

SUMMARY OF MAIN ISSUES TO BE CONSIDERED IN MAKING EDUCATION ACCESSIBLE TO CHILDREN WITH CHEMICAL SENSITIVITIES, AND SAFER FOR ALL.

BACKGROUND

The school environment is a source of exposure to many toxic air contaminants and biologicals that can present as health problems in children in a multitude of ways. They can include:

- a. Headache, fatigue and shortness of breath.
- b. Sinus congestion, coughing and sneezing.
- c. Eye, nose throat, and skin irritation.
- d. Dizziness and nausea.
- e. Attentional difficulties.

To promote an optimal health and learning environment for our children, including those with chemical sensitivities, it is essential to understand the extent to which our children are exposed to toxic chemicals and other air contaminants, and armed with that knowledge, reduce their exposure wherever possible.

SPECIAL CONSIDERATION FOR CHILDREN

1. Children are more sensitive to environmental contaminants than adults, because they breathe in more air relative to their body weight, and their body systems are still developing. In addition, they may be less able to communicate their symptoms, or associate a causal relationship to their symptoms.
2. Children spend a great proportion of their time at school.
3. Children often work more closely in an area with teachers and other students, than typical office workers. Some studies show that four times the amount of people may occupy a given area in a school, than that in an office.
4. Schools have diverse areas of potential pollutant sources. These include science labs, art rooms, pools, sports fields, locker areas, and restrooms.

FACTORS INFLUENCING LEVELS OF ENVIRONMENTAL CONTAMINATION

1. BUILDING CONSTRUCTION RENOVATION AND MAINTENANCE.

1.1 Site selection.

- Ensure the site located away from major sources of pollution, such as major freeways/traffic routes.
- Ensure the site located away from major industrial polluters and their drift.
- Undertake studies to ensure the land is not contaminated from previous use.
- Check radon levels.

1.2 Building Design.

- With the assistance of appropriate professionals, incorporate an integrated design to maximize air flow and natural light.

1.3 Building Construction/Renovation.

- Select less toxic materials for all construction purposes. For example, choose interior wall materials without formaldehyde, use non-toxic glues, grouts and sealing agents. Allow materials to be aired out as much as practicable before use.
- Adequate ventilation of work areas to reduce vapors, dust, gas, and other contaminants. Adjust ventilation flow and seal off areas as necessary.
- Select paint/stain finishes with low or zero VOC (volatile organic chemicals) levels if possible, or if durability is an issue and higher VOC paint/stain is used, paint only when students are out of school on extended breaks. Allow for sufficient time to properly ventilate the area before students return to school.
- Select floor finishes which have lower levels of hazardous chemical emissions. Choose linoleum, marmoleum, ceramic tile, or polished cement over vinyl and carpeting. If carpeting must be chosen, ensure it is made from non-toxic natural fibers, and not glued to the floor. Glues in the carpeting itself and glues used to affix it to the floor are a significant source of VOC's.

- Installation/refinishing of timber floors (eg gymnasium floors) should be done with less toxic water based alternatives.
- Avoid using particleboard and other wood composites. They are a significant source of formaldehyde. Choose less toxic alternatives such as metal cabinets and bench tops where possible.
- Avoid the use of soft furnishings. Not only are they a source of contamination, but they also absorb chemicals emitted from other sources, and then off gas them at a different rate in a potentially chemically altered form. If soft furnishings are required, choose less toxic materials such as cottons and wool. Subject to any legislative requirements, avoid using materials with flame retardants in them.
- Avoid use of timbers that have been treated with chromium arsenate and fungicides.

1.4 Building Maintenance.

- Ensure ventilation systems are operated in accordance with manufacturers recommendations, and kept clean and free of debris and dust.
- Check for evidence of water leakage e.g plumbing areas, roof, windows. Replace wet damaged materials as soon as possible. Water damage and continued moisture promote mould growth which can be a significant source of air contamination.
- Use least toxic or non-toxic cleaning products. Products containing solvents, fragrances, caustics and chlorinated compounds are not necessary for normal sanitation. Avoid the use of air fresheners, automatic aerosol dispensers, plug in air fresheners and air fresheners in air conditioning systems. Do not clean immediately before start of school. Frequently wash floors and desk tops to maintain good general hygiene and help minimize levels of airborne bacteria.
- Reduce dust levels. Vacuum frequently with a HEPA quality vacuum. Install floor mats at all entry doors to reduce levels of shoe borne contaminants inside buildings.
- Utilize measures to minimize infiltration by pests and prevent subsequent use of toxic pesticides. Such measures could include keeping food sources limited to designated areas, keep desks, lockers, flooring clear of food residues, removal of wastes at the end of each day and use of screens and trap devices.

2. HEALTH AND SAFETY ISSUES

2.1 Classrooms

- Regular cleaning practices with use of non toxic cleaners.
- Avoid bringing into, or housing animals in classrooms. Many are sensitive to dander, fur, and waste products.
- Both staff and students should be encouraged to minimize use of perfume, cologne, scented aftershave , perfumed soaps or hairspray.
- Discourage the use of solvent based marker pens and correction fluid.

2.2 Specialist Rooms – additional factors to consider.

2.2.1 Office areas

- Photocopiers and printers produce ozone and other air contaminants in low levels. They should be operated in well ventilated areas, and away from air intake for the central ventilation system.

2.2.2 Home Economics Rooms.

- Electrical appliances should be used in preference to gas. Gas leaks and incomplete combustion products are harmful to health. If gas appliances are used, they should be checked regularly for proper functioning, and vented outdoors.

2.2.3 Science Rooms.

- Most science rooms contain a variety of corrosives, flammable liquids, oxidizers and toxic materials. Air quality is compromised if they are released into the school environment. Health effects can range from noxious and irritating odors to acute respiratory effects and chronic disease or injury.

- Least hazardous chemicals should be used wherever possible. Schools should eliminate carcinogenic, highly toxic and highly reactive chemicals from science labs unless there is an overriding educational benefit.
- Proper inventory and storage of chemicals is essential. Only compatible chemicals should be stored together, and accurate inventory will reduce stockpiling of unnecessary chemicals. They should not be stored near other classrooms.
- Toxic emissions should be vented directly outside from the source by use of a lab hood. The air should not be circulated through the central air system.

2.2.4 Art Rooms

- Use and storage of art materials may contaminate air quality. Materials such as clay, paint, markers, pigment, varnish, lacquer, acid, ink, solvents and adhesives can be of concern.
- Good safety, handling and storage of materials is essential.
- Request MSDS sheets and choose least toxic options for all supplies.
- If high temperature kilns are in use, fume hoods and local exhaust should be used to prevent build up of harmful emissions within student area. The kiln should be located in a separate room if possible.

2.2.5 Locker Rooms.

- Various conditions in locker rooms can affect the level of air contaminants, including high humidity, warm temperatures, standing water, personal hygiene products and soiled clothing.
- Adequate ventilation is essential. Exhaust fans should be used to reduce vapors.
- Regular and thorough cleaning to prevent bacterial contamination and mould growth, using less toxic alternatives.
- Encourage students to remove soiled clothing from lockers at regular intervals.

- Avoid use of aerosolized sprays and deodorants to reduce ambient air contamination.

2.2.6 Sports fields/grounds

- The use of toxic herbicides, pesticides and fungicides can adversely affect the health of children. Exposure to these should be avoided by substituting with organic based lawn care products and practicing a system of integrated pest management.
- If potentially harmful products must be used, they should be used only when the area is vacant, and preferably at the beginning of school vacation periods. Notices should be placed on the areas advising of the applications, to prevent unintentional exposures.