



***To the Editor:***

*This is an article from a series of monthly columns by Environmental Law Specialist Dianne Saxe, one of the top 25 environmental lawyers in the world, and Ms. Jackie Campbell. These articles are available for publishing at no charge, provided Dr. Saxe and Ms. Campbell are cited as the authors. Dr. Saxe can be contacted at (416) 962-5882 or [admin@envirolaw.com](mailto:admin@envirolaw.com). For more information, visit <http://envirolaw.com>.*

**News Article**

## **Children, toxins, energy, and renovations**

Are you thinking about renovating?

As someone now living through a major renovation, I know that this is a big job. There are many complex factors to balance, to get the improvements you want, more or less on time and on budget, and preferably without too many surprises. The last thing you need is something else to worry about. But here are two that are worth keeping in mind.

The first is that *every renovation should include significant upgrades in energy and water conservation*. As both energy and water drop in availability and rise in price, we both want and need to reduce how much we waste. Buildings are often estimated to consume a third or more of our total energy demand.

Energy conservation can have enormous economic, social, and environmental benefits, including lower greenhouse gas emissions, less vulnerability to oil shocks from disruptions in foreign countries, and sending less of our national wealth overseas to pay for our petroleum habit. The “negawatts” of energy conservation are almost always cheaper than building, say, a new nuclear plant. It also makes buildings more comfortable. The more energy prices rise, the faster conservation will pay back on the initial investment. And buildings last a long time, so the impacts of good or bad decisions on buildings also last a long time.

The second: *Renovation can often make a house healthier as well as more energy efficient, but getting there has risks.* Especially in older buildings, demolition and sanding can release dust contaminated with toxins like lead, asbestos and polychlorinated biphenyls (PCBs). Many new building materials also contain toxins. Renovations also stir up existing house dust, which can contain over 100 potentially toxic substances, whether from indoors (e.g., consumer products) or outdoors (e.g., soil). House dust also contains fine particles that can penetrate deeply into the lungs and damage them.

In addition, one change that is almost always necessary in a renovation is to tighten the building envelope; reducing air leakage is very important to achieving energy savings. If poorly planned, this can allow indoor air pollution to climb. Children can be especially vulnerable to these exposures.

The Canadian Environmental Law Association has just released an excellent report on how to both achieve energy efficiency and protect children from toxins in the process: *Healthy Retrofits: The Case for Better Integration of Children's Environmental Health Protection into Energy Efficiency Programs*

(<http://www.cela.ca/sites/cela.ca/files/CELA773-Healthy-Retrofits-report.pdf>). The report is part of the Canadian Partnership for Children's Health and Environment (CPCHE).

The report highlights indoor health risks that can be exacerbated during renovations. First, the building may contain toxic materials that are easily disturbed. For example:

Older houses are likely to contain lead, which was used extensively in plumbing and paints; lead-based paints are among the top sources of lead contamination in house dust. Until the 1960s, some paints contained up to 50% lead (dry weight) and some old houses may contain *up to 225 kg of lead*. Disturbing the paint can release large numbers of lead particles. Lead is a potent neurotoxin, and can have lifelong impacts on the intelligence of children.

Asbestos was used in insulation between the 1930s and early 1980s, and asbestos-containing vermiculite was used until 1990. Asbestos was also used in ceiling tiles, vinyl flooring and shingles, among other things. Even short-term exposure to friable asbestos fibres can cause lifelong lung damage.

PCBs were used as ingredients in sealing and caulking products to make them more flexible; these chemicals may be found in the caulking around windows and door frames in buildings constructed or renovated from 1950 to 1978. When exposed to heat, PCBs can break down into the extremely toxic dioxins and furans.

Second, making a house airtight to conserve energy can decrease air exchange. This can allow homes with indoor sources of pollution, such as radon and carbon monoxide, to keep more of that pollution inside. Many newer building materials, including particleboard, paints, glues and carpets, off-gas volatile organic compounds which

contaminate indoor air, and which accumulate at higher concentrations in poorly ventilated houses. So can cleaning products, cigarettes, and freshly dry cleaned clothing.

CELA provides several thoughtful recommendations to encourage energy efficiency while improving indoor air quality. For example, they call on governments to:

- Design energy efficiency programs that include indoor environmental health as an integral component;
- Train energy efficiency auditors about exposure to contaminants through renovation and retrofits, the increased vulnerability of children to these chemicals, and prevention strategies;
- Improve training and requirements for specific contaminants: lead paint, mould remediation, handling PCB-containing caulking material, radon safety; and
- Introduce more comprehensive labelling requirements for toxics-containing products; make it easier for contractors and homeowners to select safer materials – for example, support informed purchasing via product rating systems.

In addition, it is perfectly possible to have both good ventilation and energy efficiency, with a little effort and forethought. There is a cost, but it may often be worthwhile. Our family decided to buy good quality HEPA filters and we have kept them running flat out throughout the renovation. The improvement in indoor air was almost immediate, and we now plan to keep them running permanently.

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