School Environmental Health and Safety Program

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Office of Environmental Health and Safety
May 12, 2016

Washington State Department of Health

Public Health – Always Working for a Safer and Healthier Washington

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

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WAC 246-366

- 030 Site Approval
- 040 Plan Review & Inspections
- 050 Buildings
- 060 Plumbing, Water Supply, & Fixtures
- 070 Sewage Disposal
- 080 Ventilation
- 090 Heating
- 100 Temperature Control
- 110 Sound Control
- 120 Lighting
- 130 Food Handling
- 140 Safety

Partners & Associates (some)

- 35 Local Health Jurisdictions
- 295 School Districts, private and tribal schools
- 9 Educational Service Districts (ESDs)
- Risk Managers and Insurance Carriers
- School Nurses
- Office of The Superintendent of Public Instruction (OSPI)School Facilities, Safety Center, School Nurse Corp
- State Agencies: Ecology, L&I, Agriculture, DEL, Fire Marshal, State Building Code Council, Clean Air Agencies
- Federal Agencies: EPA, ATSDR, CDC, NIOSH, PEHSU
- UW and WSU
- DOH Partners
  - Zoonotic Diseases & Pesticides
  - Site Assessment & Toxicology
  - Epidemiology – CD & ENV
  - Injury Prevention Group
  - Prevention and Community Health

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Local Health Jurisdictions (LHJs) with school inspection programs

School Environmental Health and 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**

School Environmental Health and Safety

www.doh.wa.gov/schoolenvironment

Air Quality

- Air Pollution and School Activities Guide (PDF)
- Asthma and Schools
- Good Ventilation is Essential for a Healthy and Efficient Building, WSU (PDF)
- Healthy Air Quality in Schools – Tips for Administrators, Custodians, and Teachers
- Improving Indoor Air Quality in King County Schools, Local Hazardous Waste Management Program in King County
- Improving Ventilation during Wildfire Smoke Events (PDF)
- Indoor Air Quality Tools for Schools, EPA
- Indoor Air Quality Topics
- Measuring Carbon Dioxide Inside Buildings, WSU (PDF)
- Responding to Indoor Air Quality Concerns in our Schools, 2005 (PDF)
- School Indoor Air Quality Best Management Practices Manual, 2003 (PDF)

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Biological Issues

- Animals in Public Settings Compendium, NASPHV
- Classroom Cleaning - Tips for Teachers
- Infectious Disease Control Guide for School Staff, OSPI, 2014 (PDF)
- Integrated Pest Management for Schools, WSU
- Mold Remediation in Schools and Commercial Buildings, EPA
- MRSA (Methicillin-resistant Staphlyococcus aureus)
- Pests - Bed Bugs, Bees, Lice, Rodents

Career and Technical Education, Art, and Science

- Art Hazards, Local Hazardous Waste Management Program in King County
- Career and Technical Education Health and Safety Education Guide, OSPI, 2009 (PDF)
- Lab Safety Videos, Local Hazardous Waste Management Program in King County
- School Chemical List, Local Hazardous Waste Management Program in King County
- Teen Workers, L&I

School Environmental Health and Safety

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Contaminants

- Contaminants such as Lead, Mercury, and Asbestos
- Lead Care II Loaner Program
- Mercury in Schools
- Pesticides and Schools

Facilities and Construction

- Children's Health & the Built Environment, CDC
- High Performance School Building Program, OSPI

Playgrounds and Playfields

- Public Playground Safety Handbook, CPSC (PDF)
- Public Playground Safety Checklist, CPSC
- Synthetic Turf Containing Crumb Rubber

Rules and Regulations

- Chapter 246-366 WAC, Primary and Secondary Schools
- School Rule Revision, State Board of Health
- Health and Safety Guide for K-12 Schools in Washington State, OSPI/DOH, 2003 (PDF)

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Student Health and Safety

- A-Z Health Topics, OSPI
- Children's Health Protection at School, EPA
- Concussion Management for School Sports
- Emergency Preparedness and Response
- Health and Safety Guide for K-12 Schools in Washington State, OSPI/DOH, 2003 (PDF)
- How to Respond to Injury and Illness at School, OSPI/DOH (PDF)
- Wi-Fi Safety Concerns in Our Schools

Content Source: School Environmental Health and Safety Program

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Some of the things I work on

Indoor Air Quality Principals

- 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

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Print

Air Quality
- Indoor Air
- Outdoor Air
- Smoke From Fires
- Climate and Health
- Contaminants
- Drinking Water
- Essentials for Childhood Initiative
- Food
- Health Equity
- Healthiest Next Generation
- Healthy Communities Washington
- Pests
- Radiation
- Schools
- Shellfish
- Wastewater Management
- Water Recreation
- Worksite Wellness

Indoor Air Quality

Indoor air quality can have a significant effect on your health. Studies show that people spend 65 to 90 percent of their time indoors, and indoor air can be two to five times more polluted than outdoor air. The young, elderly, chronically ill, and those with respiratory or cardiovascular disease are often the most impacted by poor indoor air quality.

- Asbestos
- Asthma
- Bleach Mixing Dangers
- Carbon Monoxide
- E-Cigarettes and Vaping
- Fiberglass
- Formaldehyde
- Hiring an Investigator or Contractor
- Mercury
- Mold
- Outdoor Air
- Pesticides
- Radon
- Renters, Landlords, and Mold
- School Indoor Air Quality
- Tobacco Smoke
- Vapor Intrusion

Fresh Air for a Healthier Home, Guide to Ventilation Systems

More Resources

- Green Cleaning and Toxic Free Tips - Department of Ecology
- Free Home Health Assessment for Seattle/King County Area - American Lung Association
- Local Clean Air Agencies
- Indoor Air Quality - EPA

Content Source: Indoor Air Quality Program

Also my responsibility
www.doh.wa.gov/iaq

Air Pollution and School Activities

Public Health Recommendations for Schools on Fine Particle Air Pollution

Washington State Department of Health

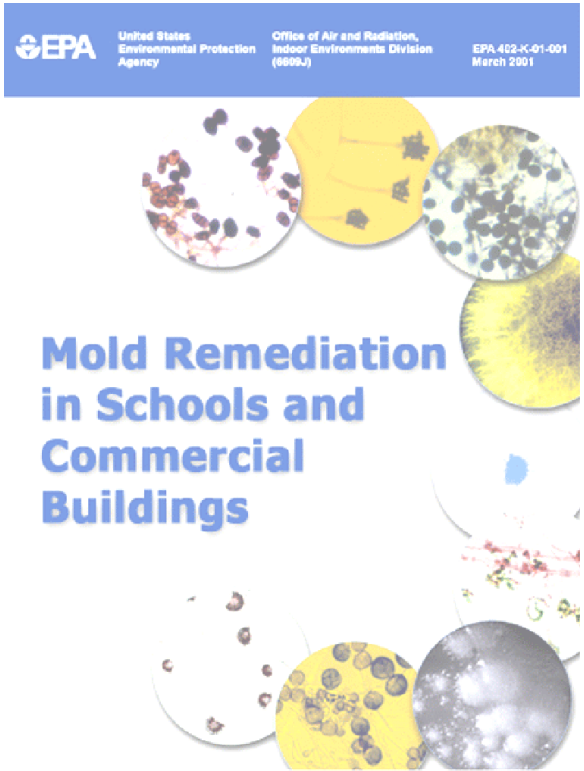
	Air Quality Conditions First, check local air conditions at https://fortress.wa.gov/ecy/enviwa/ and then use this chart.				
	Good	**Moderate**	**Unhealthy for Sensitive Groups**	**Unhealthy**	**Very Unhealthy/ Hazardous**
Recess (15 minutes)	No restrictions.	Allow students with asthma, respiratory infection, lung or heart disease to stay indoors.	Keep students with asthma, respiratory infection, and lung or heart disease indoors.	Keep all students indoors and keep activity levels light.	Keep all students indoors and keep activity levels light.
P.E. (1 hour)	No restrictions.	Monitor students with asthma, respiratory infection, lung or heart disease. Increase rest periods or substitutions for these students as needed.	Limit to light outdoor activities. Allow any student to stay indoors if they don't want to go outside. Keep students with asthma, respiratory infection, lung or heart disease, and diabetes indoors. Limit these students to moderate activities. Students with asthma should follow their Asthma Action Plan.	Conduct P.E. indoors. Limit students to light indoor activities. Students with asthma should be following their Asthma Action Plan.	Keep all students indoors and keep activity levels light. Students with asthma should be following their Asthma Action Plan.
Athletic Events and Practices (Vigorous activity 2-3 hours)	No restrictions.	Monitor students with asthma, respiratory infection, lung or heart disease. Increase rest periods and substitutions for these students as needed. Students with asthma should follow their Asthma Action Plan.	Consider moving event indoors. If event is not cancelled, increase rest periods and substitutions to allow for lower breathing rates. Students with asthma, respiratory infection, lung and heart disease, or conditions like diabetes shouldn't play outdoors. Students with asthma should follow their Asthma Action Plan.	Cancel the event. Or move the event to an area with "Good" air quality — if this can be done without much time spent in transit through areas with poor air quality.	Cancel the event. Or move the event to an area with "Good" air quality — if this can be done without much time spent in transit through areas with poor air quality.

Light Activities: Playing board games, throwing and catching while standing, and cup stacking.
Moderate Activities: Yoga, shooting basketballs, dance instruction, and ping pong.
Vigorous Activities: Running, jogging, basketball, football, soccer, swimming, cheerleading, and jumping rope.

http://www.doh.wa.gov/Portals/1/Documents/Pubs/334-332.pdf

Mold

- Leaks, inadequate ventilation, poor drainage, Condensation, high humidity.
- Irritation, allergic reactions, infections
- Fix all causes of moisture accumulation
- Prevention – Keep it dry



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Playgrounds
Certified Playground Safety Inspector

- Corrosion, wearing, opening of closures
- Pinch & crush hazards
- Head entrapment
- Protrusions
- Impalement
- Entanglement

Integrated Pest Management

- UPEST – Urban Pesticide Education Strategies Team
  - WSU, EPA, DOH, ECY, WSDA, NEESD, Eden
- **Guidelines for Schools Next to Agricultural Operations**
- School Gardens
- IPM for Microorganisms: Cleaning, Disinfecting, and Sanitizing
- https://schoolipm.wsu.edu/

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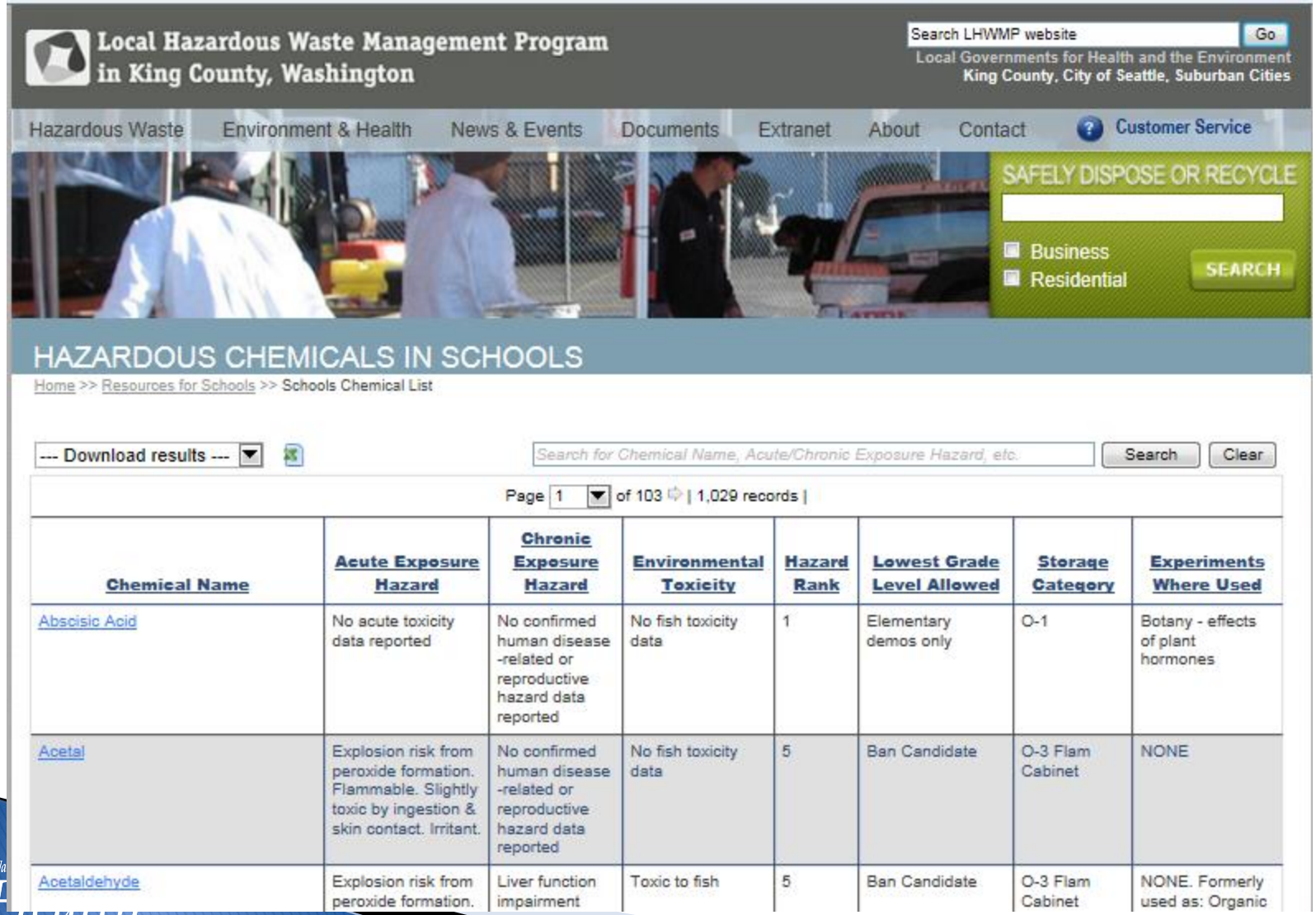
Chemistry Labs and Hazard Control

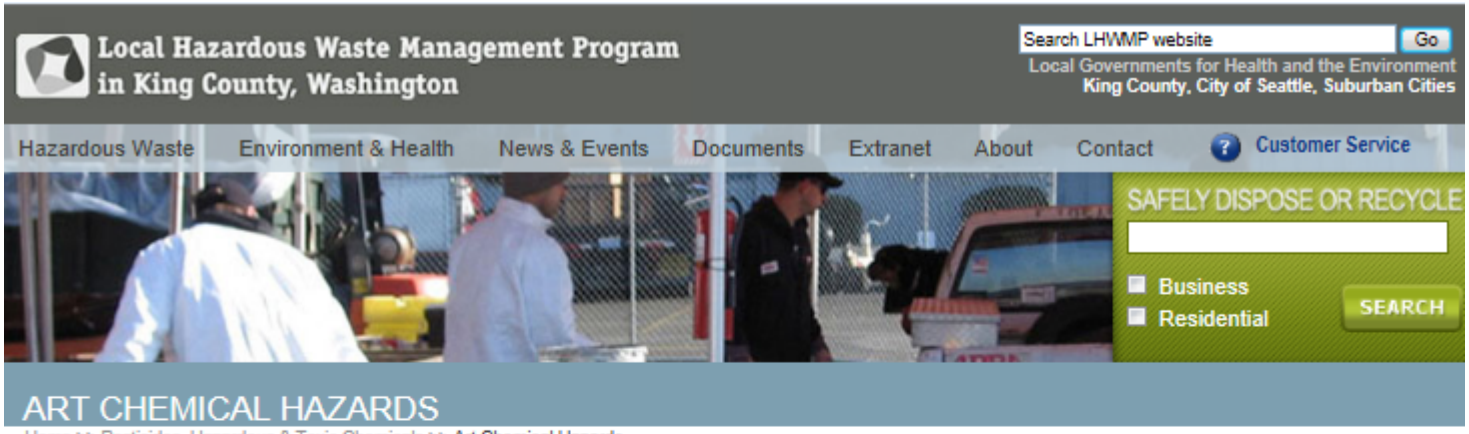
Hazardous Chemicals in Schools Data Base

Hazards, Use, Storage



Chemical Name	Acute Exposure Hazard	Chronic Exposure Hazard	Environmental Toxicity	Hazard Rank	Lowest Grade Level Allowed	Storage Category	Experiments Where Used
Abscisic Acid	No acute toxicity data reported	No confirmed human disease -related or reproductive hazard data reported	No fish toxicity data	1	Elementary demos only	O-1	Botany - effects of plant hormones
Acetal	Explosion risk from peroxide formation. Flammable. Slightly toxic by ingestion & skin contact. Irritant.	No confirmed human disease -related or reproductive hazard data reported	No fish toxicity data	5	Ban Candidate	O-3 Flam Cabinet	NONE
Acetaldehyde	Explosion risk from peroxide formation.	Liver function impairment	Toxic to fish	5	Ban Candidate	O-3 Flam Cabinet	NONE. Formerly used as: Organic

Art Hazards in Schools



Chemicals

- Art Chemical Hazards
- Hazardous Chemicals in Schools
- Chemicals Policy
- School Chemical List
- Mercury
- Bisphenol-A
- Solvents

Art Hazards Project

Print This Page

Many art techniques involve the use of chemicals that can pose risks to human health and the environment if mishandled. The objective of the Art Hazards Project, a project of the Local Hazardous Waste Management Program in King County, is to protect artists' health and the natural environment in King County from the risks posed by hazardous chemicals in art supplies.

The Art Hazards Project helps identify potentially hazardous chemicals in art supplies and provides information on ways to reduce risks from these chemicals to artists, museum and gallery staff, art educators, and art suppliers through seminars and trainings.

The project team collaborates with artists, art colleges, cooperatives, museums, galleries and suppliers to help artists and art educators understand risks, reduce potential exposures to chemical hazards, and ensure hazardous art materials are properly recycled or disposed when no longer needed.

For more information on the Art Hazards Project or to schedule a training, seminar or initial meeting, contact Dave Waddell at 206-263-3069 or dave.waddell@kingcounty.gov.

Art Supplies – Risks and Alternatives

Selecting Safer Art Adhesives (PDF, 881 KB)

Related Materials

Guidelines for the Safe Use of Art and Craft Materials
http://www.oehha.org/education/art/artguide.html

INFORM - Strategies for a better environment (PDF)

cides/artchemicals.aspx

Zoonotic Diseases
Animal Concerns

- *Salmonella*
  - Reptiles
  - Chicks
  - Owl Pellets
- Psittacosis (parrot fever)
- Classroom Pets
  - *Compendium of Measures to Prevent Disease Associated with Animals in Public Settings*
- Rabies
- West Nile Virus
- Hanta Virus
- Lice
- Bed bugs

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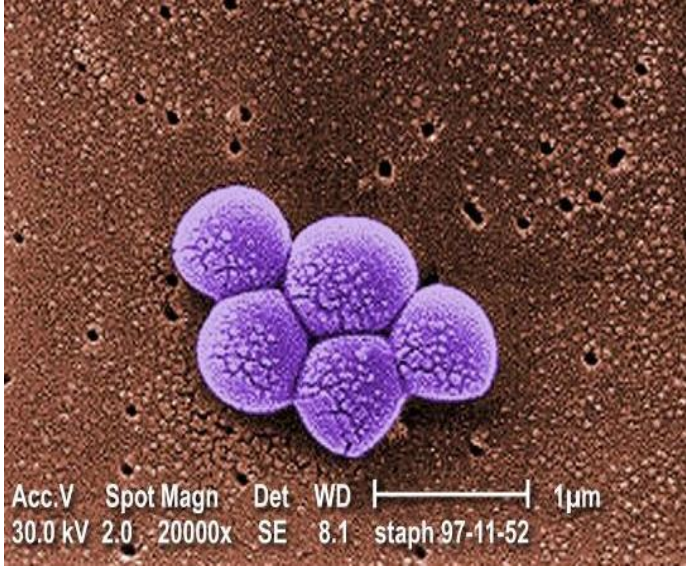
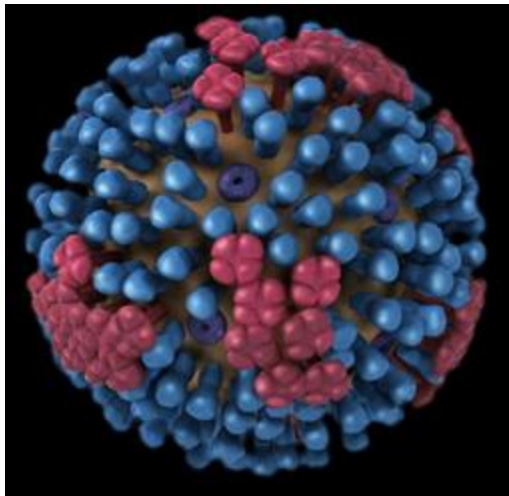
Worried?

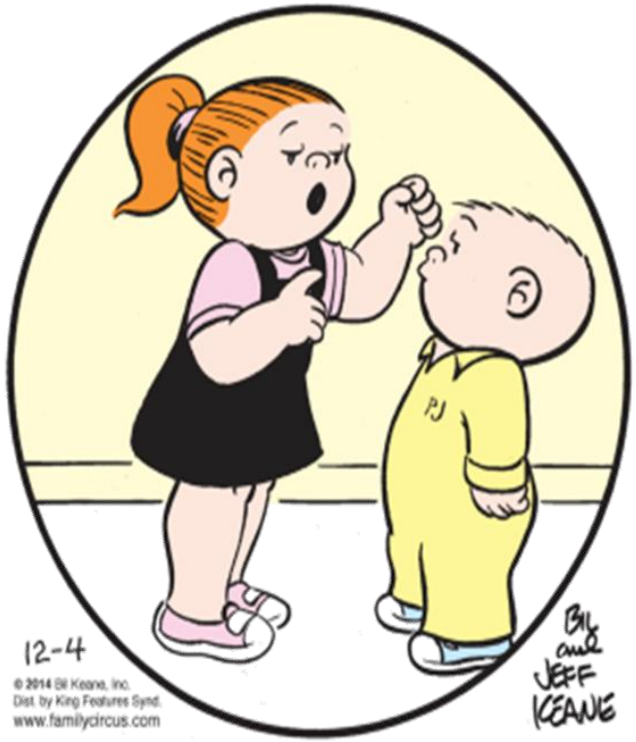


- *Clostridium difficile* (C. diff)
- *Enterovirus* D68
- Influenza
- Measles
- MRSA
  Methicillin Resistant Staphylococcus aureus
- Norovirus
- *Pertussis*
  Whooping Cough



The Basics

- 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.



"If you need to cough, you're s'posed to hide your mouth in your elbow."

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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

http://www.kplctv.com/story/27447660/local-school-credits-handwashing-stations-with-drop-in-absences

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 dyers 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.

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/spores.
- Flammable / Poison
- Preferred: Fragrance free.
- Not recommended:
  - Benzalkonium chloride / “quat” based / non-alcohol / “natural”

Good Cleaning Practices

Prevention / Walk-off mats

High efficient vacuum filters

No chemicals brought in by staff/parents

Avoid aerosols / Spray into cloths

Read the MSDS

No upholstered furniture

Clutter control

Control food in classrooms – including snack storage

Nitrile or vinyl gloves, not latex

Microfiber cloths

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

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

Recent Journal Article – what's wrong with this picture?

ADVANCEMENT OF THE **SCIENCE**

Evaluation of Ultraviolet Germicidal Irradiation in Reducing the Airborne Cultural Bacteria Concentrations in an Elementary School in the Midwestern United States

May 2015 Journal of Environmental Health

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Choosing Products

- Third Party Certified (Green Seal, UL GREENGUARD)
- EPA Safer Choice
- 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
- Disinfectants – EPA approved for the intended purpose

http://www.epa.gov/oppad001/chemregindex.htm

Special Concerns

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

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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”.

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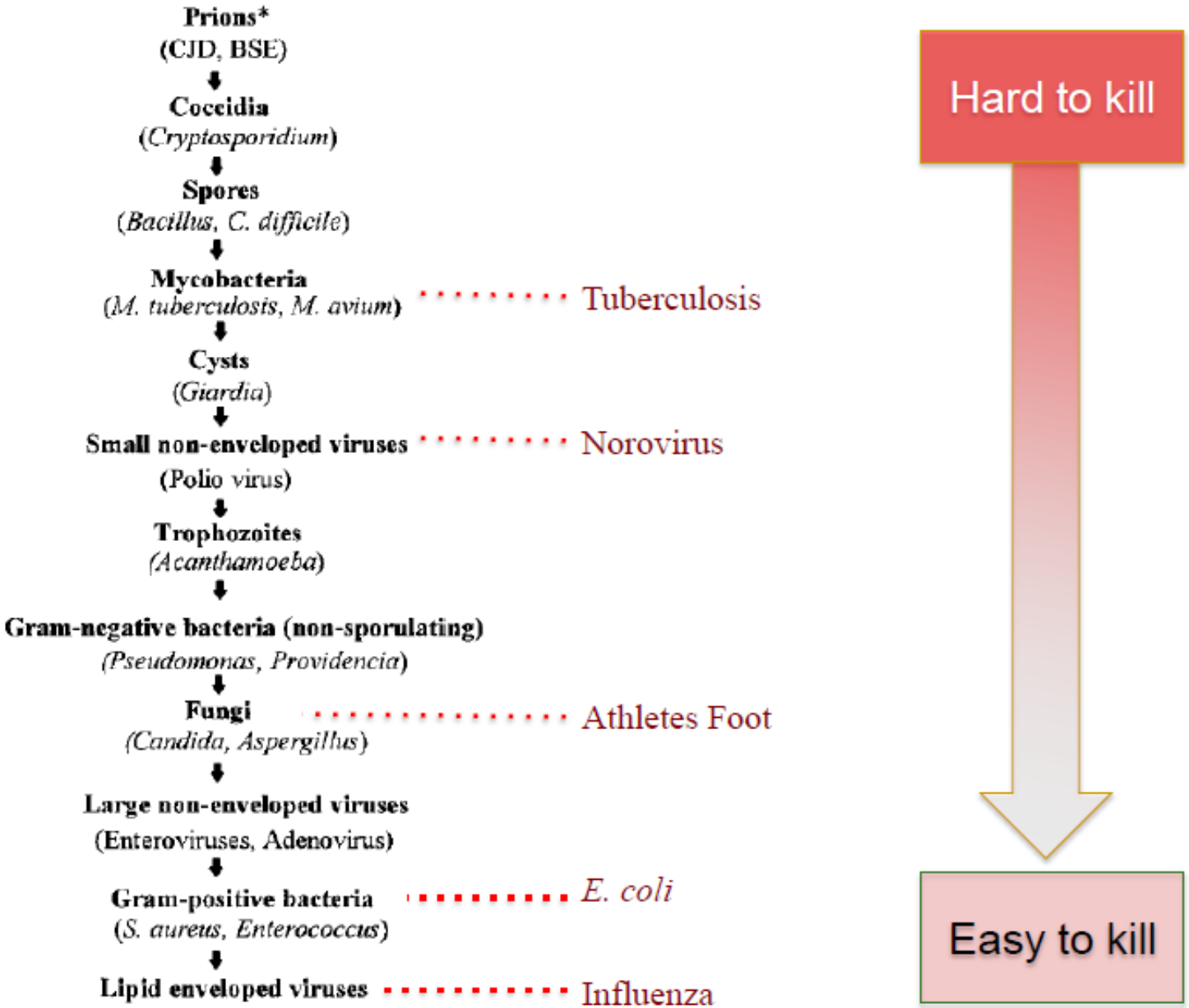

FIG. 1. Descending order of resistance to antiseptics and disinfectants. The asterisk indicates that the conclusions are not yet universally agreed upon.

Source: McDonnell & Russell, 1999

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

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

Thank You

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Resources available:

www.doh.wa.gov/schoolenvironment

Join my list serve for timely information!