

Antibacterial Agents

Narrator: Welcome to Environmental Health Chat, a podcast about how the environment affects our health, from the National Institute of Environmental Health Sciences Division of Extramural Research and Training.

Deodorant. Toothpaste. Cosmetics. Antibacterial soap. Trash bags. Towels.

What do these personal care and household products have in common?

They often contain the antibacterial agents triclosan and triclocarban. These chemicals were introduced in the 1970s as disinfectants for medical professionals working in hospitals and clinical settings. But in 1994 when the Food and Drug Administration opened up broad use of these chemicals, they exploded onto the market place, becoming commonplace in household and personal care products. Today, thousands of products contain triclosan, while a broad array of soaps contain triclocarban. These products often claim they protect against germs and bacteria. But these chemicals may, in fact, be harming our health.

Joining us to talk about the hazards of triclosan and triclocarban is Dr. Rolf Halden. He's a professor with expertise in microbiology and chemistry at Arizona State University. According to Professor Halden, animal studies have shown a range of negative health impacts associated with triclosan and triclocarban, including endocrine disruption, drug resistance, poor heart function, and allergies. Professor Halden says understanding – and addressing – these risks is vital, especially considering their widespread presence.

Rolf Halden: "So the antimicrobials, Triclosan and Triclocarbon are essentially ubiquitous today, which means we can find them just about anywhere. That's because we have used them in very large amounts for a very long time, and this has resulted in the fact that we can find the antimicrobials in our water, in our soil, in trace amounts even in food and in air where they are present on dust particles..." "Since the chemicals are so abundant now, there's actually multiple routes of exposure, and they come through all means that we can envision: that includes ingestion (with food), absorption, inhalation, and even injection and those exposures would come from incorporation of triclosan into plastics" ... "These chemicals today are detectable in just about any American person. They have multiple adverse impacts, but very few documented benefits and that's the real reason for concern. So in essence we are overmedicating a large population and very few see benefits from that."

Narrator: As Professor Halden emphasizes, studies have increasingly linked triclosan and triclocarban to two particular public health threats – endocrine disruption and antimicrobial drug resistance.

Endocrine disruption takes place when chemicals enter our body and mimic our natural hormones, such as estrogen. This can cause many negative developmental, reproductive, neurological, and immune effects – putting developing babies and children especially at risk.

Further, some bacteria are becoming resistant to triclosan and triclocarban in response to their heavy use. This means, bacteria are developing defense mechanisms, making antibiotics and antibacterial agents less effective at killing them.

Rolf Halden: "The fact that our antibiotics are becoming less and less effective is of great concern to human health." "If we carelessly use consumer antimicrobials that deplete our essential reservoir of reliable antibiotics, then that is detrimental not only to our individual health, but to public health overall."

Narrator: Pointing to what the science is telling us about the impacts of triclosan and triclocarban, Professor Halden says it's important for us to take action.

Rolf Halden: "I think for triclosan and triclocarban, it's important to understand that there are a lot of different adverse outcomes, and a rather thin body of documented benefits. So to me, for a person who has studied these chemicals for well over a decade, the biggest question is how much do we as a society need to know in order to take action, with respect to keeping consumers safe and protecting the environment and wildlife?"

Narrator: Many consumer groups have campaigned against the use of triclosan and triclocarban, pointing to their negative health impacts. This has prompted major manufacturers to reformulate their products, phasing out these chemicals. In 2014, Minnesota became the first state to prohibit the sale of personal care and hygiene products that contain triclosan, and bans have been proposed in other states as well.

Public pressure has further prompted the Food and Drug Administration to reconsider the safety of triclosan and triclocarban, as they investigate the harmful health effects. After reevaluating their safety and effectiveness, FDA recently issued a final rule stating that most consumer products containing triclosan, triclocarban and several other anti-bacterial agents can no longer be marketed. The final ruling came about because manufactures were not able to demonstrate that the chemicals were safe or more effective in preventing illness and the spread of some infections.

According to the final rule, manufactures have one year to phase out the chemicals. However the final rule does not affect consumer hand sanitizers or wipes, or antibacterial products that are used in a health care setting.

While working to phase out use of these products, Professor Halden says that it's key to change the public perception about the danger of microorganisms. There is good evidence that the microbes living in and on our bodies have a huge, largely positive, impact on our health. Professor Halden says it's time to change our mindset about micro-organisms.

Rolf Halden: "One of the reasons we use antimicrobial products is that the people are afraid of micro-organisms. And maybe this is an educational challenge. But we have to gain a better understanding and disseminate this information to the general public that microorganisms are not bad. Indeed, they are essential. They are the principal agent that allows people to digest their food, and allows them to stay healthy."

"So, there's a misperception that we have to kill every last microorganism in order to be safe, and that is certainly not true. Actually that is absolutely wrong."

Narrator: That's a valuable reminder that microorganisms serve important functions for us—boosting our immunity, protecting us from pathogens, and aiding our digestion. If you're interested in learning more about the collection of microbes living on and inside of our bodies, check out our podcast episode, titled The Microbiome.

So what else can you do, as a consumer, to limit your exposure to triclosan and triclocarban?

First, consumers can avoid products that are labeled antimicrobial or antibacterial. Antibacterial soaps and hand sanitizers are not necessary for removing germs from your hands. Plain soap and water are equally effective at preventing illness.

Second, when possible, read labels. Make sure to check the ingredient lists of personal care items, such as deodorant, toothpaste, and cosmetics, and avoid buying triclosan and triclocarban-containing products. Online databases can also help you find products that don't contain these chemicals.

Finally, sensitive populations should be especially careful to limit use. Children may be more sensitive to these chemicals, so limiting their exposure now could have significant health benefits over time. Pregnant women and breastfeeding mothers should also limit use, since these chemicals have the potential to cause health problems for developing children.

Thanks to today's guest Professor Rolf Halden of Arizona State University.

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