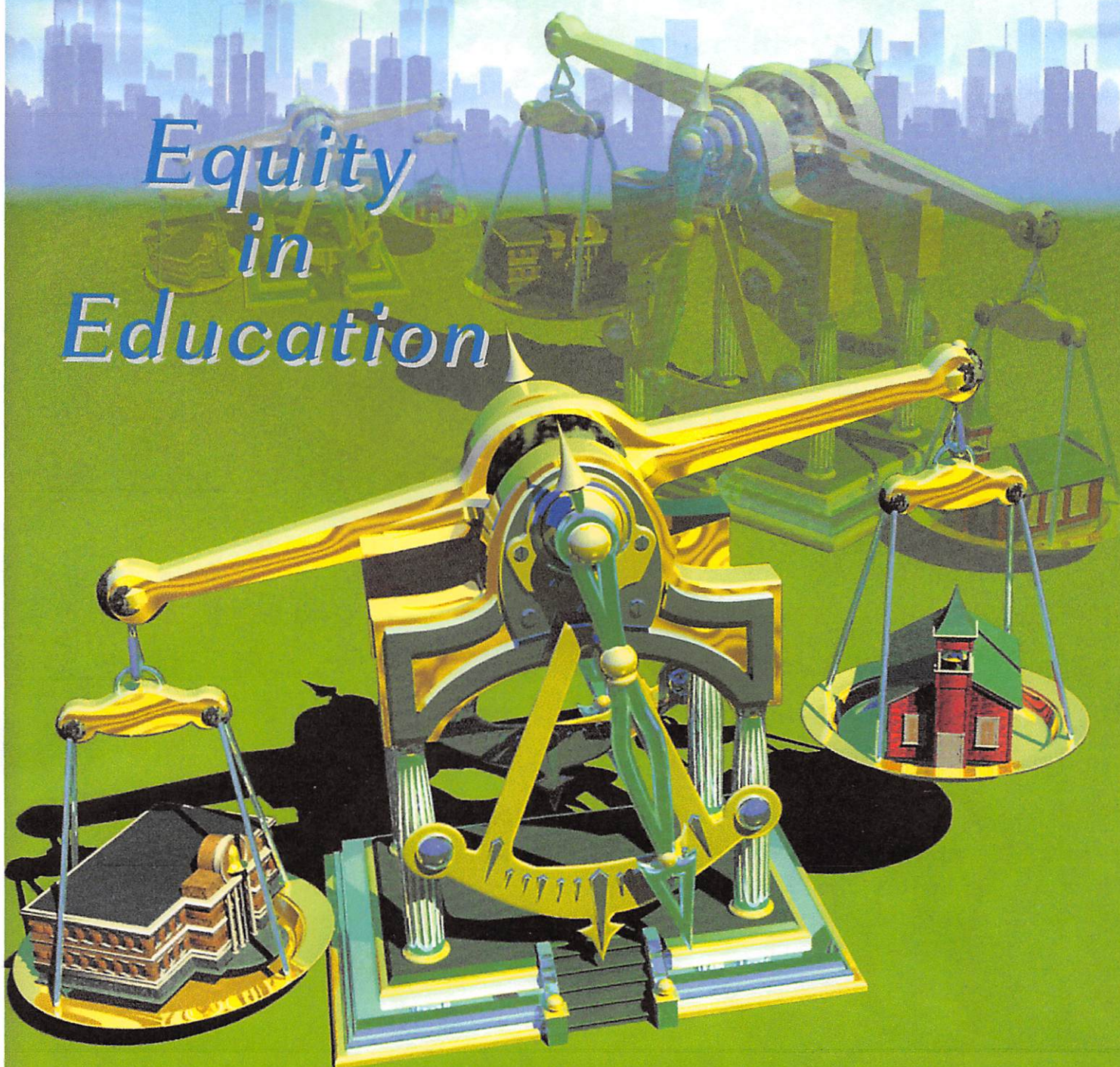


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FEATURE



Sick Schools

Sandra Moser & Avis Degaust

Picture this:

- mould consultants advise that a mouldy gymnasium ceiling should be replaced; a false ceiling is installed below it instead;
- a storage room (with a non-functioning air delivery system) is converted into a classroom while industrial strength
- floor strippers and cleaning materials are left stored behind a partition;
- tiles on one side of a classroom floor are replaced with adhesive while a class is being conducted in the other half of the room;
- all of the indoor window trim is painted while class is in session;
- for two weeks, staff and students are exposed to fumes while the roof is being tarred;
- in one school, custodial hours are cut in half, resulting in uncleaned floors, washrooms and more.

All of these incidents have taken place in Nova Scotia schools.

All too often in this province, it seems, we hear media reports of "sick schools," temporarily closed down because moulds, poor air quality and other toxins are making students and their teachers ill.

Many schools in Nova Scotia are located in aging buildings that, over the years, have been poorly maintained. The environmental problems do not end there, however. In schools both old and new, exposure to everything from paint fumes to caustic cleaning supplies have given rise to allergic reactions ranging in severity from mild to acute, even chronic.

Attempts to deal with the problem have not always been successful. In some cases, students and staff returning to a "cleaned up" buildings have contin-

ued to report physical reactions, including rashes, headaches and difficulty breathing. The problem has been severe enough to force some teachers and students to move to other schools.

Citizens for a Safe Learning Environment (CASLE) is a national non-profit organization of parents, teachers and affiliated groups and individuals whose aim is to ensure that children and school staff members have a safe and healthy place to spend their days.

CASLE members believe that a healthy building with plenty of fresh, clean air is as important to a good education as are a sound curriculum and excellent teaching. Good indoor air quality contributes to a favourable learning environment for students, productivity for teachers and staff, and a sense of comfort, health, and well-being for all school occupants, while assisting a school in its core mission: educating our children.

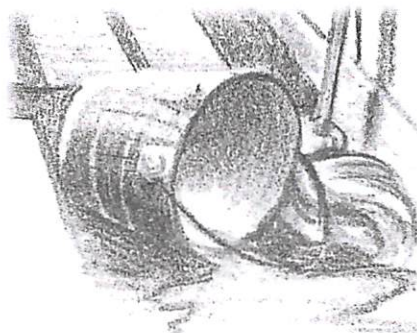
According to Canada Mortgage and Housing Corporation, Canadians spend 90 per cent of their time indoors, with as much as one-third of this at their workplace or in school. Within the last decade, the United States Environmental Protection Agency (EPA) has discovered that indoor air can be 10 times, and occasionally as much as 100 times, more polluted than out-

door air. In recent years, comparative risk studies performed by the EPA have consistently ranked indoor air pollution among the top five environmental risks to public health. According to the U.S. National Education Association, indoor air contaminants are responsible for half of all school illnesses.

The current body of scientific knowledge indicates that indoor air contaminants can have both short-term and long-term negative effects on health, learning, behaviour, and productivity. The brief, intense contaminant exposures such as spills or leaks are easy to detect. Harder to identify are the low level, long term exposures that occur on a daily basis.

Many environmental health specialists have spoken out regarding indoor air quality. Pulitzer Prize winner Rene Dubois said, "The greatest danger of pollution may well be that we shall tolerate levels of it, so low, as to have

no acute nuisance value, but sufficiently high, nevertheless, to cause delayed pathological effects and to spoil the quality of life." This pollution can do invisible damage to our health slowly, over time, with no awareness of what harm is taking place until a significant problem occurs. How often have we heard teachers or students remarking that they have sinus problems all week (or all year!) but feel fine on the weekends and vacations?



The Children

Poor air quality may affect everyone to some degree, but the most susceptible individuals are children, pregnant women, and those individuals with pre-existing health conditions such as allergies, asthma and other respiratory diseases, heart disease, immune system suppression, as well as individuals who wear contact lenses. Medical researchers at the University of California at Irvine state that the health risk from air pollution is as much as six times greater for children than for adults. Due to their growing bodies and immature systems (respiratory, neurological, reproductive, endocrine, and detoxification systems), they are more vulnerable to injury from environmental toxins. Every effort must be taken to protect them.

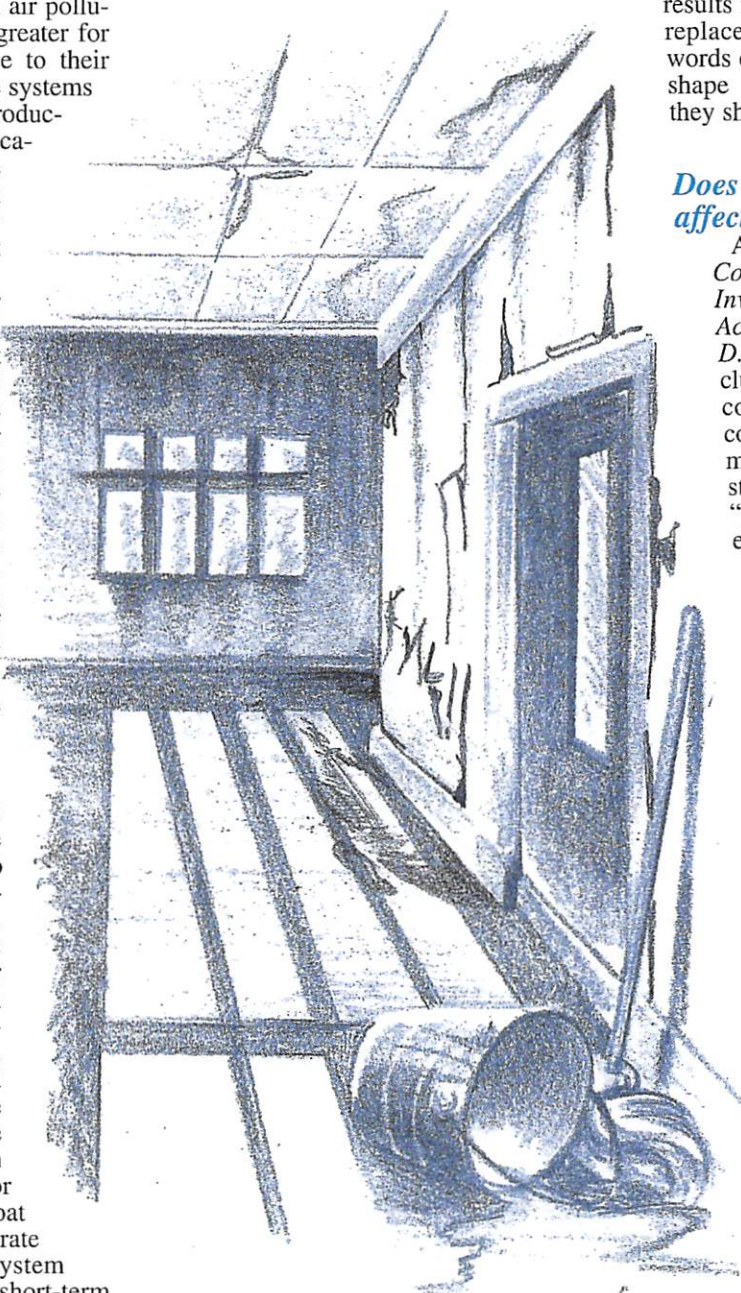
Workplace standards for exposures to workplace hazards are set for healthy adult male workers weighing 175 pounds (80 kilograms). These standards are not adequate for the protection of children in our schools and need to be changed to reflect children's special vulnerability. Keep in mind that what protects children protects school staff as well! At special risk are staff members who have spent many years in an unhealthy building, while students come and go.

Sensitivities

Sensitivities occur when susceptible individuals are unable to tolerate exposures to substances, irritants or pollutants in their surroundings. This intolerance shows up as physical, neurological, or behavioural symptoms which can appear suddenly, occasionally, or consistently. Symptoms can be varied and unique, depending upon the individual's makeup and the source of pollution. They can range in severity from mild or low grade (eye, ear, nose, throat and skin irritation), to moderate (respiratory and digestive system irritation, headache, fatigue, short-term memory loss, mood swings, hyperactivity, irritability, aggression) and finally to severe and disabling conditions (asthma, migraine, arthritis, depression, recurring infections, chronic weakness, immune system suppression), which can affect the quality of life. Dr. Sherry Rogers, author of *Tired or Toxic*, indicates that "anyone can become sensitive to any-

thing at any time."

A new national study by Cullbridge Marketing and Communications of Ottawa found, "About one in eight (several million) adult Canadians suffer significant symptoms, increased absenteeism, and measurably impaired abilities at work due to 'normally safe' exposures to some of the common chemicals found in their homes and at work."



Buildings

In 1993, the *Canadian Schoolhouse in the Red* report, indicated that approximately two-thirds of Canada's school buildings had exceeded their life expectancy. Slowly, awareness is rising concerning the risks to human health from substandard buildings.

Deferred maintenance that has hap-

pened and continues to happen as a result of tight budgets and fiscal cut-backs leads to reduced general maintenance and repairs. Putting off needed maintenance leads to premature building deterioration, chronic roof leaks, poor ventilation and heating, and compounded indoor air quality problems. Inability to repair leaks quickly and properly will often lead to mould problems. Deferred maintenance ultimately results in more expensive repairs and replacement of equipment. In the words of Sir Winston Churchill, "We shape our buildings and afterward, they shape us."

Does indoor air quality affect learning?

A study entitled *Building Conditions, Parental Involvement, and Student Achievement in the (Washington) D.C. Public School System*, concluded that there was a strong correlation between building condition and student achievement. The findings revealed students assigned to schools in "poor" condition could be expected to fall 5.5 percentage points behind those in the "fair" schools and 10.9 percentage points behind those in the schools that were in "excellent" shape. The *Canadian Schoolhouse in the Red* study reported that one building in every six, or 2,308 schools across Canada, are considered inadequate places for learning. What effects does this have on a child's learning potential and on school staff?

Products, practices and conditions of buildings can be major contributors of indoor air contaminants. Maintenance and cleaning chemicals, office supplies and equipment, combustion gases from furnaces and stoves, personal care products, laundry products, chemicals from furnishings and building materials, products created in science, technology and art labs, and

carbon dioxide from individuals all add together to form what Dr. Sherry Rogers calls "chemical soup." Unsafe work practices when dealing with renovations such as asbestos removal, silica dust, carpet removal and mould abatement can be a health hazard to all. Roof tarring is a particular problem because of

the carcinogenic fumes. Renovations that cause dust and a release of certain volatile organic compounds (chemicals) can also contribute to poor indoor air quality. Inadequate cleaning of the school in general—floors, washrooms, and curtains, for example—can add to the total pollutant load.

Occupant density, or classroom overcrowding, can also reduce the overall air quality in a building. It is estimated that schools house four times as many occupants per square foot as do office buildings.

Polluted outdoor air brought into the school through open doors and windows or through the ventilation system can be a source of environmental contaminants and toxins. Examples are: pollen, dust, fungal spores, industrial emissions, furnace stack emissions, emissions from vehicles idling near air intakes, and pesticides.

Taking Action

As overwhelming as this may seem, there are a number of easy, inexpensive, and quick ways to reduce the pollutant load and improve indoor air quality. The four overall plans for taking action are: Eliminate, Encapsulate, Ventilate, and Educate.

Eliminate

Evaluate your classroom to see what can be removed or changed to lighten the pollutant load. Eliminate any items that are not currently used in your curriculum, for example, such sources of mould as magazines, newspapers, projects, supplies and plants. Some educational activities and projects that have irritant potential, like composters and animal studies, should be moved to areas outside the classroom. Replace all supplies with the safest, least toxic ones available. Encourage a fragrance-free policy. Many schools have provided parents with a list of safer personal care and laundry products. Question the safety of each item and activity used by you and your students. Insist on the use of non-toxic, fragrance-free cleaning products in your classroom. Most Nova Scotia health food stores carry the booklet, *AEHA Guide To Less Toxic Products*. One question should be foremost at all times: Is this the safest product or procedure available?

Encapsulate

Any item that cannot be eliminated but may contain toxins should be enclosed, by placing it in a sealed container, or by coating the material with a sealant. (Caution: liquid sealants pose hazards in themselves and should only be applied in well-ventilated areas, and off-gassed well before being returned to

the classroom.) Place copiers and laminating equipment in specially vented rooms. If renovations are necessary during school hours, make sure to post prior notification and to isolate renovation activities from students and staff.

Ventilate

Ventilation can be one of the most significant factors determining indoor air quality. The EPA and the National Institute for Occupational Safety and Health in the United States have cited inadequate ventilation as one of the contributing factors to Sick Building Syndrome. Heating, Ventilation and Air Cooling (HVAC) systems, when properly designed and well maintained, can produce good to excellent air quality in a building, by controlling fresh air flow and reducing pollutant levels. Problems occur when HVAC systems are not working well, are not maintained properly or when the original design does not fit current volume needs. The common practice of not running HVAC systems to full capacity and shutting them off after hours and on weekends also can reduce their effectiveness. If your school has a ventilation system, encourage and support the maintenance department and the Joint Occupational Health and Safety Committee (JOHSC) to maintain an efficient system that includes regular changing of filters and cleaning of ducts, according to manufacturers specifications. A written log that records all maintenance and cleaning of the HVAC systems is a good idea. The common exhaust-only systems which have no controlled air intake system tend to draw air into the building through cracks, windows and other openings. This can be problematic for people in schools with mould, dust, asbestos or other pollutants in the walls.

Many schools do not have mechanical ventilation systems and rely solely on doors and windows to deliver fresh air and extract polluted air. Opening two windows and a door will encourage air flow. Be aware of the quality of the air from all sources entering the classroom.

Educate

Education and action are the keys to change. It is necessary to provide ongoing education through in-servicing, curriculum units and newsletters for all school staff, students and parents. Recognize that sensitivities are highly individual and what may bother one individual will not necessarily bother another. Become informed about allergies and sensitivities so that you can begin to understand how individuals are affected physically, emotionally, intellectually and socially. Note the circumstances before, during and after problem

periods for hyperactive students to see if there is an environmental cause/effect relationship. Insist on high standards of cleaning and maintenance. Maintain a file of Material Safety Data Sheets for all hazardous substances used in the school, including art supplies, science laboratory supplies, and cleaning and maintenance supplies. This file should be easily available to anyone, including staff and parents, upon request.

Since CASLE began its work for Nova Scotia's schools nine years ago, its members have seen many improvements to the products, practices and condition of schools buildings. It is important for everyone—the administration, the custodial and maintenance departments, the Joint Occupational Health and Safety Committee, all school staff, students and parents to work together, to support each other, to share the responsibility in a proactive approach, with the goal of achieving the healthiest school environment possible.

As Health Canada's *Issues Paper on Environmental Sensitivities* states: "Prevention is the most important and simplest aspect of this problem." Our hopes for the future include healthy, safe buildings, which provide each child and staff member the opportunity to reach their full potential.

Imagine this:

- *mould consultants advise that a mouldy gymnasium ceiling should be replaced; the ceiling is removed, all mould is removed, the source of the leak is repaired and a new ceiling is installed;*
- *school board policy states that no storage rooms are to be used as classrooms or offices;*
- *no painting, floor stripping and waxing, roof tarring or paving is permitted while students are present, or only when strict isolation techniques are implemented to protect students and staff;*
- *all schools use less toxic cleaning and maintenance materials, office and school supplies, furnishings, and building materials;*
- *all schools have an efficient, well-maintained ventilation system;*
- *all schools undertake rigorous cleaning and maintenance.*



Avis Degaust is a high school teacher currently on leave.

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