

Science You Can Use

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Dear Science: I've heard that some "hand sanitizers" aren't safe or don't work. Is this true? -- Buck R.

Dear Buck: The short answer is "yes".

Here's some detail.

Until the rise of COVID-19, most consumers paid little attention to "hand sanitizers". There are many suppliers of hand sanitizers that work for specific purposes and are safe to use. But for the last few months, in part based on the recommendations of public health professionals, the demand for hand sanitizers has greatly exceeded the supply. Unfortunately, this demand has inspired a few people who are intent on making fast money, and who do not care about your health and safety, to make and sell dangerous or useless products under the label "hand sanitizer".

What do you need to know and what can you do to maximize your chances of buying hand sanitizers that are safe and effective?

1. The term "hand sanitizer" by itself is meaningless. No US or state government organization regulates the safety or efficacy such products. It is of course against product liability law to sell products that cause harm, and no seller in the US wants to be sued because he/she sold a product that is dangerous or has been misrepresented. Product liability law, the threat of lawsuits, and robust competition, however, at best discourage dangerous or useless products from being sold.
2. Read the label carefully. It should state that the product has an "ethanol" or "ethyl alcohol" concentration of at least 60%. The word "alcohol" by itself is not enough. Why? The term "alcohol" refers to an infinitely large class of different substances and mixtures of substances, only a few of which are safe and are useful for sanitizing hands. The US Food and Drug Administration (FDA) has recently discovered (see <https://www.fda.gov/drugs/drug-safety-and-availability/fda-updates-hand-sanitizers-methanol>) that some "hand sanitizers" on the market contain
 - a. methanol – sometimes called "wood alcohol". Methanol is toxic to humans and can be absorbed directly through the skin. If ingested, methanol can kill.
 - b. denatured ethyl alcohol, which is ethyl alcohol mixed with various other substances that are intended to strongly discourage its consumption by humans.
 - c. ethyl alcohol at a concentration of less than 60%.
 - d. no sanitizing agent of any kind
3. The brand name of the product. All else being the same, buy brand names you recognize.

What are the chances that you will inadvertently purchase one of the hand sanitizers that is on the FDA's warning list or that is otherwise questionable? High enough. I happen to shop at a large discount store that is part of one of the largest companies in the world. I also shop at a

grocery store that is part of one of the grocery conglomerates in the US. In the last few weeks, I've purchased, from those stores, "hand sanitizers" whose labels say they contain "alcohol" but do not say what kind, or state they contain ethyl alcohol but do not state its concentration, or have no brand name, or various combinations of the above. At the time I bought them, they were the only items labeled "hand sanitizer" in those stores.

In addition, a few weeks ago I queried the web site of one of the largest online retailers in the US for "hand sanitizers". The response to that query featured a product that is on now on the FDA "dangerous" list. When I made the same query on 31 July 2020, the product could not be found.

Product labels, of course, do not guarantee anything, but we must at least provisionally trust something. As James Thurber wrote, "There is no safety in numbers, nor in anything else." (from "The Fairly Intelligent Moth", in *Fables for Our Time*, Harper Collins, 1952).

Most, but not all, unsafe "hand sanitizer" products the FDA has tested to date were or are manufactured in China or Mexico. This does not mean that all, or even most, hand sanitizers made in China or Mexico are unsafe or useless. Many safe and useful products we use every day, including auto, pharmaceutical, and toothpaste components, and clothing, food, cell phones, and computing equipment come from those countries. Almost all products sold in the US depend in some way on at least one component made in China or Mexico. Several components of the US's national-security-critical systems are manufactured only in China.

Even the hand sanitizers that are safe and work are *not* the first line of defense against COVID-19. What is? Like all diseases, this one is supremely indifferent to our politics, rights, wrongs, and religious convictions. As every public health professional advises, wear a mask in public, maintain 6-foot distancing from others where you can, avoid gatherings of more than 10 people where social distancing is not possible, and wash your hands thoroughly after you have been in public places. If you have any COVID-19 symptoms, or have been in contact with anyone who has, get tested immediately. If you test positive or have been around someone who has tested positive, self-quarantine for at least two weeks.

For further information, see <https://www.cdc.gov/coronavirus/2019-ncov/prevent-getting-sick/prevention.html>.

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