

Appendix B.1

Minimizing Triggers in the School Environment

Control Animal Allergens

Classes often adopt animals as a classroom pet or science project. School staff may not realize that any warm-blooded animals, including gerbils, rabbits, birds, cats, dogs, mice, and rats may trigger asthma. Proteins which act as allergens in the dander, urine, or saliva of warm-blooded animals may sensitize individuals and can cause allergic reactions, or trigger asthma episodes in people sensitive to animal allergens. Hand washing facilities are a must.

If a school chooses to allow animals, it is important to make sure those classrooms and cages containing animals are frequently and thoroughly cleaned. It is important to realize that, even after extensive cleaning, pet allergen levels may stay in the indoor environment for several months after animals are removed. In addition, animal allergens can readily migrate to other areas of the school environment through the air and on children who handle pets. Therefore, the entire building should be cleaned thoroughly. Service animals must be accommodated.

Schools are sometimes advised to use portable air cleaners. Although properly used and maintained air cleaners may be effective for reducing animal dander in small areas, they should only be considered as an addition to other control methods. Carefully review information on the type of air cleaner used to make sure it is suitably sized and has high particle removal efficiency. Some air cleaning devices marketed as air purifiers emit ozone, which is a respiratory irritant and toxin. Ozone generators must not be used in any occupied space.

References: *The Washington State Department of Health School Indoor Air Quality Best management Practices Manual*, *The EPA Indoor Air Quality Tools for Schools Teachers Checklist*.

Control Cockroach and Rodent Allergens

Pests such as cockroaches, rats, and mice, are sometimes found in schools. Allergens from these pests may be significant asthma triggers for students and staff. Pest problems in schools may be caused or worsened by a variety of conditions such as plumbing leaks, moisture problems, and improper food handling and storage practices. A minimal amount of food should be stored in classrooms, in insect proof containers, away from any chemicals. Follow Integrated Pest Management (IPM) practices. Pesticides are a last resort and should only be used by a licensed applicator, following the directions on the label. Unlicensed staff must not use pesticides of any kind. Students must not be present and the Washington State School Pesticide Notification Law must be followed:
(<http://www.leg.wa.gov/RCW/index.cfm?fuseaction=section§ion=17.21.415>)

Clean Up Mold and Control Moisture

Molds can be found almost anywhere; they can grow on virtually any substance, providing moisture is present. Molds produce tiny spores to reproduce, and the spores travel through the indoor and outdoor air continually. There are molds that can grow on wood, paper, carpet, and foods. If excessive moisture or water accumulates indoors, extensive mold growth may occur. There is no practical way to eliminate all molds and mold spores in the indoor environment; the way to control indoor mold growth is to control moisture. If mold is a problem in your school, you must clean up the mold and eliminate sources of moisture.

When mold growth occurs in buildings, it may be followed by reports of health symptoms from some building occupants, particularly those with allergies or respiratory problems. Potential health effects and symptoms associated with mold exposures include allergic reactions, asthma, and other respiratory complaints.

Carpet needs to be properly maintained or removed. Vacuum regularly with a HEPA (high efficiency particulate air) filter machine (or at least a HEPA or 1 micron filter bag), when the classroom is unoccupied. Carpet cleaning should be by hot water extraction using a low-residue environmentally sensitive (green clean) cleaner. Cleaner and water must be thoroughly extracted and the carpet should dry within 24-48 hours. Dried cleaner, if not thoroughly removed, can be a skin and respiratory irritant for some people.

References: *The Washington State Department of Health School Indoor Air Quality Best management Practices Manual, The EPA Indoor Air Quality Tools for Schools Mold Remediation in Schools and Commercial Buildings*, EPA 402-K-01-001, March 2001

Eliminate Secondhand Smoke Exposure

Enforce the Washington State ban on tobacco use anywhere on school property. Tobacco smoke is a respiratory irritant, a serious health threat, and a significant asthma trigger. It may also be a cause of asthma.

Reduce Exposure to Dust Mites

Dust mite allergens play a significant role in asthma. These allergens may cause an allergic reaction or trigger an asthma episode in sensitive individuals. In addition, there is evidence that dust mites cause new cases of asthma in susceptible children.

Dust mites are too small to be seen but are found in homes, schools, and other buildings. Dust mites live in mattresses, pillows, carpets, fabric-covered furniture, bedcovers, clothes, and stuffed toys. Their food source is dead skin flakes.

Cloth covered furniture, especially couches, should be removed from schools. Stuffed animals should be washed every two weeks in hot water (at least 130 degrees F). Remove dust from hard surfaces weekly with a damp micro-fiber or static electric cloth. Carpet should be vacuumed daily with a HEPA filter vacuum (or at least a HEPA or 1 micron filter bag). Allergic people should not be in the area when it is being vacuumed.

References: *The Washington State Department of Health School Indoor Air Quality Best management Practices Manual, The EPA Indoor Air Quality Tools for Schools*

Reduce Volatile Organic Compound (VOC) Exposure

Common sources of VOCs include solvent based markers, cleaning materials, art supplies, perfumes, colognes, and cleaners. If chalk and a blackboard are used, eliminate or remove as much chalk dust as possible daily. Evaluate materials and look for safe alternatives. Low odor, xylene free or water based white board markers and board cleaners should be used. No air fresheners should be used.

Susceptibility/sensitivity to chemicals varies in individuals. What one person can tolerate can make another ill, including inducing an asthma attack. Reducing chemicals in the environment will help all individuals, but may be critical for those with Multiple Chemical Sensitivity and/or asthma.

References: *The Washington State Department of Health School Indoor Air Quality Best management Practices Manual, The EPA Indoor Air Quality Tools for Schools*