Appendix A.1. Cleaning for Healthier Schools: Best Practices

Introduction

The Cleaning for Healthier Schools (CfHS) program was developed to assist facilities in their transition to less-toxic cleaning products and improved practices. It is a cleaning program designed to protect public health without adversely affecting the health of staff, building occupants, and the environment.

Best practices include a familiarity with the science of cleaning. Cleaning with detergent, microfiber, and friction removes organic matter (soil) and contaminants, including microbes. Frequent cleaning of high-risk or high-touch surfaces reduces the risk of building occupants coming into contact with these microbes.

Recognized experts in infection control recommend that cleaning surfaces with microfiber cloths and mops and a detergent such as an all-purpose cleaner can be very effective at removing microbes. One study found that microfiber mops (compared with cotton string mops) demonstrated superior microbe removal when used with a detergent cleaner and that the use of a disinfectant did not further improve microbial elimination when microfiber mops were used.¹

Recommendations

1. Choose “green” (third-party certified) cleaning and maintenance products, including:
   - Cleaners certified by an independent third-party such as Green Seal, Safer Choice or UL ECOLOGO®
   - Disinfectants that carry the Environmental Protection Agency’s (EPA) Design for the Environment (DfE) seal on the label

2. Practice state-of-the-art cleaning methods (best practices), such as:
   - New York State Green Cleaning Program (https://greencleaning.ny.gov/Practices.asp)

Further Reading

## Appendix A.2. Cleaning for Health: Program Components Checklist

Use this checklist to determine what components a facility has implemented and what still needs to be phased in.

### Best practices
- [ ] Vacuum entryway mats on a daily basis
- [ ] Monitor chemical usage

### Cleaning chemicals for everyday use
- [ ] Third-party-certified cleaning chemicals
  - [ ] One concentrate that is diluted for the following tasks:
    - bathroom/restroom cleaner
    - all-purpose cleaner
    - carpet spotter/extraction cleaner
    - glass and window cleaner
    - neutral floor cleaner
  - [ ] One heavy-duty cleaning product

### Hand soaps
- [ ] Third-party-certified hand soap (not antibacterial)

### High-efficiency particulate air filter vacuum cleaners
- [ ] Air flow greater than 90 cubic feet of air per minute per square foot
- [ ] Capture 96% of particulates 0.3 microns in size

### High-filtration floor care equipment (not gas fueled)
- [ ] Cord electric and battery floor buffers
- [ ] Cord electric and battery burnishers
___ Microfiber
- cloths
- high-dusting tools
- wet mops and dry mops
- determine how the microfiber will be laundered

___ Systems to prevent cross contamination:
- Mop buckets or systems that separate clean and dirty water
- Microfiber charging systems – a container with cleaning or disinfecting solution that is used to immerse cloths, trowel pads and mop heads to saturate them. The system involves loading the charging bucket with items, adding cleaning solution, closing the lid, and turning it over to evenly saturate mop heads. There are manual and mechanical systems to insert and dispense the items. They have been used to quickly clean cafeteria tables and other surfaces. Attributes of these systems are that they:
  - require no touch or wringing,
  - provide an even saturation of a large number of items in a short time,
  - use minimal chemical solution, and
  - enable fast attachment and removal of mop heads from mop frames.

___ Multilevel scraper walk-off mats with rubber backing
- Inside of entryways (and outside where possible)
- Span the entire entryway
- 15 to 20 feet long, where applicable
- Rotated on an appropriate schedule for weather conditions

___ Powered equipment
- Sound levels less than 70 decibels
- High-filtration vacuum attachments
- High efficiency/low emission motors
- Microfiber pads, where appropriate
**Specialty cleaning products**
- DfE certified environmentally preferable disinfectant
  - EPA List N Approved for COVID-19
  - rated 0–1 on the Hazardous Materials Identification System (HMIS) health rating scale
- Bioenzymatic cleaner for protein (e.g., urine)
- Urine neutralizer (instead of disinfectant)
- Third-party-certified floor care products
  - wax stripper
  - floor sealer and finish
  - baseboard stripper
- Third-party-certified graffiti remover
- Third-party-certified descaler (toilets, etc.)
- Third-party-certified whiteboard cleaner and markers
- Others

**Training programs**
- Best work practices training for cleaning and disinfecting
- Cleaning for health, safety, and appearance (including infection control)
- OSHA Personal Protective Equipment (PPE)
- OSHA Bloodborne Pathogen training
- OSHA Hazard Communication training (must provide for all products used)
- PPE for infection control
- Cleaning Equipment operator and maintenance training
- Multilingual training for non-English-speaking work staff
- Department, teacher, and other support staff training during a pandemic, as departments other than custodial and food service may become involved in the infection control program and require training (e.g., IT department using alcohol to decontaminate electronics)

**TIP on PPE Training:**
This information can be provided as part of the Hazard Communication Training on PPE used for chemical safety.

**Supplies recommended or required for preventing the spread of infectious diseases**
can be provided as part of Infection Control training.
___ Trash and recycling programs
   ❑ Trash management as part of infection control protocols
      • Standardized waste receptacle sizes
      • Proper-size liners for receptacles
      • Dedicated receptacles for recycled-product types
      • Lidded trash receptacles
      • Hands free lid

___ Washroom paper products
   ❑ Third-party-certified for boxed facial tissue, toilet paper, and dispenser roll or multifold towels
   ❑ Third-party certified /controlled-use dispensers
   ❑ Tissue and towels on large rolls
Appendix A.3. Program Planning Handout:
Cleaning for Healthier Schools and Infection Control

Introduction

There are many challenges in maintaining a school in a safe, healthy, and effective manner and in conducting infection-control practices in the face of an infectious-disease outbreak. A CfHS program will help schools to prepare for and respond to an infectious disease/pandemic episode. It is essential to have a disinfection plan in place as part of the CfHS program infection-control protocol. When a pandemic episode occurs in the school, the plan would outline the appropriate steps to take, avoiding the pressure to use inappropriate disinfecting methods.

Disinfectants are Environmental Protection Agency (EPA)-registered pesticides designed to kill or inactivate microbes (germs). The overuse or misuse of disinfectants can pose a health hazard because they contain toxic ingredients. Some common disinfectant ingredients have been identified as respiratory irritants; others are considered asthmagens.

Not all microbes are harmful (pathogenic). In fact, most are harmless (nonpathogenic) and many are even helpful because they perform such tasks as helping our digestive system to function effectively and stimulating the development of a healthy immune system. In addition, beneficial microbes are used in the fermentation process that creates bread, beer, cheese, and yogurt.

The CfHS program was developed to assist school facilities in enhancing their cleaning systems through the use of less-toxic cleaning products, state-of-the-art supplies and equipment, and improved cleaning practices. The program seeks to educate staff on the impacts that dirt, biological contaminants, cleaning products, cleaning equipment, and practices have on human health. It offers cost-effective, successful cleaning and disinfecting strategies to protect against infectious disease without adversely affecting the health of staff, building occupants, and the environment.

Types of Infectious Diseases Commonly Found in Schools

- Common cold – spread by cough, sneeze, and contact with objects on which microbes have landed
- Diarrhea illnesses – spread by fecal-oral contact, consuming food or drinks contaminated with feces, touching diarrhea or vomit, or breathing air from the same room in which someone has just vomited
- Mononucleosis – spread by mouth-to-mouth contact; sharing drinks, drinking cups, and other objects
- Strep throat – spread by cough, sneeze, and contact with objects on which microbes have landed
- Flu strains (including SARS-CoV-2) – spread by aerosols, cough, sneeze, and contact with objects on which microbes have landed
Program Recommendations

1. Form an Environmental Health and Safety Committee or use an existing committee (Wellness, Safety, etc.) made up of representatives from the school community (e.g., school nurse, facilities manager, athletic director, teacher, representatives from custodial and teachers’ unions, administrator).

2. Implement a CfHS program and select cleaning products certified by an independent third party such as Green Seal, Safer Choice, or UL ECOLOGO®.

3. Select products certified by Design for the Environment or the least hazardous product in its class for disinfecting. Some companies state on their Safety Data Sheet or product label the Hazardous Materials Identification System (HMIS) or National Fire Protection Association (NFPA) graphic that rates their product on a spectrum from 0 to 4, with 0 being the least toxic. You can use this rating system to identify a low hazard rating of 0 to 1.

4. Practice state-of-the-art cleaning strategies and methods (best practices), such as the Green Seal GS-42 Standard for Cleaning Services, a comprehensive program that can be customized by schools for their in-house staff.

5. Use advanced-technology equipment to reduce the need for chemicals and to improve indoor air quality.
   - Microfiber mops/cloths
   - High-filtration vacuums and vacuum attachments on floor care equipment
   - Floor care equipment with stripping pads to reduce the use of chemical floor strippers. Please note that vinyl asbestos flooring must be wet stripped.
   - Auto scrubbers

For cleaning products look for the following signal words on the Safety Data Sheet:

- Danger
- Warning

For disinfectants and sanitizers look for these signal words on labels:

<table>
<thead>
<tr>
<th>Danger Level</th>
<th>Signal Word</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>Highest</td>
<td>Poison</td>
<td>Highly toxic</td>
</tr>
<tr>
<td></td>
<td>Danger</td>
<td>Extremely flammable, corrosive, or highly toxic</td>
</tr>
<tr>
<td></td>
<td>Warning</td>
<td>Moderate hazard</td>
</tr>
<tr>
<td></td>
<td>Caution</td>
<td>Mild/moderate hazard</td>
</tr>
</tbody>
</table>
Infection Control Handbook for Schools

• Hands-free cleaning restroom equipment (e.g., units that spray and vacuum up water in a restroom)

• Chemical-free systems such as steam vapor devices or liquified ozone

• Walk-off mats to prevent dirt, pesticides, and other debris from being tracked into and throughout the facility

6. Develop a disinfection policy and related protocols so that all school stakeholders understand the issues and the approved practices.

• **School staff should not be allowed to bring in disinfectant products from home.** See Appendix D: Cleaning and Disinfecting by School Department Staff that will provide guidance for staff to remove personal items safely if it is prohibited for them to bring them in.

• Disinfection should be conducted by the custodial staff as part of their cleaning protocol, except in certain circumstances delineated in the policy. It is not recommended that staff other than custodians use and store disinfectants; however, if other staff are allowed to disinfect, the school should review Appendix D: Cleaning and Disinfecting by School Department Staff for detailed guidance on issues to be addressed in each department, the type of products relevant for that department and specific use guidance. At a minimum, the school should do the following:

  1. determine who will supply the product and how it will be refilled,
  2. supply an approved disinfectant product in a properly labeled container,
  3. train staff in its proper use and management, including when to use it,
  4. provide recommended personal protective equipment if required, and
  5. ensure that disinfectants are stored securely with compatible products.

Improper storage of disinfectants is a major problem in classrooms, where toxic combinations of products are stored together and accessible to students. See Chapter 3.I. Development of Protocols, Storing Disinfectant Products.

**Overview of Best Cleaning Practices**

Cleaning with a detergent and a microfiber mop/cloth and using friction removes organic matter (soil) and contaminants, including microbes (germs). Frequent cleaning of high-risk and high-touch surfaces (see definitions below) reduces the risk of coming into contact with infectious microbes.

Recognized experts in infection control recommend that cleaning surfaces with microfiber cloths and mops and a detergent such as an all-purpose cleaner can be very effective at removing microbes. One study found that microfiber mops (compared with cotton string mops) demonstrated superior microbe removal when used with a detergent cleaner and that the use of a disinfectant did not further improve microbial elimination when microfiber mops were used.1
Overview of Best Disinfection Practices

Disinfectants are still needed on certain surfaces and under certain circumstances, but their use should be determined by a policy that specifies when and where disinfecting is appropriate.

Many facilities choose to use a combination disinfectant/cleaner to minimize the number of products and the number of steps required to clean and disinfect the building. Even though combination products (to clean and disinfect) have been developed, it is essential to **clean a surface first and then apply the disinfectant**. Some disinfectants lose effectiveness in the presence of dirt, dust, and other organic matter. The disinfectant should be left on the surface for the recommended amount of contact or dwell time and then rinsed or wiped (if recommended). Because different products have different contact times, ranging from 30 seconds to 10 minutes, the label instructions must be checked.

**Cleaning first and then applying the disinfectant for the recommended contact time ensures that the surface is truly being disinfected and that microbial resistance is not being created.** When the disinfectant is not allowed the full contact time, the microbes that survive may develop resistance to the disinfectant and become superbugs that cannot be controlled by that disinfectant. **Always follow the manufacturer’s instructions found on the product label.**

Disinfecting Policy and Protocols

When illness breaks out in a school, there may be pressure on the staff to try to eradicate the problem with disinfectants. Exposing occupants unnecessarily to toxic pesticides is a result of using disinfectants when they are not needed, in the wrong concentration or incorrectly.

**Policy Criteria**

- Identify school personnel (e.g., custodian, nurse) responsible for disinfecting.
- Develop cleaning, sanitizing, and disinfecting guidelines that promote cleaning; limit the use of disinfectants and sanitizers whenever possible to bloodborne pathogens cleanup, high-risk areas, diapering areas, and food preparation surfaces where disinfection or sanitization is required. Include special guidelines in case of a pandemic outbreak.
- Write a procedure for designated staff to follow (e.g., clean first, then disinfect, leaving the product on the surface for the specified contact time).
- Disseminate the cleaning and disinfection policy and related protocols so that all school stakeholders understand the issues and the approved practices.
- Allow only EPA-registered disinfectants that have been approved by the stakeholder committee for use in the facility. Prohibit the use of cleaning and disinfecting products that have been brought in by staff or parents without school review and approval.
- Avoid using products with a strong scent that may trigger asthma and allergy complaints. Scented products may also contain known hormone disruptors (substances that interfere with our endocrine system and can cause reproductive issues, early female development,
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Appendix A: Development of Protocols

thyroid disorders, polycystic ovarian syndrome, genital deformities in newborn boys, etc.).

- Microfiber is recommended for use with disinfectants and can help prevent cross-contamination. Avoid using sponges in a school setting because they are difficult to disinfect. For more information, see Chapter 6. Equipment for Infection Control, Using Microfiber Cloths and Mops for Infection Control. Success of a microfiber program in large part is the implementation of a laundering program. Options include:
  - Launder cleaning cloths and mop heads/pads daily, separate from other laundry.
  - Establish a laundry program. This is essential to ensure that cloths are clean. Options for laundering microfiber include:
    - In school - wash by hand or in a washing machine; hang to dry or use a dryer. See Chapter 6. Equipment for Infection Control, Using Microfiber Cloths and Mops for Infection Control for information on how to launder the microfiber. There are special small potable non-plumbed units designed for microfiber cleaning if plumbed washers are not available.
    - Use a laundry service to wash and dry microfiber owned by the school or rent microfiber from the company. This is especially important when dealing with an infectious disease to minimize staff handling of items. Please see comparison of the options below when using a laundry service:

<table>
<thead>
<tr>
<th>Considerations</th>
<th>Customer Owned Goods</th>
<th>Rent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Quality</td>
<td>The school decides when to replace it.</td>
<td>Company will make items last as possible. Unless in contract, you won’t receive the same items back and have no way of knowing what they were used for.</td>
</tr>
<tr>
<td>Selection</td>
<td>The school has open ended options.</td>
<td>Choices may be more limited (e.g., color coded, denier quality, sizes)</td>
</tr>
<tr>
<td>Inventory Control</td>
<td>The school must track items sent and returned, and pays to replace lost items.</td>
<td>You must track amount sent and returned.</td>
</tr>
<tr>
<td>Cost</td>
<td>Purchasing in bulk wholesale might cost $0.60 each for replacement wipers. The school bears the cost of detergent, water, and electricity.</td>
<td>Provision and laundering might cost $0.15 per item per week. Cost included of detergent, water, and electricity</td>
</tr>
<tr>
<td>Considerations</td>
<td>Customer Owned Goods</td>
<td>Rent</td>
</tr>
<tr>
<td>----------------</td>
<td>----------------------</td>
<td>------</td>
</tr>
<tr>
<td>Item Replacement Costs</td>
<td>Higher</td>
<td>Lower</td>
</tr>
</tbody>
</table>

- Schedule disinfecting when there are the fewest number of occupants whenever possible. For example, disinfect only after school hours except in the case of an incident involving vomit, feces, bloodborne pathogens clean-up, or as written in the protocol to control a pandemic outbreak (see Appendix D: Cleaning and Disinfecting by School Department Staff).

**Disinfection Protocol**

1. **Select** – Identify the least toxic product that will control the targeted microbes (e.g., H1N1, methicillin-resistant *Staphylococcus aureus*, SARS-CoV-2). Look for a Hazardous Materials Information System (HMIS) or National Fire Protection Association (NFPA) hazard rating of 0 to 1, found on the product’s label and/or Safety Data Sheet (SDS).

2. **Clean** – Clean the surfaces to be disinfected with a third-party-certified all-purpose cleaner and a microfiber cloth. Rinse or wipe the surface as required.

3. **Ventilate** – Make sure there is ventilation in the work area (an open window or an operating heating, ventilating, and air conditioning system). For additional guidance related to COVID-19, see Appendix H: Using Ventilation to Control Infectious Disease.

4. **Wear protection** – Use personal protective equipment, such as chemically resistant gloves, if required by the label.

5. **Dilute the product** – Follow the label instructions for the proper dilution ratio if the product is a concentrate. Follow the manufacturer’s instructions exactly. If using a concentrated product, do not add more concentrate hoping to create a more effective or stronger solution. Not only is this practice wasteful, but it can be less effective and may leave behind a harmful residue that could cause skin rashes and other harmful health effects for students and staff.

6. **Apply to the surface** – Use a pump spray bottle or squirt bottle to apply the product unless label directions state otherwise:
   a. Saturate the microfiber cloth with the disinfectant and wipe the surface, leaving a wet film. Make sure there is enough disinfectant on the cloth to cover the surface to be disinfected and to ensure that it will remain wet for the required contact time. This method of spraying into the cloth minimizes the dispersion of product into the air where it could be inhaled.
   b. Squirt the solution directly onto the surface and use a microfiber cloth to distribute evenly if this method is stated on the label.
7. **Let the contact time elapse** – Leave the disinfectant on the surface for the required amount of contact time (time needed for the disinfectant to kill the microbes) as listed on the product label.

8. **Remove residue** – Rinse or wipe the surface if the product label states that this procedure is required. Rinsing removes any toxic residue that may be left on the surface that could be transferred to skin. Not all disinfectants leave a residue.

9. **Allow to dry** – Allow the surface to dry before use.

### Cleaning and Disinfection Protocols for Outbreaks of Infectious Disease/Pandemics

A **three-pronged strategy** made up of the following components is the best way to prevent the transmission of disease in the school setting while minimizing exposure to hazardous infection-control products:

1. **Personal hygiene** – building occupant responsibility – students and staff should be educated on the following:
   - Proper hand hygiene (see Appendix A.5. *Understanding Hand Hygiene*)
   - Distancing procedures – keep the distance recommended by the CDC from others who are sneezing or coughing depending on the microbe
   - Isolation and quarantine (see [https://www.cdc.gov/quarantine/index.html](https://www.cdc.gov/quarantine/index.html))


3. **A comprehensive Cleaning for Healthier Schools program with a disinfection strategy and protocols.**

### Expert Perspective on the SARS-CoV-2 (COVID-19) Virus

- Because SARS-CoV-2 was a new type of virus, we were learning about it as it developed. Check the Centers for Disease Control and Prevention (CDC) website at [https://www.cdc.gov/coronavirus/2019-ncov/community/schools-childcare/index.html](https://www.cdc.gov/coronavirus/2019-ncov/community/schools-childcare/index.html) for the latest information.

- Schools should continue to clean and disinfect school buildings according to the regular schedule. **Additional disinfection beyond routine cleaning is not recommended unless specifically required by the CDC.** High-touch surfaces and items and high-risk areas should be cleaned with the products that are routinely used for these surfaces.

- **Viability of virus in the environment:**
  - Although the SARS-CoV-2 virus might be viable on a surface for days depending on conditions (e.g., the type of surface, exposure to sunlight, temperature, humidity) it is not clear how well it transmits the virus. CDC in their *Science*
Brief: SARS-CoV-2 and Surface (Fomite) Transmission for Indoor Community Environment 4/5/21, found that studies suggest “that the risk of SARS-CoV-2 infection via the fomite transmission route is low, and generally less than 1 in 10,000, which means that each contact with a contaminated surface has less than a 1 in 10,000 chance of causing an infection.”

- SARS-CoV-2 virus in aerosolized form can remain in the indoor air for up to 3 hours, depending on the conditions in the space (e.g., ventilation, relative humidity, etc.).

- If there is an outbreak of the SARS-CoV-2 virus in your school, consult with the CDC and state health departments for guidance.

**Recommendations for Surfaces to be Cleaned and Disinfected**

- Use disinfectants (preferably when no students or other staff members are present) as required by law and in high-risk areas.

- Clean high-touch surfaces or touch-points more often during the day with a third-party-certified all-purpose cleaner and a microfiber cloth. For in depth guidance, designed to be provided to each type of classroom and department, see Appendix E: Common High-Touch Points by Location. At a minimum, here are general guidelines:

1. **Common high-touch surfaces in schools**

   These are surfaces that are frequently touched by a variety of hands. For example, a surface such as a desktop that is touched daily by only one student might be touched often but is not considered an area to be managed for infection control, because no one else would be exposed to those microbes. Areas that might be touched frequently by many different hands include but are not limited to:

   - A shared computer mouse and keyboard
   - Shared musical keyboards and instruments
   - Shared desks
   - Doorknobs, elevator buttons, light switches, door push bars, handrails
   - Faucet handles, toilet handles, toilet stall door locks, towel dispensers, hand dryers
   - School bus doors and railings
   - Coffee pots, microwave doors, refrigerator doors, cafeteria trays and tables

2. **Common high-risk areas in schools**

   Some areas of a school building are of greater concern for possible transmission of disease because there is an increased likelihood of skin-to-skin, object-to-mouth, or fecal-to-oral contact. High-risk areas also include any location where food is prepared, sick or preschool children are cared for, or special incidents (such as those involving blood, feces, and vomit) have occurred. High-risk areas include but are not limited to:
• Athletic departments – gym mats, exercise equipment, and shower and locker rooms
• Restrooms, kitchens, and lunchrooms
• Nurses’ offices and COVID-19 isolation rooms
• Childcare and preschool centers
• School buses

Protocols

Cleaning desktops
• Wash desks with a third-party-certified all-purpose cleaner and a microfiber cloth.
• Rinse and/or wipe desks if required.
• Rinse cloth in clean water after each desk or use a new clean surface from a folded cloth.
• Reapply the cleaning solution for the next desk or surface.
• After the cleaning process is complete, rinse out microfiber cloths and hang to dry, or leave for pickup and laundering by the custodial staff.

Disinfecting touch points by custodians
1. First clean with a detergent and rinse (if required by the product) or wipe surfaces. (Some disinfectants lose effectiveness in the presence of soap residue.)
2. Uniformly apply the disinfectant to a microfiber cloth (with a pump spray bottle or squirt bottle) and wipe the surface with the saturated cloth, or apply the disinfectant directly to the surface (with a squirt bottle).
3. Ensure that the surface stays wet for the length of the contact time recommended on the label.
4. Rinse or wipe surfaces (if required) after contact time has elapsed.
5. Rinse the microfiber cloth in clean water between uses on each touch point, or if using the folding method, use a clean fold of the cloth for each touch point.
6. Launder microfiber cloths as recommended by the manufacturer. See Appendix G: Disinfectant Application Equipment.

Disinfecting in the classroom by teachers
If the school’s disinfection policy includes the use of disinfectant products by teachers or other staff, please see Appendix D: Cleaning and Disinfecting by School Department Staff for detailed guidance. At a minimum, the following guidelines apply:

1. Do not ask students to use disinfectant products. Children under the age of 18 should not use disinfectants.
2. Children’s developing bodies are more susceptible to the effects of chemicals than the bodies of most adults. Disinfectant sprays and wipes can contain ingredients that are recognized as asthmagens, and scented products can contain ingredients identified as endocrine disruptors. Use disinfectant products only after students have left the building. (In case of a pandemic this may not be possible.)

3. Train teachers on the proper use and storage of disinfectants and on the Hazard Communication Law, which will help them interpret the product management and health and safety information provided in the product’s Safety Data Sheet (SDS). Provide copies of the SDS in case of an accident in the classroom.

4. Provide chemically resistant gloves as specified on the product’s SDS or label.

5. Ensure that the products are stored properly in a secure area, away from students and with other compatible chemicals. Check the product’s SDS to determine how to safely store the disinfectant.
### Appendix A.4. Regulatory Categories and Definitions of Waste

<table>
<thead>
<tr>
<th>Definition of Waste</th>
<th>Agency/Regulation</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Regulated Waste – Biohazardous Waste:</strong></td>
<td></td>
</tr>
<tr>
<td>• Liquid or semiliquid blood or other potentially infectious materials</td>
<td>Occupational Safety and Health Administration</td>
</tr>
<tr>
<td>• Contaminated items that would release blood or other potentially infectious materials in a liquid or semiliquid state if compressed</td>
<td>Bloodborne Pathogen Standard 1910.1030</td>
</tr>
<tr>
<td>• Items that are caked with dried blood or other potentially infectious materials and are capable of releasing these materials during handling</td>
<td></td>
</tr>
<tr>
<td>• Contaminated sharps</td>
<td></td>
</tr>
<tr>
<td>• Pathological and microbiological wastes containing blood or other potentially infectious materials</td>
<td></td>
</tr>
</tbody>
</table>
## Definition of Waste

**Medical or Biological Waste.** Waste that because of its characteristics may:

- Cause or significantly contribute to an increase in mortality or an increase in serious irreversible or incapacitating reversible illness.
- Pose a substantial potential hazard to human health or the environment when improperly treated, stored, transported, disposed of, or otherwise managed.

The following types of waste generally generated in schools are identified and defined as medical or biological waste:

<table>
<thead>
<tr>
<th>Type of Waste</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>2. Pathological Waste</td>
<td>Human anatomical parts, organs, tissues, and body fluids removed and discarded during medical or diagnostic procedures; specimens of body fluids and their containers; and discarded material saturated with body fluids other than urine.</td>
</tr>
<tr>
<td>3. Cultures and Stocks of Infectious Agents and Associated Biologicals</td>
<td>All discarded cultures and stocks of infectious agents and associated biologicals, including culture dishes and devices used to transfer, inoculate, and mix cultures, as well as discarded live and attenuated vaccines intended for human use, that are</td>
</tr>
<tr>
<td>4. Sharps</td>
<td>Discarded medical articles that may cause puncture or cuts, including, but not limited to, all needles, syringes, lancets, pen needles, pasteur pipettes, broken medical glassware/plasticware, scalpel blades, suture needles, dental wires, and disposable razors used in connection with a medical procedure.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Agency/Regulation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Massachusetts Department of Public Health</td>
</tr>
<tr>
<td>105 480.000</td>
</tr>
</tbody>
</table>
## Definition of Waste

MassDEP’s Fact Sheet defines Infectious waste as physically dangerous medical or biological waste, such as:

- Sharps (e.g., lancets, needles, syringes, etc.),
- Blood and blood products,
- Pathological wastes,
- Cultures and stocks of infectious agents and associated biologicals, and
- Contaminated animal carcasses, body parts, and bedding.

MassDEP does not regulate infectious waste as a regulated hazardous waste; it is classified as a special waste under the solid waste regulations.

In 310 CMR 19.000, MassDEP defines Medical or Biological Waste as defined in 105 CMR 480.000: Minimum Requirements for the Management of Medical or Biological Waste (State Sanitary Code Chapter VIII). (this regulation refers to the Massachusetts Regulation listed above.)

<table>
<thead>
<tr>
<th>Hazardous Waste:</th>
</tr>
</thead>
<tbody>
<tr>
<td>There are two ways a waste may be identified as hazardous: it may be listed in the regulations (310 CMR 30.131-136) or it may be defined by its hazardous characteristic (310 CMR 30.120). Many common disinfectants have these characteristics.</td>
</tr>
<tr>
<td><strong>Ignitable</strong> – easily catches fire, flash point 140°F</td>
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<tr>
<td><strong>Corrosive</strong> – easily corrodes materials or human tissue, very acidic or alkaline, pH ≤2 or ≥12.5</td>
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<td><strong>Reactive</strong> – explosive; produces toxic gases when mixed with water or acid)</td>
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<td><strong>Toxic</strong> – can leach toxic chemicals as determined by a special laboratory test; toxic to humans and wildlife</td>
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### Agency/Regulation

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<th>Massachusetts Department of Environmental Protection</th>
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<td>310 CMR 19.000</td>
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Appendix A.5. Understanding Hand Hygiene

Introduction

Promoting proper hand hygiene in schools is an essential part of an infection-control program and is the best method for controlling the spread of colds and flu.

Best Practice

The Centers for Disease Control and Prevention recommends hand washing to effectively prevent transmission of infection.\(^7\) Best practice is to vigorously wash hands with liquid soap and water for 20 seconds (or the time it takes to sing the ABC song). Any amount of hand washing is beneficial, but the longer time is optimum. During pandemics it is essential.

Selecting Hand Hygiene Products

Antibacterial products were originally developed for use by surgeons and other operating room personnel to prevent bacterial infections in hospitals and health care settings. These products were then marketed to the public with claims about preventing disease. Hand hygiene products come in several forms, including soaps, gels, and wipes.

1. **Antibacterial soaps and washes** – The U.S. Food and Drug Administration (FDA) states that “there isn’t enough science to show that over-the-counter (OTC) antibacterial soaps are better at preventing illness than washing with plain soap and water. To date, the benefits of using antibacterial hand soap haven’t been proven. In addition, the wide use of these products over a long time has raised the question of potential negative effects on your health.”\(^8\)

2. **Gels and wipes** – Other common hand hygiene products such as sanitizers and wipes advertised as antibacterial or antimicrobial contain alcohol or quaternary ammonium compounds (QACs) as the effective ingredient. These products have not been tested for daily use with children or other sensitive populations. Some QACs have been associated with asthma and with fertility problems in mice.\(^9\) If a hand sanitizer is needed and hand washing is not an option, an unscented, alcohol-based product (greater than 60% alcohol) made from ethanol should be selected.
Frequently Asked Questions

What do “antimicrobial” and “antibacterial” mean?

Antimicrobial means the product contains a chemical that can kill or suppress the multiplication or growth of microorganisms such as bacteria, viruses, or fungi.

Antibacterial means the chemical in the product kills bacteria and some but not all viruses. Colds and flu are caused by viruses, not bacteria. This is why antibacterial soaps, gels, and wipes are a limited form of hand hygiene.

What role do bacteria play in human health?

The Alliance for Prudent Use of Antibiotics explains that bacteria are microorganisms that are found “on our skin, in our digestive tract, in the air, in soil, and on almost all the things we touch every day. Most are harmless (nonpathogenic). Many are helpful because they occupy ecological niches (both within our bodies and in the external environment) that could be occupied by harmful (pathogenic) bacteria. These helpful strains keep harmful microorganisms in check. They also help our digestion to function effectively and stimulate the development of a healthy immune system.”

Where should antibacterial or antimicrobial products be used and who should use them?

Antibacterial or antimicrobial products should be restricted for use in high-risk settings such as hospitals, clinics, nurse’s offices and other health care settings, prisons, and by those with weakened immune systems. In case of a pandemic flu, antimicrobial products may be appropriate. They should not be used indiscriminately in homes, schools, and offices for routine hand hygiene.

What are the safety hazards of alcohol-based hand sanitizer products?

- Toxicity

Alcohol-based products pose several safety hazards. One concern is that children in some schools have ingested these hand sanitizers. Reports to the National Poison Data System have identified serious consequences, including apnea, acidosis, and coma in young children who swallowed alcohol-based (alcohol) hand sanitizer.

During the COVID-19 Pandemic, the Federal Drug Administration (FDA) found the addition of contaminants added to the toxicity of hand sanitizer. Due to the that and the following issues of concern, the FDA issued a consumer warning on 7/2/20.

- Many hand sanitizers marketed as having ethanol (ethyl alcohol), which is an acceptable ingredient, found that they were contaminated with methanol. Methanol can be toxic when absorbed through the skin or ingested. It can be life threatening when ingested and has led to blindness, hospitalizations and death.
- Some products were contaminated with 1-propanol, benzene, acetaldehyde, or acetal.
- Some products had less than the correct amount of active ingredients.
- Some products were contaminated with bacteria.
• Flammability - Another concern is the flammability of alcohol-based hand sanitizers:
  • Hazard - These products pose a fire and explosion hazard. Due to the supply chain issues, schools stocked up on supplies that were available. Since it is a flammable liquid, there are special storage guidelines that may be hard for a school to meet which poses an even greater fire risk.
  • Regulatory Guidance - The State Fire Marshal guidance for schools on managing hand sanitizer provides this regulatory guidance on how much can be stored and allowable capacity and locations of the dispensers in a building. The guidance is available at https://www.mass.gov/doc/hand-sanitizer-fire-prevention/download.

• Expiration and Efficacy
  • Hazard - Hand sanitizer expires and loses its effectiveness.
    • Protocol - If possible, try to minimize purchases to minimize storage issues and monitor it for disposal.
  • Regulatory Guidance
    • Expiration Dates – the FDA normally requires manufacturers to list an expiration date, unless they have data showing that they are stable for more than 3 years.
      Early in the COVID 19 pandemic, hand sanitizer produced under FDA’s temporary policies were not required to list an expiration date listed as they were expected to be used during the public health emergency. This temporary policy has been withdrawn. This makes it much harder to know when it is no longer effective unless schools track the receipt of the hand sanitizer and track their inventory.
    • Hazardous Waste – Massachusetts Department of Environmental Protection requires it to be stored and disposed of as a hazardous waste once it has expired, it must be disposed of as hazardous waste.

*Should antimicrobial hand sanitizers be used in schools when students do not have access to soap and water?*

A hand sanitizer can kill the germs on hands if the hands are already clean. In the case of an infectious disease outbreak, an unscented, alcohol-based (greater than 60% alcohol) hand sanitizer made from ethanol should be used.

If the hands are dirty, the sanitizer will just move that dirt around. Because the sanitizer may not remove the dirt, it may not be effective against and kill all of the microbes. It can also build up if used continuously without washing hands and become less effective.

In cases of allergies to nuts, a study found that liquid and bar soaps and commercial wipes removed proteins (the allergenic component of peanuts) from hands equally well, whereas alcohol-based hand sanitizers and plain water were not as effective.

*Are there any preferable alternatives when students do not have access to sinks for handwashing purposes?*
Yes, environmentally preferable products are available, such as those certified under UL ECOLOGO®’s Instant Hand Antiseptic Products standard and Green Seal’s GS-44 Standard for Soaps, Cleansers, Hand Sanitizers and Shower Products. If these are not readily available, look for products that do not contain added fragrances and that use bio-based ingredients.

The Federal Drug Administration (FDA) regulates hand sanitizer. FDA regulates them as “over the counter” drugs. Parents must approve their use in schools.

FDA does not approve any antiseptic product, including hand sanitizer, to prevent or treat COVID-19. FDA advises distributors not to sell hand sanitizers on the “Do Not Use List” available at: https://www.fda.gov/drugs/drug-safety-and-availability/fda-updates-hand-sanitizers-consumers-should-not-use. FDA includes some products on the list even if they were not recalled, due to the dangers of methanol, benzene, or 1-propanol contamination. FDA recommends continuously checking this list for updates.

FDA says for hand sanitizers to be legally marketed, products must have either alcohol (ethanol or isopropyl), or benzalkonium chloride (a quaternary compound as noted below, which the authors do not recommend).

**How can antibacterial chemicals be avoided?**

When shopping, read the labels and avoid purchasing antibacterial soaps, which contain quaternary ammonium compounds (QACs). To assist consumers in avoiding antibacterial chemicals, the following resource provides information, such as ingredients and safety ratings, on many products.

Environmental Working Group (EWG) Skin Deep – safer antibacterial soap: https://www.ewg.org/skindeep/search/?utf8=%E2%9C%93&search=hand+antibacterial+soaps

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**References**


11. CDC Reported Adverse Health Effects in Children from Ingestion of Alcohol-Based Hand Sanitizers — United States, 2011–2014. Available at https://www.cdc.gov/mmwr/volumes/66/wr/mm6608a5.htm
17. Green Seal GS-44 Standard. Available at: https://www.greenseal.org/green-seal-standards/gs-44

**Resources**

**Note about the accuracy of the links:** the CDC frequently updates their webpages and often renames them to reflect the updated information. If the content is outdated, CDC will often redirect users to the most recent content. The following links should take you to the links where relevant content is located.


