HEALTHY PEOPLE AND BUILDINGS – REDUCING EXPOSURES TO GERMS, CHEMICALS, AND ASTHMA TRIGGERS

Nancy P. Bernard, MPH, REHS

WSUEFC May 2019

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.



Indoor Air Quality Principles

- **Source control**
- **Ventilation**
- **“If there is a pile of manure in the room, do not try to remove the odor by ventilation. Remove the pile of manure.”**

Max Joseph Von Pettenkofer, 1818-1901

Control Asthma Triggers

- Door mats
- Avoid clutter / cleanable surfaces
- Limit hanging items/ T-bar clips
- Vinyl/leather furniture
- Animals
- Food storage
- Water based/low VOC markers
- No fragranced products
- No chemicals from home
- Premixed clay
- Carpet cleaning
- Wash stuffed toys in hot water every 2 weeks

Perfumed, Fragranced, & Scented

- **Added fragrances can trigger asthma attacks, allergies, sensitization.**
- **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.**
- **Natural oils – lavender, lemon, etc.**
- **Look for “fragrance-free,” not “unscented”.**
- **New 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

- **Not okay in schools/public places**
- **Sensitization reactions/asthma**
- **Respiratory, eye, skin irritation, headaches**
- **No diffusers, plug-ins, Sensei, candles, etc.**
- **Particulates/oils spread through room**

American Lung Association **Sample Fragrance-Free School Policy**
http://www.healthyschools.org/documents/fragrance-free-policy-sample-updated.pdf

HEALTHY AIR FOR HEALTHY SCHOOLS

Good ventilation and prohibiting air borne irritants (ABI) means healthy indoor air quality.

Reduce asthma and headaches – Increase attendance and performance!

Eliminate unnecessary chemicals, improve ventilation and filtration.

Use only chemicals, cleaners, or disinfectants approved and provided by the school or district. **Never bring in products from home.**

Infection Control: Clean surfaces with **plain soap and water.** Leave the disinfection for trained custodians with approved effective products.

Do not use disinfectant wipes.

Do not use room deodorizing sprays, plug-ins, scented candle warmers, scented reeds, candles, incense, essential oils, or potpourris.

Do not use perfumes, colognes, body sprays and other strongly scented personal care products.

Use water-based, unscented, crayon-based, or low-odor items. Do not use permanent, solvent-based or scented pens, markers, and board cleaners.

Never use air-cleaning devices that generate ozone or are called "ionizers." Ozone is a respiratory irritant.

Do not use rubber cement.

Use spray paints **only** with exhaust ventilation.

Do not use urinal cakes.

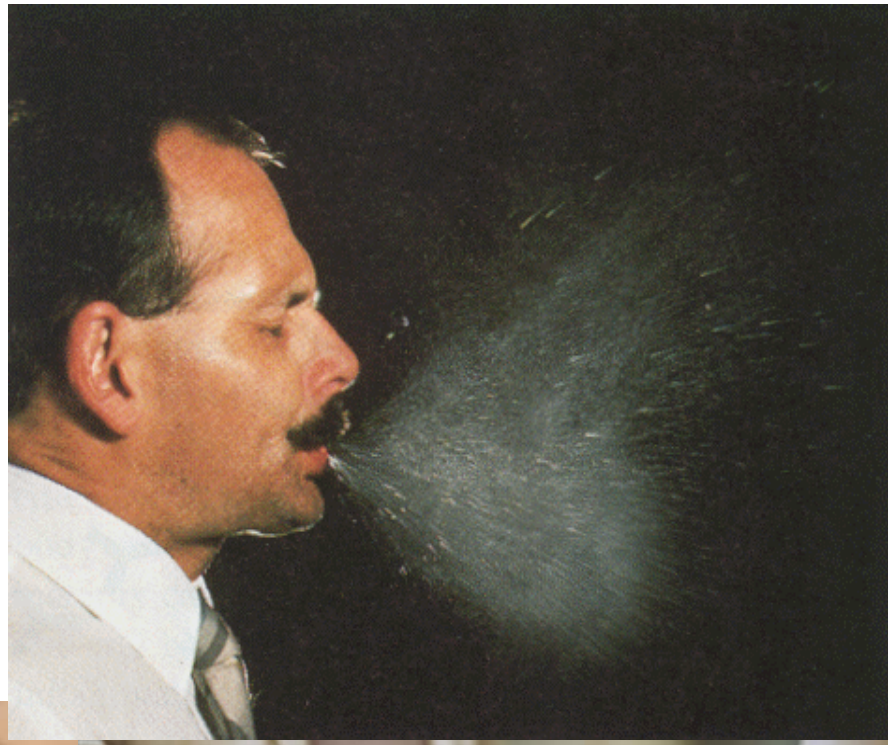
Washington State Department of Health

3D Printers

Adequate mechanical ventilation must be provided whenever kilns, paints, glues or other vaporous materials are being used. All sources producing air contaminants of public health importance shall be controlled by the provision and maintenance of a local mechanical exhaust ventilation system.

Spreading Germs

- Foodborne
- Waterborne
- Person-to-Person
- Airborne
- Contaminated surfaces



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.**

Hand Antiseptics

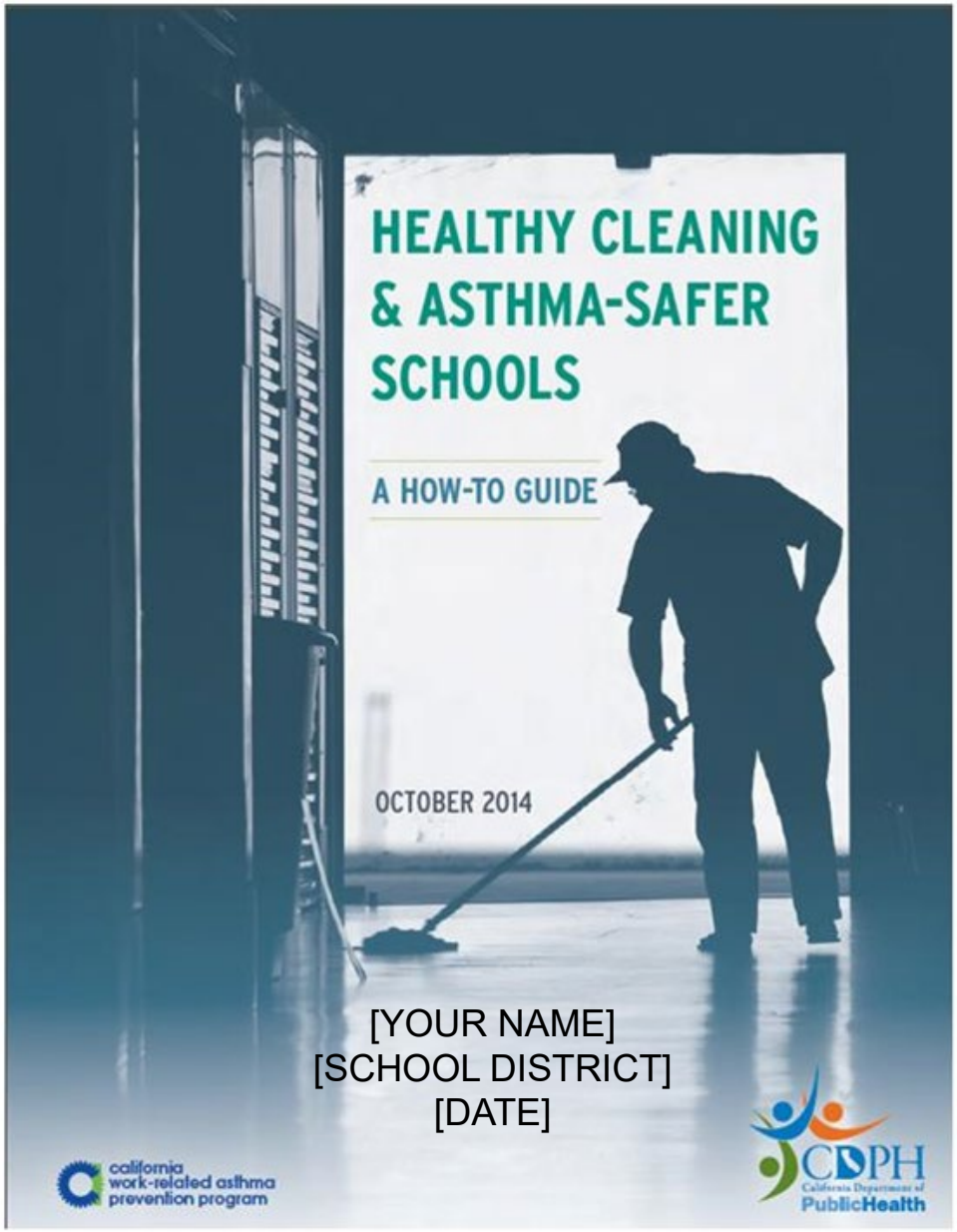
- Not a substitute for hand washing
- Not effective on dirty hands
- At least 60% alcohol
- Hands should stay wet for 10-15 seconds
- Not considered effective on non-enveloped viruses or spores
- Flammable / poison
- Fragrance free
- Not recommended:
  - Benzalkonium chloride / “quat” based / non-alcohol / “natural”

CDC: Show Me the Science:
http://www.cdc.gov/handwashing/show-me-the-science-hand-sanitizer.html

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**

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.

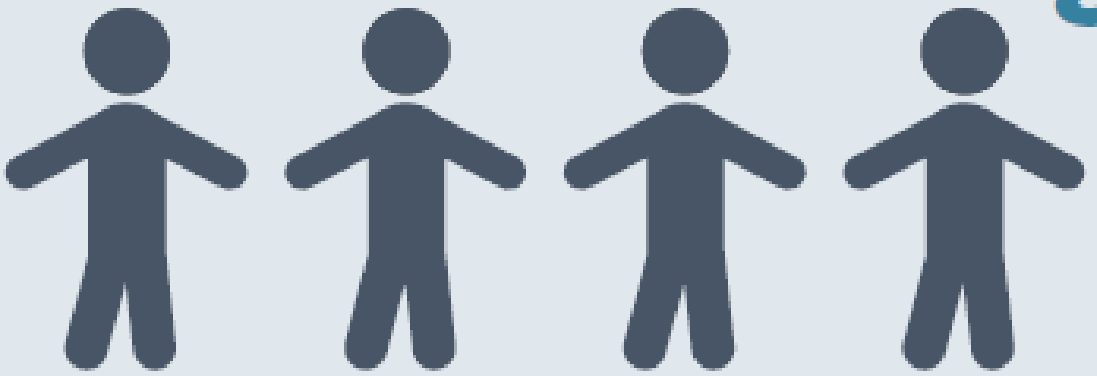


Work-Related Asthma in California

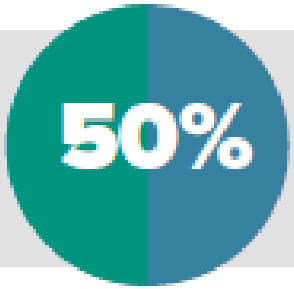
20%

1 in 5 worked as a cleaner.

80%



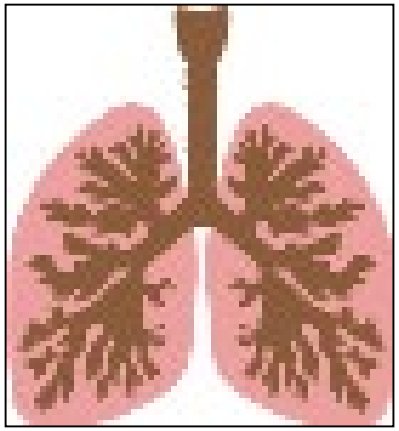
4 of 5 of workers did not clean but were around during cleaning or after cleaning just happened.



Half had new asthma that started after they began work. On-the-job exposures likely caused their asthma.

Health Hazards of Cleaning Products

- Causing asthma and making it worse
- Irritating skin, eyes, nose, throat, causing headaches
- Disrupting or acting like hormones
- Causing cancer



Asthma: significant problem in schools

Poor indoor air quality makes it worse

Work -Related Asthma

New asthma from work

or

Asthma gets worse while at work

New Asthma

People may get asthma as adults
from exposures at work

Asthmagens:
Ingredients that may cause asthma

Small amounts
⟶ lifetime impact

Safer Products Might Have Prevented Illness and Saved Custodian's Job

Work-Aggravated Asthma

Substances including asthmagens that may make asthma worse at work:

- Strong odors
- Irritating chemicals
- Dust
- Cold air
- Animal dander
- Mold
- Plant materials

Agricultural dust near school

Mold on wall

WRA + Cleaning Products

Many with WRA didn't know specific ingredients.
Those who knew reported:

- Bleach
- Acid cleaners
- Disinfectants
- Carpet cleaner
- Floor stripper
- Ammonia
- Graffiti removers
- Mixing cleaning products, etc.

Learning and Productivity

Asthma: leading cause of school absences for a chronic illness

Hospital care cost $193 million for asthma in 2005-2007 in California

Schools lose money each day a student is absent

Lower academic achievement

Lower productivity among workers, more sick days

Solution: Cleaning for Asthma-Safe Schools

Protects custodians, staff, children's health

Improves indoor air quality

Reduces environmental harm

Successes

Cost-savings

New equipment

Healthier environments

Reduced absenteeism

Fewer injuries

"Green products can clean just as well or better than some of the products we used that were not labeled or considered "green." –Livermore School District

Green Saves Green

School District Example:

Reduced cleaning chemicals

+

Changed cleaning procedures

=

28% cost savings

Green Saves Green

"By switching to greener cleaners, my custodians could see that we could save the district money and that could save their jobs." – Alameda Unified School District, California

"Financially, it's a wash, and the benefits are huge. Why would you not switch to green when it benefits everyone's health? It's a no-brainer." –Livermore Joint Valley Unified School District, California

Green Cleaning

Definition: Products and services that reduce health and environmental impact compared to other products and services used for the same purpose.

Green Cleaners

Won’t cause cancer, impact reproductive health. Some are safer for asthma.

Green Cleaners

Improved air quality

Won't pollute air or harm fish

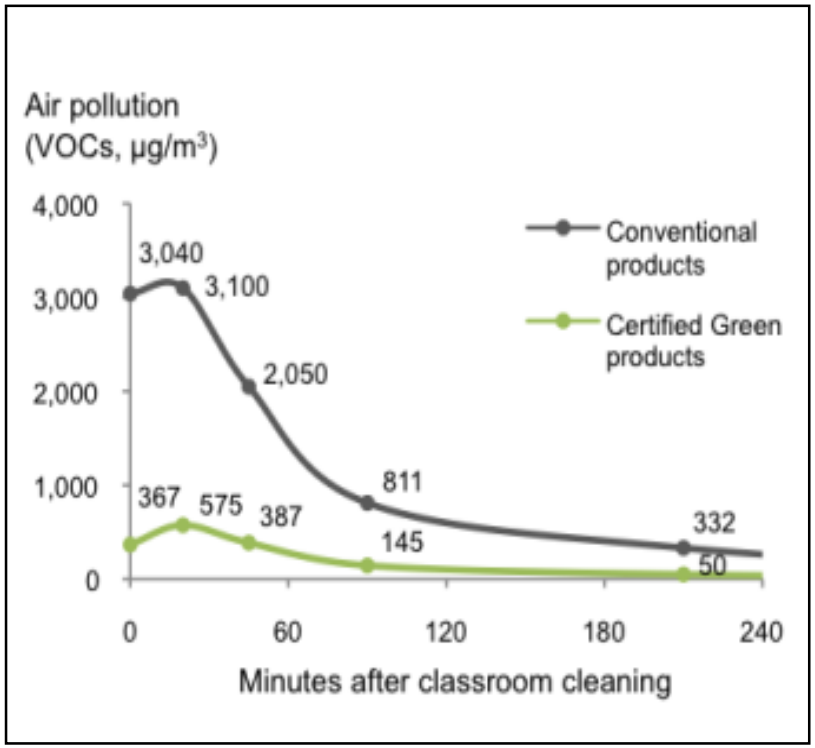
Certification Programs

Green Seal Industrial and Institutional Cleaners Standard (GS-37)

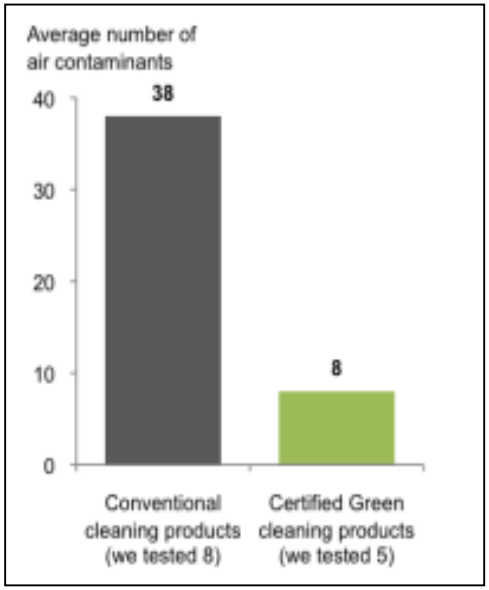
UL ECOLOGO Hard Surface Cleaners Standard (UL 2759)

Consider settings with vulnerable populations

Greener School Cleaning Supplies = Fresh Air + Healthier Schools



Green cleaning releases less air pollution



Green general purpose cleaners had fewer air contaminants

Greenwashing

- Selling you a “green” product that isn’t actually green.

- Third-party certified groups make sure products meet criteria to reduce risks to health and the environment.

Advertising and labels not always reliable

Greenwashing

Front of Bottle

Back of Bottle

Company's self-declared green products may not be safer or healthier

Green Equipment

- Use less chemicals
- Increase productivity
- Reduce mold growth

Abrasive Floor Pads

Carpet Extractor

Steam Cleaning Equipment

Green Equipment

Get rid of dust, allergens from shoes

Keep floors cleaner

HEPA vacuum

Floor machine

Walk-off mat

Microfiber

Important cleaning tools

- Little to no cleaning chemicals
- Less effort, absorbent, durable
- Prevent injuries, illnesses
- Avoid cross-contamination
- Simple to clean

Asthma-Safer Cleaning

- Update and maintain equipment
- Ventilate adequately and regularly change air filters
- Air fresheners not asthma-safer
- Clean has no scent

Asthma-Safer Cleaning

- Disinfect only when necessary
- Don't disinfect floors--no greater health protection
- High-risk areas to possibly disinfect: athletic departments, bathrooms, cafeterias, child care areas, kitchens, nurse health rooms

Steps

1. Create team
2. Train team on asthma-safer cleaning
3. Inventory products
4. Select certified products to test
5. Arrange vendor presentations, select vendors
6. Test and evaluate products
7. Share your successes, set district policies

Outcomes

- Custodians: experts in district
- Leaders become knowledgeable about healthier products

  "Let's pick a different product. This one has asthmagens."
- Less absenteeism
- Reduce cleaning budgets
- Serve as a model of success

Clean – Sanitize – Disinfect?

- **Cleaners**, **Soaps**, **Detergents**
  - Remove dirt/organics.
- **Sanitizers**
  - Reduce germs from surfaces – 99.9%.
- **Disinfectants**
  - Destroy or inactivate germs and prevent them from growing.

http://www.cdc.gov/flu/pdf/freeresources/updated/cleaning_disinfecting_schools.pdf

Cleaning and/or Disinfecting ?

- High touch surfaces
  - Door handles
  - Faucets
  - Keyboards
  - Railings
  - Phones
  - Drinking Fountains
- Bathrooms
- Drinking Fountains
- Where someone is ill

Restrooms

- Clean/disinfect bathroom at least daily.
- Soap and paper towel dispensers full.
- Tempered (85^{o}-105^{o}F) water.
- WAC 246-366-060: “Adequate, conveniently located toilet and handwashing facilities shall be provided for students and employees.

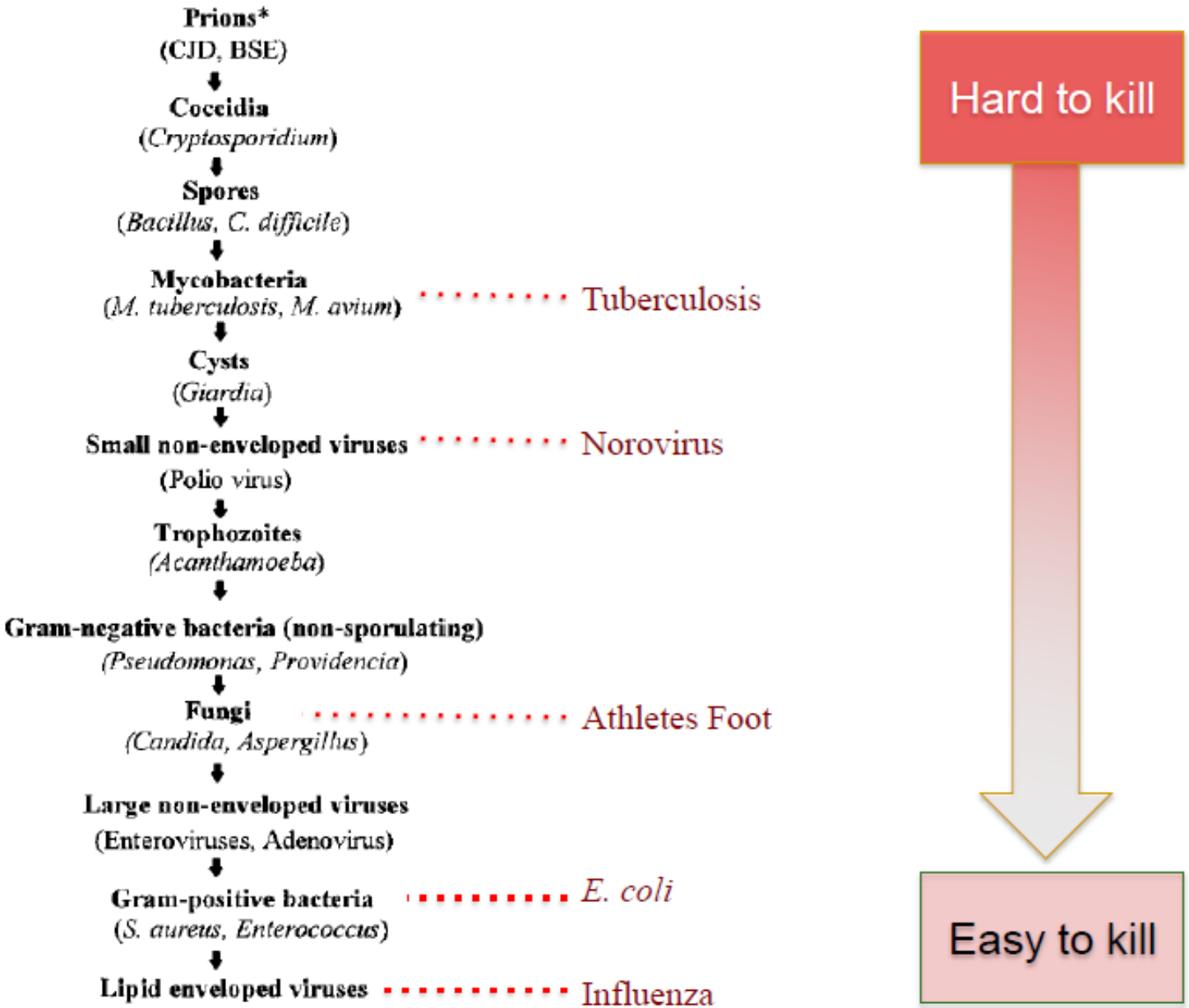


FIG. 1. Descending order of resistance to antiseptics and disinfectants. The asterisk indicates that the conclusions are not yet universally agreed upon.

Source: McDonnell & Russell, 1999

Disinfectants

Considered pesticides by Environmental Protection Agency (EPA)

Cannot be third-party certified by Green Seal or UL ECOLOGO

EPA's Design for the Environment has a safer disinfectants program

Characteristics of Selected Disinfectants

For More Information, see the 'Disinfection 101' document at www.cfsph.iastate.edu

Disinfectant Category	Alcohols	Aldehydes	Biguanides	Halogens: Hypochlorites	Halogens: Iodine Compounds	Oxidizing Agents	Phenols	Quaternary Ammonium Compounds (QAC)
Sample Trade Names	Ethyl alcohol Isopropyl alcohol	Formaldehyde Glutaraldehyde	Chlorhexidine Nolvasan® Virosan®	Bleach	Betadyne® Providone®	Hydrogen peroxide Peracetic acid Virkon S® Oxy-Sept 333®	One-Stroke Environ® Pheno-Tek II® Tek-Trol®	Roccal® DiQuat® D-256®
Mechanism of Action	•Precipitates proteins •Denatures lipids	•Denatures proteins •Alkylates nucleic acids	•Alters membrane permeability	•Denatures proteins	•Denatures proteins	•Denature proteins and lipids	• Denatures proteins • Alters cell wall permeability	• Denatures proteins • Binds phospholipids of cell membrane
Advantages	•Fast acting •Leaves no residue	•Broad spectrum	•Broad spectrum	•Broad spectrum •Short contact time •Inexpensive	•Stable in storage •Relatively safe	•Broad spectrum	• Good efficacy with organic material • Non-corrosive • Stable in storage	• Stable in storage • Non-irritating to skin • Effective at high temperatures and high pH (9-10)
Disadvantages	•Rapid evaporation •Flammable	•Carcinogenic •Mucous membranes and tissue irritation •Only use in well ventilated areas	•Only functions in limited pH range (5–7) •Toxic to fish (environmental concern)	•Inactivated by sunlight •Requires frequent application •Corrodes metals •Mucous membrane and tissue irritation	•Inactivated by QACs •Requires frequent application •Corrosive •Stains clothes and treated surfaces	•Damaging to some metals	• Can cause skin and eye irritation	
Precautions	Flammable	Carcinogenic		Never mix with acids; toxic chlorine gas will be released			May be toxic to animals, especially cats and pigs	
Vegetative Bacteria	Effective	Effective	Effective	Effective	Effective	Effective	Effective	YES—Gram Positive Limited—Gram Negative
Mycobacteria	Effective	Effective	Variable	Effective	Limited	Effective	Variable	Variable
Enveloped Viruses	Effective	Effective	Limited	Effective	Effective	Effective	Effective	Variable
Non-enveloped Viruses	Variable	Effective	Limited	Effective	Limited	Effective	Variable	Not Effective
Spores	Not Effective	Effective	Not Effective	Variable	Limited	Variable	Not Effective	Not Effective
Fungi	Effective	Effective	Limited	Effective	Effective	Variable	Variable	Variable
Efficacy with Organic Matter	Reduced	Reduced	?	Rapidly reduced	Rapidly reduced	Variable	Effective	Inactivated
Efficacy with Hard Water	?	Reduced	?	Effective	?	?	Effective	Inactivated
Efficacy with Soap/ Detergents	?	Reduced	Inactivated	Inactivated	Effective	?	Effective	Inactivated

? Information not found

Disclaimer: The use of trade names does not in any way signify endorsement of a particular product. For additional product names, please consult the most recent Compendium of Veterinary Products.

References: Linton AH, Hugo WB, Russel AD. Disinfection in Veterinary and Farm Practice. 1987. Blackwell Scientific Publications; Oxford, England; Quinn PJ, Markey BK. Disinfection and Disease Prevention in Veterinary Medicine, In: Block SS, ed., Disinfection, Sterilization and Preservation. 5th edition. 2001. Lippincott, Williams and Wilkins: Philadelphia.

the Center for Food Security & Public Health
Iowa State University
www.cfsph.iastate.edu

Safer Products and Practices for Disinfecting and Sanitizing Surfaces

San Francisco Department of the Environment

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 SENSITI-ZATION	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

EPA's Design for the Environment

- **Antimicrobial Pesticide Pilot 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 action**

Disinfectants

Asthma-Safer Ingredients	Ingredients that may Cause Asthma
• Hydrogen Peroxide • Lactic Acid • Citric Acid • Alcohol-ethyl alcohol, isopropyl alcohol	• Quaternary ammonium compounds include alkyl dimethyl benzyl ammonium chloride, benzalkonium chloride, lauryl dimethyl benzyl ammonium chloride, didecyl dimethyl ammonium chloride • Bleach (sodium hypochlorite) • Acetic acid (found in vinegar) • Thymol (skin sensitizer, suspected asthmagen) • Glutaraldehyde • Peracetic acid (peroxyacetic acid)

Bleach

- Disinfectant, NOT a cleaner
- Make a fresh solution daily
- Never mix with ammonia or acid products
- Use gloves, ventilation, eye protection
- Emergency Eye Wash
  - DOSH Directive 13.0 July 15, 2011

http://www.lni.wa.gov/Safety/Rules/Policies/PDFs/DD1300.pdf

Washington State Department of Health

DOH 970-216 January 2015

Disinfecting and Sanitizing with Bleach
Guidelines for Mixing Bleach Solutions for Child Care and Similar Environments

Preparation Tips

- Prepare a fresh bleach solution each day in a well-ventilated area that is separate from children.
- Label bottles of bleach solution with contents, ratio and date mixed.
- Use cool water. Always add bleach to cool water, NOT water to bleach.
- Wear gloves and eye protection.
- Prepare solution in an area with an eye wash.

Disinfecting Solutions

For use on diaper change tables, hand washing sinks, bathrooms (including toilet bowls, toilet seats, training rings, soap dispensers, potty chairs), door and cabinet handles, etc.

Water	Bleach Strength* 2.75%	Bleach Strength* 5.25-6.25%	Bleach Strength* 8.25%
1 Gallon	1/3 Cup, plus 1 Tablespoon	3 Tablespoons	2 Tablespoons
1 Quart	1½ Tablespoons	2¼ Teaspoons	1½ Teaspoons

Sanitizing Solutions

For use on eating utensils, food use contact surfaces, mixed use tables, high chair trays, crib frames and mattresses, toys, pacifiers, floors, sleep mats, etc.

1 Gallon	1 Tablespoon	2 Teaspoons	1 Teaspoon
1 Quart	1 Teaspoon	½ Teaspoon	¼ Teaspoon

Disinfection of non-porous non-food contact surfaces can be achieved with 600 parts per million (ppm) of chlorine bleach. To make measuring easier, the strengths listed in this table represent approximately 600-800 ppm of bleach for disinfecting, and approximately 100 ppm for sanitizing. Chlorine test strips with a measuring range of 0–800 ppm or higher can also be used to determine the strength of the solution.

Contact your local health jurisdiction for further instructions on cleaning and disinfecting if specific disease or organisms are identified as causing illness in your program.

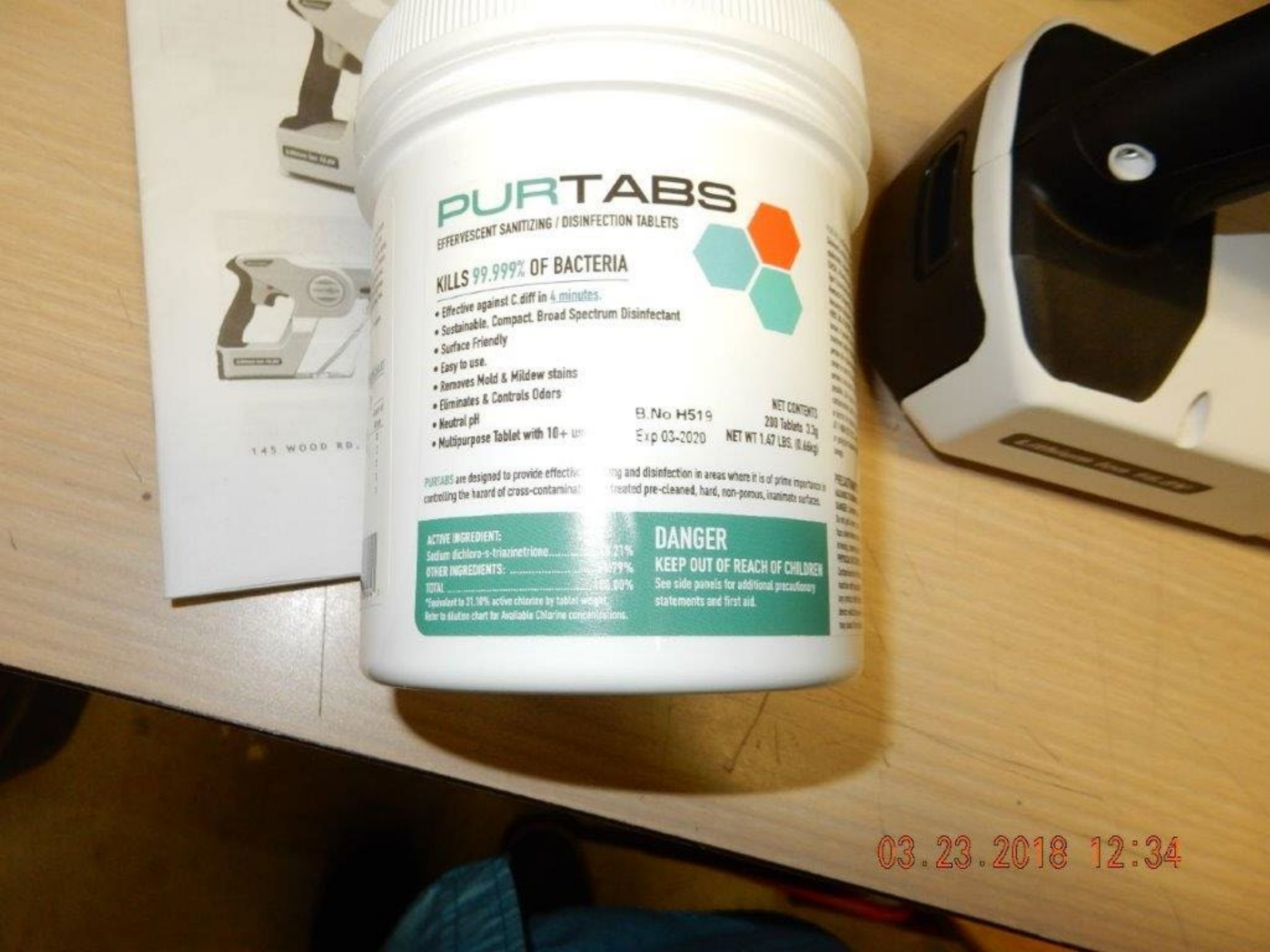
***Use only plain unscented bleach** that lists the percent (%) strength on the manufacturer's label. Read the label on the bleach bottle to determine the bleach strength. For example, Sodium Hypochlorite…6.25% or 8.25%.

Steps to Follow

- Clean the surface with soap and water before disinfecting or sanitizing.
- Rinse with clean water and dry with paper towel.
- Apply chlorine bleach and water solution to the entire area to be disinfected or sanitized.
- Air dry for at least 2 minutes.

This chart was created by the Disinfection Workgroup led by the Washington State Department of Health. Workgroup members consist of staff from the Department of Early Learning, Snohomish Health District, Local Hazardous Waste Management Program in King County, Washington State Department of Ecology, the Coalition for Safety and Health in Early Learning, and the Washington State Department of Health.

http://here.doh.wa.gov/materials/guidelines-for-bleach-solutions/13_Disinfect_E15L.pdf



03.23.2018 12:34

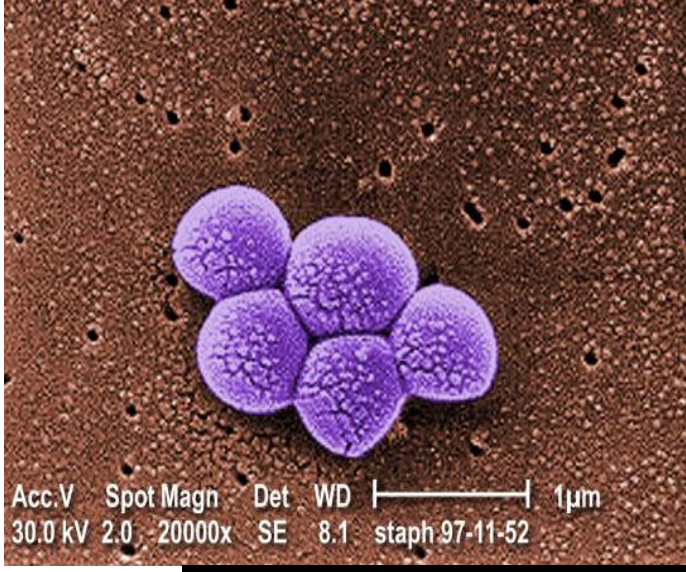
Special Concerns

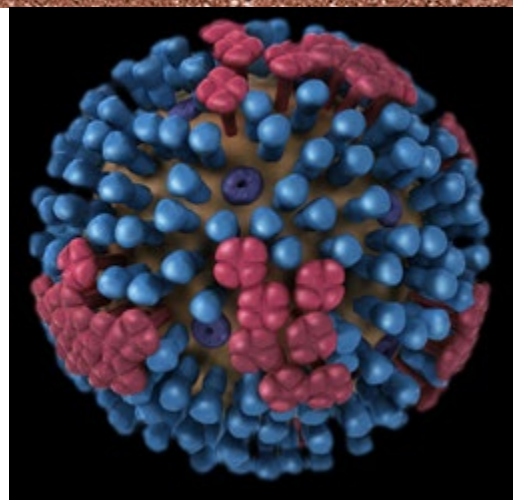
- Cake toilet deodorizers
  - paradicholorobenzene
- Citrus & Terpene Solvents
  - D-Limonene
- Nano Technology
  - nano-silver
- "Air Fresheners"
- Ozone generators
- Fragrances
- Anti-microbial soaps
  - Triclosan / Triclocarban

No Foggers

Specifics

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





Sporicide / Noro / EV D68 / Hanta

- Blood spills, diarrheal stools, rodent droppings 5000 ppm bleach
- Surfaces must be cleaned with soap and water first
- Usual 1:10 solution - 1 part bleach to 9 parts water
  - 6.25 %: 1 1/2 cups bleach/1 gallon water
  - 8.25 % bleach, (1:9) - 1 1/4 cups bleach/1 gallon water
  - Wet contact time - diarrheal stools: 5+ minutes
  - Wet contact time - Noroviruses: 1+ minute
  - Wet contact time - rodent droppings: 10 minutes
    - See WSDOH Hantavirus webpage for specifics.

➢ This is an extremely concentrated bleach solution. Protect eyes, skin, and clothing during preparation and use. Keep the area well ventilated.

Fungi/Ringworm/Athlete's Foot

- **1) Clean thoroughly with soap and water to remove all organic material.**
- **2) Apply chlorine bleach solution with a concentration of 2400 ppm (see below), leaving the surface wet for ten minutes or a 3600 ppm bleach solution staying wet for five minutes.**
- **3) Rinse with clean water.**
- **Fungus can be difficult to eliminate. Where persistent, multiple applications of bleach at a concentration of 5000 ppm, with drying in between, may be necessary to kill.**

OR

- **Use an EPA registered disinfectant where the label indicates it is effective against fungi.**

http://www.cdc.gov/fungal/diseases/ringworm/index.html

MRSA

(Methicillin-Resistant *Staphylococcus aureus*)

- Type of "staph" infection
- Often causes skin infections
- Resistant to (not killed by) penicillin
- Treatable with appropriate antibiotic
- Lives on surfaces for days – at lea

Athletic Areas / MRSA

- **Intact surfaces.**
- **Routine schedules for cleaning & disinfecting.**
- **All hard surfaces that may contact skin at least daily.**
- **EPA-approved disinfectant.**
- **Keep soap dispensers full – fragrance free, NOT antibiotic soap.**
- **Have separate cleaning mops (preferably micro-fiber) and buckets for athletic areas.**

Norovirus

- **24-48 hour incubation period**
- **Sudden onset vomiting, diarrhea , cramping**
- **Low-grade fever**
- **Symptoms last 1-2 days**
- **Viruses in stool and vomit**
- **Can shed virus for days to 2 weeks after symptoms gone**
- **Highly contagious (as little as10 virus particles can cause illness)**
- **Lives for days on surfaces, where it can be "picked up" by others**

Vomit Events in School

Preparedness

- Identify disinfection products sufficient to inactivate norovirus, consider hard and soft surfaces
- Include a training program for clean-up employees, building maintenance, janitorial, and other affected staff.
- Ready personal protective equipment (PPE).

25' Radius

- People are kept out of the actual "spill' area
- Initial cleaning of gross visible contamination to minimize spread (including disinfectant and/or absorbent).
- Any uncovered food in the immediate area must be discarded.

Report & Monitor

- Notify local health of absenteeism and/or if possibly linked to kitchen service
- Cleaning and disinfection tools and equipment from food preparation, storage and handling areas.
- Monitor clean-up employees for symptoms for 72 hours.

Resources

- Cleaning for Asthma-Safe Schools (CLASS), *CDPH*
  - *https://www.cdph.ca.gov/Programs/CCDPHP/DEODC/OHB/WRAPP/Pages/CLASS.aspx*
- *Cleaning for Healthier Schools – Infection Control Handbook 2010*
  - https://portal.ct.gov/-/media/Departments-and-Agencies/DPH/dph/environmental_health/eoha/pdf/CleaningforHealthierSchoolsFINAL2411pdf.pdf?la=en
- Green Clean Schools, Healthy Schools Campaign, The Quick & Easy Guide to Green Cleaning in Schools
  - https://healthyschoolscampaign.org/programs/green-clean-schools/
- Cleaning For Healthy Schools Toolkit
  - http://healthyschools.org/Cleaning-For-Healthy-Schools/
- Informed Green Solutions
  - http://www.informedgreensolutions.org/
- Characteristics of Selected Disinfectants
  - http://www.cfsph.iastate.edu/Disinfection/Assets/CharacteristicsSelectedDisinfectants.pdf
- *Safer Products and Practices for Disinfecting*, 2014, SFDE, RPN
  - http://www.sfenvironment.org/sites/default/files/fliers/files/sfe_th_safer_products_and_practices_for_disinfecting.pdf

Guidelines for Cleaning, Disinfecting, and Handling Body Fluids in School – Appendix 8

OSPI *Infectious Disease Control Guide for School Staff 2014*

A. Standard Precautions
B. General Precautions
C. Hand Washing Procedures
D. Use of Gloves
E. Contaminated Needles, Broken Glass, or Other Sharp Items
F. Cardiopulmonary Resuscitation
G. General Housekeeping Practices
H. Disinfectants
I. Procedures for Cleaning and Disinfection of Hard Surfaces
J. Blood or Body Fluid Spills
K. Cleaning up vomit
L. Athletics
M. Procedures for Cleaning and Disinfection of Carpets/Rugs
N. Disposal of Blood-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

THANK YOU!

Nancy P Bernard, MPH, REHS
Nancy.Bernard@doh.wa.gov
360-236-3072

Resources available:

www.doh.wa.gov/schoolenvironment

Join my list serve for timely information!

Registration open for the Fall 2019 School Environmental Health & Safety Workshops at 9 locations.


Washington State Department of
Health