

# Hand Sanitizer, Triclosan, and Thyroid Health

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Triclosan is a chemical that is commonly used in personal care products, as well as in household products, and even some medical devices. It has broad-spectrum anti-microbial activity against most gram-negative and gram-positive bacteria **(1)** <sup>[1]</sup>. Because of this, one of the most common uses of triclosan is in hand sanitizer products. Millions of people use hand sanitizer to kill the germs they're exposed to, but most don't realize that there are some potential risks of using products with triclosan.

In addition to commonly being found in hand sanitizer, triclosan is also commonly found in antibacterial soap, as well as in some toothpastes. The research shows that triclosan has been detected in breast milk, urine and plasma, with levels of triclosan in the blood correlating with consumer use patterns of the antimicrobial **(2)** <sup>[2]</sup>. What I'd like to do below is discuss some of the other research involving the potential health risks of using triclosan:

## **1. Using hand sanitizers consisting of triclosan can lead to antimicrobial resistance.**

Some people reading this are aware that many bacterial strains have become resistant to oral antibiotics. This of course is a big problem, as while antibiotics are definitely overused, the truth is that antibiotics can save lives in certain situations. But many people take them unnecessarily, and because some don't take the antibiotics for the recommended duration this has contributed to the development of bacteria that are resistant to these antibiotics.

It's a similar concept with triclosan, as these days you see hand sanitizer dispensers almost everywhere you go. I could understand wanting to practice good hygiene, but what happened to using regular soap and water? And there now is evidence that the overuse of triclosan has been linked to antimicrobial resistance to *Escherichia coli*, *Salmonella enterica*, and *Staphylococcus aureus* **(3)** <sup>[3]</sup> **(4)** <sup>[4]</sup>.

## **2. Triclosan is an endocrine disruptor.**

Having endocrine disrupting properties obviously is a concern with everyone, but it is arguably an even bigger for concern with those who have an existing thyroid or autoimmune thyroid condition. Current laboratory studies in various species provide strong evidence for its disrupting effects on the endocrine system, especially reproductive hormones **(5)** <sup>[5]</sup>. And there is evidence that triclosan directly affects thyroid hormone, as one study showed that serum thyroid hormone levels were suppressed by triclosan

**(6)** <sup>[6]</sup>, while another study mentioned that triclosan impairs thyroid homeostasis **(7)** <sup>[7]</sup>. One study did show that triclosan toothpaste had no detectable effect on thyroid function **(8)** <sup>[8]</sup>. But while there is evidence that triclosan-based toothpastes provide a more effective level of plaque control and gingival health **(9)** <sup>[9]</sup>, I still would be cautious about using a toothpaste that includes this chemical.

**3. Triclosan can increase the progression of cancer.** There is evidence that triclosan can cause cancer, or enhance cancer progression. One study showed that the progression of breast cancer cells was enhanced by triclosan, as well as another chemical called octylphenol **(10)** <sup>[10]</sup>. Keep in mind that this isn't suggesting that triclosan will cause breast cancer, but it may promote the progression of breast cancer that is already present. Another study showed that prostate cancer cells are promoted by triclosan **(11)** <sup>[11]</sup>. Yet another study showed that triclosan is a promoter of liver tumors **(12)** <sup>[12]</sup>. To be fair, these studies were conducted on rats, and this doesn't always translate to humans. However, we also can't assume that triclosan is safe in humans just because there is a lack of human studies. In fact, I would take the opposite approach with this and other chemicals, as I would assume something isn't safe unless if there are human studies which prove otherwise.

**4. Triclosan has a negative effect on muscle health.** I came across some evidence which showed that triclosan weakens cardiac and skeletal muscle contractility and has a negative impact on muscle health **(13)** <sup>[13]</sup>.

### **Are There Natural Alternatives To Triclosan?**

Hopefully you now realize that it is a good idea to avoid hand sanitizer which includes triclosan as one of the ingredients. However, you might be wondering if there are any natural products which can be used to sanitize your hands. Here are a few suggestions.

**Soap and water.** Yes, I realize that in some cases soap and water might not be available when you're on the run, and so I'll list a few other options below. But washing your hands with soap and water on a frequent basis is probably the best way to practice good hygiene. While some people like myself use natural soaps in their home, if you are washing your hands outside then you probably will be using a soap that has chemicals, and perhaps even triclosan. And so you of course want to wash your hands as much as you can in your own house, and try your best to minimize the use of soaps which include fragrance, triclosan and triclocarbon.

**Use a "natural" hand sanitizer.** There are a few hand sanitizers that don't include the toxic ingredients I mentioned above. Of course this doesn't mean that they don't have other ingredients that you might need to be aware of. What I recommend is to visit the Skin Deep database from the Environmental Protection Agency, as you can do a search for hand sanitizer

and you can see which hand sanitizers are considered to be “low hazard”. And when you click on a product you not only can look at the ingredients, but it will also list any concerns with each of the ingredients with regards to cancer risk, developmental and reproductive toxicity, and allergens and immunotoxicity.

**Use essential oils.** Certain essential oils have antimicrobial properties, including thyme, origanum, mint, cinnamon, salvia and clove **(14)** <sup>[14]</sup>. In fact, one review study discussed how essential oils can potentially combat bacterial antibiotic resistance **(15)** <sup>[15]</sup>. Another study actually compared the effects of tea tree oil (*Melaleuca alternifolia*) versus triclosan, and found that regarding the antimicrobial efficacy, there was no difference between the soap with triclosan and the soap with the tea tree oil **(16)** <sup>[16]</sup>.

In summary, triclosan has broad-spectrum anti-microbial activity, and as a result it is commonly used in hand sanitizer, along with soaps, toothpaste, and other products. Using hand sanitizers consisting of triclosan can lead to antimicrobial resistance. In addition, triclosan is an endocrine disruptor, can increase the progression of cancer, and might have a negative effect on muscle health. Some natural alternatives to triclosan include using plain soap and water, using a natural hand sanitizer, and certain essential oils also have antimicrobial properties .

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URLs in this post:

- [1] **(1)**: **<http://www.ncbi.nlm.nih.gov/pubmed/20859822>**
- [2] **(2)**: **<http://www.ncbi.nlm.nih.gov/pubmed/21462230>**
- [3] **(3)**: **<http://www.ncbi.nlm.nih.gov/pubmed/16922622>**
- [4] **(4)**: **<http://www.ncbi.nlm.nih.gov/pubmed/10882683>**
- [5] **(5)**: **<http://www.ncbi.nlm.nih.gov/pubmed/26184583>**
- [6] **(6)**: **<http://www.ncbi.nlm.nih.gov/pubmed/20562219>**
- [7] **(7)**: **<http://www.ncbi.nlm.nih.gov/pubmed/21058171>**
- [8] **(8)**: **<http://www.ncbi.nlm.nih.gov/pubmed/22197412>**
- [9] **(9)**: **<http://www.ncbi.nlm.nih.gov/pubmed/23518778>**
- [10] **(10)**: **<http://www.ncbi.nlm.nih.gov/pubmed/24684733>**
- [11] **(11)**: **<http://www.ncbi.nlm.nih.gov/pubmed/25682003>**
- [12] **(12)**: **<http://www.ncbi.nlm.nih.gov/pubmed/25404284>**
- [13] **(13)**: **<http://www.ncbi.nlm.nih.gov/pubmed/22891308>**
- [14] **(14)**: **<http://www.ncbi.nlm.nih.gov/pubmed/12678685>**
- [15] **(15)**: **<http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3950955/>**
- [16] **(16)**: **<http://www.ncbi.nlm.nih.gov/pubmed/24402336>**

