

***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**

## Are you wearing PERC?

[Perchloroethylene](#) (also called tetrachloroethylene, PCE or PERC) is a common dry cleaning solvent. It is also used in textile processing and degreasing.

Exposure to this chemical is associated with a host of [adverse effects](#), like headaches and neurological problems. The [International Agency for Research on Cancer](#) has classified it as a Group 2A [carcinogen](#), which means that it is probably carcinogenic to humans. Like many [chlorinated hydrocarbons](#), tetrachloroethene is a [central nervous system](#) depressant and can enter the body through the skin, or by inhalation. Tetrachloroethene dissolves fats from the skin, potentially resulting in skin irritation. Animal studies and a study of 99 twins by Dr. Samuel Goldman and researchers at the Parkinson's Institute in Sunnyvale, California concluded exposure to Tetrachloroethene increases the risk of developing Parkinson's disease. It is a common environmental pollutant of soil and groundwater, especially near past and present drycleaners, and vast sums are spent to clean it up.

So we were struck by a recent study that shows PERC residues building up in some drycleaned clothes.

The [study](#), published in a well-respected peer-reviewed journal, found that some fabrics retain PERC after dry cleaning. This is especially true for wool, and to a lesser extent for polyester and cotton, although not silk. It takes up to a week for garments to release half of the PERC they retain, whether or not they are wrapped in dry cleaners' plastic wrap.

Worse, with repeated dry cleaning, PERC builds up even farther in wool, (although not in cotton, polyester, or silk). Although the study was small, it raises serious questions about how consumers should handle freshly dry cleaned clothing, especially if made of wool.

The study authors note that a pair of adult wool trousers may contain around 30,000 square centimetres of material. They calculate that such a pair of trousers could contain up to 160 mg of PERC after repeated cleaning. If such items were worn once every three days, the wearer could absorb 3 or more mg of PERC through the skin in a year. 10 recently cleaned wool items in a sealed closet at room temperature could release up to 50 parts per million (ppm) of PERC into the air for a week. 4 recently (and repeatedly) cleaned wool sweaters could pollute the air in a warm car by up to 126 ppm!

Admittedly, these are preliminary calculations, based on a single study, but it's amazing that the issue has been so little studied. If these predicted pollution levels were reached, they would far exceed the levels that the European Scientific Committee on Occupational Exposure Limits ([SCOEL](#)) recommends for occupational exposure by healthy adults: 20 ppm for an 8 hour time-weighted average) and 40 ppm for a short-term exposures (maximum 15 minutes.) And occupational standards are not designed to protect children, babies, and other highly sensitive people, so residential standards usually have to be more stringent.

Canada doesn't set any standards for human exposure to PERC from sources like dry cleaned clothing, or in homes, and isn't doing anything to phase PERC out. (California banned PERC from use in dry-cleaning. Now that the Environmental Protection Agency has [approved California's regulations](#), the ban will become enforceable in 2023).

We do, however, have some regulations about PERC in the natural environment. For example, PERC, which persists and accumulates in the environment, is listed as a toxic substance under the *Canadian Environmental Protection Act, 1999* (CEPA). Accordingly, federal [regulations governing PERC in dry cleaning operations](#) ban use of PERC-containing spotting agents, require newer and more efficient dry-cleaning machines, and require better collection and disposal of PERC residue and wastewater. Dry cleaners, importers and recyclers of PERC must keep detailed records and submit yearly reports to the Environment Minister.

The regulations were even enforced once. In 2007, [Master Cleaners Ltd. of Charlottetown](#) was convicted of failing to store PERC properly and of lacking appropriate wastewater treatment, risking the release of PERC into the environment. The company was fined a modest \$4000.

Health Canada's health-based and aesthetic [Guidelines for Canadian Drinking Water Quality](#) set maximum acceptable PERC concentrations at 0.03 mg/L, a level followed by the Ontario Drinking Water Quality Standards (O.Reg. 169/03). The [U.S. standard](#) is much more stringent, 0.005 mg/L. A new Canadian guideline value, at least a year away, may finally catch up.

### **So what can consumers do?**

- keep your distance from freshly dry-cleaned clothes, especially wool. Put them in the trunk of the car, not the back seat, and open the window. Hang them somewhere away from the family to air out for a few days, not in the bedroom.

- choose cleaners that use [processes that do not contain PERC](#). These include wet cleaning, solvents like silicon, liquid carbon dioxide, and certain hydrocarbons. Check out the [list of green dry cleaners](#) in your area from the Canadian Center for Pollution Prevention – these facilities offer environmentally preferable cleaning processes, are collecting/reusing hangers and recycling plastic bags, and
- We think we'll hand wash our sweaters.

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