Practical steps for adopting a green cleaning, sanitizing, and disinfecting program: Protecting children's health and development by eliminating exposure to hazardous cleaning chemicals
Who We Are

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Learning Outcomes

1. Describe the hazards associated with conventional cleaning products.
2. Explain how to choose and use the least harmful products to clean, sanitize and disinfect.
3. List activities that reduce the spread of infectious disease.
4. Explain the difference between cleaning, sanitizing and disinfecting.
Green Cleaning Toolkit for Early Care and Education

Why Do We Clean, Sanitize and Disinfect in ECE?

- Provide a healthy environment
  - helps to control asthma and allergies.
- Provide a comfortable environment
  - workers are more productive and children learn better in clean, organized environments.
- Regulations
- Control infectious diseases
What are Infectious Diseases?

Infectious diseases are:

- spread by germs (also called microbes) from one person (or animal) to another.
- are very common in ECE.

Studies show that young children in ECE have symptoms of illness one third to one half of the days out of the year! This is normal.
What Types of Germs Are There?

There are several kinds of germs we are concerned about in the ECE environment:

- Bacteria
- Viruses
- Fungi
- Parasites

These germs or microbes get into our bodies in different ways.
How are Infectious Diseases Spread?

Bacteria and viruses are found in body fluids, including:

- Blood
- Mucus
- Saliva
- Vomit
- Stool (feces)
- Discharges from the eyes and from skin sores or wounds

A good rule to remember: if it's wet and comes from someone's body, it can be infectious!
Body fluids are directly transferred from one person to another. Examples of direct contact are touching and kissing.
Infectious Diseases Are Spread By:

Droplets

When kids sneeze, cough, spit, drool, slobber or vomit into the air and it lands on another person or a hard surface. **This is how flu is spread!**
Infectious Diseases Are Spread By:

Airborne Transmission

Germs that float suspended in the air attached to moisture, droplets, or dust particles, and travel more than 3 feet.
How Can We Reduce the Spread of Infectious Disease?

- By our personal behaviors, when we:
  - wash our hands to remove germs so we don’t transfer them to others.
  - stay home when we are ill.
  - cover our coughs and sneeze into our sleeves.

Germs get caught in our clothing, where they don’t live very long!
How Can We Reduce the Spread of Infectious Disease?

- By cleaning, sanitizing, and disinfecting

  - **Cleaning** removes germs from surfaces.
  - **Sanitizing and disinfecting** with chemicals or devices inactivates germs.
The words “natural,” “nontoxic,” and “green” that appear on product labels are largely unregulated by the government.

Products are not thoroughly tested for health effects before they are allowed to be sold.

Manufacturers are not required to list all the ingredients on the label.

Some cleaning, sanitizing, and disinfecting chemicals can cause health problems in children and staff.
Why Switch to Green Cleaning?

- The Environmental Working Group tested 21 common products used in California schools. They found:
  - 457 chemicals were emitted into the air
  - 6 known asthmagens
  - 11 known, probable or possible cancer-causing agents and
  - Others – endocrine disruptors
# Green Cleaning Toolkit for Early Care and Education

<table>
<thead>
<tr>
<th>Cleaning Products</th>
<th>Air Contaminants</th>
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</table>
Safety of Cleaning, Sanitizing and Disinfecting Products

“Precautionary Principal” – a product should be proven safe before it is allowed to be sold to the public.

OR

Buyer Beware – a product is allowed to be sold until proven harmful.
Children’s Vulnerability

Young children are more vulnerable to toxic chemicals and allergens in the physical environment.

- They breathe more air for their size, compared to adults.
- Their skin touches the ground (where harmful chemicals collect).
- They absorb harmful chemicals through their skin, which is thinner than an adult’s.
- They stick a lot of objects in their mouths.
Exposure

Children exposed to the same dose of environmental toxins and/or chemicals have proportionately much greater exposure compared to adults.
Children and Toxins

- Childhood exposures to chemicals in the environment are associated with:
  - Asthma
  - Attention deficit hyperactivity disorder (ADHD)
  - Autism
  - Cancer
  - Learning disabilities/dyslexia
  - Mental retardation

Toxins and Brain Development

- **Heavy Metals – lead, mercury**
  - Water, paint, thermometers, fluorescent lights

- **Flame Retardants**
  - Furniture, nap mats, carpeting, foam, dust

- **Pesticides/Herbicides**
  - Permethrin, glyphosate, fipronil

*Neurobehavioural effects of developmental toxicity*

Toxins and Brain Development

- Bisphenol A (BPA)
  - Cleaning products, #7 plastics, can liners, baby/water bottles

- Phthalates
  - Plastics, cleaning products, fragrances, toys, vinyl, air fresheners

Neurobehavioural effects of developmental toxicity
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
Ingredients To Avoid - Asthmagens or Asthma Triggers

- Benzalkonium Chloride
- Bisphenol A (BPA)
- Bleach – sodium hypochlorite
- Ethanolamines
  - monoethanolamine [MEA]
  - diethanolamine [DEA]
  - triethanolamine [TEA]
Ingredients to Avoid Asthmagens

- Fragrance Ingredients including essential oils
- Parabens and Phthalates – found in cleaning products
- Quaternary ammonium compounds – found in sanitizers and disinfectants
- Volatile Organic Compounds – found in aerosol products etc.
ECE Staff

- Research tells us:
  - Professional cleaners have higher incidences of work related asthma.
  - Their children may have a greater risk of developing asthma when exposed in utero.

Pregnant women especially need to protect themselves.
ECE Staff

Staff should be familiar with the label instructions on the products they are using.

- Personal protective equipment recommended – gloves, respirator etc.

- Increased ventilation needed – open windows, or use when children are not present.
What’s the Problem with Bleach?

- Bleach:
  - can cause asthma
  - triggers asthma episodes
  - can affect breathing
  - can irritate the skin and eyes
  - was the source of 35,000 poisonings in 2011

- Children are at greater risk from breathing bleach vapors because their lungs are still developing.

- Bleach has a short shelf life, so must be purchased monthly and solutions mixed daily.
What's the Problem with Bleach?

- Mixing bleach with other chemicals containing ammonia, quaternary ammonium compounds (found in other disinfectants), vinegar or other acids can create a toxic gas.

- Bleach is neutralized by dirt and other organic material, so it isn’t very effective when used on a surface that hasn’t been cleaned first.
Endocrine Disrupting Chemicals (EDCs)

Endocrine Disruptors are chemicals that interrupt or imitate natural hormonal messages.

Very small doses of EDC’s can harm people in different ways, essentially tricking the body into responding to chemicals as hormones during key stages of development.
Endocrine Disrupting Chemicals (EDCs)

Since hormones work at very small doses, endocrine disrupting chemicals can also affect health in very small amounts.

Endocrine disruptors may cause:
- reduced fertility in women and men
- early puberty in girls
- increases in cancers of the breast, ovaries, and prostate.
How Are We Exposed?

Endocrine Disruptors are found in the following:

- Canned Foods - BPA
- Cleaning Products – triclosan, nonylphenol ethoxylates
- Cosmetics/Personal Care Products - phthalates
- Flame Retardants – nap mats, chairs/couches
- Pesticides
- Plastics – recycling numbers #3, #6 and #7
- Teflon - non-stick cookware, stain resistant fabrics
Triclosan

- Collects in human and animal tissue, including in the umbilical cord blood of infants and in the breast milk of nursing mothers.
- Can interfere with thyroid function (endocrine disruption) in animals.
- Can cause skin irritation.
- Is no better than plain soap according to researchers.
Fragrances and Human Health

Fragranced products contain additional chemicals that can cause health problems. These problems include:

- Lung irritation, including asthma
- Skin irritation
- Eye irritation

Just because a cleaning product smells good does not mean it is healthy or does its job.
Fragrances and Human Health

What You Can Do About It:

• Choose unscented cleaning products.

• Avoid scented candles, air fresheners, and other scented items.

• If a scented item is used, open windows and doors (if weather permits). This allows the smell (fragrance) to escape, and lowers the risk of exposure to the chemicals in fragrances.
1. Safer cleaning products:
   - Third-party certified all-purpose and specialty cleaners
   - Disinfectants/sanitizers
2. Improved equipment:
   - Microfiber cloths
   - Microfiber mops with fillable handles
   - HEPA filter vacuums.
3. Staff training on procedures.
Cleaning Products

What products do we need to use in our ECE programs?

<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>
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<tbody>
<tr>
<td>Food Areas</td>
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<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>
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<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>
What is the Difference Between 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**

**or**

**Disinfected**
Cleaning

- uses a detergent and water to physically remove dirt, grime and germs from surfaces. **This process does not necessarily kill germs.**
- removes molds and allergens that can trigger asthma symptoms.

Has been found to remove as much as 99% of germs when microfiber cleaning tools are used.
Sanitizing

- Reduces the number of germs on hard surfaces or objects to a level considered safe for public health.
- For food contact surfaces the level should be a 99.999% reduction in microorganisms within 30 seconds.
- Sanitizing products should state on their label the surfaces they are intended to be used on.
**Disinfecting**

- **Inactivates 99.9999% of germs** on surfaces or objects if allowed to sit visibly wet on the surface for the recommended amount of “contact” time.

- **For use on:**
  - changing tables
  - bathroom sinks and toilets
  - other areas as required by licensing regulations.

A disinfectant must stay on the surface for at least the recommended contact time or it will not ‘destroy’ most of the germs.
Why Should We Clean First, Then Disinfect?

• Disinfectants don’t necessarily clean surfaces. Germs can hide under dirt and grime and are not affected by them.

• The products used to disinfect are more toxic and can be more expensive than products used to just clean.

• Overusing or misusing antimicrobial products may also lead to the spread of "super bugs." Superbugs are germs that are resistant to disinfectants and/or antibiotics.
Identifying Safer Products

Third-party certified cleaning products:
- Green Seal
- EcoLogo
- Design for the Environment - Safer Choice

Organic Ingredients Certified
- OMRI Listed
Third-party Certifiers

- Evaluate products for a list of criteria affecting both human and environmental health
  - carcinogens
  - reproductive toxins
  - skin sensitizers
  - inhalation toxicity
  - skin absorption
  - volatile organic compounds above a certain %
  - asthmagens
Choosing Safer Cleaning Products

- Look for the Following:
  - Products that are third-party certified.
  - No signal word or the word **Caution** on the label.
  - Non-aerosol.
  - Fragrance-free and dye-free.
  - All ingredients listed on the label or a website.
Signal Words

Cleaning products will have either the signal word:

- **Danger** - means it is highly toxic.
- **Warning** – moderately toxic.
- **Caution** – low toxicity
- **No signal word** – means least hazardous.
Recognizing the Logo

120
READY TO USE

Peroxide Multisurface Cleaner
Limpiador de peróxido

INGREDIENTS: Water (CAS #7732-18-5); Hydrogen peroxide (CAS #7722-84-1); citric acid (CAS #77-92-9); ethoxylated alcohol (CAS #68439-46-3). No fragrance added.

M.D. STETSON COMPANY, INC.
92 York Avenue • Randolph, MA 02368
800-255-8651 • www.mdstetson.com
How to Read A Label

Look for these items on a sanitizer/disinfectant label:

- EPA registration number - tells us it is a legitimate product
- Signal word – indicates how safe it is
- Use in healthcare or hospitals – denotes hospital grade product
- Contact time – time it must be left wet on the surface, 30 seconds to 1 minute recommended
Purchasing Safer Products

- Institutional Products -
  - Purchased in bulk – come in cases or as concentrates.
  - Accompanied by safety data sheets (SDS).
  - Used by schools/centers/buying clubs.
  - Generally less expensive.
Retail Products

- Purchased at a retail store like a grocery or big box store.
- Available in ready-to-use containers.
- Do not come with OSHA-required Safety Data Sheets, but these can be found online.

Retail Products are often more expensive and not labeled as completely as institutional products.
Where To Find Them

- Examples of businesses that carry third-party certified products:
  - Amazon
  - Costco
  - Home Depot
  - Office Depot
  - Safeway
  - Staples
  - Target
  - WalMart
  - W.B. Mason etc.
Signal Words

Sanitizers and disinfectants are different. The signal words for these products are:

- **Danger/Poison** – most hazardous
- **Danger**
- **Warning**
- **Caution**
- **None, but still EPA registered** – least hazardous
Choosing Safer Sanitizers

- Look for the Following:
  1. EPA registration number (verifies that the product is registered by them to kill the germs claimed on the label).
  2. Approval for food contact surfaces.
  3. No signal word or Caution on the label.
  4. Short contact time (the time the sanitizer must be left wet on the surface and in contact with the germs to kill them).
Choosing Safer Disinfectants

- Look for the Following:
  1. EPA registration number.
  2. The signal word **Caution** or **Warning** rather than **Danger** on the product label.
  3. Hospital-grade classification (this is a requirement of child care licensing agencies in most states).
  4. Short contact time or the time the disinfectant must be left visibly wet on the surface.
Disinfectants

- EPA doesn’t allow third-party certifications except DFE.
- Does allow the EPA’s Design for the Environment program to review sanitizers and disinfectants and recognize safer active ingredients - https://www.epa.gov/pesticide-labels/design-environment-antimicrobial-pesticide-pilot-project-moving-toward-green-end
- EPA Design for the Environment works with manufacturers to make their antimicrobial products safer and lists them on their website.
DFE Approved

DFE Logo
Caution Signal Word
Active ingredients:
Citric Acid
Isopropyl Alcohol
Hospital Grade
DFE Safer Disinfectants/Sanitizers

Safer active ingredients include:
- Hydrogen peroxide
- Citric acid based
- Ethanol Based
- L-lactic Acid
- Sodium Bisulfate
- Isopropanol
- Peroxyacetic Acid
Where To Find Them

Examples:

- Amazon – SaniDate Sanitizer and Disinfectant
- Staples - Seventh Generation Disinfectants
- W.B. Mason – Oxivir Tb RTU Disinfectant
- Walmart – Pure Green Disinfectants
Practical Steps

1. List the products you are currently using.
2. Review the labels and Safety Data Sheets.
   ◦ Are they third-party certified?
   ◦ What is the signal word?
   ◦ Do they contain added fragrance and dyes?
   ◦ Are sanitizers and disinfectants EPA registered?
   ◦ Are sanitizers food contact surface rated?
   ◦ Do they required rinsing?
Green Cleaning, Sanitizing, and Disinfecting: A Checklist for Early Care and Education

This Green Cleaning, Sanitizing, and Disinfecting Toolkit for Early Care and Education was developed by the University of California, San Francisco School of Nursing's Institute for Health & Aging, University of California, Berkeley's Center for Environmental Research and Children's Health, and Informed Green Solutions, with support from the California Department of Pesticide Regulation.
Practical Steps

3. Identify a third-party certified **all-purpose** cleaning product that can be used for many tasks:

- bathroom/ restroom
- all-purpose
- carpet spotter/extraction
- glass and window
- neutral floor
School Green Cleaning Required

- Connecticut
- Hawaii
- Illinois
- Iowa
- Maine
- Maryland
- Missouri

- New Jersey – pending includes ECE with 50+ children
- Nevada
- Pennsylvania - pending
- New York
- Vermont
4. Identify a safer disinfectant and sanitizer
   ◦ Uses DFE approved active ingredient.
   ◦ Includes no fragrances or dyes
   ◦ Has a short contact time – 30 seconds to 1 minute
   ◦ Lists no signal word or a Caution signal word at most
   ◦ Does not need rinsing
Program Components

5. Identify third-party certified
   ◦ Floor care products (if needed)
     • wax stripper
     • floor sealer & finish
   ◦ Hand soaps, not anti-bacterial
   ◦ Mineral build-up remover (toilets etc.)
Improved Equipment
Microfiber Cloths and Mops

- Remove organic matter (dirt, oils, grease) as well as germs (up to 99%) from surfaces.
- Washable 500+ times.
- Reduce landfill waste.
- Work well with green cleaning products/need less cleaning detergent to be effective.

GREAT alternative to normal cotton rags or paper towels!
Staff Training

- Training programs
  - Best practices
  - Blood-borne pathogens and chemical right-to-know
  - Certified products
  - Equipment operation
  - Infection control
Best Practices

- Spray into a cloth instead of on the surface, when possible.
- Use a stream rather than a mist when you are spraying a product.
- Open windows if ventilation is not adequate.
Best Practices

Wear gloves, goggles, and other personal protective equipment when it is listed on the product label or Safety Data Sheet.
Best Practices

- Leave the disinfectant and sanitizing solution glistening wet on the surface for the amount of time listed on the product label (dwell time) in order to inactivate microbes/germs.

  - Rinse: if required, any residue may be hazardous when it comes in contact with skin.
Resources

Eco-Healthy Child Care - national program that partners with child care professionals to eliminate environmental health hazards found in or around child care facilities. Available at: https://cehn.org/our-work/eco-healthy-child-care/

Environmental Working Group – information on what’s in specific cleaning products. Available at: http://www.ewg.org/cleaners/hallofshame/?utm_source=201208cleanershosfull&utm_medium=email&utm_content=first-link&utm_campaign=toxics
Resources

UL Environment EcoLogo - list of products available at: https://spot.ul.com/


References

2013 Update: Bleach Free Disinfection and Sanitizing for Child Care

References

Green Cleaning, Sanitizing and Disinfecting Toolkit for Early Care and Education

Available as a PDF at the Informed Green Solutions website:
https://www.informedgreensolutions.org/toolkit