Green Cleaning, Sanitizing & Disinfection: A Toolkit for Early Care and Education
Goal- You Will Be Able To:

• Recognize infectious disease hazards of group care for young children.
• Protect young children and staff from infectious diseases and from injury by toxic products.
• Identify and safely use the least harmful products to clean, sanitize and disinfect.
• Identify behaviors that reduce the risk of infectious disease at least as well as chemical products.
The Project

Informed Green Solutions Inc. was funded in part by the CDC in partnership with the Vermont Department of Health to assist schools and child care programs with the following activities:

• conducting environmental assessments
• promoting plans and policies for addressing environmental impacts
• engaging in safe practices for proper sanitizing and disinfection
• increasing knowledge to reduce potential environmental exposures
• decreasing, preventing, or eliminating harmful environmental exposures.
SARS-CoV-2, the virus that causes COVID-19 is airborne, primarily transmitted via droplets and aerosols according to:
• Centers for Disease Control and Prevention
• Scientists and Medical Experts worldwide

The risk of getting COVID-19 from surfaces is very low, 1 in 10,000.
The Layered or Swiss Cheese Approach

PolicyLab adapted this graphic from the Cleveland Clinic’s “Swiss Cheese Approach to COVID Mitigation”
The Layered Approach

- Ventilation - plays a role in reducing the transmission of airborne viruses and exposure to other diseases, chemicals and odors.

- Social Distancing Guidelines - recommend staying at least 6 feet away from others who do not live with you.

- PPE – includes wearing masks and using additional measures when cleaning after a COVID-19 case in your building.

- Cleaning, Sanitizing and Disinfecting – safer products, proper procedures
Ventilation

Portable Air Cleaners with HEPA (high efficiency particulate air) filters effectively clean air in individual rooms.

- High quality HEPA air cleaners can trap over 99% of particles the size of SARS-CoV-2.
- Avoid air cleaners that emit ozone.

California Air Resources Board lists approved machines. [ww2.arb.ca.gov/list-carb-certified-air-cleaning-devices](http://ww2.arb.ca.gov/list-carb-certified-air-cleaning-devices).

Association of Home Appliance Manufacturers (AHAM) certifies quality air cleaners.

Harvard – CU Boulder Portable Air Cleaner Calculator [https://docs.google.com/spreadsheets/d/1NEhk1lEDbEi_b3wa6gl_zNs8uBJjI5SS-86d4b7bW098/edit#gid=1882881703](https://docs.google.com/spreadsheets/d/1NEhk1lEDbEi_b3wa6gl_zNs8uBJjI5SS-86d4b7bW098/edit#gid=1882881703)

Look for an AHAM certification stamp on the air cleaner, check the Clean Air Delivery Rate (CADR) and the room size the unit can filter.
Behaviors To Reduce Infectious Disease Spread

1.) Cough and sneeze etiquette:
- Cover your nose and mouth with a tissue when you cough or sneeze, then wash your hands.

- If a tissue is not available, cover your mouth and nose with your sleeve, not your hand.

2.) Isolation/social distancing:
Stay home if you are sick. Don’t risk passing your germs on to others at your program.

- Encourage coughing or sneezing children/staff to leave a 3-6 foot buffer between themselves and others.
Handwashing

Hand washing is the **MOST** important thing you can do to reduce the spread of infectious disease.

Caregiver hands in ECE harbor more germs than most other surfaces. Caregivers change diapers, assist children with toileting, wipe noses, hold hands, handle mouthed toys and more.
Infectious diseases are spread by germs (microbes) from one person or animal to another.

- Bacteria
- Viruses (Sars-Cov-2 causes Covid-19 infections)
- Fungi
- Parasites

Germs enter our bodies in different ways.

Studies show that young children in ECE have symptoms of illness 1/3 to 1/2 of the days of the year! This is normal.
How Infectious Diseases Spread

Bacteria and viruses are found in body fluids:

- Blood
- Mucus
- Saliva
- Vomit
- Feces
- Discharges from the eyes
- Skin lesions, sores or wounds

Remember: If it's wet and comes from someone’s body, it can be infectious!
Routes of Infection: Direct Contact

Body fluids are directly transferred from one person to another. Examples include touching, kissing, and mouthing.
When kids sneeze, cough, spit, drool, or vomit into the air & the germ-containing droplets land on another person or a hard surface. This is how flu is spread!

When a person touches a germ-covered surface and then their eyes, nose or mouth, germs get into the body and cause disease.
Routes of Infection: Airborne Transmission

Germs that float suspended in the air attached to moisture droplets or dust particles and travel more than 3 feet.
Reduce Infectious Disease Transmission

• Adopt formal written policies to reduce the risk of infectious disease, including vaccination of children and staff. Model policies available at: https://irp.cdn-website.com/22c98fa0/files/uploaded/ECECurriculum.pdf

• Train child care staff concerning infection control
  • Good hand hygiene by both staff and children
  • Appropriate cleaning and targeted disinfection protocols
  • State guidelines for pandemic best practices.
Green Cleaning, Sanitizing and Disinfecting

Protects public health, including building staff and occupants.

A Green Cleaning Program includes:

• Safer cleaning, sanitizing, and disinfecting products
• State-of-the-art equipment
• Staff training of best practices
CDC Guidance for ECE

Cleaning

• “Develop a schedule for increased frequency of routine cleaning of high-touch surfaces.

• Ensure safe and correct use and storage of your cleaning and disinfection products, including storing products securely away from children. If surfaces are dirty, clean them using a detergent or soap and water prior to disinfection. Use products on List N: Disinfectants for Coronavirus (COVID-19) and follow instructions for how long a product must be in contact with a surface to be effective.”

www.cdc.gov/coronavirus/2019-ncov/community/schools-childcare/guidance-for-childcare.html#anchor_1612986010643
CDC Guidance for ECE

• “Cleaning and disinfection products should not be used by children or placed near children. Staff should ensure that there is adequate ventilation when using these products to prevent children or themselves from inhaling toxic vapors.

• Special considerations should be made for people with asthma. Some cleaning and disinfection products can trigger asthma. Learn more about reducing your chance of an asthma attack while disinfecting to prevent COVID-19.”

www.cdc.gov/coronavirus/2019-ncov/community/schools-childcare/guidance-for-childcare.html#anchor_1612986010643
Children & Chemical Exposure

- Children are more sensitive to injury from toxic chemical exposure.
- Up to one-third of childhood cancer is due to environmental exposure.
- Pregnant staff and their unborn babies are especially vulnerable to the health effects of chemical toxins.
- Health effects from exposure to environmental toxins may not develop for years or decades.
- Precautionary Principle”
Children’s Risk Factors

Children:
• Put non-food objects in their mouths.
• Have thinner skin that absorbs harmful chemicals more easily.
• Breathe more air for their size.
• Spend more time at floor level where toxic chemicals are concentrated and can contact skin or be inhaled.
Labels: Cleaners, Sanitizers & Disinfectants

Many cleaning & sanitizing products can cause health problems, even though they are sold at stores.

**Only** the ingredients that kill bacteria, viruses, or mold (disinfectants) have to be on the label.

Trade secrets, like inert ingredients and fragrances, are not listed on labels but may be toxic.

*Natural, nontoxic,* and *green* on product labels are unregulated by the government and meaningless.
Asthma and Asthmagens

Many cleaning, sanitizing, and disinfecting products can irritate the lungs, and trigger or even cause asthma.

Asthma is a chronic inflammatory disorder of the airways in the lungs that results in:

- Wheezing
- Coughing
- Chest tightness
- Trouble breathing
Endocrine Disrupting Chemicals (EDCs)

- Endocrine disruptors are chemicals that interrupt or imitate natural hormonal messages.
- Since hormones work at very small doses, endocrine disrupting chemicals can also affect health in very small amounts.
- Endocrine disruptors may cause:
  - reduced fertility
  - early puberty in girls
  - increases in sex organ cancers.

Very small doses of EDC’s can harm people in different ways by tricking the body into responding to chemicals as hormones during key stages of development.
Ingredients to Avoid

- **2-butoxyethanol** (or ethylene glycol monobutyl ether) and other glycol ethers
- **Alkylphenol ethoxylates** (some common ones are: nonylphenol and octylphenol ethoxylates, or octoxynols)
- **Bisphenol A**
- **Dyes** (may be listed as FD&C or D&C):
- **Ethanolamines**
  - Monoethanolamine [MEA]
  - Diethanolamine [DEA]
  - Triethanolamine [TEA]
- **Fragrances**
- **Parabens and Phthalates**
- **Pine or citrus oil**

- **Quaternary ammonium compounds**: (alkyl dimethyl benzyl ammonium chloride (ADBAC), benzalkonium chloride, and didecyl dimethyl benzyl ammonium chloride)
Fragrances contain volatile organic compounds (VOCs) and are found in most cleaning, sanitizing and disinfecting products.

Fragrance chemicals may:

Enter the body through:
- Skin absorption
- Inhalation
- Swallowing

Irritate the:
- Eyes
- Skin
- Lungs (including Asthma)

Fragrance does NOT indicate effectiveness.

*CLEAN HAS NO SMELL*
Green Cleaning Toolkit for Early Care and Education

Safer Cleaning, Sanitizing and Disinfecting Products

**Disinfectants**: Choose Design for the Environment-certified products that contain hydrogen peroxide, citric acid, l-lactic acid, ethanol, or isopropanol.

**Cleaning products**: Choose unscented that have been certified by third parties such as:

- Green Seal
- Safer Choice
- UL ECOLOGO®
Cleaning, Sanitizing and Disinfecting

Before choosing any type of cleaning or antimicrobial product, you will first need to decide whether the surface needs to be:

- cleaned
- sanitized
- disinfected
# How Do We Know What Process to Use?

Caring for Our Children: National Health and Safety Performance Standards

## Guide for Cleaning, Sanitizing, and Disinfecting

<table>
<thead>
<tr>
<th>Areas</th>
<th>Before Each Use</th>
<th>After Each Use</th>
<th>Daily (At the End of the Day)</th>
<th>Weekly</th>
<th>Monthly</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Food Areas</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>• Food preparation surfaces</td>
<td>Clean, Sanitize</td>
<td>Clean, Sanitize</td>
<td></td>
<td></td>
<td></td>
<td>Use a sanitizer safe for food contact</td>
</tr>
<tr>
<td>• Eating utensils &amp; dishes</td>
<td>Clean, Sanitize</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>If washing the dishes and utensils by hand, use a sanitizer safe for food contact as the final step in the process; Use of an automated</td>
</tr>
</tbody>
</table>

Green Cleaning Toolkit *for* Early Care and Education
Vermont Guidance

• “Cleaning surfaces using soap or detergent, and **not disinfecting**, is enough to reduce risk in most situations.
• When focused on high touch surfaces, cleaning with soap or detergent should be enough to further reduce the relatively low transmission risk.”

A STRONG & HEALTHY YEAR
Safety and Health Guidance for Reopening Schools, Fall 2021
Issued by the Vermont Agency of Education and Vermont Department of Health
Cleaning

• Removes germs, dirt, and impurities from surfaces or objects.
• Uses soap or detergent and water to physically wipe germs from surfaces.
• Helps inactivate SARS-CoV-2 by breaking down the outer lipid/fat shell.
• Removes molds and allergens that can trigger asthma symptoms.

Can remove up to 99% of germs when microfiber cloths or mops are used.
Sanitizing

Lowers the number of germs on surfaces or objects to a safe level, regulated as a pesticide.

• For food surfaces this level should be a 99.999% reduction in microorganisms within 30 seconds.

• Sanitizers should state on their label the surfaces they are intended to be used on.

• Food contact sanitizers should always be used in areas where food is prepared or on objects mouthed by children.

Sanitizers are used on food preparation and contact surfaces, and mouthed toys and pacifiers.
Disinfecting

- Regulated as **Pesticide**
- **Kills 99.9999% of germs** on surfaces or objects.
- Does not necessarily *clean* dirty surfaces or remove germs.
- Kills germs on contact if the disinfectant sits wet, or “dwells,” on the surface for the required contact time.
- Used on:
  - changing tables
  - bathroom sinks and toilets.
  - High touch areas which are at high-risk for collecting lots of germs, such as doorknobs and drinking fountains.

**A disinfectant must stay on the surface for at least the recommended **contact time** or it will not ‘kill’ all of the germs on that area.**
Vermont Guidance

• Disinfection is recommended in indoor settings where there has been a suspected or confirmed case of COVID-19 within the last 24 hours. Even without cleaning or disinfecting, the risk of transmission from any surfaces is minor after 3 days (72 hours).

• Schools shall continue to follow (pre-COVID) regulations regarding cleaning and disinfecting.
Identifying Safer Cleaners

Institutional vs. Retail:
-An ECE facility can be cleaned using just a few products.
-These products can be purchased as an institutional cleaning product or a retail cleaning product.

Third-party certified products:
- Green Seal
- UL ECOLOGO®
- EPA’s Safer Choice
Institutional Cleaning Products

- Purchased from a cleaning products distributor.
- Often not available in retail stores.
- Available as a concentrate.
- Accompanied by safety data sheets (SDS)*.
- Often less expensive.

It is easier to find institutional products that are certified as safer by a third-party (Green Seal, UL ECOLOGO® or Safer Choice)
Retail Cleaning Products:

- Purchased at a retail store like a grocery store.
- Available in ready-to-use containers.
- Less likely to be certified as safer by a third-party (Green Seal, UL ECOLOGO®, or Safer Choice).
- Lack OSHA-required Safety Data Sheets.

Retail Products are often more expensive and not labeled as completely as institutional products.
Choosing Safer Sanitizers

*Caring for Our Children: National Health and Safety Performance Standards* recommends sanitizing for:

- Toys
- Thermometers
- Pacifiers
- Teething toys
- Eating utensils
- Tables and high chair trays
- Food preparation areas
- Mixed use tables
- Computer keyboards.

When choosing a sanitizer look for the following:

- 0 rating on the Hazardous Materials Identification System health rating scale.
- The signal word Caution rather than Danger, Poison or Warning on the label.
- EPA registration number (verifies that the product is registered by them to kill the germs claimed on the label).
- Approval for food contact surfaces.
- Short contact time (the time the sanitizer must be left glistening wet on the surface and in contact with the germs to kill them).
Choosing Safer Disinfectants

• There are many types of disinfectants and not all disinfectants kill all germs. For example, the disinfectants that kill SARS CoV-2 are listed on EPA’s List N.

• Some require a shorter contact time, (30 seconds to 1 minute) an important consideration for changing diapers, for example.

When Choosing a Disinfectant, Look for the Following:
• 0 rating on the Hazardous Materials Identification System health rating scale
• The signal word Caution, rather than Danger, Poison or Warning on the product label
• EPA registration number
• Hospital-grade classification (this is a requirement of child care licensing agencies in most states)
• Short contact time or the time the sanitizer must be left glistening wet on the surface
“Disinfectants such as bleach and those containing quaternary ammonium compounds or “Quats” should not be used when children and adolescents are present, because these are known respiratory irritants.”

“only products labeled as safe for humans and the environment…containing active ingredients such as hydrogen peroxide, ethanol, citric acid, should be selected from this list (List N), because they are less toxic, are not strong respiratory irritants or asthma triggers, and have no known carcinogenic, reproductive, or developmental effects.”

**Microfiber**

**GREAT alternative to cotton cloths or paper towels!**

- Microfiber’s design creates 4 times the surface area as a cotton cloth!
- Microfiber absorbs up to **7 times** its weight in water.
- Microfiber is positively charged, so it attracts negatively charged dirt, germs, and grease, and can clean surfaces with less or no chemical product.
Electrostatic Sprayers

New devices for applying disinfectants have emerged especially with the onset of the pandemic. There is concern in the public health community about:

- Size of the droplets
- Effectiveness of the application
- Disinfectants overuse - we don’t need to disinfect everything
Safety Issues: Electrostatic Sprayers

Always read the equipment manual.

Health WARNING from one manufacturer:

- Electrostatic devices may interfere with sensitive medical devices such as pacemakers, defibrillators, or similar devices.
- DO NOT operate an electrostatic sprayer or stand within 10 feet if you use such medical devices. Contact your physician.

Users have been shocked when touching parts of the sprayer.
Safety of Disinfectant Applicators: Mister/Foggers

EPA/CDC have concerns with mister/foggers:

• Health risks – fine mist stays in the air longer and can go deep into the lungs.

• Efficacy – the mist may not stay wet long enough for required contact (dwell) time.
Disinfectant Applicators: Mister/Foggers

Regulatory Pushback:
- CDC
- VT
- NJ
- Others


Developed by Lynn Rose
# Disinfectant Applicators: Mister/Foggers

## Should You Use These to Disinfect?

<table>
<thead>
<tr>
<th>Disinfectant Applicator</th>
<th>Recommendation</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>EPA List N Products</td>
<td>YES</td>
<td>Follow label directions for approved application methods and required contact times.</td>
</tr>
<tr>
<td>Electrostatic Spraying</td>
<td>MORE INFO NEEDED</td>
<td>EPA and CDC are reviewing safety and effectiveness.</td>
</tr>
<tr>
<td>Ultraviolet, Ozone or Steam</td>
<td>MORE INFO NEEDED</td>
<td>EPA and CDC are reviewing effectiveness.</td>
</tr>
<tr>
<td>Fogging</td>
<td>NO</td>
<td>Increases hazardous chemical exposure and provides no added benefit.</td>
</tr>
<tr>
<td>Ultrasonic Waves or LED blue light</td>
<td>NO</td>
<td>There is no data to suggest these are effective against COVID-19.</td>
</tr>
</tbody>
</table>
This power point was developed to accompany the *Green Cleaning, Sanitizing and Disinfection Toolkit for Early Care and Education* that was developed by a team of public health professionals, health educators, nurses, and policy makers in California and across the nation.

The principle organizations involved in its development are:

[Logos of the organizations involved]
Green Cleaning Toolkit for Early Care and Education

Resources

Third Party Certifiers

- EPA’s Design for the Environment Disinfectants Program
- EPA’s Safer Choice
- Green Seal – List of certified products
- UL ECOLOGO®

Caring for Our Children National Health & Safety Performance Standards

Informed Green Solutions Inc.

Women’s Voices for the Earth – Cleaning product Ingredient lists and recipes for making less-toxic cleaners.
Questions?

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