



CLEANING & DISINFECTION SCHOOLS



Nancy P. Bernard, MPH, REHS, CSPI
Fall SEHS Workshop November 7, 2023

Washington State Department of Health School Environmental Health & Safety Program

Our Mission

To protect and improve the
Environmental Health and Safety
condition of schools in Washington state.





What's Happening Now

- [Children and Youth Activity Guide for Air Quality](#)
- [FAQ for Children and Youth Activity Guide for Air Quality](#)
- [COVID-19 Testing in Schools](#)
- [Healthy Youth Survey Registration](#)
- [Register Now - November 7 School Environmental Health and Safety Workshop \(PDF\)](#)
- [School Workshop Agenda \(Word\)](#)

Key Resources

- [Immunization](#)
- [COVID-19 Guidance K-12 & Child Care](#)
- [Mental and Behavioral Health](#)

Resources by Topic



[Enhance Safe and Healthy Environments](#)



[Promote Healthy Behaviors](#)



[Manage Health Conditions](#)



[Prevent Injury and Violence](#)



[Promote Healthy Decision Making](#)



[Additional Resources](#)

Enhance Safe and Healthy Environments

Enhance Safe and Healthy Environments

[Expand all](#)

Air Quality



Animals and Pest Management



Infection Prevention, Cleaning, and Disinfecting



Career and Tech Ed, Arts, and Science



Contaminants



Facility and Construction



Playgrounds and Playfields



Rules and Regulations



Student Health and Safety



- [School Environmental Health and Safety Workshops](#)
- [Subscribe to Email Updates on School Environmental Health and Safety Information](#)
- [Program and Contact Information for School and Environmental Health and Safety Program](#)

Enhance Safe and Healthy Environments

[Expand all](#)

Air Quality



Animals and Pest Management



Infection Prevention, Cleaning, and Disinfecting



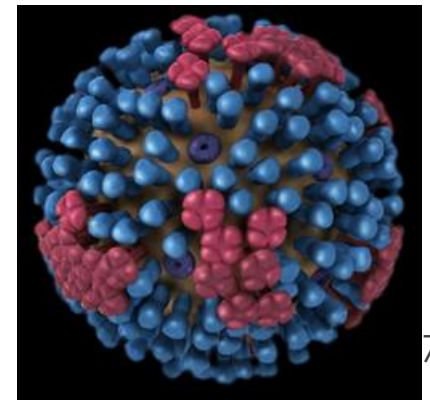
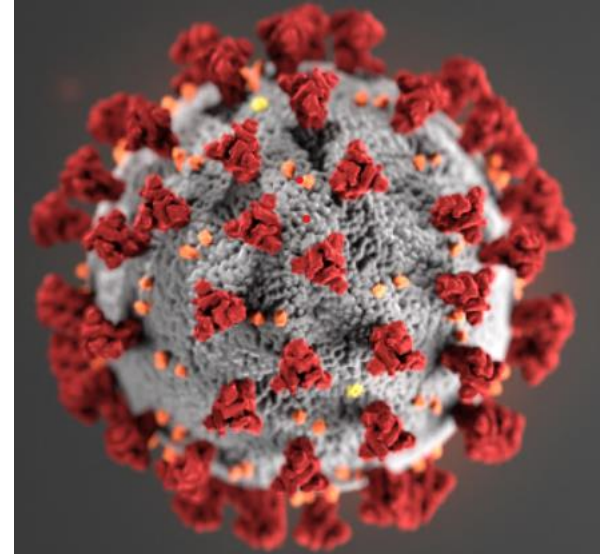
- [Classroom Cleaning - Tips for Teachers](#)
- [Cleaning and Disinfecting Public Spaces \(PDF\)](#)
- [Cleaning for Asthma-Safer Schools, CA Department of Public Health](#)
- [Cleaning, Sanitizing, and Disinfecting for Child Cares - Guide for Early Care and Education Providers \(PDF\)](#)
- [Disinfecting and Sanitizing with Bleach - Guidelines for Mixing Bleach Solutions \(PDF\)](#)
- [Handwashing to Prevent Illness at School Infectious Disease Control Guide for School Staff, OSPI, 2014 \(PDF\)](#)
- [Infectious Disease Control Guide for School Staff, OSPI, 2014 \(PDF\)](#)
- [MRSA \(Methicillin-resistant Staphylococcus aureus\)](#)

HANDLING BODY FLUIDS IN SCHOOLS

- A.** Standard Precautions
- B.** General Precautions
- C.** Hand Hygiene Procedures
- D.** Use of Gloves
- E.** Contaminated Needles, Broken Glass, or Other Sharp Items
- F.** Cardiopulmonary Resuscitation (CPR)
- G.** General Housekeeping Practices
- H.** Cleaning, Disinfecting, and Sanitizing
- I.** Disinfectants
- J.** Procedures for Cleaning and Disinfection of Hard Surfaces
- K.** Body Fluid Spills
- L.** Athletics
- M.** Procedures for Cleaning and Disinfection of Carpets/Rugs after contamination with body fluids
- N.** Disposal of Body Fluid-Containing Materials
- O.** Procedures for Cleaning and Disinfection of Cleaning Equipment
- P.** Procedures for Cleaning and Disinfection of Clothing and Linens soiled with Body Fluids
- Q.** Signs and Labels
- R.** Cleaning and Disinfecting Musical Mouth Instruments

Pathogens in Schools

- Influenza
- Measles
- *Pertussis* (Whooping Cough)
- COVID-19
- MRSA
Methicillin Resistant Staphylococcus aureus
- Norovirus
- *Clostridium difficile* (C. diff)
- *Salmonella*



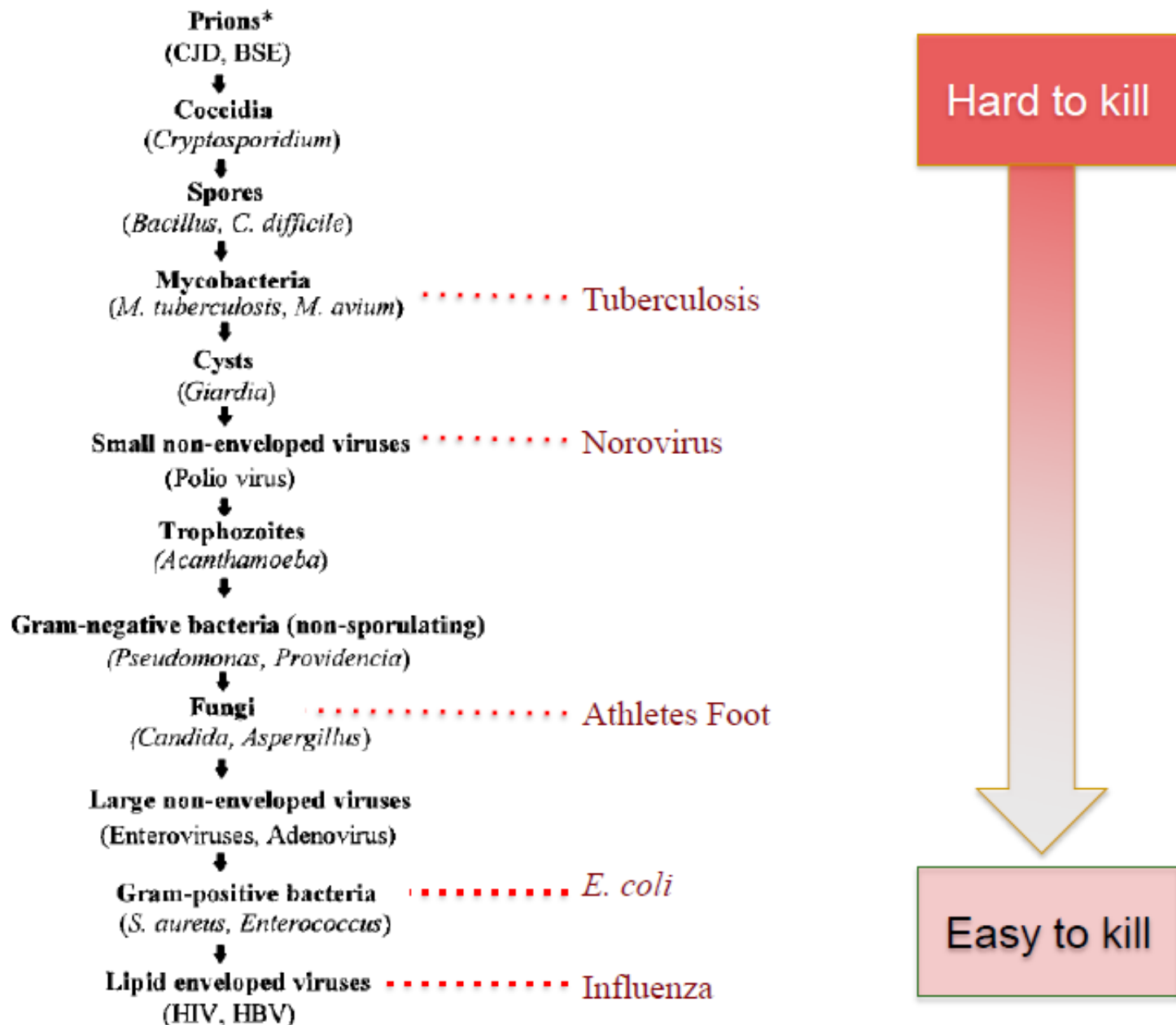
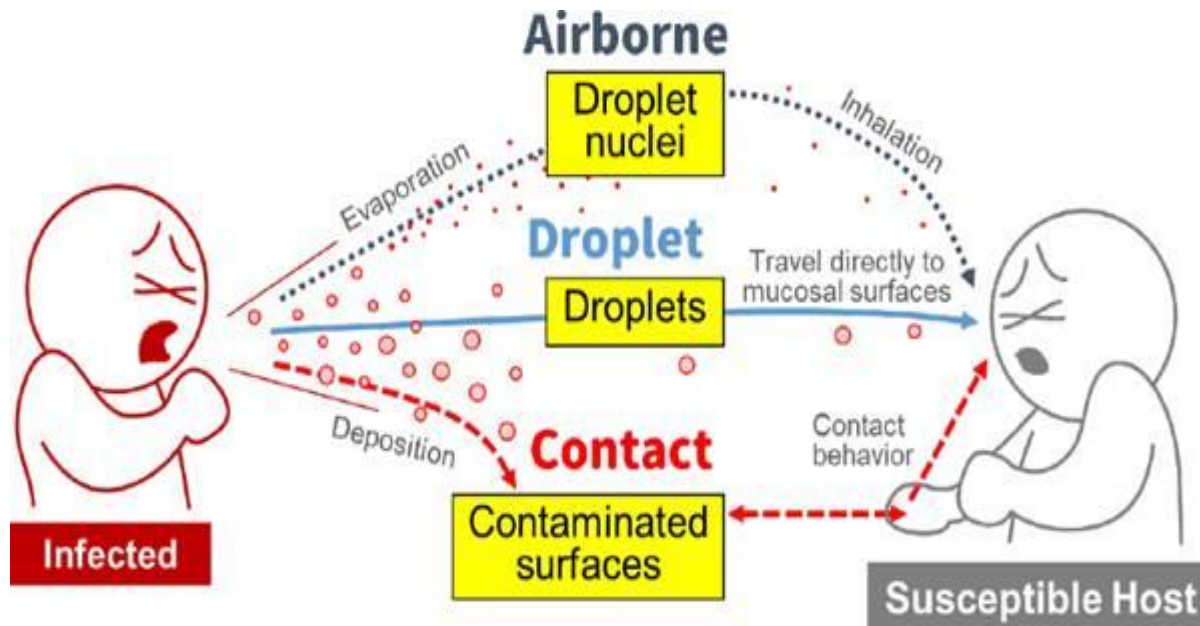


FIG. 1. Descending order of resistance to antiseptics and disinfectants. The asterisk indicates that the conclusions are not yet universally agreed upon.

How Do Viral Particles Spread?

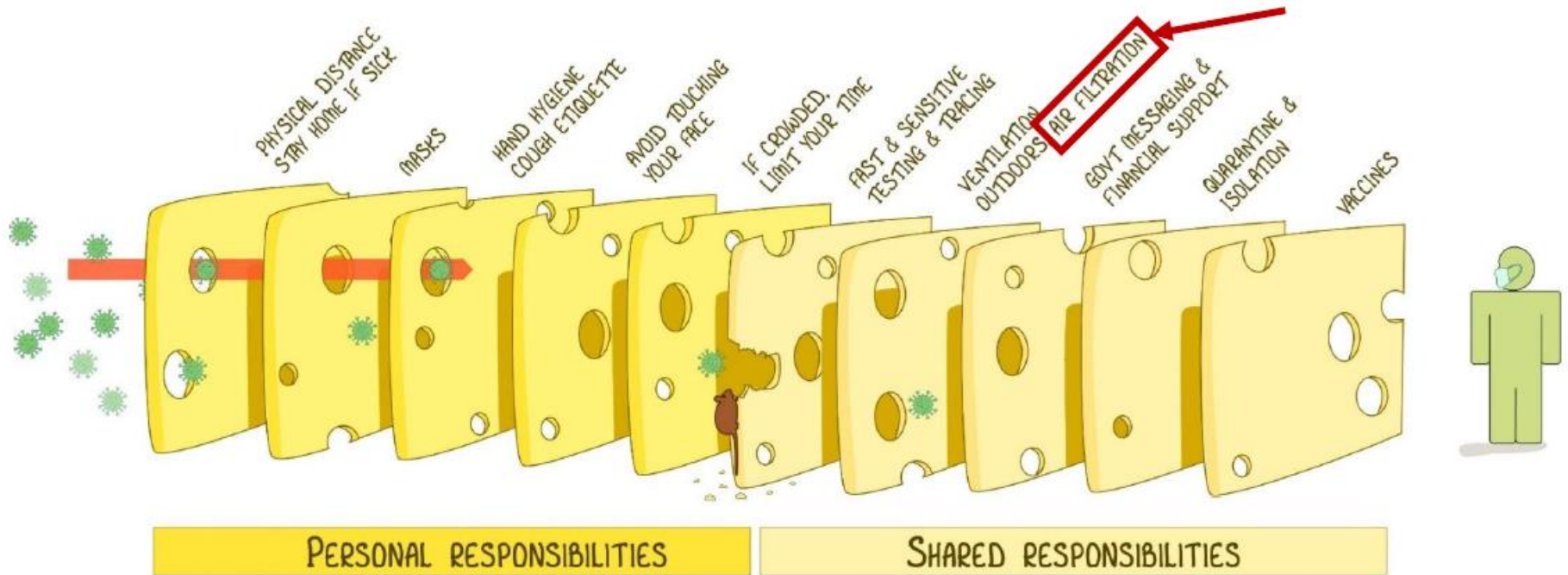


Modes of Transmission from Exhaled Pathogens (adapted from leaflet of the Office of the Prime Minister and the Ministry of Health, Labor and Welfare of Japan (2020))

Need for Layered Risk Reduction

THE SWISS CHEESE RESPIRATORY VIRUS PANDEMIC DEFENCE

RECOGNISING THAT NO SINGLE INTERVENTION IS PERFECT AT PREVENTING SPREAD



EACH INTERVENTION (LAYER) HAS IMPERFECTIONS (HOLES).
MULTIPLE LAYERS IMPROVE SUCCESS.

IAN M MACKAY
VIRIOLOGYDOWNUNDER.COM
WITH THANKS TO JODY LANARD, KATHERINE ARDEN & THE UNI OF QLD
BASED ON THE SWISS CHEESE MODEL OF ACCIDENT CAUSATION, BY JAMES T REASON, 1990
VERSION 3.0
UPDATE: 24oct2020

Prevention – Everyone's Job!

- Wash your hands with plain soap and water – often!
- Cover your cough or sneeze.
- Avoid touching your eyes, nose, or mouth.
- Stay out of spit zones.
- Get vaccinations.
- Good ventilation.
- Stay home when ill.
- Support Public Health.

I have used this slide for many years in presentations.
It's the basics!

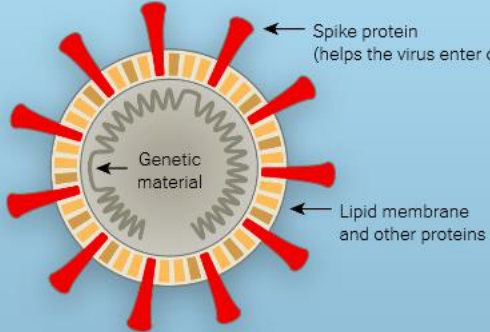


Soap

- Fragrance Free
- Dye Free
- Scrub for 20 seconds
- NO antibacterial soaps



THE CORONAVIRUS has a membrane of oily lipid molecules, which is studded with proteins that help the virus infect cells.

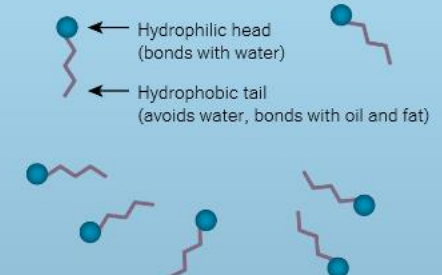


← Spike protein (helps the virus enter cells)

← Genetic material

← Lipid membrane and other proteins

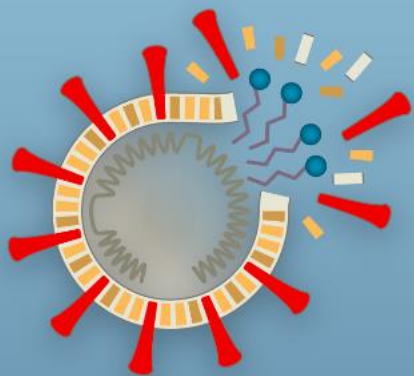
SOAP MOLECULES have a hybrid structure, with a head that bonds to water and a tail that avoids it.



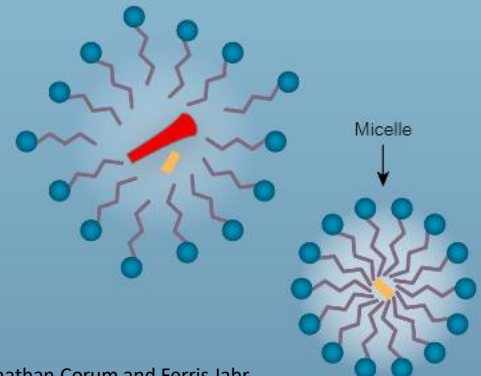
← Hydrophilic head (bonds with water)

← Hydrophobic tail (avoids water, bonds with oil and fat)

SOAP DESTROYS THE VIRUS when the water-shunning tails of the soap molecules wedge themselves into the lipid membrane and pry it apart.



SOAP TRAPS DIRT and fragments of the destroyed virus in tiny bubbles called micelles, which wash away in water.



← Micelle

By Jonathan Corum and Ferris Jabr

Wash with Soap and Water

Make time for handwashing!!!!

- **When coming inside from playing**
- **After going to the bathroom**
- **Before preparing food**
- **Before eating**
- **After touching animals**

- **Remove oils/dirt/feces**
- **Remove lead/pesticides**

- If you absolutely do not have access to soap and water – scrub with an unscented baby wipe and then use an alcohol-based hand sanitizer.



Electric Hand Dryers

“Modern hand dryers are much worse than paper towels when it comes to spreading germs, according to new research. Airborne germ counts were 27 times higher around jet air dryers in comparison with the air around paper towel dispensers.”

“jet-air” and warm air dryers studied



E.L. Best, P. Parnell, M.H. Wilcox. **Microbiological comparison of hand-drying methods: the potential for contamination of the environment, user, and bystander.** *Journal of Hospital Infection*, 2014.

Restrooms

- Clean/disinfect bathroom at least daily.
- Soap and paper towel dispensers full.
- Tempered (85°-105°F) water for handwashing.
- Maximize exhaust ventilation.

WAC 246-366-060: “Adequate, conveniently located toilet and handwashing facilities shall be provided for students and employees.



Hand Sanitizer

- Not a substitute for hand washing
- Not effective on dirty hands
- At least 60% alcohol (isopropyl or ethyl)
- Hands should stay wet for 20+ seconds
- Not considered effective on non-enveloped viruses or spores
- Flammable / poison
- **Fragrance free**
- Be careful of dangerous products (methanol, 1-propanol)
- Not recommended: Benzalkonium chloride, “quat” based / non-alcohol / “natural”
- Designates as hazardous waste when expired
- [Q&A for Consumers | Hand Sanitizers and COVID-19 | FDA](#)



CDC: Show Me the Science:

<http://www.cdc.gov/handwashing/show-me-the-science-hand-sanitizer.html>

Sinks, Sinks, and more Sinks



Local School Credits Handwashing Stations with Drop in Absences

Lake Charles, Louisiana

Posted: Nov 21, 2014 3:50 AM PST , By Britney Glaser, KPLCtv.com



Schools Need An Infection Control Plan

- Clear Protocol
- Independent third party certified cleaning products
 - Ingredients not known to contribute to asthma, cancer, respiratory irritation, liver and kidney disease
- EPA registered sanitizers-disinfectants
- Best practices & procedures
- Cleaning equipment designed to reduce the amount of chemicals required
 - Walk-off mats, HEPA filters, microfiber, etc.
- Training programs

Infection Control Handbook for Schools

Edition 2

https://portal.ct.gov/-/media/Departments-and-Agencies/DPH/dph/environmental_health/eoha/pdf/CleaningforHealthierSchoolsFINAL2411pdf.pdf?la=en



Primary Authors

Lynn Rose
Carol Westinghouse

Acknowledgements

The authors gratefully acknowledge the members of the National Cleaning for Healthier Schools and Infection Control Workgroup for their participation in a series of monthly conference calls that resulted in the 2010 Handbook. Special thanks to the Toxics Use Reduction Institute team, Victoria Leonard, and our contributors and reviewers for the 2020-2021 update.

Funding

This report was prepared with funding from and in collaboration with the Toxics Use Reduction Institute (TURI) at the University of Massachusetts Lowell in 2010 and 2020-2021.

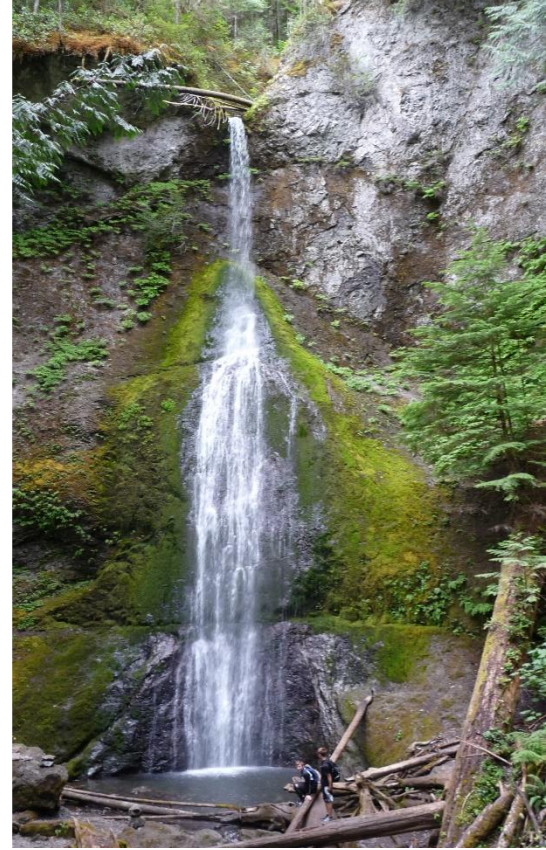
Products – How Much is Too Much?

- Irritation:
 - Respiratory, Skin, Eye
- Burns
- Endocrine Disruptors
- Reproductive Hazards
- Persistent Bioaccumulative Toxins (PBTs)



Why Green?

- Better Health
- Better Attendance
- Academic Improvement
- Improved Indoor Air Quality
- Reduce Asthma
- Reduce Sensitization
- Improved Environment
- Reduced Exposure to Toxins



Green Cleaning for schools protects public health without harming the health of staff, building occupants and the environment. The best way to reduce cleaning chemical exposures for students and staff is to implement a cleaning for healthy schools program.



National Association of School Nurses

www.cleaningforhealthyschools.org/documents/NASN_poster_greencleaning.pdf



Volatile organic compounds emitted by conventional and “green” cleaning products in the U.S. market



Choosing Products

(not disinfectants/sanitizers)

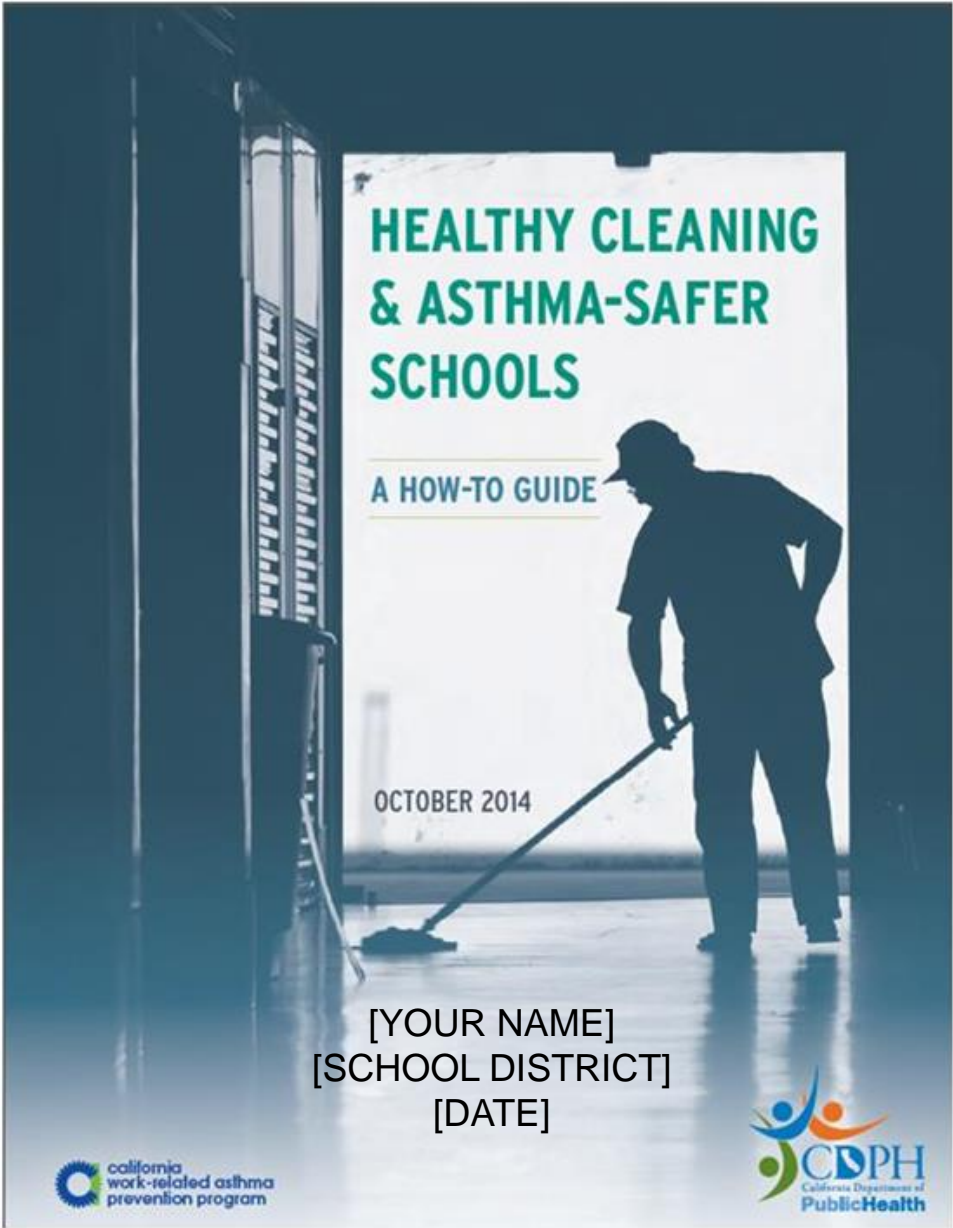


Third Party Certified

- Independent verification of product safety and performance.
- Green Seal
- UL GREENGUARD
- EPA (Fragrance-free) Safer Choice
(<https://www.epa.gov/saferchoice>)
 - ▶ Neutral pH
 - ▶ Low hazard rating
 - ▶ Use only when and where needed
 - ▶ Meets or exceeds the California VOC requirements
 - ▶ Avoid:
 - ▶ phosphates, dye, fragrance, butyl cellusolve, nonylphenol ethoxylate



Staff and students deserve to work and learn in a safe and healthy school environment, and they can, since safer cleaning products and methods exist.



NIOSH

Work-related Asthma: Occupational Exposures Cleaning Services

- **Acetic acid**
- Acids
- Ammonia (ammonium hydroxide)
- Biocides
- **Bleach (sodium hypochlorite)**
- Chloramines
- Formaldehyde
- Glutaraldehyde
- **Quaternary ammonium compounds (e.g., benzalkonium chloride)**
- **Spray products**

<https://www.cdc.gov/niosh/topics/asthma/exposures.html>

Clean – Sanitize – Disinfect?

- **Cleaners, Soaps, Detergents**

- Remove dirt/organics and most germs.
- **Always clean before sanitizing or disinfecting – dirt and oils prevent sanitizers and disinfectants from reaching/killing germs.**
- Soap/water/microfiber cloths
- Scrub to remove biofilms



- **Sanitizers**

- Reduce germs on surfaces – 99.9%.
- Kitchens/food prep/childcare
- Do not leave harmful residues
- Cannot claim killing viruses or fungi

- **Disinfectants**

- Destroy 99.99% of microbial life, bacteria, viruses, but not necessarily spores. Various levels.
- Cannot disinfect a dirty surface!



Disinfection

- CLEAN FIRST
- Use the proper concentration of disinfectant.
 - Do not mix chemicals!
 - Check expiration dates.
 - Read the label!
- Allow the required wet contact time.
- Follow the product label hazard warnings and instructions for personal protective equipment (PPE) such as gloves, eye protection, and adequate ventilation.
- Use disinfectants in a **well-ventilated space and not around children.**
- Obtain the Safety Data Sheet (SDS).
- Parents, teachers and staff should **not** supply disinfectants and sanitizers.
- Keyboards and other sensitive electronics: Use alcohol wipes. Wash hands before and after use and do not touch your face while using. Do not assume they are sterile.

Choose Safer Disinfectants EPA's Design for the Environment



- Safer Antimicrobial Pesticide Project
- The DfE logo on an EPA-authorized antimicrobial pesticide label means that the product:
 - Is in the least-hazardous classes (III & IV) of EPA's acute toxicity)
 - Is unlikely to have carcinogenic or endocrine disruptor properties
 - Is unlikely to cause developmental, reproductive, mutagenic, or neurotoxicity issues
 - All ingredients reviewed
 - Does not require the use of agency mandated PPE
 - Has no unresolved efficacy failures
 - Has no unresolved compliance/enforcement actions

Safer Products and Practices for Disinfecting and Sanitizing Surfaces

San Francisco Department of the Environment 2014 (alcohol products not on the market)

Table 1. Summary of Health and Environmental Attributes of 11 Active Ingredients Commonly Found in Surface Disinfectants and Non-food Contact Sanitizers

ACTIVE INGREDIENT	CANCER	REPRODUCTIVE TOXICITY	ASTHMA	SKIN SENSITIZATION	AQUATIC TOXICITY	PERSISTENCE
Caprylic Acid	No	No	No	No	Med acute	Low
Citric Acid	No	No	No	No	None	Low
Hydrogen Peroxide	No ¹	No	No	No	High acute	Low
Lactic Acid	No	No	No	No	None	Low
Ortho-Phenylphenol (OPP)	Known	Suspected	No	No	Very high acute	Low
Peroxyacetic Acid (PAA)	No	No	Yes	No	Very high acute	Low
Pine Oil	No ²	No	No ³	Yes	None	Low
Quaternary Ammonium Chloride Compounds (Quats)	No	Suspected	Yes	One compound ⁴	High acute, med	Very High
Silver	No	No	No	No	High acute	Very High
Sodium Hypochlorite (Chlorine Bleach)	No	No	Yes	No	Very high acute	Low
Thymol	No	No ⁵	No	Yes	High acute	Low

Active Ingredients to Look For or Avoid

Safer Ingredients for Asthma	Ingredients that may cause respiratory irritation/Asthma
Hydrogen Peroxide	Quaternary ammonium compounds (alkyl dimethyl benzyl ammonium chloride, benzalkonium chloride, lauryl dimethyl benzyl ammonium chloride, dodecyl dimethyl ammonium chloride)
Lactic Acid	Bleach (sodium hypochlorite)
Citric Acid	Acetic Acid (found in vinegar)
Ethyl Alcohol/Isopropyl Alcohol	Thymol (skin sensitizer, suspected asthmagen)
	Glutaraldehyde
	Peracetic acid (peroxyacetic acid)

Quaternary Ammonia Compounds

- Benzalkonium chloride, alkyl dimethyl benzyl ammonium chlorides, etc.
- Skin, respiratory irritation
- Asthmagen
- Potential reproductive toxicity
- The overuse of quats and bleach can promote antibacterial resistant bacteria
- Aquatic toxicity

[Quaternary Ammonium Compounds Fact Sheet / TURI Chemical Fact Sheets / TURI Publications / TURI - TURI - Toxics Use Reduction Institute](#)

[Alternatives / Quaternary Ammonium Compounds Fact Sheet / TURI Chemical Fact Sheets / TURI Publications / TURI - TURI - Toxics Use Reduction Institute](#)

<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6316403/#:~:text=Antibiotic%20resistance%20may%20occur%20after,with%20a%20proven%20health%20benefit.>

Bleach

- Disinfectant, NOT a cleaner
- Asthma/respiratory hazard
- Skin and extreme eye hazard
- Corrosive
- Make a fresh solution daily
- Always use in a well-ventilated area
- Never mix with ammonia, acids, or anything!
- Always wear gloves and eye protection
- Always have an emergency eye wash station
 - DOSH Directive 13.0 July 15, 2011



Other Options

- Hypochlorous Acid (HOCl)
 - Dominant active ingredient when operated in pH range of 4-6
 - Other ranges will have mixture of chemicals
- TURI testing looking at potential Cl₂ exposure during usage

Available Chlorine Present As HOCl %

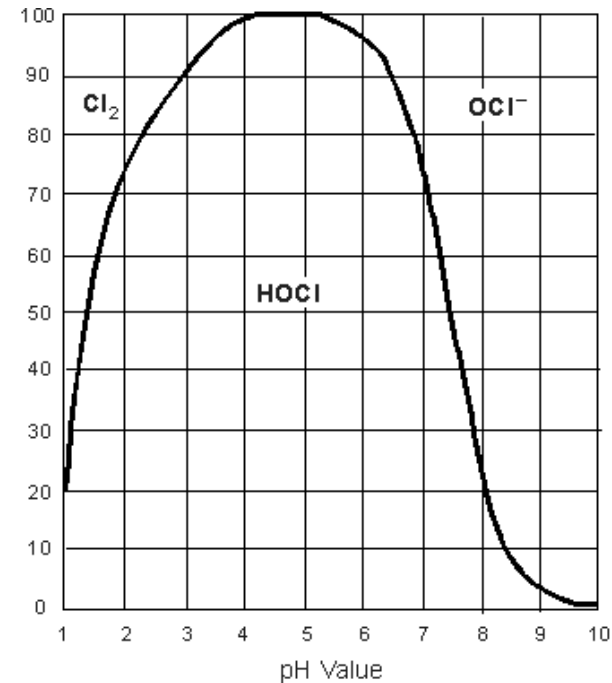


Table 1. Percentages of HOCl and OCl⁻

pH	32°F		68°F	
	% HOCl	% OCl ⁻	% HOCl	% OCl ⁻
4	100.0	0.0	100.0	0.0
5	100.0	0.0	97.7	2.3
6	98.2	1.8	96.8	3.2
7	83.3	16.7	75.2	24.8
8	32.2	67.8	23.2	76.8
9	4.5	95.5	2.9	97.1
10	0.5	99.5	0.3	99.7
11	0.05	99.95	0.03	99.97

No Spraying/Fogging Chemicals Into the Air



Hazard Alert: Rubbing/Isopropyl Alcohol can be Hazardous to Workers' Health and Safety

COVID-19 created the need to wipe down and disinfect all surfaces touched by people in the workplace. Isopropyl or rubbing alcohol is a common chemical found in most disinfecting wipes and sprays. When workers breathe in the fumes in high concentrations or over a long period of time, it can make them sick.



[Read about two Washington workers](#) overexposed to hazardous amounts of isopropyl alcohol and how you can prevent it from happening in your workplace.

Available in [English](#), [Spanish](#), [Russian](#), [Vietnamese](#), [Cambodian](#), [Chinese Simplified](#), [Chinese Traditional](#), [Korean](#) and [Somali](#). Find a list of previous alerts at <https://lni.wa.gov/safety-health/preventing-injuries-illnesses/hazardalerts>.

If you would like assistance with your Hazard Communication Plan or help measuring workers' personal exposures to chemicals, please contact [your local L&I safety & health consultant](#).

Disinfecting Wipes

- Choose safer disinfecting wipes – **alcohol or hydrogen peroxide**
- **“Keep out of the reach of children” – under 18 years of age**
- Use according to the label
- Not for use on skin!
 - There are hand wipes for skin – baby wipes, etc.
 - Choose fragrance-free.
 - Increasingly wipes with alcohol are available – check the label!
- Clean first
- **Required wet time** – these should be very wet and there is potential splash/eye exposure

EPA-Regulated Disinfecting Devices

- Instrument used to destroy bacteria and viruses
 - Works by physical means
 - Electricity, light, mechanics or heat
 - <https://www.epa.gov/safepestcontrol/pesticide-devices-guide-consumers#1>
- Do not require registration
 - But are regulated to prevent “false or misleading claims”
 - Manufacturer must have scientific data to support the claims

[09 08 21 Safer Disinfectant Use Mini Webinar Series: Disinfecting Devices and Best Practices - YouTube](#)

Other Options

- **Superheated steam vapor device**

- **Very effective for cleaning and rapid sanitizing/disinfecting**

- **Harder-to-kill viruses, such as canine parvovirus**
- **Similar human coronavirus, such as coronavirus 229E**
 - **Kill rates 99.99% under 10 seconds**
 - **Expected to be effective on Sars-CoV-2 according to the EPA**

- **They are not conventional "steam" cleaners or pressure washers**

- **They are devices that use only a little water and a little electricity to clean, disinfect, and deodorize most surface**



[09 08 21 Safer Disinfectant Use Mini Webinar Series: Disinfecting Devices and Best Practices - YouTube](#)

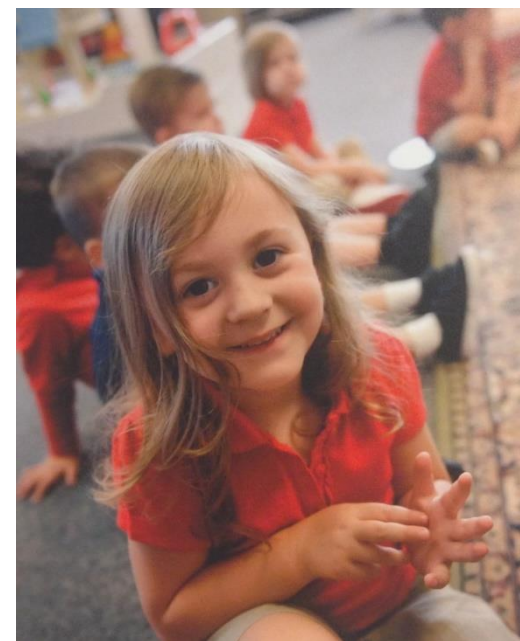
Microfiber

- The most effective type of cloth to use for cleaning and removing dirt and microorganisms
- Little to no cleaning chemicals
- Less effort, absorbent, durable
- Prevent injuries, illnesses
- Avoid cross-contamination
 - 8 fold method
- Simple to clean- wash and dry, on-site or laundering service



Say NO....

- Cake toilet deodorizers
 - paradicholorobenzene
- Citrus & Terpene Solvents
 - D-Limonene
 - [Mopping can create air pollution that rivals city streets | Science | AAAS](#)
 - “One molecule of concern is limonene, which is commonly added to cleaners and furniture polish to help remove oil and grease. The lemon-scented molecule reacts readily with ozone, an outdoor pollutant that is the main ingredient in smog. When ozone wafts into buildings, it reacts with limonene and similar molecules called monoterpenes, turning them into peroxides, alcohols, and other molecules that grow into airborne particles. Small particles can lodge deep in the lungs, irritating cells and—at high enough exposure—leading to health problems, such as asthma. In vulnerable people, particulate air pollution can cause heart attacks and strokes.”
- Nano Technology
 - nano-silver
- “Air Fresheners”
- Ozone generators
- Fragrances
- Anti-microbial soaps
 - Triclosan / Triclocarban
 - Quaternary Ammonia compounds



Perfumed, Fragranced, & Scented

- Added fragrances can trigger asthma attacks, allergies, sensitization.
 - People on the autism spectrum are particularly impacted.
- Eye, skin, and respiratory irritation.
- “Fragrance” – a thousand components.
 - Limonene, pinenes, acetone, ethanol, camphor, benzyl alcohol, ethyl acetate, limonene, benzene, formaldehyde, 1,4-dioxane, methylene chloride, acetaldehyde, synthetic musks, phthalates, etc.
- A primary source of indoor and outdoor air pollutants.
- Look for “fragrance-free,” not “unscented”.
- **[Fragrances & Work-Related Asthma \(ca.gov\)](#)**
- American Lung Association Sample Fragrance-Free School Policy
<http://www.healthyschools.org/documents/fragrance-free-policy-sample-updated.pdf>
- Fragrance-Free Toolkit from UCLA
<https://csw.ucla.edu/about/fragrance-free/>



Essential Oils / Natural Air Fresheners

- All air fresheners tested – even those advertised as “natural,” “green,” “organic,” or with essential oils – emitted chemicals classified as toxic or hazardous, including some with no safe exposure level.

Hidden Hazards in Air Fresheners and Deodorizers

<http://www.drsteinemann.com/Resources/Air%20Freshener%20Fact%20Sheet.pdf>

- Persistent exposure to lavender products is associated with premature breast development in girls, according to new research by NIEHS scientists.
- The findings also reveal that chemicals in lavender oil and tea tree oil are potential endocrine disruptors... https://factor.niehs.nih.gov/2019/9/feature/3-feature-lavender/index.htm?utm_source=efactor-newsletter&utm_medium=email&utm_campaign=efactor-newsletter-2019-September
- Not okay in schools/public places
- Sensitization reactions/asthma
- Respiratory, eye, skin irritation, headaches
- No diffusers, plug-ins, Sensei, candles, etc.
- Particulates/oils spread throughout room
- [Essential Oils - Guidance for Healthy Classrooms \(wa.gov\)](#)

resources



Public Health – Always Working for a Safer and Healthier Washington

Essential Oils

Guidance for Healthy Classrooms



Are Essential Oils Beneficial?

Many people use essential oils as aromatherapy with the intent to treat various health conditions like pain, anxiety, asthma, and ADHD. However, systematic reviews of essential oils research have not found enough evidence to suggest they successfully treat any health issue (8).

Are Essential Oils Safe to Use?

Essential oils can adversely affect the health and safety of students and staff in the classroom and can be dangerous. They contain compounds that can aggravate asthma in students; and they emit hazardous volatile organic compounds such as acetaldehyde, limonene, toluene, pinene, and camphene, all of which worsen asthma (9; 10; 1; 6; 3). They also can cause respiratory irritation, headaches and throat, eye, and nose irritation. Inhaling certain essential oils can cause pneumonia (6; 3).

Keeping essential oils in the classroom can be dangerous. When swallowed, eucalyptus, sage, and camphor oil can cause seizures, and lavender oil can cause a coma (12). Additionally, lavender oil and tea tree oil were shown to cause abnormal or premature breast development in girls and boys when applied to the skin or inhaled (5; 11).



Recommendations

Avoid using all essential oils and other fragranced products in the classroom. Use fresh air and good ventilation to reduce exposure to respiratory pathogens, chemicals, and odors. Increased fresh air supply and air filtration have been shown to improve health and test scores. Open windows for additional air or use fans pointed out of windows and doors to improve ventilation, being careful not to circulate across students.

Some schools, school districts, or early learning programs have established policies or procedures that may prohibit essential oils. Schools and districts should adopt a policy or procedure prohibiting staff from bringing in and using any chemicals that are not pre-approved or provided by the district. Always consult with your school, program, or school district to ensure compliance with their policies/procedures.

References

- Dales, & Cakmak, S. (2019). Is residential ambient air limonene associated with asthma? Findings from the Canadian Health Measures Survey. *Environmental Pollution* (1987), 244, 966–970. <https://doi.org/10.1016/j.envpol.2018.10.072>
- De Groot, & Schmidt, E. (2016). Essential Oils, Part IV: Contact Allergy. *Dermatitis*, 27(4), 170–175. <https://doi.org/10.1097/DER.0000000000000197>
- Department of Health (DOH) (2022). Pesticide Illness Reports. Washington State Department of Health.
- Gibbs. (2019). Essential oils, asthma, thunderstorms, and plant gases: a prospective study of respiratory response to ambient biogenic volatile organic compounds (BVOCs). *Journal of Asthma and Allergy*, 12, 169–182. <https://doi.org/10.2167/JAA.5193211>
- Henley, Lipson, N., Korach, K. S., & Bloch, C. A. (2007). Prepubertal Gynecomastia Linked to Lavender and Tea Tree Oils. *The New England Journal of Medicine*, 356(5), 479–485. <https://doi.org/10.1056/NEJMoa064725>
- Kodama, T., Watanabe, T., Matak, N., Kanoh, S., & Kichikawa, Y. (2022). Acute eosinophilic pneumonia following aromatherapy with essential oil. *Respiratory medicine case reports*, 37, 101657. <https://doi.org/10.1016/j.rmcr.2022.101657>
- Kuang, Liu, J., Zeng, Y., Zhou, W., Wu, P., Tan, J., Li, Y., Pang, Q., Jiang, W., & Fan, R. (2020). Co-exposure to polycyclic aromatic hydrocarbons, benzene and toluene may impair lung function by increasing oxidative damage and airway inflammation in asthmatic children. *Environmental Pollution* (1987), 266, 115220–115220. <https://doi.org/10.1016/j.envpol.2020.115220>
- Lee, Choi, J., Posadzki, P., & Ernst, E. (2012). Aromatherapy for health care: An overview of systematic reviews. *Maturitas*, 71(3), 257–260. <https://doi.org/10.1016/j.maturitas.2011.12.018>
- Nematollahi, Weinberg, J. L., Flattery, J., Goodman, N., Kolev, S. D., & Steinemann, A. (2020). Volatile chemical emissions from essential oils with therapeutic claims. *Air Quality, Atmosphere and Health*, 14(3), 365–369. <https://doi.org/10.1007/s11869-020-00941-4>
- Prieto, Sanchez-Toril, F., Brotons, B., Soriano, S., Casan, R., & Belenguer, J. L. (2000). Airway responsiveness to acetaldehyde in patients with asthma: relationship to methacholine responsiveness and peak expiratory flow variation. *Clinical and Experimental Allergy*, 30(1), 71–78. <https://doi.org/10.1046/j.1365-2222.2000.00672.x>
- Ramsey, Li, Y., Arai, Y., Naidu, A., Coons, L. A., Diaz, A., & Korach, K. S. (2019). Lavender Products Associated With Premature Thelarche and Prepubertal Gynecomastia: Case Reports and Endocrine-Disrupting Chemical Activities. *The Journal of Clinical Endocrinology and Metabolism*, 104(11), 5393–5405. <https://doi.org/10.1210/clinem.2018-01880>
- Soloway, R. A. G. (2014). Essential Oils: Poisonous when Misused. National Capital Poison Center. Accessed online at [Essential Oils: Poisonous when Misused](https://www.fda.gov/oc/essential-oils-poisonous-when-misused).

How to Avoid Allergies

Essential oils can cause allergic reactions when applied to the skin. This table (adapted from (2)) contains examples of essential oils that have caused allergic contact dermatitis (allergy). All essential oils should be avoided for a healthy classroom environment.

Angelica	Cassia	Elemi	Juniper berry	Neem	Rosemary	Tangerine
Aniseed	Cedarwood	Eucalyptus	Laurel leaf	Neroli	Rose	Tea tree
Bay	Chamomile	Frankincense	Lavandin	Niaouli	Rosewood	Thuja
Bergamot	Cinnamon	Galbanum resin	Lavender	Nutmeg	Sage	Thyme
Black cumin	Citronella	Geranium	Lemongrass	Orange	Sandalwood	Turpentine
Black pepper	Clary sage	Ginger	Lemon	Palmarosa	Silver fir	Valerian
Cajeput	Clove	Grapefruit	Litsea cubeba	Patchouli	Spearmint	Vetiver
Calamus	Coriander fruit	Guaiacwood	Lovage	Peppermint	Spike lavender	Ylang ylang
Cananga	Costus root	Hinoki	Mandarin	Petitgrain bigarade	Star anise	Zdravetz
Cardamom	Cypress	Hyssop	Melissa	Pine needle	Sweet basil	
Carrot seed	Dwarf pine	Jasmine absolute	Myrrh	Ravensara	Sweet marjoram	

DOH 333-307 October 2022

To request this document in another format, call 1-800-525-0127. Deaf or hard of hearing customers, please call 711 (Washington Relay) or email civil.rights@doh.wa.gov.



Cleaning for Health in the Classroom Best Practices for Teachers

School Environmental Health and Safety Program

School custodial staff is responsible for cleaning schools. Some teachers choose to do additional cleaning. Here is how to ensure those efforts tackle dirt and germs safely and effectively.

Teach good handwashing habits - the #1 way to keep germs from spreading.

Use plain soap and water for handwashing – before eating, after using the bathroom, after recess, etc. Antibacterial soap is not recommended. Use plain fragrance-free soap. When there is no access to a sink, as on a field trip, alcohol-based (at least 60% alcohol, dye-free and fragrance-free) hand sanitizer or alcohol-based sanitizer wipes can be used. Hand sanitizers are not a substitute for handwashing. They are not effective when hands are dirty or greasy.

Cleaning for Health benefits all

- Lowers absenteeism
- Increases productivity
- Improves indoor air quality
- Reduces asthma and allergy triggers

Good to know:

- Kids are more vulnerable to chemical exposures.
- Many common cleaning products have ingredients that can harm health, especially the lungs.

Know the difference between Cleaning, Sanitizing, and Disinfecting.

Use the right product for the task:

- **CLEANING** removes dirt and most germs. Use soap and water. A third party certified green cleaner is preferred. In the classroom, cleaning is the focus.
- **SANITIZING** reduces germs to safe levels, for example in food service environments. Food code regulations have specific requirements for sanitizers in the cafeteria and kitchen.
- **DISINFECTING** kills most germs, depending on the type of chemical, and only when used as directed on the label.
- In schools, custodial staff use disinfectants and sanitizers regularly only in high-risk areas – nurse’s office, bathrooms, cafeterias, kitchens, drinking fountains, sink and door handles, and athletic facilities; preferably, when students are not present. Overuse does not provide any additional protection and can expose students and staff to harmful chemicals.

Teachers can rely on basic *cleaning* to remove dirt and germs in the classroom.

If staff, besides trained custodial staff, needs to assist with classroom cleaning, they should use a school or district provided basic cleaner. A third party certified green cleaner is preferred.

- Custodial staff can make a simple all-purpose cleaner for classrooms. Mix one teaspoon of fragrance-free dish soap in a spray bottle filled with water. Spray on surface and scrub with paper towels or a microfiber cloth. Rinse and wipe dry to remove any residue.
- Microfiber cleaning cloths improve cleaning – the removal of dirt and germs. Dampened with water they are great dust removers. With soap and water, they remove most germs.
- Disinfecting is the responsibility of school custodial staff. They are trained to use disinfectants in a safe and effective manner and to clean up potentially infectious materials and body fluid spills – blood, vomit, feces, and urine. Contact your custodian or school nurse if students are ill and your classroom needs cleaning and disinfection. If teachers use disinfectants, the district must provide training and supply the appropriate cleaner and sanitizer or disinfectant.

Students should never use disinfectants. Disinfectant wipes should not be used to clean hands. This includes Clorox wipes.

If students are helping:

- They should only use soap and water.
- Fragrance-free baby wipes could be used for quick cleaning.
- Most store-bought cleaning products are not safe for children to use.

Cleaning for Health in the Classroom Frequently Asked Questions

School and Indoor Air Quality Program



How does cleaning reduce germs?

Cleaning works by removing dirt and organic matter that contains and protects germs. Soap breaks down oils and allows dirt, contaminants, and germs to be more easily removed. Cleaning with soap, water, and a microfiber cloth will remove most germs.

Why is handwashing better than hand sanitizer?

Soap and rubbing hands together under running water removes oil, dirt, and harmful surface germs. Hand sanitizer does not remove dirt in which germs hide and only kills a few easy-to-kill ones.

Why use plain soap for handwashing?

Antibacterial ingredients, in particular triclosan and quaternary ammonia compounds (quats), only kill a few types of germs and are unnecessary when washing hands. It doesn’t matter if germs are alive or dead when they are washed down the drain.

What about non-alcohol hand sanitizers?

The U.S. Centers for Disease Control and Prevention only recommends hand sanitizers with at least 60% alcohol. Non-alcohol ones are even less effective than alcohol hand sanitizers.

How does this guidance affect fall classroom supply request lists?

Okay to Request

- Fragrance-free baby wipes.
- Paper towels (recycled content preferred).

DO NOT Request

- Disinfecting wipes.
- Non-alcohol-based hand sanitizer.

What are the issues with disinfecting wipes?

- Disinfecting wipes are often overused. They are not appropriate for general cleaning when an all-purpose cleaner or soap and water would suffice.
- Disinfecting wipes (e.g. Clorox, Lysol) usually contain quats and fragrance chemicals. These ingredients can trigger asthma and are associated with adverse health effects.
- Disinfectants can give a false sense of security because when they are not used exactly to label instructions, they don’t work properly. Most disinfecting wipes require the surface to be cleaned first, and then remain visibly wet 4-10 minutes (dwell time) to be effective, requiring multiple wipes.

Why is it important to use fragrance-free products in school?

Fragrance is one of the most frequently identified allergens, can irritate the respiratory system, cause headaches, and exacerbate asthma.

What’s so great about microfiber cloths?

Their split fibers create more surface area and are superior for removing dust, dirt, and germs. They are reusable and can be laundered or washed by hand.

Why should teachers not bring common cleaning products (including bleach) from home into the classroom?

- Some common cleaning products are dangerous when mixed. Never mix bleach with ammonia, acids, or other disinfectants. An example: Comet, containing bleach, would react with Windex, which contains ammonia, to form poisonous vapors.
- Common household cleaners and disinfectants may not be appropriate for schools and may cause allergic reactions or have other health impacts.
- Schools and districts must have a Safety Data Sheet for each chemical used in the school.

Resources - Safer Disinfectants



Safer Cleaning, Sanitizing and Disinfecting Strategies to Prevent Infection Transmission

Proper cleaning and disinfecting are important for reducing the spread of infectious disease. This fact sheet provides best practices for cleaning, sanitizing and disinfecting surfaces to prevent the spread of disease while minimizing harmful chemical exposures. These practices focus on the workplace, however they can be applied in any setting. Consult the U.S. Centers for Disease Control and Prevention and the U.S. National Institute for Occupational Health and Safety for the most current information.

► **Remember:** When possible for handwashing and cleaning surfaces, using soap and water is always the best option.

Why are we talking about safer practices?

 Hazardous chemicals are common in cleaning, sanitizing, and disinfecting products.

People using these products, and people in the spaces where they are used, can get sick or develop illnesses, including asthma. Others harm reproductive health or may cause cancer if too much exposure occurs. Some damage skin or other body systems. For example, custodians using cleaning products and disinfectants may suffer from work-related asthma due to exposure on the job.

 Safer options are available.

Look for Safer Choice, Green Seal®, Ecologo® and Design for the Environment (DfE) labels on products.



These labels are on environmentally preferable cleaning products and disinfectants that have a lesser or reduced effect on human health and the environment. These labels have strict requirements and can help you avoid chemicals that have negative impacts.

Key Terms

Cleaner
Removes germs, dirt, and impurities from surfaces or objects. Works by using soap/detergent, water and friction to physically remove dirt and germs from surfaces. Cleaning before disinfecting reduces spreading infection more than disinfecting alone.

Sanitizer
Reduces germs on surfaces to levels considered safe for public health (usually 99.99%). Products must be EPA registered.

Disinfectant
Destroys almost all infectious germs, when used as the label directs on a surface. No effect on dirt, soil, or dust. Should be used where required by law, in high-risk and high-touch areas, or in case of infectious disease. Products must be EPA registered.

Photo: iStockphoto.com/Tommaso

DEPARTMENT OF ENVIRONMENTAL & OCCUPATIONAL HEALTH SCIENCES | SCHOOL OF PUBLIC HEALTH | deohs.washington.edu

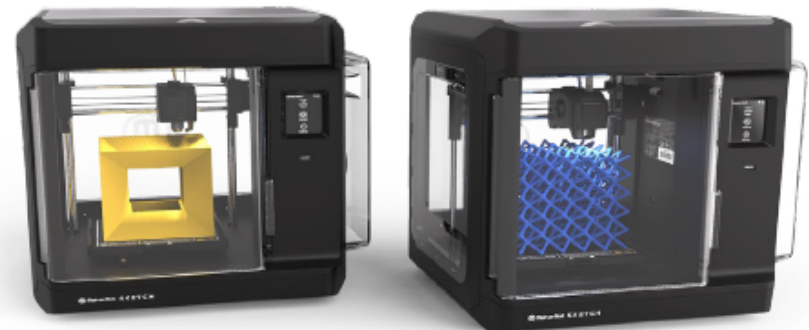
Using 3D Printers Safely



Three dimensional (3D) printers are a great education tool. They provide rapid prototyping and the ability to create small-scale manufacturing for various lessons in science, technology, engineering, math, and art. Although a great educational tool, 3D printers produce hazardous byproducts including fine and ultra-fine particulates, volatile organic compounds, and heavy metals.

When using 3D printers, required safety precautions protect students from inhaling hazardous particles and chemical vapors and avoid physical hazards such as burns, cuts, and pinches. The State Board of Health Rule for Primary and Secondary Schools, [WAC 246-366-080](#), requires 3D printers to have local mechanical exhaust ventilation.

A recent National Institute of Safety and Health (NIOSH) study evaluated the hazards associated with using different 3D printers and recommended ways to minimize exposure to these hazards. This document focuses on the safe use of fused filament fabrication (FFF) 3D printers (functionally similar to fused deposition modeling, or FDM printers), which are most common in K–12 schools.



Two examples of FFF 3D printers.

[Using 3D Printers Safely \(wa.gov\)](#)



Healthy Air for Healthy Schools

Use Only:

- Approved chemicals, cleaners, or disinfectants provided by the school or district. Never bring in products from home.
- Fragrance-free soap and water or fragrance-free baby wipes to clean surfaces. Disinfection is for trained custodians with approved effective products.
- Pens, markers, and board cleaners that are water-based, unscented, crayon, or low-odor.
- Spray paints and spray glues where there is mechanical exhaust ventilation.

Avoid Products That Reduce Air Quality — Do Not Use:

- Room deodorizing sprays, plug-ins, scented candle warmers, scented reeds, candles, incense, essential oils, or potpourris.
- Air-cleaning devices that generate ozone or are called "ionizers" – ozone is a respiratory irritant.
- Perfumes, colognes, body sprays and other strongly scented personal care products.
- Permanent, solvent-based, or scented pens, markers, and board cleaners.
- Disinfectant wipes.
- Urinal cakes.
- Rubber cement or spray adhesives with hexane or toluene.



Using classroom products that are free of airborne irritants means healthy indoor air quality!

- > Eliminate unnecessary chemicals.
- > Reduce asthma and headaches.
- > Increase attendance and performance!

Learn more at www.doh.wa.gov/schoolenvironment



DOH 333-243 August 2019

For people with disabilities, this document is available on request in other formats. Call 1-800-525-0127 (TDD/TTY call 711).

Healthy Air Quality in Schools - Tips for Administrators, Custodians, and Teachers



Healthy Air Quality in Schools

Achieving healthy air quality in schools takes administrators, custodians, and teachers working together. Good ventilation and source control of pollutants means healthy indoor air quality.

General Tips

- Teachers and staff need to know who to contact for indoor air quality concerns in the school.
- There should be a written school or district indoor environmental quality plan that includes indoor air quality and integrated pest management.
- Notify school or district indoor air quality contact or maintenance staff if you detect odors or dust from locations such as shops, copy rooms, science labs, laminators, locker rooms, graphic arts, custodial supply rooms, storage areas, combustion equipment, kitchens, or bus exhaust. Document your concerns.
- Immediately report any water leaks, water stains, damp materials, or unusual odors (such as musty or moldy smells) to maintenance staff.
- Maintenance staff should respond to water leaks and moisture problems within 24 hours.
- Relative humidity levels between 30 and 50 percent are better for health. Low relative humidity leads to dry eyes and respiratory irritation. High relative humidity allows dust mites to grow and promotes condensation.
- Dispose of food wastes promptly in covered containers.

Ventilation

- Operate the ventilation system continually when the school is in use, including during custodial work. Supply at least 15 cubic feet per minute per person of fresh outside air whenever the school is in use. See [WSU Energy Program's Good Ventilation is Essential for a Healthy and Efficient Building \(PDF\)](#). (www.energy.wsu.edu/Portals/0/Documents/Good_Ventilation_is_Essential.pdf).
- An occupied room is considered to be receiving the minimum amount of fresh air when indoor carbon dioxide (CO₂) levels are approximately 700 parts per million (ppm) over outside ambient CO₂ levels. See [WSU Energy Program's Measuring Carbon Dioxide Inside Buildings \(PDF\)](#). (www.energy.wsu.edu/Portals/0/Documents/Measuring_CO2_Inside_Buildings-Jan2013.pdf).
- Maintain three feet of clearance around unit ventilators and do not put items on top of them to block airflow.
- Change ventilation filters regularly. Use the highest rated, deepest pleat filters the system can accommodate.
- Check to make sure that supply air diffusers, exhaust, and return grills are not blocked. They should be clean and dry.
- Don't turn off unit ventilators – ask maintenance staff to repair noisy units, control temperatures, and control drafts.
- Monitor windows – they should not show condensation except on the very coldest of days.
- Don't allow vehicle idling on school property.
- Maintenance staff should follow integrated pest management strategies. Don't use pesticides in the building.

Control Asthma Triggers

Reduce Animal Allergens, including Dust Mites

- Animals shouldn't be classroom residents and should only come to school for educational purposes.
- Use integrated pest management practices to prevent cockroach and rodent infestations.
- Store food in tightly sealed containers.
- Seal all cracks and crevices.
- Grate all foundation and roof ventilation.
- Use barriers to discourage birds roosting.
- Wash stuffed animals and blankets in hot water every two weeks, or remove them.

Control Dust

- All outside doors should have large entry mat barriers (walk-off mats) outside and just inside the door. The mats should provide at least four to seven footfalls.
- Maintain cleanable surfaces and avoid clutter. Put loose items into plastic boxes with lids that can be wet-wiped.
- Damp-wipe surfaces weekly with a micro-fiber cloth.
- Don't hang items from the ceiling T-bars without special clips to prevent fraying fiberglass. Remove or clean items when dusty.
- Discourage clutter by removing as many unnecessary dust-collecting items as possible.
- Use pre-mixed and pre-wetted clay art supplies whenever possible to reduce dusts.
- Replace fabric upholstered furniture with furniture easily dusted.
- Remove area rugs that cannot be regularly cleaned and that trap dirt and moisture.

Reduce Chemicals

- Don't use permanent, solvent-based or scented pens, markers, and board cleaners. Use water-based, unscented, crayon-based, or low-odor items.
- Don't use room deodorizing sprays, plug-ins, scented candle warmers, scented reeds, candles, incense, therapeutic oils, or potpourris.
- Don't use urinal cakes in bathrooms.
- Avoid spray adhesives, contact cement, and volatile paints. If spray adhesives are necessary, use hexane and toluene-free products. Wear solvent-resistant gloves. Spray in an area with local exhaust ventilation and away from children. See [King County's Selecting Safer Art Adhesives](#) (www.hazwastehelp.org/publications/publications_detail.aspx?DocID=z%2F70%2F2BLUUM%3d).
- Don't bring chemicals, cleaners, or disinfectants from home. Use only those provided by the school or district.
- Never use air-cleaning devices that generate ozone. Ozone is a respiratory irritant.
- Discourage the use of perfumes, colognes, body sprays and other strongly scented personal care products.
- Hazardous chemicals in laboratories, chemical storages, shops, art rooms, and any other areas need to be properly stored and managed to prevent air contamination.

Carpet Care

- Whenever possible, don't allow food or beverages in classrooms. If possible, vacuum daily (when children are not present). Use a vacuum with a HEPA (high efficiency particulate air) filter – or use HEPA vacuum bags. Having both is even better.
- Avoid use of area rugs. They can trap moisture and dirt under them. Clean carpets thoroughly with truck-mounted hot water and steam extraction once or twice per year.
 - Spot treat carpet as needed first.
 - Use the minimum amount necessary of low-odor and low-sudsing carpet shampoo.
 - All shampoo and cleaner needs to be thoroughly extracted until the water runs clean.
 - Carpet should dry thoroughly within 24 to 48 hours after cleaning.

Resources

- [School Environmental Health and Safety, Department of Health](#) (www.doh.wa.gov/schoolenvironment)
- [School Indoor Air Quality Best Management Practices Manual, 2003 \(PDF\)](#) (www.doh.wa.gov/Documents/Pubs/333-044.pdf)
- [Integrated Pest Management for Schools, WSU](#) (<http://schoolipm.wsu.edu/>)
- [Creating Healthy Indoor Environments in Schools, EPA](#) (www.epa.gov/iaq/schools/index.html)
- [Taking Asthma Care To School, Washington Asthma Initiative \(PDF\)](#) (<http://waasthma.org/wp-content/uploads/2014/05/AMES2014Final.pdf>)
- [Art Hazards, King County Local Hazardous Waste Management Program](#) (<http://hazwastehelp.org/ChemToxPesticides/artchemicals.aspx>)

Infection Control Handbook for Schools

Edition 2

https://portal.ct.gov/-/media/Departments-and-Agencies/DPH/dph/environmental_health/eoha/pdf/CleaningforHealthierSchoolsFINAL2411pdf.pdf?la=en



Primary Authors

Lynn Rose
Carol Westinghouse

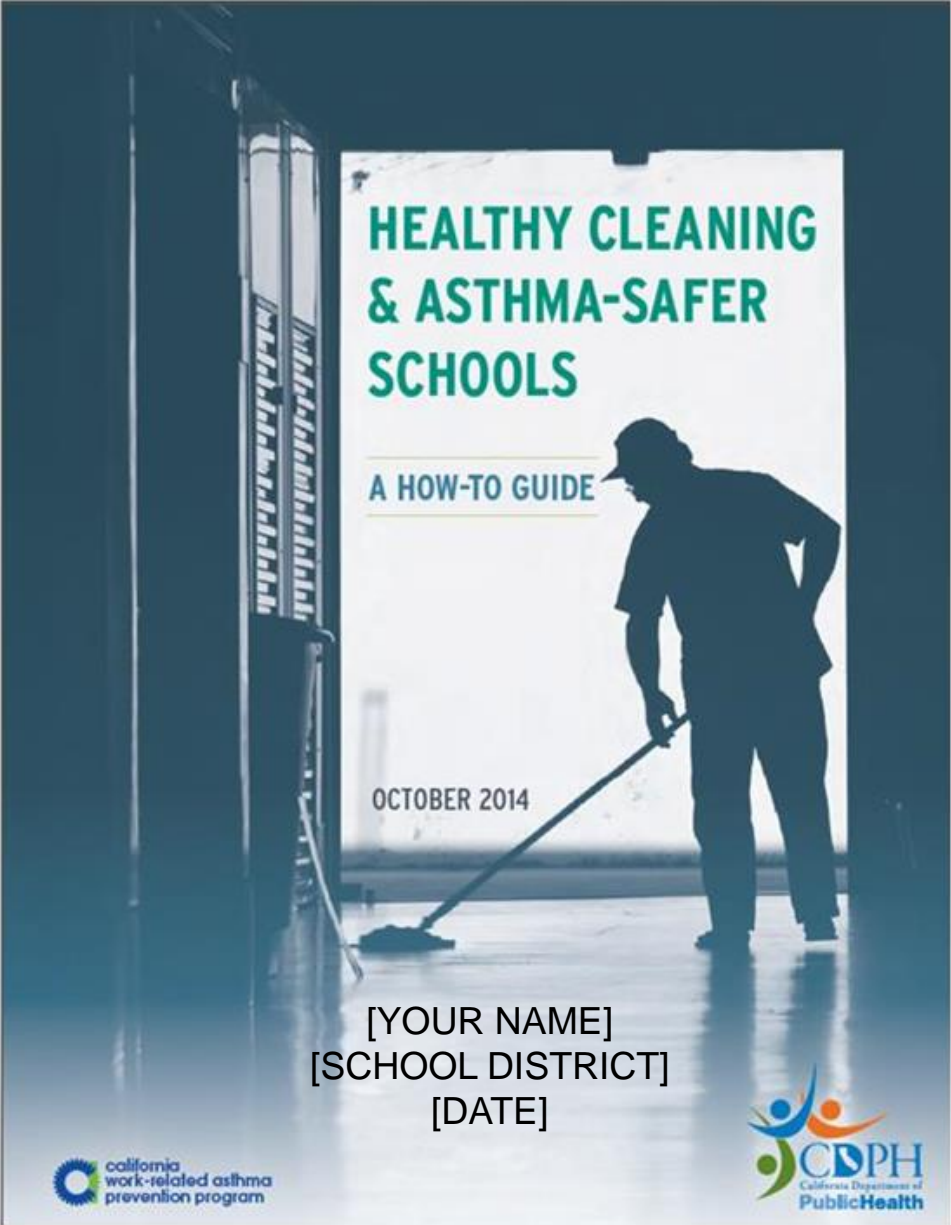
Acknowledgements

The authors gratefully acknowledge the members of the National Cleaning for Healthier Schools and Infection Control Workgroup for their participation in a series of monthly conference calls that resulted in the 2010 Handbook. Special thanks to the Toxics Use Reduction Institute team, Victoria Leonard, and our contributors and reviewers for the 2020-2021 update.

Funding

This report was prepared with funding from and in collaboration with the Toxics Use Reduction Institute (TURI) at the University of Massachusetts Lowell in 2010 and 2020-2021.

Staff and students deserve to work and learn in a safe and healthy school environment, and they can, since safer cleaning products and methods exist.



Using Disinfecting Wipes at School



What disinfectants can be used on hard surfaces to kill the virus that causes COVID-19?



- Disinfectants – approved by EPA to be effective against specific viruses.
- EPA List N for Emerging Pathogens – lists disinfectants for use for COVID-19 on surfaces.

See fact sheet "Choosing Safer Disinfectants" from the EPA List N.

What are disinfectant wipes?



- Disposable material soaked in disinfectant.
- While wipes are convenient, if used incorrectly, they can spread germs, give a false sense of security that surfaces are disinfected, and cause unnecessary exposures.

What should wipes not be used for?



- They are NOT handwipes or baby wipes, and should NOT be used on skin.
- They should NOT be used on produce, or have contact with food.

How can I safely and effectively use wipes?



1. Protect hands - put on chemical resistant gloves, even if label doesn't mention it.
2. Wash and rinse surface to enable disinfectant to be in direct contact with germs.
3. Shake wipe container with lid securely on to wet wipes with any liquid that settled.
4. Disinfectants only work when wet! Use enough wipes to keep surface wet for the "contact time" listed on label, which can vary by product and type of germ. Use wipe(s) *only once on one surface* to prevent spreading germs around.
5. Rinse surface if it will be in contact with skin or food, and label directs you to do so.

Who can use wipes in school?

- Only adults should use disinfecting wipes.
- Children under 18 should NOT use wipes.



Where can I get more information?


www.informedgreensolutions.org
 Poster funded by: Toxics Use Reduction Institute, UMass, Lowell



Sources: NPIC, 1.800.858.7378, npic@ace.orst.edu
Health News, 6/3/08 Study Antibacterial wipes can spread superbugs, Michael Kahn

Using Disinfecting Wipes / Safer Cleaning and Disinfection for Schools / COVID-19: Safely Clean & Disinfect / Cleaning Laboratory / Our Work / TURI - Toxics Use Reduction Institute

or all the pages.



Disinfecting for SARS-CoV-2

What Does that Look Like?

Jason Marshall, ScD
Toxics Use Reduction Institute
University of Massachusetts Lowell

[09 08 21 Safer Disinfectant Use Mini Webinar Series:
Disinfecting Devices and Best Practices - YouTube](#)





Making Massachusetts a safer place to live and work

Family Martial Arts Center Kicks Out Harmful Disinfecting Chemicals While Defending Against COVID-19



https://www.turi.org/content/download/13598/207121/file/Casestudy.FamilyMartialArtsCenter_disinfectant.Jun2021.pdf

California DPH Occupational Health Watch January 2021

- Fragrance ingredients such as those found in perfumes, essential oils, air fresheners, and cleaning products can cause and trigger asthma. Fragrance products are used in many California workplaces and have been associated with over 350 cases of work-related asthma investigated by the Occupational Health Branch.
- To help California workers and employers address fragrances and work-related asthma, WRAPP created a [web page](#) dedicated to this issue. It features publications in multiple languages, a model fragrance-free workplace policy, and resources to find products that do not contain fragrances.

Resources

- [Volatile chemical emissions from car air fresheners](#) (Journal article abstract)
- [Volatile chemical emissions from essential oils with therapeutic claims](#) (Journal article abstract)
- [Work-Related Asthma Fragrance Web Page](#)
- [Work-Related Asthma Prevention Program](#)

Asthma-Safer Cleaning and Disinfecting Update - CaDPH

- [Work-Related Asthma, Cleaning Products, and Disinfectants](#) – OHB web page

[Reminders for Using Disinfectants at Schools and Child Cares \(PDF\)](#) | [Spanish](#) – California Department of Pesticide regulation InfoSheet

[Fragrances and Work-Related Asthma](#) – OHB web page

[Cleaning for Asthma-Safe Schools \(CLASS\)](#) – OHB web page

[Work-Related Asthma Prevention Program \(WRAPP\)](#) – OHB website

Finding Products Without Fragrances

- [New York State's Green Cleaning Program](#) keeps a list of asthma-safer cleaning products without fragrance: (Under Product Category, choose "cleaning products." Click the "No" button next to the "Prefer products with fragrance" question)
- Some cleaning products have earned the [U.S. EPA's Safer Choice Fragrance-Free Label](#).
- The [Canadian Center for Occupational Health and Safety web page](#) includes steps for implementing a fragrance-free policy in the workplace.

Safer Disinfectant Use Mini Webinar Series

A collaboration between ACMT and PEHSU



Beginning in December 2020, the American College of Medical Toxicology (ACMT) and [Pediatric Environmental Health Specialty Unit \(PEHSU\)](#) will be co-hosting a joint mini webinar series predominantly focusing on safer disinfectant use in the new world of COVID-19.

The PEHSU program hosts a regularly scheduled series of scientific webinars. Their purpose is to provide a forum for regular discourse on scientific issues and to facilitate the development of educational material that will be made available on-demand to a wider audience and as part of their educational products offering.

The "Safer Disinfectant Use" mini webinar series will qualify for Continuing Education (CE) for healthcare professionals through the Centers for Disease Control. Instructions for claiming CE will be provided upon completion of the webinar. For those interested in obtaining CE for this series, please visit the [PEHSU National Classroom Webinars page](#).

[ACMT - Safer Disinfectant Use Webinars](#)

[COVID-19 Webinar: Navigating the Landscape of COVID-19 Transmission and Exposure Reduction – YouTube](#) November 3, 2021

Excellent webinar on ventilation and filtration

Research Study

Fragranced consumer products: exposures and effects from emissions, Anne Steinemann

Air Qual Atmos Health, 20 October 2016

- 35% of population reported health problems
 - Half disabled
- 15% have lost workdays or a job due to exposure in the workplace
- 20% would leave quickly if fragranced products
- 50%+ would prefer fragrance-free public places – hotels, airlines, healthcare, work
- 53% support fragrance-free workplace policies
 - 20% opposed
- 18% unable/reluctant to use public toilets due to scented sprays
- 14% unable/reluctant to wash hands with fragranced soap

6 Steps for Safe & Effective Disinfectant Use



Step 1: Check that your product is EPA-approved

Find the EPA registration number on the product. Then, check to see if it is on EPA's list of approved disinfectants at: [epa.gov/listn](https://www.epa.gov/listn)



Step 2: Read the directions

Follow the product's directions. Check "use sites" and "surface types" to see where you can use the product. Read the "precautionary statements."

Step 3: Pre-clean the surface

Make sure to wash the surface with soap and water if the directions mention pre-cleaning or if the surface is visibly dirty.



Step 4: Follow the contact time

You can find the contact time in the directions. The surface should remain wet the whole time to ensure the product is effective.

Step 5: Wear gloves and wash your hands

For disposable gloves, discard them after each cleaning. For reusable gloves, dedicate a pair to disinfecting COVID-19. Wash your hands after removing the gloves.



Step 6: Lock it up

Keep lids tightly closed and store out of reach of children.

[Six Steps for Safe & Effective Disinfectant Use \(epa.gov\)](https://www.epa.gov)

Cleaning and Disinfection Protocol

Remove all grossly visible debris.

The presence of gross contamination or organic material, especially feces, will inactivate most disinfectants.

Wash the area or item with water and detergent.

Thoroughly rinse the cleaned area to remove any detergent residue.

Some disinfectants may be inactivated by detergents; therefore, it is very important to rinse well after washing the area or item.

Allow the area to dry completely.

Select and apply an appropriate, effective disinfectant.

Allow the proper contact time!

This is one of the most overlooked steps!!
Contact time may vary depending on the disinfectant selected, but is usually at least 10 minutes. Consult the product label.

Thoroughly rinse away any residual disinfectant and allow the area or item to dry.

CLEANING AND DISINFECTING

Best Practices During the COVID-19 Pandemic

Good Idea	Be Careful	Don't Do It
<p>Follow CDC, State, and Local Public Health Guidelines</p> <p>According to the Centers for Disease Control and Prevention (CDC), COVID-19 is mainly spread through the air. The risk of getting the virus by touching a contaminated surface is thought to be low.</p> 	<p>Be Careful Using Disinfectants Around People with Asthma</p> <p>Disinfectants can trigger an asthma attack. If you have asthma, you may need to take extra precautions like avoiding areas where people are cleaning and disinfecting or making sure the space is well ventilated.</p> 	<p>Don't Ask Children or Students to Apply Disinfectants</p> <p>Disinfectants are powerful tools for controlling the spread of disease, and they can harm kid's health if used or stored incorrectly. Children and students should not apply disinfectants, and they should be kept out of children's reach.</p> 
<p>Clean Surfaces with Soap and Water</p> <p>Normal routine cleaning with soap and water lowers the risk of spreading COVID-19 by removing germs and dirt from surfaces. In most situations, cleaning is enough to reduce risk.</p> 	<p>Be Careful with Fogging, Fumigating, and Wide-Area or Electrostatic Spraying</p> <p>Make sure your product's label includes directions for the application method. Follow all directions, including precautions. If a product isn't labeled for these application methods, using it that way might be risky or ineffective.</p> 	<p>Don't Ignore the Label Directions</p> <p>If you don't follow the label directions, disinfectant products may be ineffective or unsafe. Do not apply disinfectants to skin, pets or food. Do not dilute disinfectants or mix them with other chemicals unless the label tells you to. Don't think that twice the amount will do twice the job.</p>  
<p>Use EPA-Registered Disinfectants According to Label Directions</p> <p>Disinfectants further lower the risk of spreading COVID-19 by using chemicals to kill germs. Use disinfectants on high-touch surfaces when you know or suspect someone around you is sick with COVID-19.</p>	<p>Be Careful With UV Lights or Ozone Generators</p> <p>UV lights or ozone generators may be risky or ineffective. EPA cannot verify if or when it is appropriate to use these devices. Check out the guidance at: go.usa.gov/xHcKJ</p> 	<p>Don't Use Unregistered Disinfectants</p> <p>If a product says that it kills SARS-CoV-2 (COVID-19), but it doesn't have an EPA registration number, it may not be safe or effective. Federal law requires disinfectants to be registered with EPA.</p> 

US EPA - Cleaning and Disinfecting Best Practices During the COVID-19 Pandemic

For some or all the pages.



An excellent presentation

[Navigating the Landscape of Air Cleaning Technologies for COVID-19 - YouTube](#)

(Slides 34, 49,50 from this presentation.)



Indoor Environments

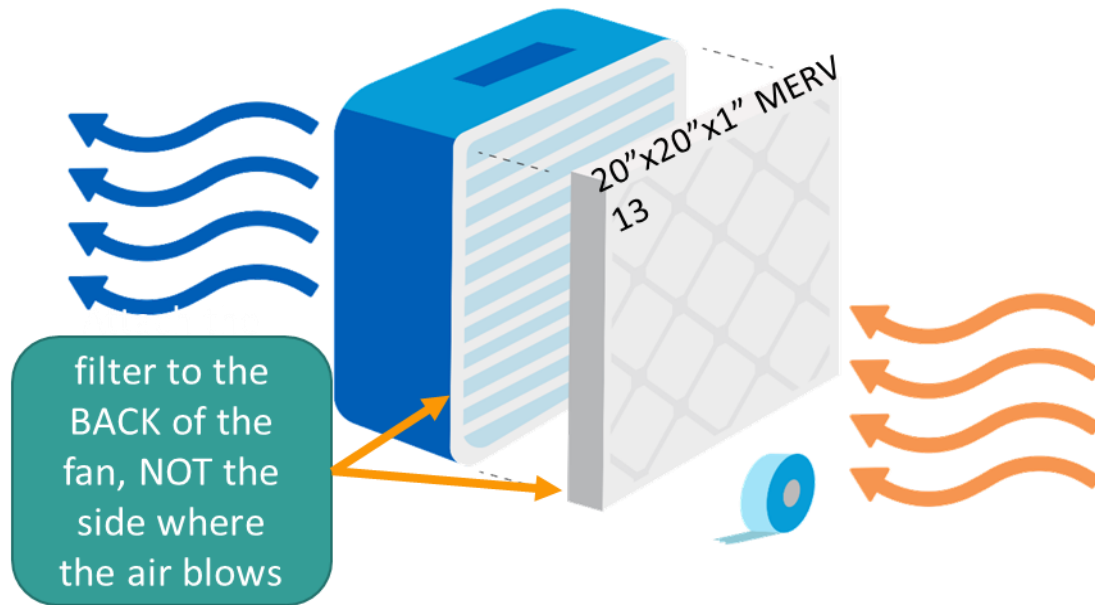
Please join us for EPA's next Indoor Air Quality Science Webinar

Navigating the Landscape of Air Cleaning Technologies for COVID-19

With guest speakers Brent Stephens, Ph.D., Illinois Institute of Technology and Elliott Gall, Ph.D., Portland State University

	<u>Date</u> Wednesday, June 16, 2021	<u>Time</u> 1:00 – 3:00 P.M. EDT	
---	---	-------------------------------------	---

Another Option: Create a Do-it-Yourself Box Fan Filter



Resources:

- [WA Department of Ecology's video on how to make your own clean air fan](#)
- [Puget Sound Clean Air Agency's info on DIY air filters](#)
- [Colville Tribes Air Quality Program box fan filter a DIY users guide](#)
- [Case-Study_DIY-Portable-Air-Cleaners-083121.pdf \(ucdavis.edu\)](#)
- [High Quality DIY Box Fan Air Purifier "Comparetto Cube" - YouTube](#)

Thank you for joining us in February for our webinar: [*A National Conversation on Indoor Air & K-12 Schools During the COVID-19 Pandemic.*](#)

Today, the Johns Hopkins Center for Health Security at the Bloomberg School of Public Health released a new report calling on kindergarten through 12th grade (K-12) school administrators to urgently invest in ways to provide healthy air in schools to increase safety during the COVID-19 pandemic and potential future respiratory disease outbreaks, as well as to improve student learning.



The new report, [*School Ventilation: A Vital Tool to Reduce COVID-19 Spread*](#), reviews how improvements in building ventilation can reduce the risks of disease transmission. The report also summarizes current ventilation guidelines for K-12 schools and shares the results of an analysis finding that ventilation improvements are a cost-effective public health measure compared to enhanced (“deep”) cleaning that focuses on surfaces.

[Tips to Improve Indoor Ventilation in K-12 Schools to Help Reduce COVID-19 Transmission \(centerforhealthsecurity.org\)](#)

“School systems should use only proven technologies for improving indoor air quality: appropriate ventilation, HEPA filtration, or ultraviolet germicidal irradiation. They should not use chemical foggers or any “air cleaner” other than filtration and ultraviolet germicidal irradiation. School systems should not use unproven technologies such as ozone generators, ionization, plasma, and air disinfection with chemical foggers and sprays. The effect of these cleaning methods on children has not been tested and may be detrimental to their health. The primary aim for improving air quality should be to remove contaminants and impurities from the air and not to introduce new substances into the air.”

[20210526-school-ventilation.pdf](https://www.cdc.gov/20210526-school-ventilation.pdf)
([centerforhealthsecurity.org](https://www.cdc.gov/centerforhealthsecurity.org))

Schools For Health – How School Buildings Influence Student Health, Thinking and Performance



Schools For Health

For Health Menu 

[Home](#) [COVID-19 Reopening Strategies](#) [COVID-19 FAQs](#) [Relevant Research](#)

SCHOOLS



HEALTHY BUILDINGS
FOR HEALTH  **HARVARD T.H. CHAN**
SCHOOL OF PUBLIC HEALTH

How School Buildings Influence Student Health, Thinking and Performance



HARVARD T.H. CHAN
SCHOOL OF PUBLIC HEALTH



COVID-19 + SCHOOLS: WHAT TO KNOW



5-step guide to checking ventilation rates in classrooms

Joseph Allen, Jack Szemplak, Emily Ames, Jesse Costello-Laurent
Harvard Healthy Buildings program | www.forschool.org

VENTILATION GUIDE

5 STEP GUIDE TO CHECKING VENTILATION RATES IN CLASSROOMS

DOWNLOAD THE GUIDE



COVID-19 REPORT

RISK REDUCTION STRATEGIES FOR REOPENING SCHOOLS

READ THE REPORT



COVID-19 TOOLS

CALCULATORS FOR THE CLASSROOM

SEE ALL TOOLS

COVID-19 + SCHOOLS: RESEARCH AND NEWS



Washington Post: Schools finally have the road map they need to fully reopen

[View Article](#)



Washington Post: Don't let covid-19 keep kids from playing sports

[View Article](#)



Updates to the Risk Reduction Strategies For Reopening Schools Report

[View Article](#)



New Video Released

Watch our 8 Minute Video on the Importance of
Filtration in Schools



[The Importance of Filtration In Schools - YouTube](#)

[Importance of Ventilation in Schools - YouTube](#)

Children spend a large portion of their day indoors at school. Ensuring adequate filtration and ventilation in classrooms is essential and will help support the health and productivity of students and teachers.

Tool Lending Library

Smart Buildings Center, NW Energy Efficiency Council (NEEC)

<https://www.smartbuildingscenter.org/tool-library/>

Lending “library” of diagnostic tools.

CO, CO₂, data loggers, power meters, lighting loggers, infrared cameras, liquid and air flow measurement devices, etc.

Free of charge. Shipping or pick up Tues-Thurs 9-4.

Guidance on how to use/interpret data.

Library of videos and application notes.

Tool-library@smartbuildingscenter.org

206-538-0685

You can subscribe for updates.





Thank You

Nancy P Bernard, MPH, REHS, CPSI
Nancy.Bernard@doh.wa.gov

Resources available:

www.doh.wa.gov/schoolenvironment

Join my list serve for timely information!



Public Health – Always Working for a Safer and Healthier Washington