style="list-style-type: none"> (i) The request for a variance must be in writing and describe: <ul style="list-style-type: none"> (A) the specific requirement the variance is requested to replace; (B) the alternative proposed to meet the specific requirement; and (C) how the proposed alternative will provide at least a comparable level of protection as that provided by the specific requirement. (ii) The request for a variance must include information as needed to support and clarify the request, such as material descriptions and specifications, engineering reports, photos, drawings, or sketches. (b) May implement a variance only after obtaining approval from the local health officer. (2) The local health officer shall: <ul style="list-style-type: none"> (a) Initially review documents submitted with the request for a variance and inform school officials if additional information is required. (b) Compare the health and safety aspects of the specific requirement being addressed and the variance proposal to determine if the proposal provides at least a comparable level of protection as that provided by the specific requirement.

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	<ul style="list-style-type: none"> (c) Provide written approval or denial of a request for a variance within sixty days of receiving a complete written request, unless school officials and the local health officer agree to a different timeline. (d) Submit an annual written report to the department regarding all variance requests. The report must be submitted by March 1st of each year, beginning in 2013, and cover the calendar period January through December of the previous year. <p>WAC 246-366A-175 Temporary emergency waivers for disaster situations The local health officer may grant to school officials an emergency waiver from some or all of the requirements in these rules for the temporary use of a facility or site as a school when the facility normally used by the school is not safe to be occupied due to a natural or man-made disaster.</p>
<u>246-366-030 Site approval.</u>	
(1) Before a new school facility is constructed, an addition is made to an existing school facility, or an existing school facility is remodeled, the board of education shall obtain written approval from the health officer that the proposed development site presents no health problems. The board of education may request the health officer make a survey and submit a written health appraisal of any proposed school site.	<p>WAC 246-366A-030 Site assessment, review, and approval</p> <ul style="list-style-type: none"> (1) A full site assessment and local health officer review and approval to determine environmental health and safety risk is required for: <ul style="list-style-type: none"> (a) Constructing a new school facility on a site that was previously undeveloped or developed for other purposes; or (b) Converting an existing structure for primary use as a school facility. (2) The local health officer shall determine, in consultation with school officials, the need for and scope of the site assessment, review, and approval process for: <ul style="list-style-type: none"> (a) Constructing a new school facility on an existing school site; and (b) Constructing an addition to an existing school facility; or (c) Converting part of an existing structure primarily used for other purposes into a school facility. (3) A full site assessment must include: <ul style="list-style-type: none"> (a) A Phase 1 Environmental Site Assessment (ESA) that meets the requirements of the <i>American Society for Testing and Materials (ASTM) Standard #1527-05</i> (published November 2005); (b) Sampling and analysis of potential contaminants if the Phase 1 ESA indicates that hazardous materials may be present. Sampling and analysis must comply with applicable rules of the Washington state department of ecology; ... (4) School officials shall: <ul style="list-style-type: none"> (a) Notify the local health officer within ninety days of starting preliminary

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	<p>planning for school development that may require a site assessment with local health officer review and approval.</p> <p>(b) Consult with the local health officer throughout the plan development phase regarding the scope of the assessment and the timeline for completion of the site assessment.</p> <p>(c) Have a site assessment completed when required under this section.</p> <p>(d) Submit a written report to the local health officer assessing the potential impact of health and safety risks presented by the proposed site, including, but not limited to the following:</p> <ul style="list-style-type: none"> (i) The findings and results obtained under subsection (3) of this section; (ii) Analysis of the findings; (iii) Description of any mitigation proposed to address identified health and safety risks present at the site; and (iv) Any site assessment-related information requested by the local health officer to complete the site assessment review and approval process. <p>(e) Obtain site review and written site approval from the local health officer when required under subsections (1) or (2) of this section.</p> <p>(5) The local health officer shall:</p> <ul style="list-style-type: none"> (a) Conduct an inspection of the proposed site; (b) Review the site assessment for environmental health and safety risk; (c) For site assessments according to subsection (1) of this section, provide written approval, describe site deficiencies needing mitigation to obtain approval, or deny use of the proposed school facility site within sixty day of receiving a complete request unless the school officials and the local health officer agree to a different timeline; and (d) For site assessments according to subsection (2) of this section, provide written approval or describe site deficiencies needing mitigation to obtain approval of the proposed school facility site within sixty days of receiving a complete request unless the school officials and the local health officer agree to a different timeline. <p>(6) If school officials notified the local health officer in writing prior to the implementation date of this section that construction is planned for a particular site, the site review requirements in effect at the time of notification apply, provided that school officials comply with all agreed on timelines for completion.</p>
<p>(2) School sites shall be of a size sufficient to provide for the health and safety of the school enrollment.</p>	<p>No corresponding requirement in Chapter 246-366A WAC</p>

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(3) Noise from any source at a proposed site for a new school, an addition to an existing school, or a portable classroom shall not exceed an hourly average of 55 dBA (Leq _{60 minutes}) and shall not exceed an hourly maximum (Lmax) of 75 dBA during the time of day the school is in session; except sites exceeding these sound levels are acceptable if a plan for sound reduction is included in the new construction proposal and the plan for sound reduction is approved by the health officer.	WAC 246-366A-030 Site assessment, review, and approval (3)(c) A noise assessment. Noise from any source must not exceed an hourly average of 55 dBA (the mean sound energy level for a specified time (Leq _{60 minutes}) and must not exceed an hourly maximum (the maximum sound level recorded during a specified time period (Lmax)) of 75 dBA during the time of day the school is in session. Sites exceeding these sound levels are acceptable if a plan for noise reduction is included in the new construction proposal and the plan for noise reduction is approved by the local health officer.
<u>246-366-040</u> Plan review and inspection of schools.	
(1) Any board of education, before constructing a new facility, or making any addition to or major alteration of an existing facility or any of the utilities connected with the facility, shall: (a) First submit final plans and specifications of such buildings or changes to the jurisdictional health officer; (b) Shall obtain the health officer's recommendations and any required changes, in writing; (c) Shall obtain written approval from the health officer, to the effect that such plans and specifications comply with these rules and regulations.	WAC 246-366A-040 Construction project review (1) The following school facility construction projects must be reviewed by the local health officer: (a) Construction of a new school facility; (b) Schools established in all or part of any existing structures previously used for other purposes; (c) Additions or alterations consisting of more than five thousand square feet of floor area or having a value of more than ten percent of the total replacement value of an existing school facility; (d) Any construction of a shop or laboratory for the use by students: and (e) Installation of a portable. ... (3) School officials shall: (a) Consult with the local health officer during preliminary planning for school construction projects that are subject to the requirements of this section; (b) Invite the local health officer to a pre-development conference with school officials and project design professionals to participate in the preliminary design discussions to highlight health and safety matters and requirements of these rules; (c) Obtain construction project review and written approval from the local health officer regarding environmental health and safety requirements in these rules before starting construction; (d) Provide construction documents to the local health officer at the same time as the local building official to facilitate a concurrent and timely review; and

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	<p>(e) Provide additional documents requested by the local health officer, which may include, but are not limited to, written statements signed by the project licensed professional engineer verifying that design elements comply with requirements specified by these rules.</p> <p>(4) The local health officer shall:</p> <p>(a) Consult with school officials and determine what is required for plan review and approval;</p> <p>(b) Review construction documents to confirm that the health and safety requirements of these rules are met;</p> <p>(d) Identify and request any additional documents required to determine compliance with requirements specified by these rules; and</p> <p>(e) Provide written approval, or describe plan deficiencies needing change to obtain approval, of the construction project within sixty days of receiving all documents needed to complete the review, unless the school officials and the local health officer agree to a different timeline.</p>
<p>(2) The health officer shall:</p> <p>(a) Conduct a preoccupancy inspection of new construction to determine its conformity with the approved plans and specifications.</p> <p>(b) Make periodic inspections of each existing school within his jurisdiction, and forward to the board of education and the administrator of the inspected school a copy of his findings together with any required changes and recommendations.</p>	<p>WAC 246-366A-050 Preoccupancy inspection of construction projects</p> <p>(2) The local health officer:</p> <p>(a) Shall coordinate all construction-related inspections with the on-site project manager or other appropriate person identified by school officials.</p> <p>(b) May inspect for compliance with these rules during the construction phase.</p> <p>© Shall conduct a preoccupancy inspection for construction projects subject to WAC 246-366A-040(1) to verify compliance with these rules before the building is occupied and not more than five business days after the date requested by school officials or as otherwise agreed to by the school officials and the local health officer.</p> <p>(i) If an imminent health hazard is identified, a solution must be identified and agreed to by school officials, the local health officer, and the local building official and implemented by school officials before the affected portion of the building is occupied.</p> <p>(ii) If other conditions of noncompliance with these rules are identified, school officials shall be provided with a written list of items and consulted in developing a correction schedule, based on the level of risk to health and safety.</p> <p>(f) May reinspect to confirm satisfactory correction of the items identified under © of this subsection.</p> <p>WAC 246-366A-020 Responsibilities — General</p> <p>(2) Responsibilities of the local health officer.</p> <p>(a) Except as provided in (b) of this subsection, the local health officer shall:</p>

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	<ul style="list-style-type: none"> (i) Periodically conduct an environmental health and safety inspection of each school facility within his or her jurisdiction. Beginning one year after the implementation date of this section, those inspections must be conducted at least once each year. (ii) Notify school officials at the time of discovery or immediately following the inspection if conditions that pose an imminent health hazard are identified and recommend actions to mitigate the hazards and prevent exposure. (iii) Consult with school officials upon completion of the inspection about findings and recommended follow-up actions and, if necessary, develop a correction schedule. Approaches and timelines used to address non-compliant conditions will depend on the level of risk to health and safety presented by the condition, and may include a consideration of low-cost alternatives. (iv) Develop draft and final inspection reports in consultation with school officials, within sixty days after conducting an inspection. The report must include inspection findings related to this rule and any required correction schedule. (v) Confirm, as needed, that corrections are accomplished. (vi) Retain for at least six years, unless otherwise required by other state or federal laws, records pertaining to: <ul style="list-style-type: none"> (A) Health and safety inspections of the school facilities performed by the local health officer, including, but not limited to, the final inspection report and correction schedules; and (B) Imminent health hazards identified under this section and WAC 246-366A-190, and local health officer actions taken in response. (vii) Have the records described in this subsection available to the public, except where otherwise provided by applicable public disclosure law. (b) The local health officer may allow a school official or qualified designee to conduct a required inspection under a program approved by the local health officer not more than two out of every three years. The program must include provisions for: <ul style="list-style-type: none"> (i) Assuring that the school official or designee conducting the inspection has attended training in the standards, techniques, and methods used to conduct an environmental health and safety inspection; (ii) Completing a standardized checklist at each inspection; (iii) Providing a written report to the local health officer about the findings of the inspection; (iv) Notifying the local health officer regarding any identified imminent health hazards and coordinating with the local health officer to mitigate hazards and prevent exposure; and

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	(v) Consulting with the local health officer on follow-up and corrective actions needed to address noncompliant conditions that do not pose an imminent health hazard.
<u>246-366-050 Buildings.</u>	
(1) Buildings shall be kept clean and in good repair.	WAC 246-366A-065 General operation and maintenance requirements School officials shall: (1) Keep school facilities clean and in good condition.
(2) Instructional areas shall have a minimum average ceiling height of 8 feet. Ceiling height shall be the clear vertical distance from the finished floor to the finished ceiling. No projections from the finished ceiling shall be less than 7 feet vertical distance from the finished floor, e.g., beams, lighting fixtures, sprinklers, pipe work.	No corresponding requirement in Chapter 246-366A WAC
(3) All stairway[s] and steps shall have handrails and nonslip treads	WAC 246-366A-060 General construction requirements School officials shall: (4) Provide surfaces on steps that reduce the risk of injury caused by slipping.
(4) The floors shall have an easily cleanable surface.	WAC 246-366A-060 General construction requirements School officials shall: (5) Provide floors throughout the school facility that are appropriate for the intended use, easily cleanable and can be dried effectively to inhibit mold growth. These floor materials include, but are not limited to, wood, vinyl, linoleum, and tightly woven carpets with water impervious backing.
(5) The premises and all buildings shall be free of insects and rodents of public health significance and conditions which attract, provide harborage and promote propagation of vermin.	WAC 246-366A-060 General construction requirements School officials shall: (1) Design school facilities to minimize conditions that attract, shelter, and promote the propagation of insects, rodents, bats, birds, and other pests of public health significance. This subsection does not mandate the installation of window screens nor does it prohibit the installation of retention ponds or rain gardens. WAC 246-366A-065 General operation and maintenance requirements School officials shall: (3) Control conditions that attract, shelter, and promote the propagation of insects, rodents, bats, birds, and other pests of public health significance. This subsection does not mandate the

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	routine installation of window screens nor does it prohibit the proper operation of retention ponds or rain gardens.
6) All poisonous compounds shall be easily identified, used with extreme caution and stored in such a manner as to prevent unauthorized use or possible contamination of food and drink.	<p>WAC 246-366A-065 General operation and maintenance requirements School officials shall:</p> <ul style="list-style-type: none"> (4) Label, use, store and dispose of hazardous materials to: <ul style="list-style-type: none"> (a) Prevent health and safety hazards; (b) Keep incompatible substances apart from each other; (c) Prevent unauthorized use; and (d) Follow procedures according to material safety data sheet instructions. (5) Select supplies and methods of use that reduce exposure to hazardous materials. <p>WAC 246-366A-165 Laboratories and shops — Operation and maintenance requirements (1) Select, label, use, store and dispose of hazardous materials in accordance with WAC 246-366A-065.</p>
(7) There shall be sufficient space provided for the storage of outdoor clothing, play equipment and instructional equipment. The space shall be easily accessible, well lighted, heated and ventilated.	<p>WAC 246-366A-060 General construction requirements School officials shall:</p> <ul style="list-style-type: none"> (6) Provide reasonably sufficient space for the storage of play equipment, instructional equipment, and outdoor clothing. The space must be reasonably accessible, lighted, and ventilated. <p>WAC 246-366A-065 General operation and maintenance requirements School officials shall:</p> <ul style="list-style-type: none"> (7) Safely store play equipment, instructional equipment, and outdoor clothing where reasonably accessible.
(8) Schools shall be provided with windows sufficient in number, size and location to permit students to see to the outside. Windows are optional in special purpose instructional areas including, but not limited to, little theaters, music areas, multipurpose areas, gymnasiums, auditoriums, shops, libraries and seminar areas. No student shall occupy an instructional area without windows more than 50 percent of the school day.	<p>WAC 246-366A-060 General construction requirements School officials shall:</p> <ul style="list-style-type: none"> (2) Design school facilities with windows in sufficient number, size, and location to enable students to see outside at least fifty percent of the school day. Windows are optional in special purpose instructional areas including, but not limited to, theaters, music areas, multipurpose areas, gymnasiums, auditoriums, shops, laboratories, libraries and seminar areas.

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(9) Exterior sun control shall be provided to exclude direct sunlight from window areas and skylights of instructional areas, assembly rooms and meeting rooms during at least 80 percent of the normal school hours. Each area shall be considered as an individual case. Sun control is not required for sun angles less than 42 degrees up from the horizontal. Exterior sun control is not required if air conditioning is provided, or special glass installed having a total solar energy transmission factor less than 60 percent.	WAC 246-366A-060 General construction requirements School officials shall: (3) Provide sun control to exclude direct sunlight from window areas and skylights of instructional areas, assembly rooms and meeting rooms during at least eighty percent of the normal school hours. Each area must be considered as an individual case. Sun control is not required for sun angles less than forty-two degrees up from the horizontal. Sun control is not required if air conditioning is provided or special glass is installed having a total solar energy transmission factor less than sixty percent.
<u>246-366-060 Plumbing, water supply and fixtures.</u>	
(1) Plumbing: Plumbing shall be sized, installed, and maintained in accordance with the state building code. However, local code requirements shall prevail, when these requirements are more stringent or in excess of the state building code.	No corresponding requirement in Chapter 246-366A WAC
(2) Water supply: The water supply system for a school shall be designed, constructed, maintained and operated in accordance with chapter 246-290 WAC.	WAC 246-366A-005 Applicability (3) Additional environmental health and safety rules that apply to school facilities include, but are not limited to: (g) Chapter 246-290 WAC Public water supplies...
(3) Toilet and handwashing facilities. (a) Adequate, conveniently located toilet and handwashing facilities shall be provided for students and employees. At handwashing facilities soap and single-service towels shall be provided. Common use towels are prohibited. Warm air dryers may be used in place of single-service towels. Toilet paper shall be available, conveniently located adjacent to each toilet fixture. (b) The number of toilet and handwashing fixtures in schools established in existing structures, previously designed or utilized for other purposes shall be in accordance with the state building code. However, local code requirements shall prevail, when these	WAC 246-366A-125 Restrooms and showers — Operation and maintenance requirements School officials shall: (1) Provide in each restroom: (a) Toilet paper in each toilet stall; (b) Single service handwashing soap near each handwashing sink; and (c) Single service towels or an adequate number of warm-air dryers. Common use towels are not allowed. (2) Provide hot water to all handwashing plumbing fixtures at a maximum temperature of one hundred twenty degrees Fahrenheit. (3) Provide tempered water for those handwashing plumbing fixtures that do not allow the user to select water temperature. (4) Provide any hand operated, self-closing handwashing plumbing fixtures with the capability of providing at least ten seconds of running water.

Appendix B - Crosswalk Between Existing Rule and the Proposed Rule Revision

<u>Existing Rule</u>	<u>Proposed Rule</u>
<p>Chapter 246-366 WAC Primary and secondary schools Last Update: 12/23/91</p>	<p>Chapter 246-366A WAC Environmental Health and Safety Standards for Primary and secondary schools CR-102 Draft: 06/30/09</p>
<p>requirements are more stringent or in excess of the state building code.</p> <p>(c) Toilet and handwashing facilities must be accessible for use during school hours and scheduled events.</p> <p>(d) Handwashing facilities shall be provided with hot water at a maximum temperature of 120 degrees Fahrenheit. If hand operated self-closing faucets are used, they must be of a metering type capable of providing at least ten seconds of running water.</p>	<p>(5) Provide access to restrooms when:</p> <p>(a) School buildings are in use; or</p> <p>(b) Outdoor facilities or athletic fields are in use for school-sponsored events. School officials are not required to provide access to restrooms when outdoor facilities and athletic fields are in use after school hours or on weekends unless it is a school-sponsored event.</p>
<p>(4) Showers:</p> <p>(a) Showers shall be provided for classes in physical education, at grades 9 and above. An automatically controlled hot water supply of 100 to 120 degrees Fahrenheit shall be provided. Showers with cold water only shall not be permitted.</p> <p>(b) Drying areas, if provided, shall be adjacent to the showers and adjacent to locker rooms. Shower and drying areas shall have water impervious nonskid floors. Walls shall be water impervious up to showerhead heights. Upper walls and ceiling shall be of smooth, easily washable construction.</p> <p>(c) Locker and/or dressing room floors shall have a water impervious surface. Walls shall have a washable surface. In new construction, floor drains shall be provided in locker and dressing areas.</p> <p>(d) If towels are supplied by the school, they shall be for individual use only and shall be laundered after each use.</p>	<p>WAC 246-366A-120 Restrooms and showers — Construction requirements</p> <p>School officials shall:</p> <p>(1) Provide shower facilities for grades nine and above for classes in physical education and for team sports. Showers must supply hot water between one hundred and one hundred twenty degrees Fahrenheit.</p> <p>(2) Provide floor surfaces in shower areas that are water impervious, slip-resistant, and sloped to floor drains. Walls must be water impervious up to showerhead height. Upper walls and ceilings must have an easily cleanable surface.</p> <p>(3) Locate drying areas, if provided, adjacent to showers and locker or dressing rooms. Walls and ceilings must have an easily cleanable surface and floor surfaces must be water impervious, slip-resistant, and sloped to floor drains.</p> <p>(4) Provide locker or dressing rooms adjacent to showers or drying rooms. Walls and ceilings must have an easily cleanable surface. When drying areas are provided, floor surfaces in locker or dressing rooms must be appropriate for the intended use, easily cleanable and dryable to effectively inhibit mold growth. When drying areas are not provided, locker or dressing room floor surfaces must be water impervious, slip-resistant, and sloped to floor drains.</p> <p>WAC 246-366A-125 Restrooms and showers — Operation and maintenance requirements</p> <p>School officials shall:</p> <p>(6) Provide access to shower facilities with hot water between one hundred and one hundred twenty degrees Fahrenheit for classes in physical education and school-sponsored sports at grades nine and above.</p> <p>(7) When cloth towels are supplied by the school, provide them for individual use and launder them after each use.</p>

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<u>Existing Rule</u>	<u>Proposed Rule</u>
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<u>246-366-070 Sewage disposal.</u>	
All sewage and waste water from a school shall be drained to a sewerage disposal system which is approved by the jurisdictional agency. On-site sewage disposal systems shall be designed, constructed and maintained in accordance with chapters 246-272 and 173-240 WAC.	WAC 246-366A-005 Applicability (3) Additional environmental health and safety rules that apply to school facilities, include, but are not limited to: (e) Chapter 246-272A WAC On-site Sewage Systems; (f) Chapter 246-272B WAC Large On-site Sewage Systems;
<u>246-366-080 Ventilation.</u>	
(1) All rooms used by students or staff shall be kept reasonably free of all objectionable odor, excessive heat or condensation. (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.	WAC 246-366A-090 Heating and ventilation — Construction requirements School officials shall: (1) Provide mechanical exhaust ventilation that meets or exceeds the requirements in chapter 51-52 WAC at locations intended for equipment or activities that produce air contaminants of public health importance. (2) Situate fresh air intakes away from building exhaust vents and other sources of air contaminants of public health importance in a manner that meets or exceeds the requirements in chapter 51-52 WAC. Sources of air contaminants include bus and vehicle loading zones, and might include, but are not limited to, parking areas and areas where pesticides or herbicides are commonly applied. (3) Use materials that will not deteriorate and contribute particulates to the air stream if insulating the interior of air handling ducts. Insulation materials must be designed to accommodate duct cleaning and exposure to air flow without deteriorating. This subsection does not apply if the local permitting jurisdiction received a complete building permit application within three years after the implementation date of this section. (4) Use ducted air returns and not open plenum air returns consisting of the open space above suspended ceilings. This subsection does not apply to: (a) Alterations to school facilities; (b) Additions to school facilities that tie into existing ventilation systems that use open plenum air returns; or (c) Facilities for which the local permitting jurisdiction received a complete building permit application within three years after the implementation date of this section. WAC 246-366A-095 Heating and ventilation — Operation and maintenance requirements School officials shall: (2) Ventilate occupied areas of school buildings during school hours and school-sponsored

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	<p>events. During periods of ventilation:</p> <p>(a) For school facilities constructed or sited under a building permit for which the local permitting jurisdiction received a completed building permit application on or after the implementation date of this section, provide, as a minimum, outdoor air according to WAC 51-52-0403, Table 403.3, Required Outdoor Ventilation Air.</p> <p>(b) For school facilities constructed or sited under a building permit for which the local permitting jurisdiction received a completed building permit application before the implementation date of this section, conduct standard operation and maintenance best practices including, but not limited to, making timely repairs, removing obstructions, and replacing filters and fan belts, and setting system controls so that, to the extent possible given the design of the ventilation system, outdoor air is provided consistent with WAC 51-52-0403, Table 403.3, Required Outdoor Ventilation Air.</p> <p>(3) Use and maintain mechanical exhaust ventilation installed for equipment or activities that produce air contaminants of public health importance or moisture.</p> <p>(4) Limit student exposure to air contaminants of public health importance produced by heat laminators, laser printers, photocopiers, and other office equipment by placing such equipment in appropriate ventilated spaces and providing instruction to users on how to operate and maintain equipment as recommended by the manufacturer.</p> <p>(5) Take preventive and corrective action when pesticides, herbicides, or air contaminants of public health importance are likely to be drawn or are drawn into the building or ventilation system.</p> <p>WAC 246-366A-160 Laboratories and shops — Construction requirements School officials shall:</p> <p>(7) Provide mechanical exhaust ventilation in hazardous material storerooms, and in laboratories and shops where equipment or activities may produce air contaminants of public health importance.</p> <p>(8) When activities or equipment in laboratories or shops produce air contaminants of public health importance, provide an appropriate source capture system to prevent those contaminants from entering a student’s breathing zone. These activities and equipment include, but are not limited to, spray painting, welding, pottery kilns, chemistry experiments, and wood-working.</p> <p>(9) Design ventilation systems to operate so that air is not recirculated and does not flow from the laboratory or shop to other parts of the school facility. Open plenum air returns consisting of the space above suspended ceilings in laboratories and shops must not be used to recirculate air to other parts of the school facility.</p>

Appendix B - Crosswalk Between Existing Rule and the Proposed Rule Revision

<u>Existing Rule</u>	<u>Proposed Rule</u>
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	WAC 246-366A-165 Laboratories and shops — Operation and maintenance requirements In laboratories and shops, school officials shall: (6) Properly maintain laboratory and shop equipment and mechanical exhaust ventilation.
<u>246-366-090 Heating.</u>	
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.	WAC 246-366A-095 Heating and ventilation — Operation and maintenance requirements School officials shall: (1) Heat occupied areas of school buildings during school hours and school-sponsored events to maintain a minimum temperature of sixty-five degrees Fahrenheit except for gymnasiums and hallways which must be maintained at a minimum temperature of sixty degrees Fahrenheit.
<u>246-366-100 Temperature control.</u>	
Heating, ventilating and/or air conditioning systems shall be equipped with automatic room temperature controls.	No corresponding requirement in Chapter 246-366A WAC
<u>246-366-110 Sound control.</u>	
(1) In new construction, plans submitted under WAC <u>246-366-040</u> shall specify ventilation equipment and other mechanical noise sources in classrooms are designed to provide background sound which conforms to a noise criterion curve or equivalent not to exceed NC-35. The owner shall certify equipment and features are installed according to the approved plans.	WAC 246-366A-100 Noise control — Construction requirements (1) School officials shall design ventilation equipment and other mechanical noise sources in classrooms to provide background sound which conforms to a noise criterion curve or equivalent not to exceed NC-35. School officials shall certify, or hire the appropriate person to certify, that ventilation equipment and other mechanical noise sources that have been installed meet the NC-35 noise criterion design standard.
(2) In new construction, the actual background noise at any student location within the classroom shall not exceed 45 dBA (Leg _x) and 70 dB (Leq _x) (unweighted scale) where _x is thirty seconds or more. The health	WAC 246-366A-105 Noise control — Operation and maintenance requirements School officials shall: (1) Maintain the background noise at any student location within classrooms constructed after January 1, 1990 at or below 45 dBA (Leg _x) where _x is 30 seconds or more. Background

Appendix B - Crosswalk Between Existing Rule and the Proposed Rule Revision

<u>Existing Rule</u>	<u>Proposed Rule</u>
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officer shall determine compliance with this section when the ventilation system and the ventilation system's noise generating components, e.g., condenser, heat pump, etc., are in operation.	noise levels must be determined when the ventilation system and the ventilation system's noise generating components, such as the condenser and heat pump, are operating and the room is unoccupied by students.
(3) Existing portable classrooms, constructed before January 1, 1990, moved from one site to another on the same school property or within the same school district are exempt from the requirements of this section if the portable classrooms meet the following: (a) Noise abating or noise generating features shall not be altered in a manner that may increase noise levels; (b) The portable classrooms were previously in use for general instruction; (c) Ownership of the portable classrooms will remain the same; and (d) The new site is in compliance with WAC <u>246-366-030(3)</u> .	WAC 246-366A-100 Noise control — Construction requirements (2) Portable classrooms constructed before January 1, 1990, moved within the same school property or within the same school district, are exempt from the requirements of this section if the portable classrooms meet all of the following criteria: (a) Noise abating or noise generating features are not altered in a manner that may increase noise levels; (b) The portable classrooms were previously in use for general instruction; (c) Ownership of the portable classrooms remains the same; and (d) The new site meets the noise standard in WAC 246-366A-030(3)(c).
(4) In new construction, the maximum ambient noise level in industrial arts, vocational agriculture and trade, and industrial classrooms shall not exceed 65 dBA when all fume and dust exhaust systems are operating.	WAC 246-366A-105 Noise control — Operation and maintenance requirements School officials shall: (2) Maintain the background noise level at any student location in laboratories and shops with local exhaust ventilation systems constructed after January 1, 1990, at or below 65 dBA (Leg _x) where x is 30 seconds or more. Background noise levels must be determined when all ventilation equipment is operating and the room is unoccupied by students.
5) The maximum noise exposure for students in vocational education and music areas shall not exceed the levels specified in Table 1.	WAC 246-366A-105 Noise control — Operation and maintenance requirements School officials shall: (3) Maintain noise exposure for students below the maximum levels in Table 1.

Appendix B - Crosswalk Between Existing Rule and the Proposed Rule Revision

<u>Existing Rule</u>	<u>Proposed Rule</u>																																								
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<p>(6) Should the total noise exposure in vocational education and music areas exceed the levels specified in Table 1 of subsection (5) of this section, hearing protectors, e.g., ear plugs, muffs, etc., shall be provided to and used by the exposed students. Hearing protectors shall reduce student noise exposure to comply with the levels specified in Table 1 of subsection (5) of this section.</p>	<p>WAC 246-366A-105 Noise control — Operation and maintenance requirements School officials shall:</p> <p>(5) Provide and require students to use personal protective equipment, for example ear plugs or muffs, where noise levels exceed those specified in Table 1. Personal protective equipment must reduce student noise exposure to comply with the levels specified in Table 1.</p>																																								

Appendix B - Crosswalk Between Existing Rule and the Proposed Rule Revision

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Chapter 246-366 WAC Primary and secondary schools Last Update: 12/23/91	Chapter 246-366A WAC Environmental Health and Safety Standards for Primary and secondary schools CR-102 Draft: 06/30/09												
246-366-120 Lighting.													
<p>(1) The following maintained light intensities shall be provided as measured 30 inches above the floor or on working or teaching surfaces. General, task and/or natural lighting may be used to maintain the minimum lighting intensities.</p>	<p>WAC 246-366A-110 Lighting — Construction requirements School officials shall equip school facilities with lighting systems designed to meet the requirements of WAC 246-366A-115. General, task or natural lighting may be used to achieve lighting intensities. Energy efficient lighting systems, lighting fixtures, or bulbs that meet the minimum lighting intensities in Table 2 of WAC 246-366A-115(1) may be used.</p> <p>WAC 246-366A-115 Lighting — Operation and maintenance requirements School officials shall:</p> <p>(1) Provide light intensities that meet or exceed those specified in Table 2. General, task and/or natural lighting may be used to maintain the minimum lighting intensities. Energy efficient lighting systems, lighting fixtures, or bulbs that meet the minimum lighting intensities in Table 2 may be used.</p>												
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	<p align="center">TABLE 2</p> <p align="center">Lighting Intensities</p> <p align="center">Measured 30 inches above the floor or on working or teaching surfaces. Some lighting fixtures may require a start-up period before reaching maximum light output.</p> <table border="0"> <thead> <tr> <th></th> <th align="right">Minimum Foot-candle Intensity</th> </tr> </thead> <tbody> <tr> <td>General instructional areas, for example, study halls, lecture rooms, and libraries.</td> <td align="right">30</td> </tr> <tr> <td>Special instructional areas where safety is of prime consideration or fine detail work is done, for example, family and consumer science laboratories, science laboratories (including chemical storage areas), shops, drafting rooms, and art and craft rooms.</td> <td align="right">50</td> </tr> <tr> <td>Noninstructional areas, for example, auditoriums, lunch rooms, assembly rooms, corridors, stairs, storerooms, and restrooms.</td> <td align="right">10</td> </tr> <tr> <td>Gymnasiums: Main and auxiliary spaces, shower rooms, and locker rooms.</td> <td align="right">20</td> </tr> </tbody> </table>		Minimum Foot-candle Intensity	General instructional areas, for example, study halls, lecture rooms, and libraries.	30	Special instructional areas where safety is of prime consideration or fine detail work is done, for example, family and consumer science laboratories, science laboratories (including chemical storage areas), shops, drafting rooms, and art and craft rooms.	50	Noninstructional areas, for example, auditoriums, lunch rooms, assembly rooms, corridors, stairs, storerooms, and restrooms.	10	Gymnasiums: Main and auxiliary spaces, shower rooms, and locker rooms.	20
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(2) Excessive brightness and glare shall be controlled in all instructional areas. Surface contrasts and direct or indirect glare shall not cause excessive eye accommodation or eye strain problems.	(2) Control excessive brightness and glare in all instructional areas. Surface contrasts and direct or indirect glare must not cause excessive eye accommodation or eye strain problems.										
(3) Lighting shall be provided in a manner which minimizes shadows and other lighting deficiencies on work and teaching surfaces.	(3) Provide lighting in a manner that minimizes shadows and other lighting deficiencies on work and teaching surfaces.										

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Chapter 246-366 WAC Primary and secondary schools Last Update: 12/23/91	Chapter 246-366A WAC Environmental Health and Safety Standards for Primary and secondary schools CR-102 Draft: 06/30/09
<u>246-366-130 Food handling.</u>	
(1) Food storage, preparation, and service facilities shall be constructed and maintained and operated in accordance with chapters 246-215 and 246-217 WAC. (2) When central kitchens are used, food shall be transported in tightly covered containers. Only closed vehicles shall be used in transporting foods from central kitchens to other schools.	WAC 246-366A-005 Applicability (3) Additional environmental health and safety rules that may also apply to school facilities, include, but are not limited to: (a) Chapter 246-215 WAC Food Services; (b) Chapter 246-217 WAC Food Worker Cards;
<u>246-366-140 Safety.</u>	
(1) The existence of unsafe conditions which present a potential hazard to occupants of the school are in violation of these regulations. The secretary in cooperation with the state superintendent of public instruction shall review potentially hazardous conditions in schools which are in violation of good safety practice, especially in laboratories, industrial arts and vocational instructional areas. They shall jointly prepare a guide for use by department personnel during routine school inspections in identifying violations of good safety practices. The guide should also include recommendations for safe facilities and safety practices.	WAC 246-366A-080 Safety — Animals in school facilities (1) School officials shall allow in school facilities only those animals, other than service animals, approved under written policies or procedures. (2) School officials shall develop written policies or procedures for any animals allowed in school facilities to prevent: (a) Injuries caused by wild, dangerous, or aggressive animals; (b) Spread of diseases from animals known to commonly carry those diseases including, but not limited to, rabies, psittacosis, and salmonellosis; (c) Allergic reactions; (d) Exposure to animal wastes; and (e) Handling animals or their bedding without proper handwashing afterward. (3) Written policies or procedures required under subsection (2) of this section shall address service animals in the school facility that are not well behaved or present a risk to health and safety. WAC 246-366A-015 Guidance (1) The department, in cooperation with the Office of Superintendent of Public Instruction, shall: (a) Update the <i>Health and Safety Guide for K-12 Schools in Washington</i> (the guide) at least every four years; and (b) Make the guide available on the department's website. (2) The guide is the primary source of guidance for local health officers and school officials implementing these rules.

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(2) In new construction, chemistry laboratories shall be provided with an eyewash fountain and a shower head for flushing in cases of chemical spill and clothing fires. If more than one laboratory is provided, one of each fixture will be adequate if the laboratories are in close proximity.	WAC 246-366A-160 Laboratories and shops — Construction requirements School officials shall: (1) Provide an emergency eyewash fountain for each laboratory and shop where hazardous materials are used or eye irritants are produced. (2) Provide an emergency shower for each laboratory where hazardous materials are used and the potential for chemical spills exists. (3) Assure that all emergency eyewash fountains and showers have unobstructed access and are reachable within ten seconds.
246-366-150 Exemption.	
The board of health may, at its discretion, exempt a school from complying with parts of these regulations when it has been found after thorough investigation and consideration that such exemption may be made in an individual case without placing the health or safety of the students or staff of the school in danger and that strict enforcement of the regulation would create an undue hardship upon the school.	No corresponding requirement in Chapter 246-366A WAC
[New Section Proposed for Chapter 246-366 WAC] 246-366-160 Severability	
If any provision of this chapter or its application to any person or circumstance is held invalid, the remainder of the chapter or the application of the provision to other persons or circumstances is not affected.	WAC 246-366A-200 Severability If any provision of this chapter or its application to any person or circumstance is held invalid, the remainder of the chapter or the application of the provision to other persons or circumstances is not affected.

Appendix B - Crosswalk Between Existing Rule and the Proposed Rule Revision

Environmental Health & Safety Regulation in Schools, Grades K-12

Appendix C – Construction Costs

Preliminary Significant Analysis

Chapter 246-366 WAC

**Primary and Secondary Schools
and**

Chapter 246-366A WAC

Environmental Health and Safety Standards for Primary and Secondary Schools

June 2009

Appendix C - Construction Costs

Section	Elementary (65,000 sq. ft.)		Middle/Junior (95,000 sq. ft.)		High (225,000 sq. ft.)	
	Meng	Kennedy	Meng	Kennedy	Meng	Kennedy
WAC 246-366A-030 Site assessment, review, and approval						
Phase 1 Environmental Site Assessment that meets ASTM Standard #1527-05 (published November 2005)	\$7,700	\$0	\$9,700	\$0	\$14,700	\$0
Soil sampling and analysis that complies with Department of Ecology rules	\$6,000	\$0	\$8,000	\$0	\$10,000	\$0
Consult with LHO throughout plan development re: site assessment scope and timeline	\$3,480	\$0	\$3,480	\$0	\$3,480	\$0
Written report to LHO: findings, analysis, mitigation, additional information requested by LHO	\$3,000	\$0	\$3,000	\$0	\$3,000	\$0
Section Totals	\$20,180	\$0	\$24,180	\$0	\$31,180	\$0
WAC 246-366A-040 Construction projects						
Participation of LHO in predevelopment conference	\$3,460	\$11,500	\$3,460	\$17,250	\$3,460	\$23,000
Section Totals	\$3,460	\$11,500	\$3,460	\$17,250	\$3,460	\$23,000

Environmental Health & Safety Regulation in Schools, Grades K-12

Appendix C – Construction Costs

Section	Elementary (65,000 sq. ft.)		Middle/Junior (95,000 sq. ft.)		High (225,000 sq. ft.)	
	Meng	Kennedy	Meng	Kennedy	Meng	Kennedy
WAC 246-366A-050 Pre-occupancy inspection of projects						
Additional preoccupancy inspection costs related to additional rule requirements	Not requested	\$2,300	Not requested	\$3,450	Not requested	\$5,750
Section Totals	\$0	\$2,300	\$0	\$3,450	\$0	\$5,750
WAC 246-366A-060 General construction requirements						
Provide tightly woven carpets with water impervious backing when carpeting is used *	\$64,350	\$74,650	\$78,375	\$124,417	\$148,500	\$199,067
Fall protection measures**	Stage warning strips: \$1,814 Exterior railing: \$41,580	Low height walls/lockers: \$7,465	Stage warning strips: \$1,814 Exterior railing: \$62,370	Low height walls/lockers: \$11,198	Orchestra pit railing: \$7,257 Stage warning strips: \$1,814 Exterior railing: \$83,160	Orchestra pit railing: \$5,972 Low height walls/lockers: \$14,930
OPTIONAL: Health room requirements	\$56,416	\$11,198	\$57,790	\$11,198	\$57,940	\$11,198
Section Totals (not including health rooms)	\$107,744	\$82,115	\$142,559	\$135,615	\$240,731	\$213,997
WAC 246-366A-090 Heating and ventilation - Construction requirements						
Situate air intakes away from air contaminants to meet or exceed chapter 51-52 WAC	\$1,940	\$0	\$1,940	\$0	\$1,940	\$0
Use insulation materials designed to accommodate cleaning and air flow that will not deteriorate and contribute particulates or air contaminants	Upgraded duct lining: \$49,140 -OR- Sound chambers: \$63,504	Upgraded duct lining: \$111,975 -OR- Sound chambers: \$37,325	Upgraded duct lining: \$73,510 -OR- Sound chambers: \$88,906	Upgraded duct lining: \$223,950 -OR- Sound chambers: \$74,650	Upgraded duct lining: \$170,100 -OR- Sound chambers: \$165,110	Upgraded duct lining: \$447,900 -OR- Sound chambers: \$149,300

Environmental Health & Safety Regulation in Schools, Grades K-12

Appendix C – Construction Costs

Section	Elementary (65,000 sq. ft.)		Middle/Junior (95,000 sq. ft.)		High (225,000 sq. ft.)	
	Meng	Kennedy	Meng	Kennedy	Meng	Kennedy
Use ducted air returns - does not apply to alterations or additions that tie into existing ventilation systems that use open plenum air returns.	\$98,280	\$0	\$143,640	\$0	\$340,200	\$0
Section Totals (Costs of duct lining not included)	\$163,724	\$37,325	\$234,486	\$74,650	\$507,250	\$149,300
WAC 246-366A-150 Playgrounds - Construction and installation requirements						
All playground equipment and fall protection surfaces must meet ASTM F 1487-01 and must be installed consistent with the manufacturer's instructions and Consumer Product Safety Commission Handbook for Public Playground Safety, 2008	\$20,866	\$0	\$0	\$0	\$0	\$0
Prepare documents and consult with the LHO for review and approval of plans	\$1,800					
Section Totals	\$22,666	\$0	\$0	\$0	\$0	\$0
WAC 246-366A-160 Laboratories and shops - Construction requirements***						
Emergency eyewash fountain for each lab/shop with unobstructed access and reachable within ten seconds.	\$0	\$0	\$22,344	\$29,860	\$35,112	\$59,720
Emergency shower for each lab with unobstructed access and reachable within ten seconds.	\$0	\$0	\$39,732	Included in eyewash costs above	\$62,436	Included in eyewash costs above
Handwashing and drying facilities in each lab/shop	\$0	\$0	\$19,051	\$0	\$29,937	\$0
Emergency shut-offs for electricity and gas in labs/shops located near exits, with unobstructed access, and signage - no new costs for gas shut-offs (2 switches per room)	\$0	\$0	\$28,350	\$35,832	\$44,550	\$71,664
Magnetic switches on stationary machinery in labs/shops	\$0	\$0	\$2,430	\$0	\$3,240	\$0

Environmental Health & Safety Regulation in Schools, Grades K-12

Appendix C – Construction Costs

Section	Elementary (65,000 sq. ft.)		Middle/Junior (95,000 sq. ft.)		High (225,000 sq. ft.)	
	Meng	Kennedy	Meng	Kennedy	Meng	Kennedy
Design HVAC so that air is not recirculated and does not flow from labs/shops to other parts of the school - no open plenums	\$0	\$0	\$4,536	\$0	\$4,536	\$0
Section Totals	\$0	\$0	\$116,443	\$65,692	\$179,811	\$131,384
Construction Costs Totals	\$317,774	\$133,240	\$521,128	\$296,657	\$962,432	\$523,431
Costs per square foot	\$4.89	\$2.05	\$5.49	\$3.12	\$4.28	\$2.33

* Recalculated additional carpeting costs based on June 16, 2008 meeting with Puget Sound Schools Coalition

** DOH assumes elementary and junior/middle high schools do not typically have orchestra pits.

*** DOH assumes no elementary schools have shops or laboratories that will need to implement these requirements.

Environmental Health & Safety Regulation in Schools, Grades K-12

Appendix D – Operations and Maintenance Costs

School Rule Operation and Maintenance Costs-Elementary (65,000 sq ft) Startup and Ongoing Costs

	Respondent									Low	High	# used in mean	Mean Startup Costs	Mean Ongoing Costs
	#1	#2	#3	#4	#5	#6	#7	#8	#9 (PSSC)					
WAC 246-366A-020														
Address Imminent Health Hazards-Notify LHO, students and staff									225	225	225	1	225	225
LHO Annual Inspection Costs (assumed to be passed through to schools)												1	693	693
LHO Annual Inspection Costs (school time)									350	350	350	1	350	350
Record Keeping Component	810	1021	350	500	173	1100	900	157		157	1100	8	626	441
Annual Report Component	486	264	1000	1000	1020	150	750	70	314	70	1020	9	562	562
Section Total	1296	1285	1350	1500	1193	1250	1650	227	889				2456	2271
WAC 246-366A-065 General operation and maintenance requirements														
Approve and Manage Hazardous Materials	680	1232	1167		950		560	1055	1278	375	1278	7	989	503
Sewage Back-ups in Student Use Areas	49	44	250			24	6	178		6	250	6	92	92

Environmental Health & Safety Regulation in Schools, Grades K-12

Appendix D – Operations and Maintenance Costs

School Rule Operation and Maintenance Costs-Elementary (65,000 sq ft) Startup and Ongoing Costs

	Respondent									Low	High	# used in mean	Mean Startup Costs	Mean Ongoing Costs
	#1	#2	#3	#4	#5	#6	#7	#8	#9 (PSSC)					
Upholstered Furniture Policy (District costs-School costs equal 1/8th of district costs)	73	129	1000				1500	1125		73	1500	5	96	0
Section Total	802	1405	2417	0	950	24	2066	2358	1278				1176	595
WAC 246-366A-070 Moisture control, mold prevention and remediation														
Begin Corrective Action within 24 hours (assumes 6 events per year if unspecified)	900	437	1200	2583	360	1680	1440	240		240	2583	8	1105	1105
Start Mold Remediation Procedures within 24 hours (does not include cost of remediation)		194					17	1060		17	1060	3	424	424
Notify Students, staff, when conducting Mold Remediation (assumes one event per year if unspecified)	194	176	1200	375	55	1000	63	82	500	55	1200	9	405	405
Section Total	1094	807	2400	2958	415	2680	1520	1382	500				1934	1934

Environmental Health & Safety Regulation in Schools, Grades K-12

Appendix D – Operations and Maintenance Costs

School Rule Operation and Maintenance Costs-Elementary (65,000 sq ft) Startup and Ongoing Costs

	Respondent									Low	High	# used in mean	Mean Startup Costs	Mean Ongoing Costs
	#1	#2	#3	#4	#5	#6	#7	#8	#9 (PSSC)					
WAC 246-366A-080 Animals in school facilities (District costs estimates identified-Mean school costs equal 1/8th of district costs)	972	704	1200	7500	4000	2500	1550	1090	400	400	7500	9	277	0
WAC 246-366A-095 Heating and ventilation-Operation and maintenance requirements														
Heat existing buildings-school and school sponsored events													No new costs identified	
Strive to provide outdoor air consistent with Chapter 51-52 WAC (Assumes schools will not have to complete a mechanical air study)													No new costs identified	

Environmental Health & Safety Regulation in Schools, Grades K-12

Appendix D – Operations and Maintenance Costs

School Rule Operation and Maintenance Costs-Elementary (65,000 sq ft) Startup and Ongoing Costs

	Respondent									Low	High	# used in mean	Mean Startup Costs	Mean Ongoing Costs
	#1	#2	#3	#4	#5	#6	#7	#8	#9 (PSSC)					
Take preventive or corrective action whe air contaminants are likely to be drawn into the building (assumes replacing 4 filters 5 times each year per school @ \$30 per filter)													600	600
Section Total													600	600
WAC 246-366A-120 Restroom and showers Operation and maintenance- Tempered water-Respondents indicated no new costs- (assumption- does not require schools to replace faucets with blended water unit)													No new costs identified	No new costs identified

Environmental Health & Safety Regulation in Schools, Grades K-12

Appendix D – Operations and Maintenance Costs

School Rule Operation and Maintenance Costs-Elementary (65,000 sq ft) Startup and Ongoing Costs

	Respondent									Low	High	# used in mean	Mean Startup Costs	Mean Ongoing Costs
	#1	#2	#3	#4	#5	#6	#7	#8	#9 (PSSC)					
WAC 246-366A-130 Water Quality Monitoring for Lead (Assumes testing completed in first years-30% of schools will need to address 10% of their taps-ongoing costs represent annualized cost of monitoring)													3517	703
WAC 246-366A-135 Water Quality Monitoring for Copper (Assumes testing completed over first two years)-(This includes \$4,500 corrective action costs anticipated for approximately 1% of schools)													289	58
WAC 246-366A-155 Playgrounds- Operation and maintenance requirements		1559	3900	4305	420	8820	360	806		360	8820	7	2881	2881

Environmental Health & Safety Regulation in Schools, Grades K-12

Appendix D – Operations and Maintenance Costs

School Rule Operation and Maintenance Costs-Elementary (65,000 sq ft) Startup and Ongoing Costs

	Respondent									Low	High	# used in mean	Mean Startup Costs	Mean Ongoing Costs
	#1	#2	#3	#4	#5	#6	#7	#8	#9 (PSSC)					
WAC 246-366A-165 Laboratories and shops- Operation and maintenance requirements														
Safety Policy and Procedure														
Personal Protection Equipment (No additional costs anticipated estimated here)														
Situation Specific Protection Equipment (same costs addressed in line above)														
Section Total														
WAC 246-366A-190 Complaints (District costs estimates identified. School costs equal 1/8 of district costs)-(does not include costs for investigating complaints)	972	704	2000	2000	4000	2500	1500	1468		516	4000	7	270	0

Environmental Health & Safety Regulation in Schools, Grades K-12

Appendix D – Operations and Maintenance Costs

School Rule Operation and Maintenance Costs-Elementary (65,000 sq ft) Startup and Ongoing Costs

	Respondent									Low	High	# used in mean	Mean Startup Costs	Mean Ongoing Costs
	#1	#2	#3	#4	#5	#6	#7	#8	#9 (PSSC)					
Respondent Costs	5,136	6,463	13,267	18,263	10,978	17,774	8,646	7,331	3,067			A	\$ 13,399.81	\$ 9,041.57
												B	\$ 27.40	\$ 18.49
When unspecified, benefits stated at 35% of salary						A	Average weighted start up costs and ongoing cost per 65,000 sq ft school							
						B	Average annual cost per student (489 students)							

Environmental Health & Safety Regulation in Schools, Grades K-12

Appendix D – Operations and Maintenance Costs

Environmental Health & Safety Regulation in Schools, Grades K-12

Appendix D – Operations and Maintenance Costs

School Rule Operation and Maintenance Costs-Middle-Jr High (95,000 sq ft) Startup and Ongoing Costs

	Respondent									Low	High	# used in mean	Mean Startup costs	Mean Ongoing Costs
	#1	#2	#3	#4	#5	#6	#7	#8	#9 (PSSC)					
WAC 246-366A-020														
Address Imminent Health Hazards-Notify LHO, students and staff									338	338	338	1	338	338
LHO Annual Inspection Costs (assumed to be passed through to schools)												1	950	950
LHO Annual Inspection Costs (school time)									525	525	525	1	525	525
Record Keeping Component	810	1021	500	500	259	1100	900	157		157	1100	8	656	531
Annual Report Component	486	264	1200	1000	1020	150	750	70	471	70	1020	9	601	601
Section Total	1296	1285	1700	1500	1279	1250	1650	227	809				3070	2945
WAC 246-366A-065 General operation and maintenance requirements														
Approve and Manage Hazardous Materials	680	2464	1167		950		560	1055	1778	375	2464	7	1236	553
Sewage Back-ups in Student Use Areas (assuming one event per year)	49	44	250			24	6	178		6	250	6	92	92
Upholstered Furniture Policy	73	149	500				1500	1125		73	1500	5	70	0
Section Total	802	2657	1917		950	24	2066	2358	1778				1398	645

Environmental Health & Safety Regulation in Schools, Grades K-12

Appendix D – Operations and Maintenance Costs

School Rule Operation and Maintenance Costs-Middle-Jr High (95,000 sq ft) Startup and Ongoing Costs

	Respondent									Low	High	# used in mean	Mean Startup costs	Mean Ongoing Costs
	#1	#2	#3	#4	#5	#6	#7	#8	#9 (PSSC)					
WAC 246-366A-070 Moisture control, mold prevention and remediation														
Begin Corrective Action within 24 hours (assumes 6 events per year if unspecified)	900	437	1200	2583	360	1680	1440	120		120	2583	8	1090	1090
Start Mold Remediation Procedures within 24 hours		194					17	1060		17	1060	3	424	424
Notify Students, staff, when conducting Mold Remediation (assumes one event per year if unspecified)	194	176	1600	375	75	1000	63	82	750	63	1600	9	479	479
Section Total	1094	807	2800	2958	435	2680	1520	1262	750				1993	1993
WAC 246-366A-080 Animals in school facilities (District costs estimates identified-Mean school costs equal 1/8th of district costs)	972	704		7500	4000	2500	1550	1090	400	400	7500	8	292	0
WAC 246-366A-095 Heating and ventilation-Operation and maintenance requirements														
Heat existing buildings-school and school sponsored events														

Environmental Health & Safety Regulation in Schools, Grades K-12

Appendix D – Operations and Maintenance Costs

School Rule Operation and Maintenance Costs-Middle-Jr High (95,000 sq ft) Startup and Ongoing Costs

	Respondent									Low	High	# used in mean	Mean Startup costs	Mean Ongoing Costs
	#1	#2	#3	#4	#5	#6	#7	#8	#9 (PSSC)					
Strive to provide outdoor air consistent with Chapter 51-52 WAC (Assumes schools will not have to complete a mechanical air study)														
Take preventive or corrective action whe air contaminants are likely to be drawn into the building (assumes replacing 8 filters 5 times each year per school @ \$30 per filter)													1200	1200
Section Total													1200	1200
WAC 246-366A-120 Restroom and showers Operation and maintenance-Tempered water- Respondents indicated no new costs- (assumption- does not require schools to replace faucets with blended water unit)													No new costs identified	No new costs identified

Environmental Health & Safety Regulation in Schools, Grades K-12

Appendix D – Operations and Maintenance Costs

School Rule Operation and Maintenance Costs-Middle-Jr High (95,000 sq ft) Startup and Ongoing Costs

	Respondent									Low	High	# used in mean	Mean Startup costs	Mean Ongoing Costs
	#1	#2	#3	#4	#5	#6	#7	#8	#9 (PSSC)					
WAC 246-366A-130 Water Quality Monitoring for Lead (Assumes testing completed in first years-30% of schools will need to address 10% of their taps-ongoing costs represent annualized cost of monitoring)													1992	398
WAC 246-366A-135 Water Quality Monitoring for Copper (Assumes testing completed over first two years)-(This includes \$4,500 corrective action costs anticipated for approximately 1% of schools)													289	58
WAC 246-366A-150 Playgrounds-Construction and installation requirements														
WAC 246-366A-155 Playgrounds-Operation and maintenance requirements														

Environmental Health & Safety Regulation in Schools, Grades K-12

Appendix D – Operations and Maintenance Costs

School Rule Operation and Maintenance Costs-Middle-Jr High (95,000 sq ft) Startup and Ongoing Costs

	Respondent									Low	High	# used in mean	Mean Startup costs	Mean Ongoing Costs
	#1	#2	#3	#4	#5	#6	#7	#8	#9 (PSSC)					
WAC 246-366A-165 Laboratories and shops- Operation and maintenance requirements														
Safety Policy and Procedure					1425		1500	1100		1100	1500	3	1342	
Personal Protection Equipment (costs not included but estimated at \$20 per student outfitted)														
Situation Specific Protection Equipment (same costs addressed in line above)														
Section Total					1425		1500	1100					1342	0
WAC 246-366A-190 Complaints (District costs estimates identified. School costs equal 1/8 of district costs)-(does not include costs for investigating complaints)	972	704	2000	2000	4000	2500	1500	1468		516	4000	8	237	0
Respondent Costs	5,136	6,156	8,417	13,958	12,089	8,954	9,786	7,505	3,737			A	\$11,812.16	\$7,239.21
												B	\$17.17	\$10.52
When unspecified, benefits stated at 35% of salary						A	Average weighted start up costs and ongoing cost per 95,000 sq ft school							
						B	Average annual cost per student (688 students)							

Environmental Health & Safety Regulation in Schools, Grades K-12

Appendix D – Operations and Maintenance Costs

School Rule Operation and Maintenance Costs- High School (225,000 sq ft) Startup and Ongoing Costs

	Respondent									Low	High	# used in mean	Mean Startup costs	Mean Ongoing Costs
	#1	#2	#3	#4	#5	#6	#7	#8	#9 (PSSC)					
WAC 246-366A-020														
Address Imminent Health Hazards- Notify LHO, students and staff									675	675	675	1	675	675
LHO Annual Inspection Costs (assumed to be passed through to schools)										1387	1387	1	1387	1387
LHO Annual Inspection Costs (school time)									1050	1050	1050	1	1050	1050
Record Keeping Component	810	1021	700	500	259	1100	900	157		157	1100	8	681	495
Annual Report Component	486	264	1500	1000	1020	150	750	70	942	70	1500	9	687	687
Section Total	1296	1285	2200	1500	1279	1250	1650	227	2667				4480	4294
WAC 246-366A-065 General operation and maintenance requirements														
Approve and Manage Hazardous Materials	680	2464	1167		950		560	1055	3278	375	3278	7	1451	505
Sewage Back-ups in Student Use Areas	49	44	250			24	6	178		6	250	6	92	92
Upholstered Furniture Policy	73	169	500				1500	1125		73	1500	5	84	0
Section Total	802	2677	1917		950	24	2066	2358	3278				1626	597
WAC 246-366A-070 Moisture control, mold prevention and remediation														
Begin Corrective Action within 24 hours (assumes 6 events per year if unspecified)	900	437	1200	2583	360	1680	1440	120		120	2583	8	1090	1090
Start Mold Remediation Procedures within 24 hours		194						17	1060	17	1060	3	424	424

Environmental Health & Safety Regulation in Schools, Grades K-12

Appendix D – Operations and Maintenance Costs

School Rule Operation and Maintenance Costs- High School (225,000 sq ft) Startup and Ongoing Costs

	Respondent									Low	High	# used in mean	Mean Startup costs	Mean Ongoing Costs
	#1	#2	#3	#4	#5	#6	#7	#8	#9 (PSSC)					
Notify Students, staff, when conducting Mold Remediation (assumes one event per year if unspecified)	194	176	2000	375	75	1000	63	82	1500	63	2000	9	607	607
Section Total	1094	807	3200	2958	435	2680	1520	1262	1500				2121	2121
WAC 246-366A-080 Animals in school facilities (District costs estimates identified-Mean school costs equal 1/8th of district costs)	972	704		7500	4000	2500	1550	1090	400	400	7500	8	292	0
WAC 246-366A-095 Heating and ventilation-Operation and maintenance requirements														
Heat existing buildings-school and school sponsored events														
Strive to provide outdoor air consistent with Chapter 51-52 WAC (Assumes schools will not have to complete a mechanical air study)														
Take preventive or corrective action whe air contaminants are likely to be drawn into the building (assumes replacing 16 filters 5 times each year per school @ \$30 per filter)													2400	2400
Section Total													2400	2400

Environmental Health & Safety Regulation in Schools, Grades K-12

Appendix D – Operations and Maintenance Costs

School Rule Operation and Maintenance Costs- High School (225,000 sq ft) Startup and Ongoing Costs

	Respondent									Low	High	# used in mean	Mean Startup costs	Mean Ongoing Costs
	#1	#2	#3	#4	#5	#6	#7	#8	#9 (PSSC)					
WAC 246-366A-120 Restroom and showers Operation and maintenance-Tempered water- Respondents indicated no new costs- (assumption- does not require schools to replace faucets with blended water unit)														
WAC 246-366A-130 Water Quality Monitoring for Lead (Assumes testing completed in first years-30% of schools will need to address 10% of their taps-ongoing costs represent annualized cost of monitoring)												From DOH Input	1992	398
WAC 246-366A-135 Water Quality Monitoring for Copper (Assumes testing completed over first two years)-(This includes \$4,500 corrective action costs anticipated for approximately 1% of schools)												From DOH Input	289	58
WAC 246-366A-150 Playgrounds- Construction and installation requirements (Elementary schools only-Does not address elementary schools for children of high school students)														
WAC 246-366A-155 Playgrounds- Operation and maintenance requirements														

Environmental Health & Safety Regulation in Schools, Grades K-12

Appendix D – Operations and Maintenance Costs

School Rule Operation and Maintenance Costs- High School (225,000 sq ft) Startup and Ongoing Costs

	Respondent									Low	High	# used in mean	Mean Startup costs	Mean Ongoing Costs
	#1	#2	#3	#4	#5	#6	#7	#8	#9 (PSSC)					
WAC 246-366A-165 Laboratories and shops- Operation and maintenance requirements														
Safety Policy and Procedure					1603		1500	1100		1100	1500	3	1401	
Personal Protection Equipment (costs anticipated but unknown-estimated at \$20 per student outfitted)														
Situation Specific Protection Equipment (same costs addressed in line above)														
Section Total													1401	
WAC 246-366A-190 Complaints (District costs estimates identified. School costs equal 1/8 of district costs)-(does not include costs for investigating complaints)	972	704	2000	2000	4000	2500	1500	1468		516	4000	8	237	0
Respondent Cost	5,136	6,176	9,317	13,958	10,664	8,954	8,286	6,405	7,845	916	11,500	A	\$ 14,837.67	\$ 9,867.65
												B	\$ 10.29	\$ 6.84
When unspecified, benefits stated at 35% of salary						A	Average weighted start up costs and ongoing cost per 225,000 sq ft school							
						B	Average annual cost per student (1442 students)							

Environmental Health & Safety Regulation in Schools, Grades K-12

Appendix D – Operations and Maintenance Costs

To Aid Discussion on Overlaps & Gaps

Environmental Health & Safety Matrix of Agency Areas of Regulation in Schools, Grades K-12

Appendix E – Developed for the State Board of Health Study Session (11/8/06)

Elements of Environmental Health & Safety in Schools, Grades K-12¹

Agencies	Elements of Siting										Elements of Design				Elements of Construction				Elements of Operation & Maintenance						Elements of Oversight & Assurance				Comments & Conditions															
	Ambient Conditions (Air Quality, Drainage, Noise, Soil, Other Pollutant Sources)	Traffic Flow & Pedestrian Access	Utility Availability (Water, Sewer, Power)	Drinking Water Supply & Sewage Treatment	Energy Conservation	Fire Safety	Heating, Cooling, Ventilation	Lighting & Daylighting	Noise / Sound Control	Plumbing & Fixtures	Portables ⁱⁱ	Safety & Special Areas ⁱⁱⁱ	• Playgrounds	• Science Labs	• Career & Technical	• Vehicle Traffic & Parking ^{iv}	Material Selection & Handling	Project Management & Oversight	Inspections for Standards & Design Compliance	Commissioning ^v	Chemical Use & Storage ^{vi}	Cleaning Methods & Materials	HVAC, Lighting & Energy	Fire Safety	Monitoring Facilities for Conditions ^{vii}	Indoor Air Quality	Moisture & Mold	Drinking Water Quality	Safety & Special Areas ³	Pest Management & Pesticides	Protective Measures ^{viii}	Staff Training (Building Operation & Maintenance, Shop & Lab Safety)	Specific Enforcement or Penalty Provisions	Complaint Response & Appeal Processes	Environmental Conditions & Events Communication & Notification	Response	Remediation & Repair	First Aid Readiness (Trained & Certified Staff)	Operational Oversight and Inspection					
Local Health Jurisdiction (SBOH Rules)	3	4	4	4	4	4	4	4	4	4	1 ¹⁹	•	•	•	•	4	4	4	3				3			•	•	•						3 ^{ix}	•	•	•	3 ^g	•	•	•	3 ^x	LHJ staffing and expertise to conduct site and plan review and periodic inspection varies statewide. Application of the State Building Code may vary statewide due to differences in local adoption of optional elements of the building code.	
Local Building Official (State Building Code)	4 ^{xi}	4	4	4	4	4	4	4	4	4 ^{xii}		•	•	•	•	4	4	4	2																									Application of the State Building Code may vary statewide due to differences in local adoption of optional elements of the building code.
Local or State Fire Marshal (State Fire Code)		4				4				4								4					4																			State Fire Marshall assumes oversight if Local Fire Marshall can not.		
Office of Superintendent of Public Instruction	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	1 ^{xiv}	1 ¹⁴	1 ¹⁴	1 ¹⁴	1 ¹⁴	1 ¹⁴	1 ¹⁴	1 ¹⁴	1 ¹⁴	1 ¹⁴	1 ¹⁴	1 ¹⁴	1 ¹⁴											OSPI can only provide building project oversight to state funded projects.	
State Department of Agriculture																																										Ecology for new drinking water sources. DOH for water systems and source quality & quantity.		
State Department of Ecology	4 ^{xv}	4																																							GA works with public schools for the Energy Life Cycle Cost Analysis and application of the LEED or the Washington Sustainable Schools Protocol ^{xvii}			
State Department of General Administration				4		4	4																																		EPA & SBOH rules apply to water suppliers and schools with their own water supply.			
State Department of Health (EPA & SBOH Drinking Water Rules)		4	4																																					L&I workplace safety for employees. ^{xix}				
State Department of Labor and Industries					4			3		4			3	3		3 ^{xviii}			3	3	3	3	3						3	3	3	3	4	4	4	4	4	4	4	4				
US Environmental Protection Agency (Other than drinking water)	1						1	1																																				
Consumer Product Safety Commission											1					1																										CPSC Guidance for playgrounds ^{xx}		

MATRIX LEGEND

Rating Number	<u>Regulatory Level</u>	Rating Number	<u>Regulatory Level</u>	Rating Number	<u>Regulatory Level</u>	Rating Number	<u>Regulatory Level</u>
4	<ul style="list-style-type: none"> Standards established in statute or rule Standards are applied by review & approval, permit and/or inspection^{xxi} Adequate statewide capacity exists for applying standards Compliance is generally achieved statewide 	3	<ul style="list-style-type: none"> Standards established in statute or rule Standards are applied by review & approval, permit and/or inspection Less-than-adequate statewide capacity exists for applying standards Compliance is variable statewide 	2	<ul style="list-style-type: none"> Standards established in statute or rule. Compliance is expected despite absence of specific application mechanisms Compliance is variable statewide 	1	<ul style="list-style-type: none"> Standards established by state or national guidance, or industry "standard-of-practice"^{xxii} Standards may be applied by non-regulatory entities (such as insurance risk pools) or by regulatory entities under general authority Compliance is voluntary and variable statewide

Environmental Health & Safety

Matrix of Agency Areas of Regulation in Schools, Grades K-12

Appendix E – Developed for the State Board of Health Study Session (11/8/06)

STATE AGENCIES		STATE AGENCIES (continued)	
<p>Office of Superintendent of Public Instruction William T. Panos, Director School Facilities & Organization P.O. Box 47200 Olympia, WA 98504-7200 Phone: (360) 725-6261 E-mail: bpanos@ospi.wednet.edu</p>	<p>RCW 28A WAC 392 Numerous other applicable RCW, WAC, policy, guidance, budgetary and appropriation language Washington Sustainable Schools Protocol Website: www.k12.wa.us</p>	<p>State Department of Health School Environmental Health & Safety Program Nancy Bernard, Manager P.O. Box 47825 Olympia, WA 98504-7825 Phone: (360) 236-3072 E-mail: Nancy.Bernard@doh.wa.gov</p>	<p>Chapter 246-366, Primary and Secondary Schools Chapter 246-290 Group A Public Water Systems Website: http://www.doh.wa.gov/ehp/ts/School/default.htm</p>
<p style="text-align: center;">State Building Code Council</p> <p>Tim Nogler, Managing Director 906 Columbia Street SW P.O. Box 48350 Olympia, WA 98504-8350 Phone: (360) 725-2969 E-mail: timn@cted.wa.gov</p>	<p>RCW 19.27 State Building Code Act <ul style="list-style-type: none"> • International Building Code, International Residential Code, International Mechanical Code, International Fire Code, Uniform Plumbing Code <p style="text-align: center;">RCW 19.27A State Energy Code RCW 70.162 Indoor Air Quality RCW 70.92 Accessibility Act</p> <p>Website: http://www.sbcc.wa.gov/sbccindx.html</p> </p>	<p>State Department of Labor and Industries Division of Occupational Safety & Health Labor and Industries operates through over 20 regional offices. Locations may be identified at their website: www.lni.wa.gov/Main/ContactInfo/OfficeLocations/default.asp</p>	<p>RCW 49.17.010</p>
FEDERAL AGENCIES			
<p>State Department of Agriculture David Zamora Pesticide Management Division P.O. Box 42589 Olympia, Washington 98504-2589 Toll Free 1-877-301-4555 E-mail: dzamora@agr.wa.gov</p>	<p>Chapter 15.58 RCW, Washington Pesticide Control Act Chapter 17.21 RCW, Washington Pesticide Application Act Chapter 16-228 WAC, General Pesticide Rules Website: www.agr.wa.gov</p>	<p>Environmental Protection Agency U.S. Environmental Protection Agency Ariel Rios Building 1200 Pennsylvania Avenue, N.W. Washington, DC 20460 Websites: www.epa.gov/iaq/schools/index.html www.epa.gov/ebtpages/airindoorairpollution.html</p>	<p>Consumer Product Safety Commission U.S. Consumer Product Safety Commission 4330 East West Highway Bethesda, MD 20814 Phone: (301) 504-7923 E-mail: info@cpsc.gov Website: www.cpsc.gov/</p>
NATIONAL INDUSTRY STANDARDS ORGANIZATIONS			
<p>State Department of Ecology Dave Bradley Toxics Cleanup Program PO Box 47600 Lacey, WA 98504-7600 Phone: (360) 407-6907 E-mail: dbra461@ECY.WA.GOV</p>	<p>Ed O'Brien Stormwater Program P.O. Box Lacey, WA 98504- Phone: (360) 407-6438 E-mail: eobr461@ecy.wa.gov Website: www.ecy.wa.gov</p>	<p>ASHRAE — American Society of Heating, Refrigerating, and Air Conditioning Engineers, Inc. 1791 Tullie Circle, N.E. Atlanta, GA 30329 Phone: (404) 636-8400 E-mail: ashrae@ashrae.org Website: www.ashrae.org/</p>	<p>ANSI — American National Standards Institute Headquarters 1819 L Street, NW Washington, DC 20036 Phone: (202) 293-8020 E-mail: info@ansi.org Website: www.ansi.org/</p>
<p>State Department of General Administration Division of Engineering & Architectural Services Stuart Simpson, Facilities Senior Planner P.O. Box 41012 Olympia, WA 98504-1012 Phone: (360) 902-7199 E-mail: ssimpso@ga.wa.gov</p>	<p>RCW 19.27A State Energy Code <i>RCW 39.35B Life-cycle Cost Analysis of Public Facilities</i> <i>RCW 39.35D High Performance Public Buildings</i> Websites: www.ga.wa.gov/eas/energy www.ga.wa.gov/eas/elcca</p>	<p>GLOSSARY</p> <ul style="list-style-type: none"> • Commissioning: the process of verifying that the installation and performance of selected building systems meet or exceed the specified design criteria and therefore satisfy the design intent and includes a physical inspection, functional performance testing, listing of noted deficiencies, and a final commissioning report, performed by a professional agent • Energy Life Cycle Cost Analysis: Provides a means of comparing the present values of two or more design alternatives. • Industry “Standards of Practice”: Industry standards developed typically by national organizations, such as ASHRAE—American Society of Heating, Refrigerating, and Air Conditioning Engineers. Sometimes industry “standards of practice” are adopted by reference in local or state building codes. • Portables: any factory-built structure, transportable in one or more sections that is designed to be used as an education space and is needed to meet interim needs of a school facility, also known as a “relocatable facility”. 	
<p>State Board of Health Craig McLaughlin, Executive Director P.O. Box 47990 Olympia, WA 98504-7990 Phone: (360) 236-4106 E-mail: craig.mclaughlin@doh.wa.gov</p>	<p>RCW 43.20.050 Chapter 246-366 WAC, Primary and Secondary Schools Website: http://www.doh.wa.gov/SBOH</p>		

ENDNOTES

- ⁱ The School Rule Development Committee presented 48 proposals to the Department of Health in June 2005 to address gaps they identified in environmental health and safety in public and private schools. The proposals were grouped by the same five categories used on this matrix: *Siting, Design, Construction, Operation and Maintenance, and Oversight and Assurance*.
- ⁱⁱ See Glossary (above) for “Portables”
- ⁱⁱⁱ Special Areas (Such as: Technical & Vocational, Arts & Crafts, Chemistry Labs, Other Science Labs, Computer Sciences, Theater & Performing Arts, Nurse / Health Rooms, Kitchens (may have children present), Athletic Fields, Playgrounds)
- ^{iv} Vehicle Traffic & Parking: includes traffic flow and parking relating to school buses, parents & staff, and emergency vehicles, on and to & from the school campus.
- ^v See Glossary (above) for “Commissioning”
- ^{vi} Chemical Use & Storage (Instructional and institutional materials, including cleaning materials and pesticides)
- ^{vii} Monitoring Conditions (Including water sampling, monitoring air flow, temperature, CO₂, dampness, etc.)
- ^{viii} Protective Measures (Including equipment guards, personal protective equipment, emergency showers & eye washes, etc.)
- ^{ix} Local Health Jurisdictions typically respond to complaints about environmental health conditions and consult with school officials when requested, in addition to school site and plan review and approval, and food service inspections.
- ^x Currently nine of 35 Local Health Jurisdictions conduct regularly scheduled school facility inspections.
- ^{xi} The State Building Code includes requirements for soil characterization and slope stability for the placement of structures.
- ^{xii} The State Building Code applies to the placement of portables when placed on permanent foundations.
- ^{xiii} The State Building Code applies to the stair, ramp and pathway access to portables for ADA compliance.
- ^{xiv} Risk management pools and other service cooperatives, such as Educational Service Districts, assist schools in meeting various requirements or applying best management practices for operating and maintaining their facilities, by providing schools with technical assistance, guidance, and other support.
- ^{xv} Department of Ecology regulations address contaminated soils issues and stormwater related issues.
- ^{xvi} Department of Ecology regulations address contaminated soils issues at proposed and existing school sites.
- ^{xvii} Leadership in Energy and Environmental Design (LEED) Green Building Rating System™, Silver Rating, or the Washington Sustainable Schools Protocol is applied to public school projects over 5,000 square feet receiving state funds.
- ^{xviii} L&I requires that construction companies develop a safety program suitable for each site they where they are working.
- ^{xix} L&I oversees work place safety for school employees, not for students.
- ^{xx} CPSC Guidance for playgrounds is frequently applied to schools by insurance & risk pool requirements, and by LHJs safety review.
- ^{xxi} The review and approval, permit and/or inspection may be performed by an agency other than the rule-making agency, such as the Local Health Jurisdiction role under the State Board of Health rules, or the Local Building Official's role under the State Building Code.
- ^{xxii} See Glossary (above) for *Industry “Standards of Practice”*