



PREVENTING POLLUTION: TRICLOSAN & TRICLOCARBAN

Concern is growing about the presence in the environment of antibacterial compounds, such as triclosan, and its chemical cousin triclocarban. Triclosan and triclocarban are common ingredients in many everyday cleaning products such as hand soaps, dish and laundry soaps, personal care products such as toothpaste and mouthwash, and can be found in institutional, clinical, commercial and residential settings. These compounds can be washed down the drain, can persist through wastewater treatment, and make their way into waterways.

FACTS ABOUT TRICLOSAN AND TRICLOCARBAN:

- Triclosan and triclocarban have been detected in U.S. waterways^{1,2}
- Triclosan has been shown to bioaccumulate in fish and humans^{3,4}
- Triclosan is a thyroidal endocrine disruptor in aquatic organisms⁵
- Scientists have raised concerns about bacterial resistance related to exposure to triclosan⁶
- In the presence of UV light, triclosan degrades into a compound with dioxin-like characteristics⁷
- Triclosan and triclocarban can persist through wastewater treatment and can be discharged into waterways and/or biosolids^{2,8}

According to the American Medical Association, "...the use of antimicrobial agents such as triclosan in consumer products has not been studied extensively. No data exist to support their efficacy when used in such products or any need for them, but increasing data now suggest there is little evidence to support the use of antimicrobials in consumer products such as topical hand lotions and soaps....Considering the available data and the critical nature of the antibiotic resistance problem, it may be prudent to avoid the use of antimicrobial agents in consumer products."⁹

To prevent potential environmental pollution, consider alternatives antibacterial products containing triclosan and/or triclocarban. Alcohol-based sanitizers have been shown to be effective in health care settings.¹⁰

¹ Kolpin, Dana W., E. T. Furlong, M. T. Meyer, E. M. Thurman, S. D. Zaugg, L. B. Barber and H. T. Buxton. 2002. Pharmaceuticals, Hormones, and Other Organic Waste Contaminants in U.S. Streams, 1999-2000: A National Reconnaissance. *Environmental Science and Technology*, 36: 1202-1211.

² Rolf U. Halden and Daniel H. Paull. 2005. Co-Occurrence of Triclocarban and Triclosan in U.S. Water Resources. *Environmental Science and Technology*, 39: 1420-1426.

³ Samsoe-Petersen, Lise, Margrethe Winther-Nielsen and Torben Madsen. 2003. Fate and Effects of Triclosan. Danish EPA.

⁴ Adolfsson-Erici, M. Patterson, J.Parkkonen, and J.Sturve. 2000. Triclosan, A Commonly Used Bactericide Found in Human Milk and in the Aquatic Environment, *Abstracts of Dioxin, 2000, 20th International Symposium on Halogenated Environmental Organic Pollutants and POP's: Monterey, CA*, 48: p83.

⁵ Veldhoen, Nik, R.C. Skirrow, Heather Osachoff, Heidi Wigmore, David J. Clapson, Mark P. Gunderson, Graham Van Aggelen and Caren C. Helbing. 2006. The Bactericidal Agent Triclosan Modulates Thyroid Hormone-Associated Gene Expression and Disrupts Postembryonic Anuran Development. *Aquatic Toxicology*, 80(3): 217-227.

⁶ Levy, S. 2000. "Antibacterial Household Products: Cause for Concern," Presentation from the 2000 Emerging Infectious Diseases Conference in Atlanta, Georgia.

⁷ Rule, K. L., V. R. Ebbett and P.J. Vikesland. 2005. Formation of Chloroform and Chlorinated Organics by Free-Chlorine-Mediated Oxidation of Triclosan. *Environmental Science and Technology*, 39(9):3176-3185.

⁸ Jochen Heidler, Amir Sapkota, and Rolf U. Halden. 2006. Partitioning, Persistence, and Accumulation in Digested Sludge of the Topical Antiseptic Triclocarban during Wastewater Treatment. *Environmental Science and Technology*, 40(11): 3634 – 3639.

⁹ American Medical Association. 2000. Use of Antimicrobials in Consumer Products. Report 2 of the Council on Scientific Affairs (A-00).

¹⁰ John M. Boyce, M.D. and Didier Pittet, M.D. Guideline for Hand Hygiene in Health-Care Settings Recommendations of the Healthcare Infection Control Practices Advisory Committee and the HICPAC/SHEA/APIC/IDSA Hand Hygiene Task Force. Available at <http://www.cdc.gov/mmwr/preview/mmwrhtml/tr5116a1.htm>