Antimicrobials murderous in nature.

Nov 10, 2010

Ricarta, M, H Guasch, M Alberch, D Barceló, C Bonnineau, A Geiszinger, M la Farré, J Ferrer, F Ricciardi, AM Romaní, S Morin, L Proia, L Sala, D Sureda and S Sabater. 2010. **Triclosan persistence through wastewater treatment plants and its potential toxic effects on river biofilms**. Aquatic Toxicology http://dx.doi.org/10.1016/j.aquatox.2010.08.010.

Synopsis by Thea Edwards

Antimicrobial compounds that are washed down the drain make it into the environment where they can interfere with the algae and bacteria needed for healthy ecosystem function.

ShareThis

When released into waterways from wastewater treatment plants, the antimicrobial triclosan continues to do what it was designed to do – kill bacteria – and starts doing what it was not designed to do – interfere with photosynthesis in algae.

The results from a study in Spain suggest that triclosan carries a high environmental risk and warrants concern about its presence in waterways. The findings agree with prior studies that find the antimicrobial is toxic to bacteria at levels measured in water.

However, this is one of just a few published studies to report that triclosan can reduce photosynthesis in a type of algae known as diatoms. Through photosynthesis, diatoms produce oxygen and food that other aquatic organisms rely upon. It is estimated that 80 percent of the oxygen in our atmosphere comes from diatoms, making these microscopic organisms essential for life on earth.

Triclosan is an anti-microbial chemical widely used in personal care products, like toothpaste and anti-bacterial hand soap. It is added to cleaning products and is applied to many items, including clothing, toys, shower curtains and kitchenware.

Triclosan is washed down sinks and showers and into wastewater treatment facilities. Because treatment plants are not designed to eliminate organic compounds – like pharmaceuticals, detergents or personal care products – triclosan can remain intact and enter rivers and lakes with the treated wastewater. Triclosan is found in wastewater effluent at concentrations ranging from 0.027 - 2.7 micrograms per liter.

After release into water bodies, it can affect aquatic organisms and contaminate drinking water. Triclosan also breaks down in sunlight to release dioxins, which are powerfully toxic compounds known to cause reproductive and developmental damage to wildlife and humans.

The new study tested the effects of various levels of triclosan on naturally-occurring microbial communities gathered from a river in northeast Spain. The microbes were constantly exposed for 48 hours to a range of triclosan concentrations (0, 0.5, 5, 25, 125, 250 and 500 micrograms per liter) that included levels previously measured in wastewater effluent.

They found that their lowest concentration (0.5 micrograms/liter) reduced bacterial concentrations. The higher

doses killed up to 85 percent of the bacterial population.

Triclosan was also toxic to diatoms and reduced photosynthesis at concentrations above 5 micrograms per liter.

The results suggest that triclosan is a risk to aquatic microorganisms and may change the numbers and types of bacteria and diatoms in a microbial community. These changes could lead to alterations in the balance of an ecosystem.

10 November **Antimicrobials murderous in nature.** When released into waterways from wastewater treatment plants, the antimicrobial triclosan continues to do what it was designed to do – kill bacteria – and starts doing what it was not designed to do – interfere with photosynthesis in algae. Environmental Health News.

13 August **Levels of controversial soap chemical rise.** Last week the CDC published data on the levels of 212 chemicals in 2400 volunteers in the US. The average amount of triclosan, a chemical added to soaps and toothpastes to kill fungi and bacteria, jumped by over 40 per cent in two years. New Scientist.

7 August **Recycling household gray water.** Although gray water has a lighter pollutant load than wastewater from toilets, it still contains chemicals found in personal care products, such as the antibacterial agent triclosan and the preservative propylparaben. Chemical & Engineering News.

29 July **Health group sues FDA over antimicrobial soap.** A nonprofit environmental group has sued the U.S. FDA, claiming the agency failed to regulate toxic chemicals found in "antimicrobial" soap and other personal care products. It alleges that two common ingredients, triclosan and triclocarban, can damage reproductive organs, sperm quality and hormone production. Reuters Health.

22 May **River sediments contain dioxins linked to Triclosan.** Dioxins associated with the widely used antimicrobial called triclosan accounted for nearly one-third of all dioxins deposited in two aquatic sediment cores from 2004 to 2009, researchers say. Chemical & Engineering News.

19 May **A new source of dioxins: Clean hands.** Manufacturers have been adding the germ fighter triclosan to soaps, hand washes, and a range of other products for years. But here's a dirty little secret: Once it washes down the drain, that triclosan can spawn dioxins. Science News.

18 April **FDA reviewing use of antibacterial products.** The antibacterial chemical triclosan found in liquid hand soaps, deodorant bar soaps, toothpastes and more may harm humans and the wildlife. Industry groups say they have provided volumes of information on the benefits and safety of the products. Los Angeles Times, California.

15 April **No study despite concern over common chemical.** Health authorities will not investigate triclosan, a chemical compound found in many common household items, despite concerns in the US about links to hormone dysfunction. Sydney Morning Herald, Australia.

13 April **Triclosan targeted.** Federal regulators are concerned about the potential for antibiotic resistance and endocrine disruption from human exposure to triclosan, an antibacterial ingredient found in numerous consumer products including soaps, body washes, cutting boards, and toys. Chemical & Engineering News.

13 April **Concern over anti-bacterial products.** The FDA is taking a closer look at triclosan, a key chemical commonly found in anti-bacterial products. CNN.

10 April **FDA, EPA to review safety of antibacterial ingredient, triclosan.** The U.S. Food and Drug Administration said on Thursday it was conducting a safety review of triclosan, a widely used antibacterial chemical that can be found in many consumer products from soap and toothpaste to toys. Daily Finance.

9 April **FDA reviews safety of triclosan.** The United States Food and Drug Administration said on Thursday that it was reviewing the safety of triclosan, a widely used antibacterial agent found in soap, toothpaste and a range of other consumer products. Reuters.

9 April **FDA to review antibacterial ingredient.** The U.S. Food and Drug Administration said Thursday it was conducting a safety review of triclosan, an ingredient designed to fight bacteria that's in a variety of consumer products such as liquid hand soap, kitchenware and some toys. Wall Street Journal.

8 April **FDA says studies on triclosan, used in sanitizers and soaps, raise concerns.** The Food and Drug Administration said recent research raises "valid concerns" about the possible health effects of triclosan, an antibacterial chemical found in a growing number of liquid soaps, as well as some clothes and toys. Washington Post.

8 April **Markey sees risks in cleaning chemical.** Most consumers have probably never heard of triclosan, but they almost certainly come into contact with it. The chemical, an antibacterial and antifungal agent, has become part of daily life, present in a wide variety of personal care products. Boston Globe, Massachusetts.

1 October **Healthy handwashing.** What do you do when your office starts directing you to douse yourself in a synthetic bactericide? The active ingredient in those antibacterial soaps, triclosan, has been found to contaminate breast milk, dolphin tissues and waterways everywhere. Now Toronto, Ontario.

1 September **Antibacterial soaps and products made without triclosan.** Once you've read the indictment against triclosan, it's easy to decide you don't want to use the substance. Harder, if you use liquid soap, is finding a product that doesn't use include triclosan for its supposed antibacterial qualities. Daily Green.

11 August **Germ-killing chemical from soaps, toothpaste building up in dolphins.** A new study found that one-third of the bottlenose dolphins tested off South Carolina and almost one-quarter of those tested off Florida carried traces of the antibacterial chemical triclosan in their blood. Now some scientists are calling for its removal from consumer products because it is building up in the ocean's food web. Environmental Health News.

16 July **Antibacterial soap: An imminent threat to human health and the environment?** Arguing that the chemical commonly used to give antibacterial soap its bite "poses imminent threats to human health and the environment," two groups are petitioning the FDA to have triclosan banned. We have consistently recommended against using antibacterial soap. Daily Green.

28 May **Pesticides lurk everywhere.** Rick Smith remembers a Christmas Eve when he and his wife were sorting through stocking stuffers. The executive director of the Toronto-based Environmental Defence happened to notice on a package of socks, in tiny print, a label for triclosan. Georgia Straight, British Columbia.

Log in to add comments