



Safer Cleaning, Sanitizing and Disinfecting during the COVID-19 Pandemic

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The Western States Pediatric Environmental Health Specialty Unit

Our purpose is to provide expertise and resources on the connection between pediatric and reproductive health and the environment.

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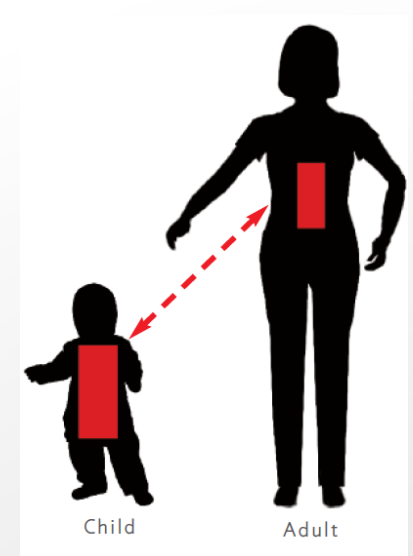
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Why should we choose safer products and use safer practices to clean, sanitize and disinfect?

- Many products used to clean, sanitize, and disinfect contain toxic chemicals.
- Children are more sensitive than adults to the health effects of toxic chemicals in the environment.
- Some health effects from these products are immediate, like an asthma attack.
- But some health effects from exposure to environmental toxins may not show up for years or even decades.



Increased disinfectant-related health effects

- In 2018, 152,861 cases of poisonings with household cleaning substances were reported to the national Poison Control Centers.
- Poison Control Centers: 40,875 bleach exposure cases were reported to the 55 U.S. Poison Control Centers this year (Jan. 1, 2020 through Sep. 27, 2020), an increase of 33% compared to the same period in 2019. There was an increase of 51% in other disinfectant exposures.
- Between March 1, 2020 and June 30, 2020 there was a 10% increase in exposures to household cleaners in children 0-5 years old when compared to 2019.

Hazards of Cleaners, Sanitizers and Disinfectants

Many cleaning, sanitizing and disinfection products sold have health effects, even though they are available at most stores.

Many cleaning and sanitizing chemicals can cause health problems, especially in children and fetuses.

Only the chemicals that kill bacteria, viruses, or mold (disinfectants) have to be labeled.

Manufacturers are not required to list all the ingredients on the label.



What is cleaning?

Cleaning

- Uses a detergent or soap and water to physically remove dirt, grime and germs from surfaces. This process does not necessarily kill germs, though **SARS-CoV-2's outer lipid layer is dissolved by soap and the virus falls apart.**
- Removes molds and allergens that can trigger asthma symptoms.

Has been found to remove as much as 99% of germs when microfiber cleaning tools are used.

What is sanitizing?

Sanitizing

- **Reduces the number of germs on hard surfaces or objects to a safer level** - at least a 99.9% reduction. Sanitizers are registered for use on bacteria, not viruses.
- For food surfaces the level should be a 99.999% reduction in microorganisms within 30 seconds.
- Sanitizing products should state on their label the surfaces they are intended to be used on.

Sanitizers are used on food preparation and contact surfaces, and mouthed toys and pacifiers.

In this PowerPoint sanitizing refers to the sanitation of objects and surfaces, not the body

What is disinfecting?

Disinfecting

- **Inactivates 99.999% of germs** on hard surfaces or objects if allowed to sit visibly wet or “dwell” on the surface for the recommended amount of “dwell” time.
- For use on:
 - changing tables
 - bathroom sinks and toilets
 - high touch areas that collect lots of germs, such as doorknobs, cabinet handles and drinking fountains.

A disinfectant must stay on the surface for at least the recommended dwell time or it will not ‘kill’ all of the germs. This may lead to the creation of “super bugs”.

Health Hazards of Cleaners, Sanitizers and Disinfectants

Key Points:

- The words “natural,” “nontoxic,” and “green” that appear on product labels are unregulated by the government.
- Researchers have found that products labeled “green” often have as many toxic chemicals as conventional cleaning products.
- Cleaning products do not have to list ingredients on the label and manufacturers do not have to prove that they are safe before they market them. Disinfectants only have to list the active ingredient that kills germs.
- These gaps in ingredient information on product labels make it difficult for the consumer to make wise choices when purchasing cleaning products.

Identifying Safer Products

The only way to know which cleaning products are safer:

Buy products certified as safer for human health and the environment by an independent third-party agency

Choose fragrance free products.



Identifying Safer Products

Third-party certified cleaning products:

-Green Seal



-EcoLogo



-EPA's Safer Choice Program



Design for the Environment's safer disinfectant project is the only agency that certifies *disinfectants* as safer for human health and the environment.



Microfiber Cloths and Mops

GREAT alternative to normal cotton rags or paper towels!

- Remove organic matter (dirt, oils, grease) as well as germs (up to 99%) from surfaces.
- Washable 500-1,000 times.
- Reduce landfill waste.
- Work well with green cleaning products/need less cleaning detergent to be effective.



Choosing Safer Disinfectants for COVID-19

Find a disinfectant with one of the Design for the Environment safer active ingredients:

- Citric acid
- Hydrogen Peroxide
- L-lactic Acid
- Ethanol
- Isopropanol
- Peroxyacetic acid



Products that combine hydrogen peroxide and peroxyacetic acid are asthmagens and respiratory sensitizers and are not considered safer.

Use the EPA's List N search tool to find a product that is effective against SARS CoV-2, the virus that causes COVID-19:

A screenshot of the EPA's List N search tool interface. The header shows the EPA logo and "United States Environmental Protection Agency". The title is "List N Tool: COVID-19 Disinfectants". On the left, there are search filters: "EPA Registration Number", "Active Ingredient" (highlighted in blue), "Use Site", "Contact Time", "Browse All", and "Keyword Search". On the right, a list of disinfectant active ingredients is shown: Dodecylbenzenesulfonic acid, Ethanol (Ethyl Alcohol), Glutaraldehyde, Glycolic acid, Hydrochloric acid, Hydrogen chloride, Hydrogen peroxide (highlighted with a red box), Hypochlorous acid, Isopropanol (Isopropyl Alcohol), L-Lactic Acid, Octanoic acid, Peroxyacetic Acid (Peracetic Acid), Peroxyoctanoic acid, Phenolic, and Potassium peroxymonosulfate. At the bottom, a search bar contains the text: "Search EPA's list of products for use against SARS-CoV-2, the virus that causes COVID-19".

Reading a Disinfectant Product Label

Look for a product with one of the safer active ingredients.

ACTIVE INGREDIENT:	
Hydrogen Peroxide.....	4.25%
OTHER INGREDIENTS:	95.75%
TOTAL	100.00%

Look for a signal word of caution or a product with no signal word.

Signal words used on disinfectants:

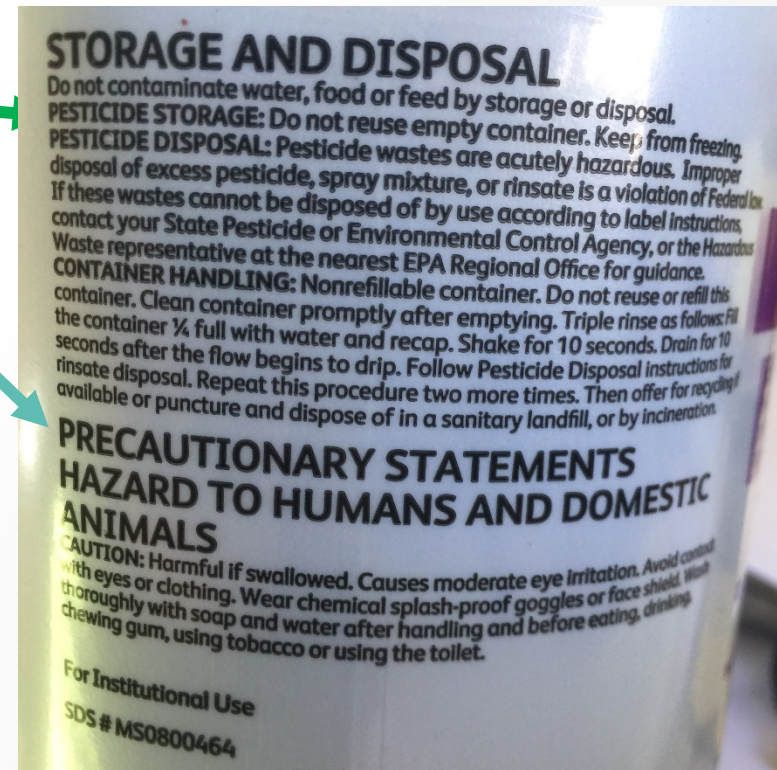
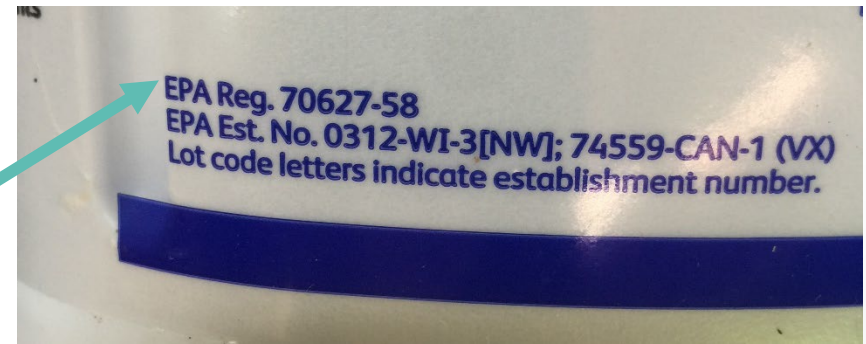
- **DANGER:** may be highly toxic when ingested, or may induce irreversible eye or skin damage if used without proper protective gear.
- **WARNING:** moderately toxic if ingested or may cause reversible skin or eye irritation.
- **CAUTION:** slightly toxic
- **NO SIGNAL WORD:** Least toxic.

KEEP OUT OF REACH OF CHILDREN
CAUTION
See additional precautionary statements on side panel.

EPA Reg. 70627-58
EPA Est. No. 0312-WI-3[NW]; 74559-CAN-1 (VX)
Lot code letters indicate establishment number.

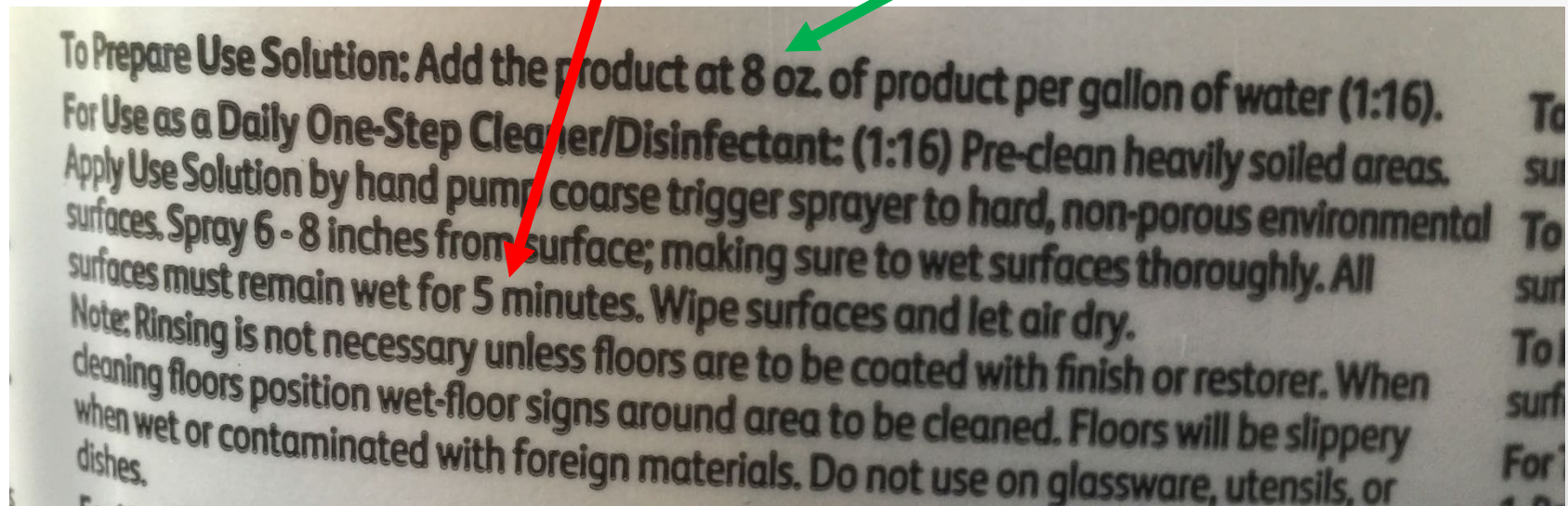
Reading a Disinfectant Product Label

- Make sure the product has an EPA registration number on the label.
- Look at the storage and disposal instructions.
- Read the precautions



Reading a Disinfectant Product Label

- Read instructions for use. Follow dilution instructions exactly. What is the contact time?



Safer Use of Disinfectants

- Always read the label!
- Open windows, increase ventilation.
- Preclean the surface before disinfecting.
- Wear gloves and wash your hands when finished. Some disinfectants require more protection or PPE (read the label!)
- If you have asthma, spray product in a stream on a towel and apply to surfaces rather than spraying the surface which increases exposure.
- Make sure you apply enough disinfectant so that it remains glistening wet for the required contact time (read the label!).

Safer Use of Disinfectants

- Always read the label!
- Don't use disinfectants on food, food contact surfaces or things that children put in their mouths. Use food contact *sanitizers*.
- Don't apply to skin.
- Don't inhale or ingest them.
- Never mix products. Poisonous gasses can form.
- Children should never use disinfectants, including disinfectant wipes.

What's the Problem with Bleach?

- Bleach:
 - can cause asthma
 - triggers asthma episodes
 - can affect breathing
 - can irritate the skin and eyes
 - was the source of 35,000 poisonings in 2011
- Children are at greater risk from breathing bleach vapors because their lungs are still developing.
- Bleach has a short shelf life. Purchase it when you are going to use it, mix solutions daily. Not all bleach products on retail shelves are disinfectants. Make sure the bleach you are using has an EPA registration number.

What's the Problem with Bleach?

- Mixing bleach with other chemicals containing ammonia, quaternary ammonium compounds (found in other disinfectants), vinegar or other acids can create a toxic gas.
- Bleach corrodes many metals. It should never be used on stainless steel, aluminum, copper, brass, marble, or granite.
- Bleach is neutralized by dirt and other organic material, so it isn't very effective when used on a surface that hasn't been cleaned.

Why Can't We Just Use a Disinfectant/ Cleaner Everywhere?

- Disinfectants don't necessarily clean surfaces. Germs can hide under dirt and grime and are not affected by disinfectants. Some disinfectants don't disinfect in the presence of dirt.
- The products used to disinfect are more toxic and usually more expensive than products used to just clean.
- Overusing antimicrobial products may also lead to the spread of "super bugs." Superbugs are germs that are resistant to disinfectants and/or antibiotics.
- NEVER use disinfecting products, or wipes, on bodies/hands!

Devices

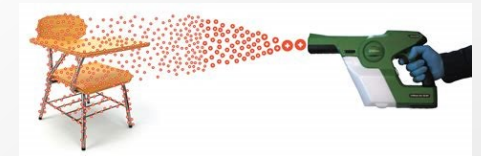
Dry steam vapor technology:

- Very effective for cleaning and rapid sanitizing/disinfecting.
- Approved for most surfaces, including food contact surfaces.
- Unfortunately, still very expensive.



Electrostatic sprayers

- May be an option if safer disinfectants are not available.



Foggers and misters:

- Depend on gravity, may not apply sufficient disinfectant to allow for required contact time
- Greater exposure to applicator



Device manufacturers must have an EPA establishment number but EPA does not evaluate the effectiveness or safety of devices!

Surfaces are only disinfected until someone touches, coughs, or sneezes on them!

REMEMBER:

- COVID 19 is primarily spread by inhaling droplets or aerosols in the air. Disinfecting doesn't help with this.
- If you touch a surface contaminated with the COVID 19 virus, you won't get sick if:
 - You don't touch your face
 - You wash your hands for 20 seconds with soap and water. Hand sanitizer is acceptable if handwashing is not possible, but it is not as effective, especially if hands are dirty.

The virus that causes COVID 19 is encased in a “lipid envelope.” This envelope is dissolved by soap and water, so washing hands and surfaces well with soap and water will dissolve the virus's surface, causing it to fall apart.

Resources

- [Western States Pediatric Environmental Health Specialty Unit \(WSPEHSU\): Safer Disinfectant Use During the COVID 19 Pandemic Fact Sheet](#)
- [Western States Pediatric Environmental Health Specialty Unit \(WSPEHSU\): Safer Disinfectant Use During the COVID 19 Pandemic Infographic](#)
- [Green Cleaning Sanitizing and Disinfecting: A Toolkit for Early Care and Education](#)
- [Holm, S. M., et al. \(2019\). "Do we know how best to disinfect child care sites in the United States? A review of available disinfectant efficacy data and health risks of the major disinfectant classes." Am J Infect Control 47\(1\): 82-91.](#)
- [EPA Design for The Environment Antimicrobial Pesticide Program Safer Disinfectants List](#)
- [EPA Disinfectants Effective Against SARS-CoV-2 \(List N\)](#)
- [EPA Cleaning and Disinfecting Decision Tool \(PDF\)](#)

Resources

- [EPA: Guidance for Cleaning and Disinfecting Public Spaces, Workplaces, Businesses, Schools and Homes \(PDF\)](#)
- [Green Seal Safer Cleaning Products List](#)
- [EPA Safer Choice Products List](#)
- [SPOT: Ecologo's sustainable product database](#)
- [Toxics Use Reduction Institute, list of safer disinfectants for COVID-19](#)
- [Envirox: Your Guide to Green Cleaning Product Certifications](#)
- [Disinfection is a Process, Not a Product \(video\)](#)
- [What are the differences between these types of products?](#)
- [Vox: How soap kills the coronavirus](#)