

# Hand Sanitizer Risks

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Hand Sanitizers have 62% ethyl alcohol. That is also known as ethanol. It is also the same stuff in wine, beer and Jack Daniels. That's right: A little 2-ounce bottle = 4 shots of vodka.

The New England Journal of Medicine first warned of cases of people ingesting hand sanitizer a few months ago. Now according to the American Association of Poison Control Centers American Association of Poison Control Centers, the country's 61 poison centers are getting more calls about it. There were nearly 12,000 cases last year, up from 2005. Already, since June 2007, there have been about 6,600 cases.

I know just about everything goes from hand to mouth. And, hand sanitizer can smell especially appetizing! So, is it time we start locking up the hand sanitizer and treating it as a poison?

<http://www.cnn.com/HEALTH/blogs/paging.dr.gupta/2007/06/hand-sanitizer-on-rocks-please.html>

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## **Saskatchewan Corrections and Public Safety 2004**

Office of the Fire Commissioner Suite 310-1855 Victoria Avenue Regina, Saskatchewan S4P 3V7

[http://www.cps.gov.sk.ca/safety/fire/pdf/TC\\_AlcoholSanitizers.pdf](http://www.cps.gov.sk.ca/safety/fire/pdf/TC_AlcoholSanitizers.pdf)

**Title:** Alcohol-Based Hand Sanitizers

Over the past two years, the use of alcohol-based hand sanitizers within health care facilities has greatly increased. These products are regarded as an important aspect to improving hand hygiene practices of health care personnel and in reducing health care-associated infections with patients. Containers of hand sanitizer are typically located on wall-mounted holders from which a small amount can be dispensed prior to it being applied to hands. Since these products are dispensed and used in very small quantities, the fire hazards they present are minimal. However, alcohol is a flammable liquid and the use and storage of these products is regulated under provincial fire safety regulations.

The following is a list of recommendations to address potential fire safety hazards related to the use and storage of alcohol-based hand sanitizers within health care facilities.

1. Avoid exposure to open flames during and immediately after application. A warning should be provided to potential users of the product e.g. signage or instruction to staff.
2. This product should not be dispensed, stored or handled near any sources of ignition. Sources of ignition include, but are not limited to, open flames, smoking, cutting and welding, hot surfaces, frictional heat, static, electrical and mechanical sparks, spontaneous ignition, heat producing chemical reactions, radiant heat.
3. Alcohol-based products may have hazardous reactions with strong oxidizers or inorganic acids. This product should not be dispensed, stored or handled near any oxygen sources, oxidizers or inorganic acids.
4. Dispensers containing this product should not be located in a required means of egress or exit system. Local authorities may provide guidance on acceptable installation of dispensers.
5. The storage of product not for immediate use should be located in an acceptable storage room or cabinet in accordance with provincial fire safety regulations or local by law.

**Active ingredient**

Ethyl Alcohol 62%

**Warnings**

- **For external use only.**
- **Flammable, keep away from fire or flame.**
- **Do not use** in the eyes. In case of contact, rinse eyes thoroughly with water.
- **Stop use and ask a doctor if** irritation and redness develop and persist for more than 72 hours.
- **Keep out of reach of children.** If swallowed, get medical help or contact a Poison Control Center right away.
- May discolor certain fabrics

**Directions** - Supervise children in the use of this product**Inactive ingredients**

water, isopropyl alcohol, glycerin, carbomer, **carcinogenic** **fragrance**, aminomethyl propanol, **antifreeze** **propylene glycol**, isopropyl myristate, and tocopheryl acetate

**Questions?** call 1-888-4PURELL (1-888-478-7355), weekdays, 9AM - 5PM EST

- **Does Purell® kill the good germs and bad germs?**  
Purell® does eliminate some of your good germs while it gets rid of the bad germs. The same is true when washing with soap and water. However, in both cases, your body quickly regenerates the good germs. Because Purell® products have no residual antimicrobial activity, the natural flora left in the skin will resurface and repopulate quickly on the skin.
- **How does Purell® work?**  
Purell® combines 62% ethyl alcohol with a special blend of moisturizers to kill germs on hands and leave them feeling soft and refreshed. The alcohol breaks down the germs' cell walls causing them to die. A light layer of moisturizers remains to condition the hands.
- **How long after I use Purell® does it kill germs?**  
The product kills germs on contact, but once it has evaporated, the germ-killing action has stopped.
- **Is Purell® flammable?**  
The product is flammable but requires a flame, spark or other ignition source. It is not recommended that it be stored in the car due to the potential of extreme temperatures.
- **Is Purell® safe for children?**  
Purell® is safe for children when used according to the directions. Children should be supervised when using Purell®. All Purell® Instant Hand Sanitizers contain an additive that tastes bitter and makes Purell® undesirable to drink. As with all drug products, consult your physician before using on babies or young children.
- **Is Purell® toxic? Purell® is not toxic or unsafe when used as directed.**
- **Will Purell® stain?**  
Because alcohol is a solvent and Purell® is 62% ethyl alcohol, it may dissolve floor wax or leave a dull or discolored spot if dripped on the floor. It may also discolor certain fabrics or surfaces.
- **Will Purell® sting on cuts or burns?**  
Yes, Purell® will sting if applied to an open cut or burn, just as any alcohol would.

## Definition of Ethanol

**Ethanol**, also known as **ethyl alcohol**, **drinking alcohol** or **grain alcohol**, is a flammable, colorless, slightly toxic [chemical compound](#), and is best known as the [alcohol](#) found in [alcoholic beverages](#). Ethanol is less polar than water and used in [perfumes](#), [paints](#) and [tinctures](#).

Ethanol is used in [medical wipes](#) and in most common antibacterial [hand sanitizer](#) gels at a concentration of about 62% ([percentage](#) by weight, not volume) as an [antiseptic](#). Ethanol kills organisms by denaturing their [proteins](#) and dissolving their [lipids](#) and is effective against most [bacteria](#) and [fungi](#), and many [viruses](#), but is *ineffective* against bacterial [spores](#). Alcohol does not act like an [antibiotic](#) and is not effective against [infections](#) by ingestion, nor can bacteria develop resistance.

## Metabolism and toxicology

Pure ethanol is a tasteless liquid with a strong and distinctive odor that produces a characteristic heat-like sensation when brought into contact with the tongue or mucous membranes. Ethanol adds a distinctive taste to drinks. When applied to open wounds (as for disinfection) it produces a strong stinging sensation. Pure or highly concentrated ethanol may permanently damage living tissue on contact. Ethanol applied to unbroken skin cools the skin rapidly through evaporation.

Ethanol is a central nervous system depressant and has significant psychoactive effects in sublethal doses.

## Effects by dose

Different concentrations of alcohol in the human body have different effects on the subject. The following lists the effects of alcohol on the body, depending on the [blood alcohol concentration](#). Also, tolerance varies considerably between individuals.

- [Euphoria](#) (*BAC = 0.03 to 0.12%*)
  - They may become more self-confident or daring.
  - Their attention span shortens. They may look flushed.
  - Their judgment is not as good — they may express the first thought that comes to mind, rather than an appropriate comment for the given situation.
  - They have trouble with fine movements, such as writing or signing their name.
- [Lethargy](#) (*BAC = 0.09 to 0.25%*) They have trouble understanding or remembering things.
- [Confusion](#) (*BAC = 0.18 to 0.30%*) Profound confusion, Heightened emotional state, Poor coordination.
- [Stupor](#) (*BAC = 0.25 to 0.40%*) Movement severely impaired; lapses in and out of consciousness.
- [Coma](#) (*BAC = 0.35 to 0.50%*) Heart rate drops. Death usually occurs at levels in this range.
- [Death](#) (*BAC more than 0.50%*) Can cause [central nervous system](#) to fail, resulting in death.

The amount of ethanol in the body is typically quantified by [blood alcohol content](#) (BAC), the [milligrams](#) of ethanol per 100 [milliliters](#) of blood. The table at right summarizes the symptoms of ethanol consumption.

## Hazards

Ethanol-water solutions greater than about 50% ethanol by volume are [flammable](#) and easily ignited (in some cases ethanol will burn at as low as a 45% solution).