

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. Occasionally, internet and news stories surface, 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. The dose determines if it is a poison.

Hand sanitizers contain either ethyl alcohol or isopropyl alcohol. Ethyl alcohol, also called ethanol, 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. Swallowing a pea-sized amount before rubbing it into the hands 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 is dangerous? An average 2-year-old weighing 30 pounds would have to drink four teaspoonsful of most hand sanitizers before requiring medical attention. To put this into perspective, that would be four mouthfuls or eight pumps of the product. Most children are unable to consume this quantity due the small amount dispensed with each pump. In addition, the products are irritating to the mouth.

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

A look at nationwide poison center data shows children 6-12 years old had more intentional ingestions of alcohol-containing hand sanitizers than those without alcohol. This may suggest children in this age group see hand sanitizers as a product they can abuse. Symptoms and medical outcomes were more severe in the 6-12 age group than in younger children. Finally, the study showed more ingestions reported in this age group during the school year. The same was not found in children under the age of five years.¹

General safety 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.^{2,3} Employers who make the product available should be suspicious if large quantities of the hand sanitizers are missing.

If you suspect someone has swallowed some hand sanitizer, contact the Maryland Poison Center 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.

March 2017

1. Santos C, Kieszak S, Wang A, Law R, Schier J, Wolkin A. Reported Adverse Health Effects in Children from Ingestion of Alcohol-Based Hand Sanitizers — United States, 2011–2014. *MMWR Morb Mortal Wkly Rep* 2017;66:223–226. DOI: <http://dx.doi.org/10.15585/mmwr.mm6608a5>
2. Doyon S, Welsh C. Intoxication of a prison inmate with an ethyl alcohol-based hand sanitizer. *NEJM* 2007;356:529-30.
3. Emadi A, Coberly L. Intoxication of a hospitalized patient with an isopropanol-based hand sanitizer. *NEJM* 2007; 356:530-31.