

Controlling Microbes with Triclosan

Apparently information has been spreading on the Internet that triclosan, a commonly used antiseptic in commercial products is a health hazard because it is akin to 2,4-D, the notorious Agent Orange. First of all, 2,4-D is a commonly used herbicide and is not Agent Orange. It was an ingredient in the notorious defoliating agent but the danger of Agent Orange was due to a contaminant called dioxin.

Triclosan bears a distant chemical resemblance to 2,4-D but is never contaminated with dioxin. There is a proliferation of products that contain antibacterial substances. These range from deodorants to toys. The ingredient used most commonly is called triclosan. It is an antiseptic, meaning it slows the growth of microorganisms, but at higher concentrations it can also be a disinfectant.

There is no doubt that we are eating more produce that comes from far away and that it undergoes more handling meaning that the likelihood of contamination is greater. But a 20-second wash with soap gets rid of 96% of bacteria and viruses on the hands. Soap does not kill bacteria but does emulsify the oily skin secretions in which bacteria are embedded, allowing these to be rinsed away with water.

Antibacterial soaps may offer another 1% protection. It is probably a good idea to use antimicrobial soaps when someone comes home from the hospital and when someone in the house is sick spraying surfaces with a disinfectant reduces the risk of spread of the disease. Otherwise the antibacterial effect is not needed. Our skin is actually covered with bacteria that eat our sweat and defend us from less friendly bacteria that would eat us. Soap should be left dry because it can actually cause bacteria to breed and pump dispensers are actually better. It is also important not to recontaminate hands after washing; that is why hospital sinks have elbow handles. Disposable towels are better than moist cloth towels, which could have festering bacteria. There is no evidence that triclosan embedded in cutting boards can stop the spread of germs. May slow the fungi and bacteria that rot the plastic.

While equating triclosan with Agent Orange is sensationalistic nonsense, there may be some concern with the overuse of the substance. It has been assumed that biocides, like triclosan, unlike antibiotics, are non-specific and that their action is due to the massive breakdown of cell membranes similar to what happens with alcohol or bleach. For this reason it has been assumed that bacteria cannot develop resistance. This has been shown to be incorrect for triclosan. Tufts researchers have shown that triclosan blocks lipid synthesis by inhibiting the activity of a key enzyme in bacterial fatty acid synthesis. The gene that codes for this enzyme can mutate and cause triclosan resistance. This means that overuse can lead to problems by causing bacterial resistance. This is a problem if some bacteria survive triclosan treatment; this may occur at distances far from where the product is used in a concentrated fashion. But such products have been used since the turn of the century. Still it is better to rely on hot water and soap for most cleaning purposes. For cutting boards, periodically wash with a spoonful of bleach in a liter of water.