

# School Pesticide Monitor

A Bi-monthly Bulletin on Pesticides and Alternatives



Vol. 5 No. 3 May/June 2005

Beyond Pesticides / National Coalition Against the Misuse of Pesticides  
701 E Street, SE, Suite 200 • Washington, DC 20003 • 202-543-5450  
info@beyondpesticides.org • www.beyondpesticides.org

## Common Antibacterial Soaps Threaten Children's Health, Found To Offer No Added Protection From Bacteria

In a world full of germs and viruses, antibacterial products may seem like an easy way to stay healthy, but a close look at them reveals that they present a serious threat to public health and the environment. Over the last two decades, antibacterial products have swarmed the marketplace, showing up in hundreds of different products, in everything from soaps and toothpastes to clothes, kitchenware, and toys. In fact, a study done in 2000 found that over 75% of liquid soaps and nearly 30% of bar soaps—45% of all the soaps on the market—contain some type of antibacterial agent. The most common ingredient: triclosan, a chemical that is used so commonly it actually makes its way into the human body. A 2002 Swedish study found high levels of triclosan in 3 out of 5 human breast milk samples.

Under the appropriate settings and conditions, such as in hospitals to prevent hospital-acquired infections, triclosan has been proven effective. But no current data demonstrate any extra health benefits from having antibacterial-containing cleansers in a healthy household. A study of over 200 healthy households found that those households that used antibacterial products did not have any reduced risk for runny noses, coughs, and other symptoms of infectious diseases. According to the American Medical Association, "Despite their recent proliferation in consumer products, 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...it may be prudent to avoid the use of antimicrobial agents in consumer products..."

### Health Effects of Triclosan: The Carcinogen Connection

There have been reports of acute health effects, such as skin irritation, resulting from triclosan exposure. But the most worrisome health effects of triclosan are the subtle ones. Researchers have



*Commonly used products containing triclosan*

raised concerns about triclosan and its link to dioxins. Dioxins are highly carcinogenic chemicals that can cause severe health problems such as weakening of the immune system, decreased fertility, altered sex hormones, birth defects, and cancer. Even relatively small quantities of dioxins can have devastating effects. According to EPA, triclosan "could be" and is "suspected to be" contaminated with dioxins. Dioxins can be found in triclosan as impurities formed during the manufacturing process. Researchers who added triclosan to river water and exposed it to ultraviolet light found that a significant portion of the triclosan was converted to dioxins, raising fears that sunlight could transform triclosan to dioxins naturally.

Another serious health threat stems

from interactions between triclosan and tap water. A new study by researchers at Virginia Polytechnic Institute finds that triclosan reacts with chlorine molecules in tap water to form chlorinated dioxins, which are highly toxic forms of dioxin. Because the study was conducted using triclosan-containing dishwashing soap, researchers believe that these chlorinated dioxins are forming in kitchen sinks across the country. The same study also found that the combination of tap water and triclosan produces significant quantities of chloroform, which is a probable human carcinogen. Production of chloroform and dioxins may also be a problem in pools, where there are high levels of chlorine that can react to triclosan residues on people's skin.

Overuse of triclosan (and other antibacterials) is also linked to allergies. The "hygiene hypothesis" theorizes that there is a correlation between too much hygiene and increased allergies and asthma. This hypothesis is based on studies that have found an increase in the frequency of allergies, asthma, and eczema in persons who have been raised in more sterile and hygienic environments. By over-cleaning, the theory states, children's immune systems are not challenged and thus are prevented from developing and maturing.

### Antibiotic Resistance

Many recent studies have raised serious concerns that triclosan may promote the emergence of bacteria resistant to antibiotics. One concern is that bacteria will become resistant to antibacterial products like triclosan, rendering those products useless to those

# School Pesticide Monitor

Beyond Pesticides/

National Coalition Against the Misuse of Pesticides

701 E Street, SE, Suite 200

Washington, DC 20003

(202) 543-5450

who need them, such as people with compromised immune systems. Scientists also worry that because triclosan kills bacteria in a similar way as antibiotics, bacteria that become resistant to triclosan will also be resistant to antibiotics. Triclosan does not actually cause a mutation in the bacteria, but by killing the normal bacteria, it creates an environment where mutated bacteria that are resistant to triclosan are more likely to survive and reproduce. Laboratory studies with triclosan have already found a number of different strains of mutated bacteria that are resistant to triclosan and to certain antibiotics. Antibiotic resistance has become an increasingly serious problem worldwide, and overuse of triclosan may exacerbate this problem.

## Environmental Effects

Over 95% of triclosan uses are in consumer products that are disposed of down sink drains. Wastewater treatment plants cannot remove triclosan from water, so large quantities of triclosan are continuously discharged into local waterways. Numerous studies have detected triclosan in streams and rivers. In a U.S. Geological Survey study of 95 organic wastewater contaminants in U.S. streams, triclosan was one of the most frequently detected compounds, and in some of the highest concentrations.

Triclosan is highly toxic to algae. Because algae are the first-step producers in aquatic ecosystems, researchers believe that high levels of triclosan discharged into the environment may destroy the balance of aquatic ecosystems.

The risks are especially high immediately downstream from wastewater treatment plants.

## Girl Scouts Say No To Triclosan

A group of curious Girl Scouts in St. Paul, Minnesota found that, when they used triclosan to kill bacteria they grew for a science fair project, the bacteria actually started growing. After a two-year investigation, the girls found that while anti-bacterial soap kills 99.6% of germs, regular soap kills 99.4% of germs. The Girl Scouts concluded that

household anti-bacterial products are unnecessary, and that by not killing all the bacteria, they could actually create super-germs that will pose a threat to public health. Based on their findings, these young girls have met with local lawmakers who have submitted a bill on the girls' behalf that would ban the use of triclosan.

*For more information on triclosan and a list of products containing triclosan, contact Beyond Pesticides at 202-543-5450, or visit [www.beyondpesticides.org/pesticides/factsheets](http://www.beyondpesticides.org/pesticides/factsheets).*

## Staying Clean and Healthy Without Triclosan

When used outside of health care settings, triclosan is unnecessary, and constant exposure to triclosan becomes a health and environmental hazard. The best solution to preventing infections is good old soap and water. Here are some guidelines on protection from bacteria without antimicrobials:

- Wash hands frequently and thoroughly. Regular soaps lower the surface tension of water, washing away unwanted bacteria. Lather hands for at least 10 to 15 seconds and then rinse off in warm water. It is important to wash hands often, especially when handling food, before eating, after going to the bathroom, and when someone in your house is sick.
- Take time to teach children the correct way to wash their hands.
- Dry hands with a clean towel to help brush off any germs that did not get washed down the drain.
- Wash surfaces that come in contact with food with a detergent and water.
- Wash children's hands and toys regularly to prevent infection.

Because triclosan has become so ubiquitous in soaps and toiletries, make sure to carefully read all ingredients when buying these products. Triclosan is also known as Irgasan and Microban. Check with your school to see if it uses triclosan-containing products in its classrooms and bathrooms. If you feel like you need antibacterial protection, there are some essential oils that have antimicrobial properties, such as Australian tea tree oil and grapefruit seed extract, which are sometimes included in natural soaps. Alcohol-based antibacterial soaps, such as Purell, do not carry the same risks of antibiotic resistance and dioxin contamination as triclosan-containing products.