

Bleach and Alcohol Make Chloroform – Why You Shouldn't Mix Disinfectants

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Mixing disinfectants is dangerous! Bleach and alcohol combine to produce chloroform.

Disinfectants are important for preventing the spread of diseases like [coronavirus](#), but don't mix them! Mixing bleach and alcohol forms chloroform, a sedative powerful enough to make you pass out or potentially die. Actually, you should avoid mixing bleach with any disinfectant or cleaner to avoid producing toxic fumes.

Bleach and Alcohol Chemical Reaction

The key ingredient in household bleach is sodium hypochlorite. Sodium hypochlorite reacts with ethanol, isopropyl alcohol, and other [types of alcohol](#) to make chloroform (CHCl_3), hydrochloric acid (HCl), and other compounds, such as dichloroacetate or chloroacetone. Ethanol and isopropyl alcohol occur in many disinfectants, including [hand sanitizer](#).

Some people may think mixing bleach and hand sanitizer boost disinfecting power, but chemicals in mixtures often react with one another to yield products with undesirable properties. Usually, the mixture forms unintentionally, like from cleaning up an alcohol spill with bleach or by mixing cleaners. Bleach, in particular, is highly reactive and shouldn't be combined with other products.

Chloroform Risks

Chloroform is a dangerous chemical. It's readily absorbed into the body through skin or by inhalation or ingestion. Chloroform irritates skin, eyes, and the respiratory system. It damages the eyes, lungs, nervous system, skin, liver, and kidneys, and may cause cancer. However, the immediate risk is that it acts as powerful anesthetic that can cause unconsciousness or "sudden sniffer's death," a fatal cardiac arrhythmia.

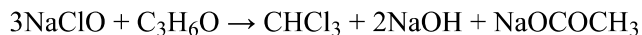
Suspect chloroform exposure if you smell an ether-like odor or a heavy, sweet scent. If you think you've been exposed, immediately leave the area and call Poison Control (800-222-1222) or seek medical attention. Chloroform in oxygen (and air, which contains oxygen) degrades and forms phosgene, carbon monoxide, dichloromethane, hydrochloric acid, carbon dioxide, and formyl chloride. These are also toxic chemicals that should be avoided. For example, phosgene is the chemical agent that caused about 85% of the deaths from chemical weapons exposure in World War I.

How to Dispose of a Bleach and Alcohol Mixture

If you accidentally mix bleach and alcohol, the area must be well-ventilated before it's safe to return. Use caution before returning and do not enter if you smell chloroform or any unusual scent. After the reaction dissipates, dilute the mixture with lots of water and rinse it away as quickly as possible.

Bleach and Other Chemicals

The mixture of bleach and acetone also produces chloroform:



Mixing [bleach with vinegar](#), ammonia, or most cleaners produces toxic fumes.

References

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