

## **Indoor Air Quality and Flooring**

### **Equinox Holistic Alternative School (EHAS) & Roden Public School**

The Healthy Building Committee at Equinox Holistic Alternative School (EHAS)/Roden Public School is extremely concerned about the poor indoor air environment at the school and the associated serious adverse health implications for staff and students. With the recent removal of carpets in the school hallways, it is imperative that the replacement flooring product be non-toxic. The recommendation would be use a product like linoleum/Marmoleum instead of polyvinyl chlorine (PVC) tiles. It's also important to remove the carpets from the classrooms, particularly in the kindergarten rooms.

#### **Health concerns**

At EHAS/Roden, the indoor air environment is significantly impacted by the old, degrading carpets. Carpets act as a repository for bacteria, viruses, pollens, mould, organic chemicals and dust.<sup>1,2</sup> Even with high efficiency vacuum cleaners and regular maintenance, it is impossible to thoroughly clean carpets. Studies show that the amount of dust found in a square metre of old carpet can be up to 400 times that found on smooth surface flooring.<sup>3</sup>

It is well documented that poor indoor air quality (IAQ) affects children's health and impacts school performance. Research shows that poor IAQ makes it difficult for children to focus, concentrate and learn effectively. Poor indoor air quality has been linked to fatigue, coughs, headaches and frequent colds as well as more serious health concerns such as asthma, allergies and chronic respiratory problems.<sup>4</sup>

#### **Children are more vulnerable**

Children are particularly vulnerable to chemical exposures because their bodies, brains and organs are still growing and developing and their pathways of detoxification are immature. They are also in closer physical contact with the flooring and therefore have a higher exposure to contaminants contained in or emitting from the flooring product. Children's immune, hormonal and metabolic systems are very delicate and susceptible to chemicals that mimic or disrupt hormones. There is a strong body of evidence demonstrating that some chemicals can disrupt hormones at very low levels, such as parts per million or smaller.<sup>5</sup> Hence, it is imperative that the selection of materials within the school take into account the specific vulnerabilities of children.

#### **The issue with PVC**

Vinyl flooring is made flexible and versatile from the use of plasticizers known as phthalates. Phthalates are considered endocrine disruptors and reproductive and developmental toxicants. Phthalates have also been linked to many other serious health concerns such as cancer and asthma.<sup>6</sup> Many PVC products also use heavy metals, which bear considerable health risks. These chemicals, particularly phthalates, do not permanently bind to the PVC and have the capacity to migrate out of the flooring when the surface

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<sup>1</sup> Maryland State Department of Education, Division of Business Services. 1993. *Technical bulletin — Carpet and indoor air quality in schools*. Baltimore, MD: Department of Education, 2-8.

<sup>2</sup> Health Canada. 2003 Indoor Air Quality – Tools for Schools Action Kit. [http://www.hc-sc.gc.ca/ewh-semt/pubs/air/tools\\_school-outils\\_ecoles/renovation\\_3-eng.php](http://www.hc-sc.gc.ca/ewh-semt/pubs/air/tools_school-outils_ecoles/renovation_3-eng.php)

<sup>3</sup> John W. Roberts and Philip Dickey. 1995. Exposure of children to pollutants in house dust and indoor air. *Reviews of Environmental Contamination and Toxicology*. 143: 61.

<sup>4</sup> Environmental Protection Agency. Student Health and Academic Performance. November 2012. [http://www.epa.gov/iaq/schools/pdfs/student\\_performance\\_findings.pdf](http://www.epa.gov/iaq/schools/pdfs/student_performance_findings.pdf)

<sup>5</sup> Cooper K, Marshall L, Vanderlinden L, and Ursitti F (2011) *Early Exposures to Hazardous Chemicals/Pollution and Associations with Chronic Disease: A Scoping Review*. A report from the Canadian Environmental Law Association, the Ontario College of Family Physicians and the Environmental Health Institute of Canada.

<sup>6</sup> Ibid.

layer becomes worn, through use or abrasion, into the air, dust and water to be inhaled or ingested by humans<sup>7</sup>. There is evidence that has linked phthalates in PVC flooring to the development of asthma and allergies.<sup>8</sup> The Canadian federal government declared a ban on phthalates in children's toys two years ago, and some bans have been in place in Europe since 1999. **There are no safe levels when it comes to phthalates.** PVCs have their own concerns independent of these plasticizers: major by-products of their manufacture are dioxins and vinyl chloride, and these impact communities in which people live and the environment in general.

### **Call for Action**

The recommended option for new flooring at Roden and Equinox would be either Linoleum or Marmoleum, both of which last lengthy periods of time (Marmoleum has a longer life span than vinyl) with substantially less immediate and long-term health risks. The selection of a healthy floor should also help advance the school's capacity to improve its eco-school status whilst certainly ensuring the improved well-being of staff and students.

We do recognize that the school board is in a position of fiscal restraint but linoleums are not only healthier for children's growing bodies but also are longer lasting flooring options and, ultimately, are more fiscally responsible.

### **Action that can be taken by:**

- Sign online petition requesting that the Toronto District School board choose a non-toxic flooring option like Marmoleum as opposed to PVC tiles and remove carpet from the kindergarten rooms.
- Ask your child to draw a card to TDSB staff thanking them for removing the carpets
- Contact school trustee by email, phone or letter to express your concerns
- Borrow the DVD, *Children Breathe Easy*, which documents the experience of Blake/EAST school working to improve their indoor air quality (available at school office)
- Document any adverse health effects that your child may be experiencing related to the indoor air quality at the school

If you have any questions, please talk to:

Pascaline Phillips, Heather Bell, Stacey Iseman, Dorothy Hrischenko  
Chair and members of the Healthy Building Committee (EHAS/Roden schools)

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<sup>7</sup> Resilient Flooring and Chemical Hazards – A comparative Analysis of Vinyl and Other Alternatives for Health Care. Lent, T., Silas, J., Vallette, J. April 2009, 17.

<sup>8</sup> Larsson M et al. 2010 PVC--as flooring material--and its association with incident asthma in a Swedish child cohort study. *Indoor Air.* Dec;20(6):494-501. doi: 10.1111/j.1600-0668.2010.00671.x.