Zoonotic Diseases in Our Communities
Cleaning and Disinfection for Healthy Schools
Reduce Infections, Asthma, and Pests

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School EHS and IAQ Programs
Fall 2017 Workshops
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.
DOH School Environmental Health & Safety Program

Provide technical support & training

- Local Health Jurisdictions (LHJs)
- Schools

Authority

- RCW 43.20.050(2)(c) Adopt rules controlling public health related to environmental conditions including but not limited to heating, lighting, ventilation, sanitary facilities, cleanliness and space in all types of public facilities including but not limited to food service establishments, schools, institutions, ...

- WAC 246-366

- DOH / OSPI K12 Health & Safety Guide
School Environmental Health & Safety

- Animals
- Control of Communicable & Zoonotic Diseases
  - Disinfection and Green Cleaning
- Hazardous Chemicals
  - Arts, Science Labs, CTE
- Indoor Air Quality
  - Asthma, Mold, Ventilation, Filtration
- Injury Prevention
  - Athletics, Playgrounds, Fall Protection
- Integrated Pest Management
- Lighting
- Noise
Asthma Triggers

- Pollen
- Smoke
- Rodents
- Cockroaches
- Dust mites/dust
- Fragrances/Essential Oils
- Cleaners
- Mold
- Infections
- Stress
- Athletics
- Pool Chemicals
Integrated Pest Management

- Common sense strategies to reduce food, water, and shelter for pests.

- Create a safe and healthy learning environment

- Reduce pests and pesticide exposure

Resources and Information

- WSU School IPM: [https://schoolipm.wsu.edu/](https://schoolipm.wsu.edu/)
- EPA Managing Pests in Schools: [https://www.epa.gov/managing-pests-schools](https://www.epa.gov/managing-pests-schools)
Zoonotic Diseases
Animal Concerns

- Salmonella
- Psittacosis (parrot fever)
- Rabies
- West Nile Virus
- Hanta Virus
- Lice
- Bed bugs
- Classroom Pets
  - Policy/Procedures
  - Compendium of Measures to Prevent Disease Associated with Animals in Public Settings
  - DOH/OSPI Health & Safety Guide for K-12 Schools
    - Section O, Appendix F
Rabies

- **Dogs, Cats, & Ferrets** – require vaccination

- **Bats**
  - Can contract rabies and die from it
  - Avoid contact
  - Call the local health jurisdiction if potential contact
  - Contain bat safely until instructions from the LHJ
  - Statewide – normally 3-10% positive. This year ~8.5% (21 total)
  - Dried guano – histoplasmosis (fungus), respiratory hazard
  - How to Safely Capture a Bat, PHSKC [https://youtu.be/Fd8PMAc6T2c](https://youtu.be/Fd8PMAc6T2c)
  - [https://www.cdc.gov/rabies/exposure/animals/bats.html](https://www.cdc.gov/rabies/exposure/animals/bats.html)
Psittacosis

- *Chlamydia psittaci*, gram-negative bacteria
- Reservoir: birds (Avian Chlamydiosis)
- Inhalation of dried secretions from infected birds
  - Parrots, parakeets, macaws, cockatiels, turkeys, ducks
  - Infectious for over a month if protected by organic debri/feces
- Incubation: 5-19 days
- Humans: fever, chills, headache, muscle aches, pneumonia
- Solution for schools: No Birds

https://www.cdc.gov/pneumonia/atypical/psittacosis.html
Hantavirus

- Hantavirus pulmonary syndrome, *Sin Nombre* virus
- Carried by deer mice (*Peromyscus maniculatus*)
- Inhalation of dust from rodent droppings and urine
- Treat ALL mice infestations as though they are deer mice

[https://www.doh.wa.gov/YouandYourFamily/IllnessandDisease/Hantavirus](https://www.doh.wa.gov/YouandYourFamily/IllnessandDisease/Hantavirus)

*2017 represents partial year data as of 7/18/17 and is subject to change*
Cleaning up Rodent Infested Areas

- Air out enclosed areas (30 minutes)
- PPE
- Do not stir up dust – NO SWEEPING/VACUUMING
- Thoroughly wet contaminated areas with 10% bleach.
- Soak for 5 minutes
- Steam clean upholstered materials/carpet.
- Clean/Disinfect gloves before removal.
- Double bag with all cleaning materials, dispose.
- Wash hands thoroughly.
- DOH Rodents: https://www.doh.wa.gov/CommunityandEnvironment/Pests/Rodents
Salmonellosis

- Salmonellosis is an intestinal disease
- Exposure to *Salmonella* bacteria can be through direct and indirect contact with infected animals
- Main route of transmission is hand-to-mouth contact (fecal-oral)
- Transmitted by pets and farm animals,
  - Reptiles: Turtles, lizards, and snakes
  - Birds: Chicks and ducklings
  - Owl Pellets
- Backyard flocks
  - 10 outbreaks in 48 states
  - 961 cases, 215 hospitalized, 1 death
  - 22 cases in Washington
Salmonellosis

- 23 ill, mostly fifth-grade students (Massachusetts 2006)
  - Classroom pet turtle’s dirty tank may have triggered outbreak

- Multistate outbreak linked to pet turtles
  - 37 infected, 13 states, March 1 – August 3, 2017
    - 16 hospitalized
    - https://www.cdc.gov/salmonella/agbeni-08-17/index.html

- No turtles <4”
- Wash hands thoroughly
- All bedding/habit contaminated
- Do they belong in schools?
Bed Bugs

- Work with a pest control company committed to using IPM
- Cleaning/sanitation/clutter control

Resources
- DOH Bed Bugs
- Pest Press: Bed Bugs
- Bed Bug Information EPA
- Bed Bug Action Plan for Schools Virginia Tech
Head Lice

- Parasitic insect adapted to living mainly on the scalp and neck hairs
- Not a health hazard or responsible for the spread of any disease
- Not a sign of uncleanliness
- Transmitted by direct contact with live louse through head-to-head contact or through contact with personal articles such as hats or combs
• School District applied a lice insecticide without pre-notification or posting.
• Made the application during recess to the collars and hoods of about 20 coats.
• Residues detected on the coats ranged from 5 to 16 µg/sample.
• Two children had headaches and were nauseated and one child had two very serious asthma attacks that evening.
West Nile Virus

- About 1 in 5 infected – mild symptoms
  - Fever, headache, body aches
- About 1 in 150 will develop severe illness
  - Headache, high fever, neck stiffness, stupor, disorientation, tremors, convulsions, muscle weakness, paralysis, coma
- People over age 50 are more likely to develop serious illness
- 2017 so far: activity in Benton, Grant, Kittitas, Lincoln, Spokane, Walla Walla, Yakima Counties
  - 9 infected horses, 4 birds, 34 mosquitoes
  - 9 humans: 5 acquired in-state (Spokane), 4 out-of-state live in Clark, Pierce, Spokane, and King
- Use EPA registered mosquito repellent
- Eliminate standing water

https://www.doh.wa.gov/CommunityandEnvironment/Pests/Mosquitoes
https://www.doh.wa.gov/DataandStatisticalReports/DiseasesandChronicConditions/WestNileVirus
Prevention!

- 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.
Soap

- Fragrance Free
- Dye Free
- Green Seal Certified
- NO antibacterial soaps
Be a Germ-Buster...

WASH YOUR HANDS!

1. WET
2. SOAP
3. WASH
4. RINSE
5. DRY
6. TURN OFF WATER WITH PAPER TOWEL

For persons with disabilities, this document is available on request in other formats. Please call 1-800-525-0127 (TDD relay 1-800-535-6388).

http://here.doh.wa.gov/materials/be-a-germ-buster/12_GermBust_E06L.pdf
Hand Sanitizers

- 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
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.**
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
Custodial and Maintenance the Front Line

- OSHA-NIOSH Information Sheet
  - Protecting Workers Who Use Cleaning Chemicals, July 2012
  - [www.cdc.gov/niosh/docs/2012-126/](http://www.cdc.gov/niosh/docs/2012-126/)
Lost time injuries are those that are so serious, the worker is off work for three days or more.
**Floor Stripper Ingredients and Risks to Users**

<table>
<thead>
<tr>
<th>Strippers are most dangerous to eyes and skin – even when diluted.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Butoxyethanol</strong></td>
</tr>
<tr>
<td><strong>Monoethanolamine</strong></td>
</tr>
<tr>
<td><strong>Sodium hydroxide or Sodium Metasilicate</strong></td>
</tr>
</tbody>
</table>

Chemical Hazards from Cleaning Products – Module 1, L&I:  
Cleaning 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.

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**National Association of School Nurses**

www.cleaningforhealthyschools.org/documents/NASN_poster_greencleaning.pdf
Keeping Staff Safe

- Trained
  - Always wear appropriate PPE
- The label
- The SDS
- Containers labeled, secured
- Use automated chemical dispenser/dilution
- Ventilation!
- Maintain equipment in good working order
- Wash hands with soap and water frequently!
  - Hands can be contaminated through small holes in gloves – wash after removing
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.

Choosing Products

- Third Party Certified (Green Seal, UL GREENGUARD)
- EPA 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
- Say No
  - phosphates, dye, fragrance, butyl cellusolve, nonylphenol ethoxylate
California Cleaning Product Right to Know Act of 2017

- Requires known hazardous chemicals in cleaning products to be listed on-line and on the label
- First requirement in the US
- Online ingredient listing by January 1, 2020
- On-package disclosure by January 1, 2021

http://leginfo.legislature.ca.gov/faces/billNavClient.xhtml?bill_id=201720180SB258
Choosing Disinfectants

- EPA/WA ST registered
  - ~400 Danger level (Toxicity Class 1) labeled for use in WA schools
  - Out of 30 Danger level disinfectants found in schools, most required protective eyewear, chemical resistant glove, protective clothing

- Efficacy
- Label
  - All 30 used contrary to the label directions for PPE
- PPE
- Hazard level
- SDS
- Beware marketing
Too Toxic

Germicidal™
Bowl Cleanse
DISINFECTS  CLEANS  DEODORIZES

ACTIVE INGREDIENTS:
Hydrogen chloride ......................................................... 23.00%
n-alkyl (C<sub>14</sub>-50%, C<sub>12</sub>-40%,
C<sub>16</sub>-10%) dimethyl benzyl ammonium chlorides ................... 0.05%
INERT INGREDIENTS:...................................................... 76.95%
Total .......................................................... 100.00%

EPA Reg.
No. 5741-11
EPA Est.
No. 5741-OH-1

Keep Out of Reach of Children
DANGER • POISON
See other precautions on rear panel
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 actions
Active Ingredients – DfE Pesticide Piolot

- Products composed of one or more of the approved active ingredients can be considered for the DfE label.

- The product and the inert ingredients will be reviewed against the Safer Choice standard.

<table>
<thead>
<tr>
<th>Active Ingredients</th>
<th>Year Approved</th>
</tr>
</thead>
<tbody>
<tr>
<td>Citric acid</td>
<td>2009</td>
</tr>
<tr>
<td>Hydrogen peroxide</td>
<td>2009</td>
</tr>
<tr>
<td>L-lactic acid</td>
<td>2009</td>
</tr>
<tr>
<td>Ethanol</td>
<td>2012</td>
</tr>
<tr>
<td>Isopropanol</td>
<td>2012</td>
</tr>
<tr>
<td>Peroxyacetic acid</td>
<td>2015</td>
</tr>
<tr>
<td>Sodium Bisulfate</td>
<td>2015</td>
</tr>
</tbody>
</table>
Prions*  
(CJD, BSE)  
↓  
Coccidia  
(Cryptosporidium)  
↓  
Spores  
(Bacillus, C. difficile)  
↓  
Mycobacteria  
(M. tuberculosis, M. avium)  
↓  
Cysts  
(Giardia)  
↓  
Small non-enveloped viruses  
(Polio virus)  
↓  
Trophozoites  
(Acanthamoeba)  
↓  
Gram-negative bacteria (non-sporulating)  
(Pseudomonas, Providencia)  
↓  
Fungi  
(Candida, Aspergillus)  
↓  
Large non-enveloped viruses  
(Enteroviruses, Adenovirus)  
↓  
Gram-positive bacteria  
(S. aureus, Enterococcus)  
↓  
Lipid enveloped viruses  
(HIV, HBV)  
↓  
Tuberculosis  
↓  
Norovirus  
↓  
Athletes Foot  
↓  
E. coli  
↓  
Influenza

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
<table>
<thead>
<tr>
<th>Disinfectant Category</th>
<th>Alcohols</th>
<th>Aldehydes</th>
<th>Biguanides</th>
<th>Halogens: Hypochlorites</th>
<th>Halogens: Iodine Compounds</th>
<th>Oxidizing Agents</th>
<th>Phenols</th>
<th>Quaternary Ammonium Compounds (QAC)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Sample Trade Names</strong></td>
<td>Ethyl alcohol</td>
<td>Isopropyl alcohol</td>
<td>Formaldehyde</td>
<td>Glutaraldehyde</td>
<td>Chlorhexidine</td>
<td>Viofan®</td>
<td>Betadine®</td>
<td>Provionate®</td>
</tr>
<tr>
<td><strong>Mechanism of Action</strong></td>
<td>• Precipitates proteins</td>
<td>• Denatures proteins</td>
<td>• Alkylates nucleic acids</td>
<td>• Alters membrane permeability</td>
<td>• Denatures proteins</td>
<td>• Denatures proteins and lipids</td>
<td>• Denatures proteins</td>
<td>• Alters cell wall permeability</td>
</tr>
<tr>
<td><strong>Advantages</strong></td>
<td>• Fast acting</td>
<td>• Leaves no residuum</td>
<td>• Broad spectrum</td>
<td>• Broad spectrum</td>
<td>• Short contact time</td>
<td>• Inexpensive</td>
<td>• Stable in storage</td>
<td>• Relatively safe</td>
</tr>
<tr>
<td><strong>Disadvantages</strong></td>
<td>• Rapid evaporation</td>
<td>• Flammable</td>
<td>• Carcinogenic</td>
<td>• Mucous membranes and tissue irritation</td>
<td>• Only functions in limited pH range (5-7)</td>
<td>• Toxic to fish (environmental concern)</td>
<td>• Inactivated by sunlight</td>
<td>• Requires frequent application</td>
</tr>
<tr>
<td><strong>Precautions</strong></td>
<td>Flammable</td>
<td>Carcinogenic</td>
<td>Never mix with acids; toxic chlorine gas will be released</td>
<td>None</td>
<td>None</td>
<td>None</td>
<td>None</td>
<td>None</td>
</tr>
<tr>
<td><strong>Vegetative Bacteria</strong></td>
<td>Effective</td>
<td>Effective</td>
<td>Effective</td>
<td>Effective</td>
<td>Effective</td>
<td>Effective</td>
<td>Effective</td>
<td>Effective</td>
</tr>
<tr>
<td><strong>Mycobacteria</strong></td>
<td>Effective</td>
<td>Effective</td>
<td>Variable</td>
<td>Effective</td>
<td>Limited</td>
<td>Effective</td>
<td>Effective</td>
<td>Variable</td>
</tr>
<tr>
<td><strong>Enveloped Viruses</strong></td>
<td>Effective</td>
<td>Effective</td>
<td>Limited</td>
<td>Effective</td>
<td>Limited</td>
<td>Effective</td>
<td>Effective</td>
<td>Variable</td>
</tr>
<tr>
<td><strong>Non-enveloped Viruses</strong></td>
<td>Variable</td>
<td>Effective</td>
<td>Limited</td>
<td>Effective</td>
<td>Limited</td>
<td>Effective</td>
<td>Variable</td>
<td>Not Effective</td>
</tr>
<tr>
<td><strong>Spores</strong></td>
<td>Not Effective</td>
<td>Effective</td>
<td>Not Effective</td>
<td>Variable</td>
<td>Limited</td>
<td>Variable</td>
<td>Not Effective</td>
<td>Not Effective</td>
</tr>
<tr>
<td><strong>Fungi</strong></td>
<td>Effective</td>
<td>Effective</td>
<td>Limited</td>
<td>Effective</td>
<td>Variable</td>
<td>Effective</td>
<td>Variable</td>
<td>Variable</td>
</tr>
<tr>
<td><strong>Efficacy with Organic Matter</strong></td>
<td>Reduced</td>
<td>Reduced</td>
<td>?</td>
<td>Rapidly reduced</td>
<td>Rapidly reduced</td>
<td>Variable</td>
<td>Effective</td>
<td>Inactivated</td>
</tr>
<tr>
<td><strong>Efficacy with Hard Water</strong></td>
<td>?</td>
<td>Reduced</td>
<td>?</td>
<td>Effective</td>
<td>?</td>
<td>?</td>
<td>Effective</td>
<td>Inactivated</td>
</tr>
<tr>
<td><strong>Efficacy with Soap/Detergents</strong></td>
<td>?</td>
<td>Reduced</td>
<td>Inactivated</td>
<td>Inactivated</td>
<td>Inactivated</td>
<td>Effective</td>
<td>?</td>
<td>Effective</td>
</tr>
</tbody>
</table>

**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.


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### 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

<table>
<thead>
<tr>
<th>ACTIVE INGREDIENT</th>
<th>CANCER</th>
<th>REPRODUCTIVE TOXICITY</th>
<th>ASTHMA</th>
<th>SKIN SENSITIZATION</th>
<th>AQUATIC TOXICITY</th>
<th>PERSISTENCE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Caprylic Acid</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>Med acute</td>
<td>Low</td>
</tr>
<tr>
<td>Citric Acid</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>None</td>
<td>Low</td>
</tr>
<tr>
<td>Hydrogen Peroxide</td>
<td>No&lt;sup&gt;1&lt;/sup&gt;</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>High acute</td>
<td>Low</td>
</tr>
<tr>
<td>Lactic Acid</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>None</td>
<td>Low</td>
</tr>
<tr>
<td>Ortho-Phenylphenol (OPP)</td>
<td>Known</td>
<td>Suspected</td>
<td>No</td>
<td>No</td>
<td>Very high acute</td>
<td>Low</td>
</tr>
<tr>
<td>Peracetic Acid (PAA)</td>
<td>No</td>
<td>No</td>
<td>Yes</td>
<td>No</td>
<td>Very high acute</td>
<td>Low</td>
</tr>
<tr>
<td>Pine Oil</td>
<td>No&lt;sup&gt;2&lt;/sup&gt;</td>
<td>No</td>
<td>No&lt;sup&gt;3&lt;/sup&gt;</td>
<td>Yes</td>
<td>None</td>
<td>Low</td>
</tr>
<tr>
<td>Quaternary Ammonium Chloride Compounds (Quats)</td>
<td>No</td>
<td>Suspected</td>
<td>Yes</td>
<td>One compound&lt;sup&gt;4&lt;/sup&gt;</td>
<td>High acute, med</td>
<td>Very High</td>
</tr>
<tr>
<td>Silver</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>High acute</td>
<td>Very High</td>
</tr>
<tr>
<td>Sodium Hypochlorite (Chlorine Bleach)</td>
<td>No</td>
<td>No</td>
<td>Yes</td>
<td>No</td>
<td>Very high acute</td>
<td>Low</td>
</tr>
<tr>
<td>Thymol</td>
<td>No</td>
<td>No&lt;sup&gt;5&lt;/sup&gt;</td>
<td>No</td>
<td>Yes</td>
<td>High acute</td>
<td>Low</td>
</tr>
</tbody>
</table>
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
Disinfecting and Sanitizing with Bleach
Guidelines for Mixing Bleach Solutions for Child Care and Similar Environments

### 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.

<table>
<thead>
<tr>
<th>Water</th>
<th>Bleach Strength*</th>
<th>Bleach Strength*</th>
<th>Bleach Strength*</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2.75%</td>
<td>5.25-6.25%</td>
<td>8.25%</td>
</tr>
</tbody>
</table>

- 1 Gallon: 1/2 Cup, plus 1 Tablespoon, 3 Tablespoons, 2 Tablespoons
- 1 Quart: 1 1/2 Tablespoons, 2 1/4 Teaspoons, 1 1/2 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.

<table>
<thead>
<tr>
<th>Water</th>
<th>Bleach Strength*</th>
<th>Bleach Strength*</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- 1 Gallon: 1 Tablespoon, 2 Teaspoons, 1 Teaspoon
- 1 Quart: 1 Teaspoon, 1/2 Teaspoon, 3/4 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.

4. 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%.

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.

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

No Foggers
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°-105°F) water.
- WAC 246-366-060: “Adequate, conveniently located toilet and handwashing facilities shall be provided for students and employees.”
Specifics

- Influenza
- Measles
- Mumps
- 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
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 as 10 virus particles can cause illness)
- Lives for days on surfaces, where it can be “picked up” by others
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 least 70!
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.

- [MRSA Toolkit for Middle and High Schools](#) - TPCHD
- [MRSA Toolkit for Elementary Schools](#) - TPCHD
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
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
RPN Webinar: Learning to Clean With Safer Chemicals: How Baltimore City Public Schools is Developing a Districtwide Green Cleaning Program - May 3, 2017

2017-05-03 Learning to Clean With Safer Chemicals - How Baltimore City Public Schools

- Prohibit carcinogens
  - ortho-phenyl phenol; pine oil (can create formaldehyde)
- Avoid asthmagens (per AOEC)
  - e.g., chlorine bleach, hydrochloric acid (HCl), and quaternary ammonium chlorides (Quats)
- Specify products with approved active ingredients
  - Hydrogen peroxide, citric acid, lactic acid

Please note: The first few minutes of the webinar recording is cut off. We are working to re-record that section. Thank you!

Download Slides

Hear first-hand how Baltimore City Public Schools (BCPS) -- with RPN's help -- has been creating a green cleaning program for nearly 180 school buildings. This webinar highlights the steps BCPS took to protect the health of students, teachers, and custodial staff by:

Thank You
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Resources available:
www.doh.wa.gov/schoolenvironment
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