Antibacterial Chemicals – Triclosan and Triclocarban

GreenScreen® Assessments Show Why They Should be Prohibited in Consumer Goods

Most people are unaware of how widespread triclosan and triclocarban chemicals are in their daily lives. Triclosan is found in liquid hand soaps, cosmetics, toothpastes, moisturizers, drugs, natural health products, clothes, office and school products, plastic toys, toothbrushes, shower curtains and cutting boards, mattresses, carpets, tents, garbage cans, insulation, and concrete mixtures. Triclocarban is also widely used in personal care products and antimicrobial bar soaps. Products containing these two chemicals are often labelled as "antibacterial", "fights odours" or "kills germs."

According to Canadian and international biomonitoring studies we all carry triclosan and triclocarban in our bodies,[1] originating from diverse consumer products, contaminated drinking water, breast milk, and household dust. These chemicals are top contaminants of concern globally, detectable in house dust worldwide, in ocean water, and locations as remote as the water loop of spacecraft.[2] Yet they are rarely even necessary and are implicated in the troubling problem of bacterial resistance as emphasized by major medical organizations. Growing scientific and public awareness exists about the many hazards of triclosan and triclocarban.

We used GreenScreen® for Safer Chemicals to assess the hazards of these chemicals to human health and the environment. A comprehensive assessment of these hazards shows that triclosan should be avoided and triclocarban should be substituted with safer alternatives if a biocide is necessary at all. In particular, because both chemicals are highly toxic to living organisms in aquatic environments, these chemicals should not be entering water systems, such as the Great Lakes Basin. Yet the vast majority of consumer products containing triclosan and triclocarban are designed to be flushed down the drain. In addition both chemicals are found to be endocrine active and interfering with the normal function of hormones and the reproductive system in humans and animals.

GreenScreen® for Safer Chemicals is an internationally recognized tool for comparative hazard assessment of chemicals identifying those of high concern and evaluating safer alternatives. A scientifically robust and transparent method, GreenScreen® is used by industry, governments and NGOs to support product design and development, materials purchasing, and for alternatives assessment to meet regulatory requirements. For example, computer giant Hewlett-Packard is the global leader in GreenScreen® use, it is used by the government of Washington State, and GreenScreen® has been endorsed by the US Green Building Council as a material credit for LEED certification.

Chemicals are assessed for environmental and human health impact in 18 categories with each scored from Very High to Very Low. It also considers how a chemical breaks down in the environment. Benchmarks are a unique strength in GreenScreen developed to reflect hazard concerns that have been established by governments, both nationally and internationally. Benchmarks range from Benchmark 1 (Avoid: Chemical of High Concern) to progressively safer levels, Benchmark 4 (Prefer: Safer Chemical). Triclosan is ranked as Benchmark 1 and triclocarban as Benchmark 2. GreenScreen allows for informed decision making by regulators and product manufacturers. Results inform when chemical mixtures need reformulating to inherently safer chemical design, or why a chemical should not be used. For example, if a chemical has a high hazard score for aquatic ecotoxicity, (such as triclosan and triclocarban), it would signal specific concern for products that are flushed down the drain. Regulators responsible for protecting water basins and drinking water sources, such as the Great Lakes, have a better understanding of a chemical's hazard by viewing its GreenScreen results.

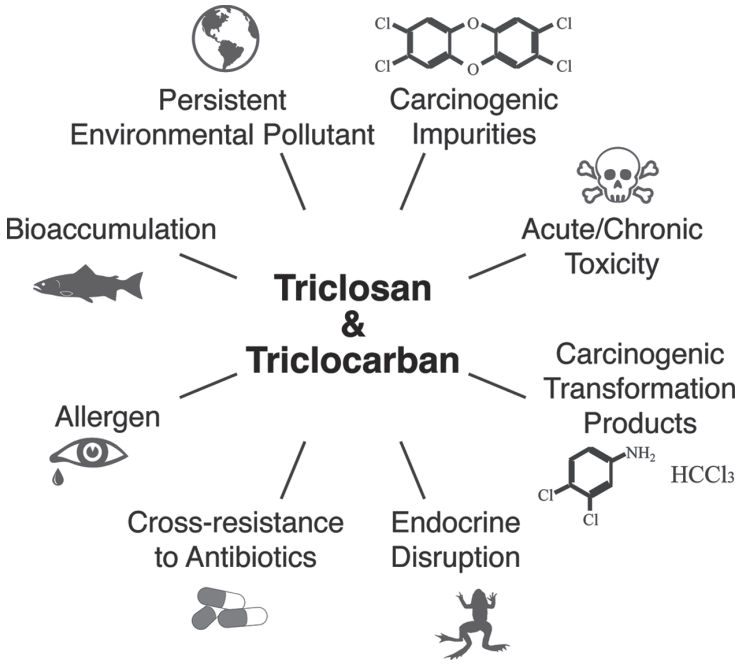

Image by Jason Drees, the Biodesign Institute at Arizona State University, produced for Rolf U. Halden's paper: On the Need and Speed of Regulating Triclosan and Triclocarban in the United States. *Environ. Sci. Technol.* 2014, 48, 3603–3611. Reproduced with permission.

The Canadian Government Needs a Comprehensive Phase-out Plan for Triclosan and Triclocarban

GreenScreen results provide a way for regulators and businesses to take informed action. Chemicals management in Canada is a shared job between Health Canada and Environment Canada which sometimes results in conflicting conclusions about the safety of a chemical. For example, the government's draft risk assessment of triclosan concluded that triclosan is toxic to the environment but that the chemical poses no threat to human health. This creates confusion in the marketplace and demonstrates why our chemicals policy needs to be more comprehensive and rooted in a life cycle approach for safer chemicals. The fact that 95% of triclosan and the vast majority of triclocarban ends up in waste water discharges requires quick action to avoid ongoing contamination of our rivers and lakes. In addition, both the Canadian and American Medical Associations have warned of the risk these chemicals pose for increasing bacteria resistance. They have concluded that simply washing with soap and water is more effective than using such chemicals in antibacterial soaps.

Some companies are taking action to ban triclosan but it is very important that product manufacturers do not replace triclosan with an equally hazardous replacement. The GreenScreen results for triclocarban show why it is a bad substitute for triclosan. That is why we are calling on companies and government agencies to require an assessment of any alternative to triclosan and triclocarban if indeed, an anti bacterial function is necessary in a product. For specific and rare cases, such as in hospital settings, biocides can be necessary—in which case safer and less hazardous alternatives to triclosan and triclocarban would be used. But to assume that all consumer products need antibacterial chemicals is dangerous and misleading, particularly when consumers have no information about the environmental and health hazards of these substances in the products they buy. Regulators in other regions are beginning to take restrictive action on triclosan and Canada should too. We recommend that:

1. Canadian and US federal, and all provincial and state governments in the Great Lakes Basin, should prohibit triclosan and triclocarban and assess alternatives, if biocides are shown to be necessary for specific applications.

2. In advance of regulatory action, companies and retailers should eliminate triclosan and triclocarban in all consumer products. To reduce business risk, retailers and product brands must demand proof from their suppliers that an antibacterial function is necessary in a product and that an assessment of alternatives has been done to show why any substitute to triclosan or triclocarban is safe for both our health and the environment.

Both triclosan and triclocarban are highly hazardous to aquatic living organisms — Focus on the Great Lakes

Triclosan and triclocarban are of particular concern in the Great Lakes Basin since it receives the bulk of waste water effluent from 40 million residents and these chemicals are known to be highly toxic to aquatic living organisms. Triclosan and triclocarban are widespread and detected in many fish species and in 90% of surface water samples. Increased population and increased sewage discharges continue to impact water quality in the near shore, an area that is essential for the survival of a healthy fish population, plus where most human recreational activity takes place. It is time for action if we are to reverse the ongoing input of these chemicals into surface waters and protect human health and wildlife. We need a truly preventive chemicals policy to comprehensively address the full range of product-based exposures and that integrates alternatives assessment and informed substitution at its core.

This fact sheet is based on the report, *Chemicals in Consumer Products are Draining Trouble into the Great Lakes Ecosystem: GreenScreen® Assessment Shows Triclosan and Triclocarban Should be Avoided.* Available at *http://www.cela.ca/triclosan-and-triclocarban.*

Endnotes

1 Health Canada. Second Report on Human Biomonitoring of Environmental Chemicals in Canada. 2013. Retrieved May 20, 2014. *http://www.hc-sc.gc.ca/ewh-semt/pubs/contaminants/chms-ecms-cycle2/index-eng.php*

2 Rolf U. Halden. On the Need and Speed of Regulating Triclosan and Triclocarban in the United States. *Environ.Sci.Technol.* 2014, 48, 3603-3611. American Chemical Society. Retrieved May 20, 2014. *http://pubs.acs.org/doi/abs/10.1021/es500495p*

Canadian Environmental Law Association
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Canadian Environmental Law Association
130 Spadina Avenue, Suite 301 • Toronto, ON M5V 2L4
Tel.: 416-960-2284 • Fax: 416-960-9392