

CONTAMINATION – PITY THE POOR PROPERTY OWNER (Newsletters Summer 1997, Winter 1996/97, Summer 1996)

We propose a patron saint for property owners: they too deserve a special place in the hereafter (preferably as tenants). The last six years have been particularly unkind, but the storm clouds actually started to build in the 1970s when the North American continent's attention started to shift from economic growth to environmental issues. Perhaps Love Canal was the catalyst: that rather inappropriately named area of New York, that captured world attention in 1978 when an unusually high incidence of birth defects were noted in infants born to parents living in a residential area built over a toxic waste dump. It was followed in 1979, with the partial meltdown at the Three Mile Island nuclear plant in Pennsylvania, which contaminated the atmosphere. In 1982 the Town of Times Beach, Missouri had to be abandoned because of widespread PCB contamination. It is a story which has echoes in Canada: most dramatically perhaps in the Hagersville, Ontario fire, started by a teen-age drinking party, which burnt through 13 million tires over a 17 day period. And then there is the Sydney Steel, Nova Scotia, tar ponds saga: lagoons of toxic waste that swallow money by the millions. Separate and unconnected events but which together conspire to increase the risk and cost of operating property ... and none of which have any relevance to this article other than as a preamble.

The Atlantic region is the oldest industrialised area in the country and we continually run into environmental challenges with the property we value and market for sale. Two issues face owners: environmental hazards posed by the materials utilised in the construction of their building; and problems arising out of the use of the property, or adjacent properties. This article first focuses on the former and attempts to provide you with a guide to potentially hazardous construction materials in the building you own, wish to own, finance or lease. Much of the information is stolen (a.k.a. research). It is usual to acknowledge sources at the end of the article in the expectation nobody will read them and attribute everything to the brilliance of the author. We are well aware that you are not that easily fooled, so would like to thank the following: The Appraisal Institute, The Counselors of Real Estate, The Royal Institution of Chartered Surveyors, The Appraisal Institute of Canada, The Globe and Mail, and the Federal and Nova Scotia governments (in their various guises). We especially thank Tyler Barkhouse, an environmental engineer with Jacques Whitford for pausing enroute to the Arctic, to review the following table.

As you would expect, there are no errors in this article, other than those inserted deliberately to ensure that you are alert. If you spot the latter, please let us know so that we can pass the information on to less vigilant readers. Thank you.

[Click to view data on "Potential Presence of Hazardous Building Materials 1960-1996"](#)

Hazardous Building Materials

Our matrix tabulates hazardous construction materials against the age of the building. Use it to determine if the object of your desire is likely to clutch such a viper to its bosom. We would emphasise that most so called "hazardous materials" **do not** pose a threat per se to the occupants of the building. So, if your office building contains asbestos, **and virtually all do so**, there is no necessity to panic ... yet ... We will describe the characteristics of each material, identify the circumstances where it does create a potential health hazard and, based on our own experience give you some idea of the cost of remediation or removal. We'll also review its impact on the value of your property and (there is a silver lining to every cloud) show how you can use it to gain some tax relief.

Asbestos is ubiquitous: chances are you are probably breathing, standing on, beside or under it even as we speak. Asbestos is a general term used to describe a group of fibrous mineral silicates. **There are six major types of asbestos: chrysotile (white asbestos), crocidolite (blue), amosite (brown), anthophyllite, tremolite and actinolite.** About 95% of the asbestos-in-place is chrysotile, whose curly fibres tend not to be taken up by the lungs. Crocidolite has long, thin and straight fibres that penetrate narrow lung passages.

Asbestos is a health hazard **only** when it is inhaled. If the asbestos fibres are not released into the air, they cannot be inhaled and adverse health effects do not occur. (However, they are also a naturally occurring phenomena and are released by nature into the atmosphere. You breath in thousands of asbestos fibres each year). **Inhalation of asbestos fibres can result in asbestosis, lung cancer and mesothelioma.** **Asbestosis** limits the ability of the lung to expand and contract and in some cases interferes with the exchange of gases such as carbon dioxide and oxygen between the lungs and blood vessels. Its onset may be dependent on the duration and level of exposure to asbestos fibres, and can take between 2 to 20 years to develop. **Lung cancer** is an abnormal, uncontrolled growth of lung tissue. It can take up to 40 years to develop: smokers are 10 times as vulnerable as non-smokers. **Mesothelioma** is a rare form of cancer which effects the lining of the lung and/or abdominal cavities. Unlike asbestosis and lung cancer, there is no predicable relationship between severity and duration of exposure and it can occur after a short period of exposure. There is some evidence that crocidolite and amosite are more likely to cause it than chrysotile.

Asbestos was widely used as a construction material, and any building erected before 1976 almost certainly contains it. Floor coverings, especially vinyl asbestos tiles and thermal insulation around hot water pipes, are common locations. However, it was also used in ceiling tiles and plaster finishes. As a consequence many municipal land fills refuse to accept this type of refuse even when it is asbestos free. It was frequently sprayed on the underside of floor slabs and will be revealed in all its glory if you lift aside a ceiling tile. However asbestos cannot be positively identified by the naked eye, you'll need laboratory analysis. Since asbestos is only hazardous when inhaled it is not a health hazard unless disturbed. However, an in-place asbestos management program is required to protect you from liability if you own the building. It has been our experience that private sector tenants are usually reassured with a program of air-testing: however, government tenants often insist on asbestos removal. Asbestos, especially the sprayed on form adversely impacts the market value of the property by an amount in excess of the remediation cost.

Lead was commonly used in paint between 1910 and 1974, and sometimes as late as 1980. Laboratory testing is required to confirm the presence of lead but you should refrain from chewing or licking the paintwork particularly if your building was erected, or renovated, between 1940 and 1980. Lead is poisonous in small quantities: its use in paint was banned in Canada in 1979 (> 0.5% lead content by weight) and 1995 (> 0.06% lead content). Lead paint is really only a problem when it is released into the atmosphere during renovations, otherwise it is best left alone.

Lead was also used in water pipes, solder for copper pipes, old municipal water lines and other conveyances of drinking water. Soft water exacerbates the presence of lead (residents of Truro, N.S. take note). Cities in the Atlantic Region have an abundance of lead water lines. Lead can impair physical and mental development of young children and exacerbates high blood pressure in adults. Pregnant women are therefore at risk. Lead in drinking water, drawn from a fully flushed tap must be below 10 parts per billion. Laboratory testing of drinking water is cheap and readily available ... we have confirmed that the level of mental acuity in our office is totally unrelated to our present drinking habits ... the damage is of earlier origin.

Mercury is still used in electronic switching gear and is available by the million in thermostats throughout the land. (The ubiquitous Honeywell Round™ T-86 thermostat uses mercury as do the

other pre-electronic thermostats). It evaporates readily and when inhaled over long periods of time causes irreversible kidney, liver and brain damage. It was used in the manufacture of hats hence the saying "mad as a hatter"...

Urea Formaldehyde is used as a binding agent in particle board (cabinet frames, doors, shelves, wall panelling), fibreglass insulation, fibre tiles (T-bar and glued ceiling covering) and as a residue in some recycled fibreboard (floor underlays, roof decking, insulating sheathing, sound isolation board). It was also used as a foam insulator (UFFI) until 1980, mainly in residential construction, when its use was banned in Canada. Formaldehyde, a pungent, colourless gas is released into the air when the parent building material comes into contact with water or even high humidity, or when it is broken up. Small amounts of formaldehyde are harmless and in fact it is present in so many materials, including furniture and carpets, that it's impossible to escape from it. Your "new car smell" is partly thanks to formaldehyde. If your office tenants complain of irritation to eyes, nose and throat; persistent cough and respiratory distress, skin irritation, nausea, headache and dizziness you may have a formaldehyde problem. (Health Canada safety standards for a home are 0.1 parts per million). Then again maybe they just want to get out of their lease and have read this article.

Polychlorinated Binphenyls (PCBs) were used in some fluorescent light ballasts until 1978 so you are probably reading this with their help. They are also commonly used in transformers, circuit breakers and switch gears. They are not harmful unless swallowed ... resist the temptation. However, when they are heated to more than 250°C they degrade into furans and dioxins, both highly toxic substances. If you renovate and wish to get rid of your PCBs, you have a problem since there is no disposal facility in Atlantic Canada.

[Click to view data on "Documented Use of Hazardous Substances 1990-1800"](#)