



The Facts About Hand Sanitizers

Hand sanitizers seem to be everywhere...schools, workplaces, playgrounds, gas stations, homes and hospitals. Hand sanitizers have been associated with a significant reduction in microorganisms on skin. They are inexpensive and convenient, but not without danger. Recently, email accounts and news stories have surfaced, alleging that children have developed toxic effects from ingesting small amounts of hand sanitizers. These accounts have resulted in questions about whether they should be used in schools and other locations where children, and in some cases adults, frequent. While these products can be harmful if ingested, they are perfectly safe and effective when used in the correct amount and in the correct manner. It is the dose that determines if it's a poison.

Hand sanitizers contain either ethyl alcohol or isopropyl alcohol. Ethyl alcohol is also called ethanol and is the same alcohol found in beer, wine and other liquors, as well as in perfumes, after shave lotions and mouthwash. Isopropyl alcohol is commonly known as rubbing alcohol. The concentration of alcohol in hand sanitizers varies from 45% to 95%, with the most commonly used products in the range of 60-65%.

A hand sanitizer pump dispenses approximately ½ teaspoonful or 2.5ml of hand sanitizer. If this pea-sized amount is swallowed before it can be rubbed into the hands, it would not pose a problem to even a small child. Once it is rubbed into the hands, the alcohol evaporates and is no longer present.

How much hand sanitizer would be dangerous? An average 2 year old, weighing 30 pounds, would have to drink 4 teaspoonfuls of most hand sanitizers before requiring medical attention. To put this into perspective, that would be 4 mouthfuls or 8 pumps of the product. Most children would be unable to consume this quantity due the small amount dispensed with each pump and because of mouth irritation that would be produced by the product.

As with other household products and medicines, the key is proper storage and usage. Small children should be supervised when using hand sanitizers. Children should be instructed that 1 or 2 pumps are all they need to clean their hands. When not in use, the product should be stored properly in a safe place.

Implications for teens and adults are similar. The products are safe and effective when used properly. However, because many of the products contain ethanol, there is a potential for abuse.^{1,2} Employers who make the product available should be suspicious if large quantities of the hand sanitizers are missing.

If it is suspected that someone has swallowed some hand sanitizer, the Maryland Poison Center should be contacted right away by dialing 1-800-222-1222. The specialists will do calculations based on the weight of the person and the amount ingested in order to determine the best treatment for the patient. The pharmacists and nurses at the poison center are available 24 hours a day, 7 days a week. Call the poison experts for help with hand sanitizers as well as other products that are used in an inappropriate amount or manner.

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1. Doyon S, Welsh C. Intoxication of a prison inmate with an ethyl alcohol-based hand sanitizer. *NEJM* 2007;356:529-30.
2. Emadi A, Coberly L. Intoxication of a hospitalized patient with an isopropanol-based hand sanitizer. *NEJM* 2007; 356:530-31.