

Antimicrobial/Antibacterial Products: Is Cleaner Really Safer?

By ACSH Staff — February 26, 2002

Nearly a hundred and fifty products making antimicrobial/antibacterial claims had found their way into the consumer market since 1996 (the terms *antimicrobial* and *antibacterial* are often used interchangeably, technically antimicrobials fight a variety of organisms while antibacterials target bacteria). Today, there are over seven hundred such products on the market. From toys and food preparation items to health and beauty aids, manufacturers have convinced consumers that the use of products embedded with triclosan (a broad spectrum germicide) or other active antimicrobial/antibacterial ingredients will lower the risk of infection.

"Germs have become the buzzword for a danger people want to eliminate from their surroundings. In response to these messages, people are buying antibacterial products because they think these products offer health protection for them and their families," said Stuart Levy, M.D., director of the Center for Adaptation Genetics and Drug Resistance, Tufts University School of Medicine in Boston in his article "Antibacterial Household Products: Cause for Concern" (Centers for Disease Control, *Emerging Infectious Diseases*, vol. 7, no. 3, June 2001). Dr. Levy has written articles on antibacterials and their active ingredient, triclosan, as well as antibiotic use and resistance. "They are now being added to products used in healthy households, even though an added health benefit has not been demonstrated," he wrote.

Triclosan has been used safely for more than a quarter of a century in hospital soaps, dermatologic preparations, underarm deodorants, and deodorant soaps. Some researchers and health workers are concerned, however, that too much germ-fighting power on a household level could be hazardous to our health.

A False Sense of Security

With widespread or increased use of antimicrobial/antibacterial products, there are several cautions worth noting. First, the National Centers for Disease Control and Prevention (CDC) in Atlanta is concerned that the public may develop a false sense of security and may not be aware of the continued need for valid hygienic practices such as hand-washing. The CDC says that clean hands would go a long way toward preventing 79 million cases of food-related illnesses that occur each year in the U.S. "If you have good handwashing technique, antimicrobial soap is not necessary," the CDC states.

Second, most of the products make an antimicrobial/antibacterial claim, but many childhood and adult communicable diseases are viral in nature, not bacterial. Two main types of germs bacteria and viruses cause most infections. Antibiotics can cure bacterial infections but not viral infections. A person recovers from a viral infection (sore throats, colds) when the illness has run its course.

Third, could the widespread use generate a strain of resistant bacteria, causing them to lose their effectiveness? Dr. Levy equates antibacterial substances to antibiotics. "Antibiotics are critical to the treatment of bacterial infections," he explained in a presentation at the 2000 Emerging Infectious Diseases Conference in Atlanta, GA. "However, after years of overuse and misuse of these drugs, bacteria have developed antibiotic resistance, which has become a global health crisis. The relatively recent increase of surface antibacterial agents or biocides into healthy households may contribute to the resistance problem." A study conducted by Dr. Levy and geneticists at Tufts investigated whether widespread use of triclosan could generate a strain of resistant bacteria, causing it to lose its effectiveness. The results were first published in the August 6, 1998 edition of the scientific journal *Nature*. Although they did not find resistant bacteria that are the product of triclosan exposure, they found that the compound targets a specific genetic site, increasing the potential for developing a resistant strain.

Manufacturers Point to Benefits

Manufacturers of these products believe that the heightened consumer awareness regarding the transmission of infectious diseases has stimulated the need for germ protection products. Empyrean Bioscience, for example, markets a line of germ protection products including a hand sanitizer/first aid antiseptic, antibacterial towelettes, and an antibacterial surface disinfectant under the brand names Preventx and Coleman with Advanced Preventx. President and CEO, Richard C. Adamany, says that, "In-vitro studies conducted by independent laboratories show that Preventx kills chlamydia, E. coli, gardnerella, gonorrhea, klebsiella, proteus, pseudomonas, salmonella, serratia marcescens, shigella, staph aureus, strep, trichomoniasis, hepatitis B, herpes I and II, HIV, and candida."

The Soap and Detergent Association (SDA) agrees with Adamany, stating on their website, "Personal cleansing and household cleaning products that contain an active antibacterial or antimicrobial ingredient provide extra protection against germs, including those that may cause disease," they state on their website. They note that when you wash with an antimicrobial, "a very small amount of antibacterial ingredient is deposited on the skin that keeps the number of germs at a significantly reduced level for an extended period of time." They note that products designed to kill odor-causing bacteria have been on sale since the 1920s.

When Are You Clean Enough?

A study published in the October 1999 issue of *Dairy, Food and Environmental Sanitation* examined the effectiveness of four different handwashing regimens at reducing a transient marker microorganism (E. coli) from hands. The researchers worked with twenty people to evaluate four different configurations of products intended for use in hand cleansing: ordinary soap, an antimicrobial, an alcohol gel hand sanitizer, and a two-step application of antimicrobial and alcohol gel. The most effective regimen was use of the antibacterial soap followed by the alcohol gel hand

sanitizer. Either of these products used alone proved no more effective than the ordinary, non-antibacterial soap (see Colorado State University Cooperative Extension, SafeFood Rapid Response Network, *SafeFood News*, Spring 2000, vol. 4, no. 3).

Does that mean we should all start a two-step wash process? "Plain soap is considered to be adequate for the purpose of preventing infectious agents found transiently on hands or spread by the fecal-oral route or from the respiratory tract," wrote Linda Boyette, a Family and Consumer Education agent with the North Carolina Cooperative Extension Service (in *Nutrition, Wellness & You*, July 2001). "Unless you are performing invasive surgery or have extensive contact with blood and body fluids, plain soap is recommended for handwashing."

"Mild, non-antimicrobial soap should suffice for routine bathing," explained Elaine Larson, an M.D. and a professor at Columbia's schools of nursing and public health, in a paper in *Emerging Infectious Disease*, CDC, vol. 7, no. 2, Mar.-Apr. 2001. "Available data do not support a recommendation for bathing with antimicrobial products."

Yet antimicrobial/antibacterial agents are not only in hand soaps, dishwashing liquids, sponges and dishcloths, but cutting boards, toys and furniture. "Among the newer products in the antibacterial craze," explained Dr. Levy at the conference, "are antibacterial window cleaners and antibacterial chopsticks. Antibacterial agents are now in plastic food storage containers in England and touted in public laundries in Italy. In the Boston area, you can purchase a mattress completely impregnated with an antibacterial agent. Whole bathrooms and bedrooms can be outfitted with products containing triclosan, including pillows, sheets, towels, and slippers."

Has the public adopted a whole new definition of clean? It's one thing to be free of dirt, but must our homes and bodies be free of microbes and sterile? Are Americans striving for a level of cleanliness once reserved for surgical units? Dr. Levy suggested to conference attendees that, "We reserve antibacterial products in the household for the care of vulnerable patients, those who are extremely ill or undergoing therapies which compromise their immune systems and their host defenses." Most people, however, simply don't need to be that clean.

Regulatory Measures

The Food and Drug Administration (FDA) is keeping an eye on the issue of antibacterial products for consumers and waiting for more definitive evidence of possible dangers before asserting more regulatory authority. Household cleaning products designed to kill germs on surfaces are generally regulated by the U.S. Environmental Protection Agency (EPA).

Household cleaning products intended to kill germs on inanimate surfaces are typically said on their labels to disinfect, kill bacteria, or sanitize. Depending on their active ingredients, these products may kill a wide variety of microorganisms that can live on household surfaces.

The Association for Professionals in Infection Control and Epidemiology, Inc. (APIC) has issued a position statement from their guidelines committee on the use of antimicrobial household products (1997) that still stands today: "There is no proven infection prevention benefit in the use of these products. APIC does not advocate the use of antimicrobial household products which are marketed with the implication of preventing infections." *Cleaner*, in short, doesn't necessarily mean

you're any *safer*.

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