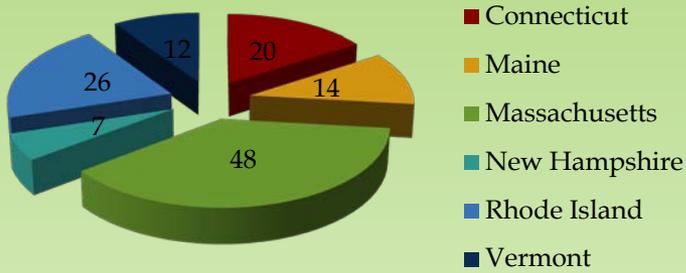


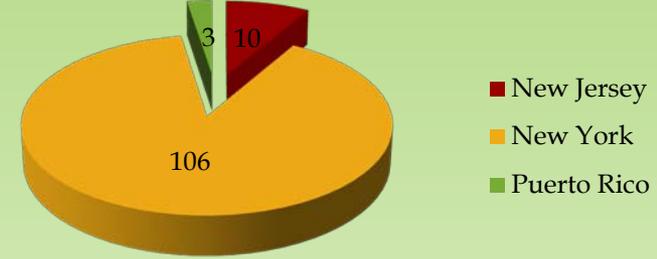
Green Cleaning, Sanitizing and Disinfecting: A Toolkit for Early Care and Education



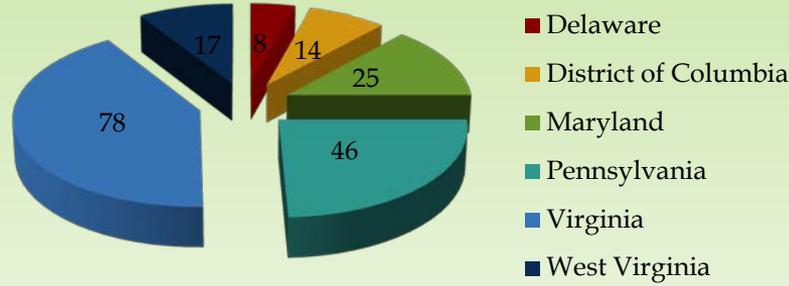
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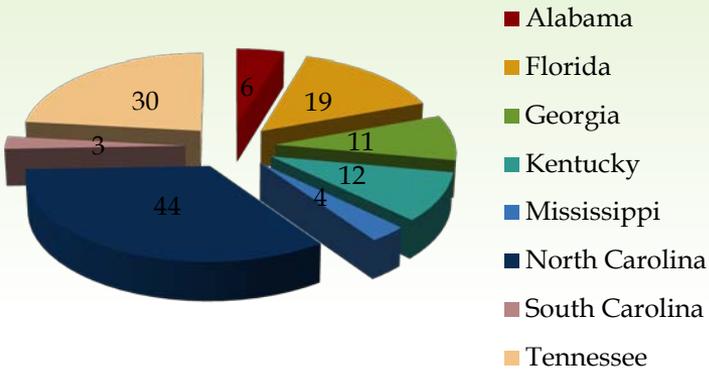
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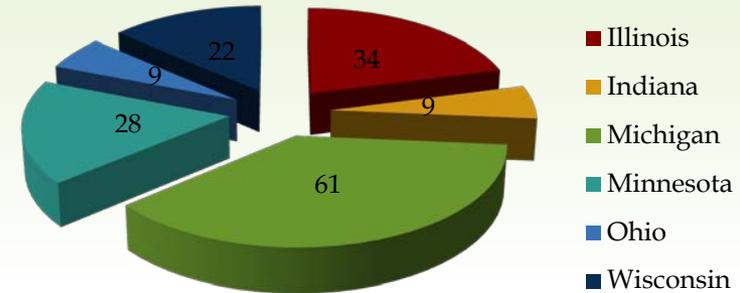
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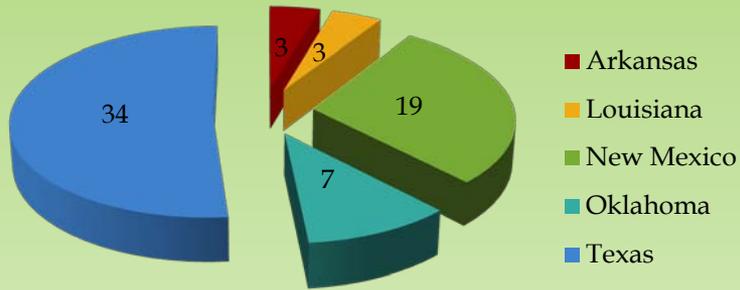
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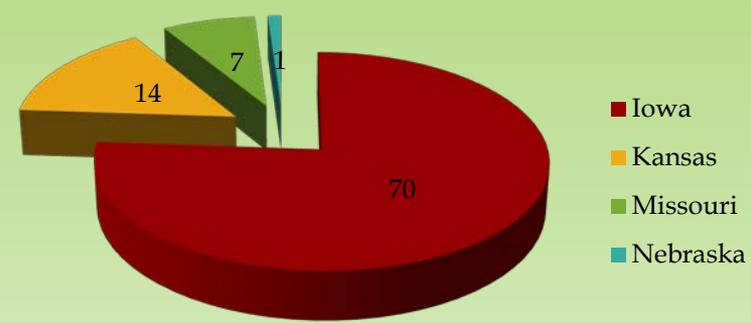
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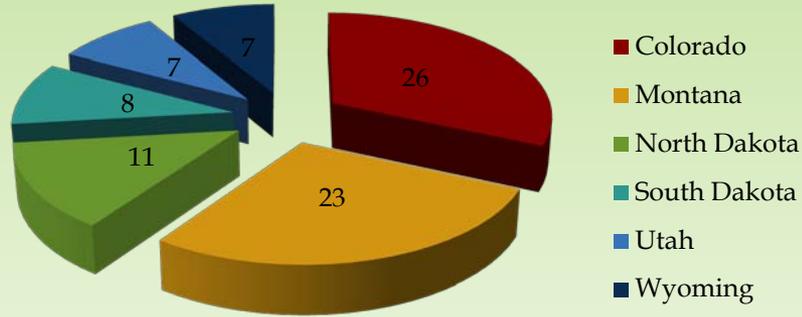
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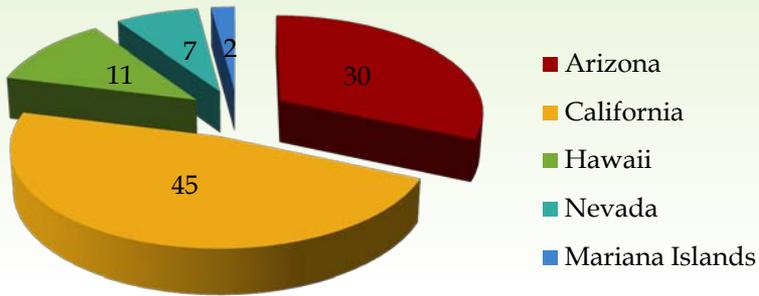
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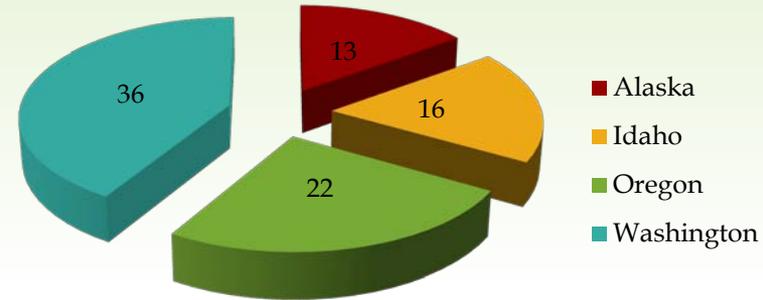
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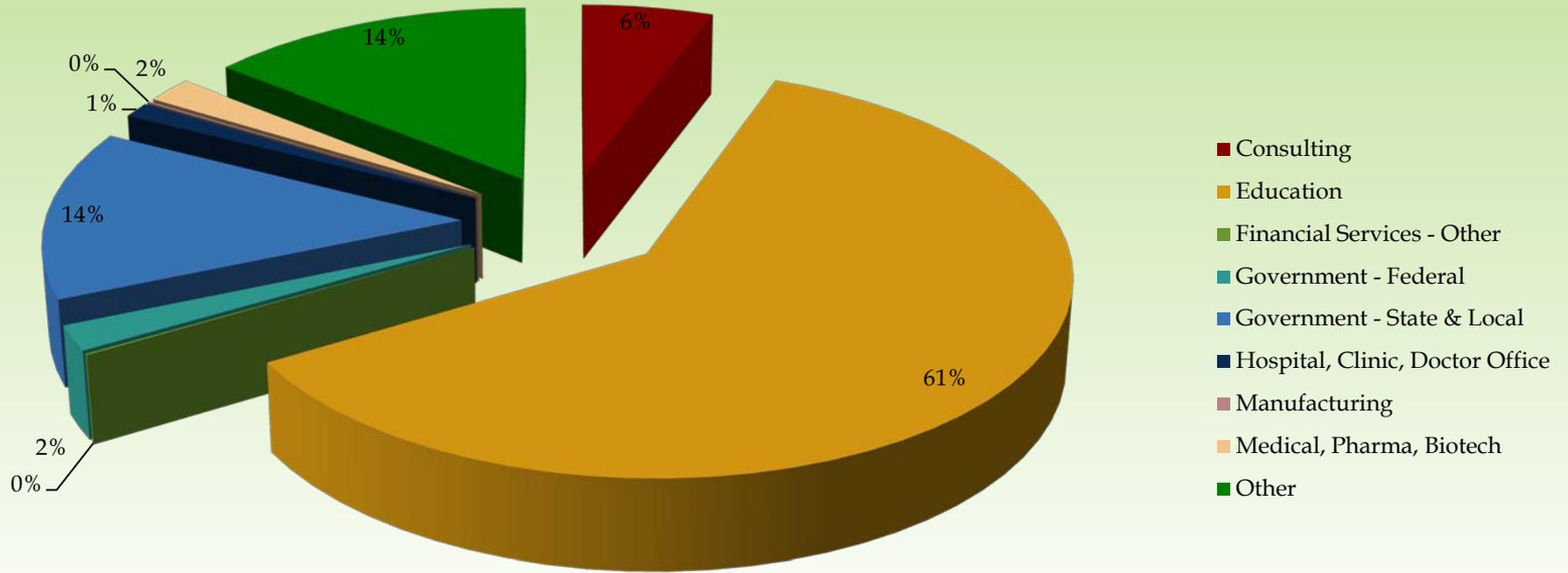


EPA Region 10



Other: Nicaragua 1

Participants by Sector



Who We Are

This *Green Cleaning, Sanitizing and Disinfecting Toolkit for Early Care and Education* was developed by a team of public health professionals, health educators, nurses, and policy makers both in California and across the nation. The principle organizations involved in its development are:



Funding for this project has been provided in full or in part through a grant awarded by the California Department of Pesticide Regulation (DPR). The contents of this document do not necessarily reflect the views and policies of DPR nor does mention of trade names or commercial products constitute endorsement or recommendation for use.



Why is Adopting a Green Cleaning, Sanitizing, and Disinfecting Program so Important in ECE?

- Many products used to clean, sanitize, and disinfect contain toxic chemicals.
- Children are more sensitive than adults to the health effects of toxic chemicals in the environment.
- Health effects from exposure to environmental toxins may not show up for years or even decades.
- Up to one-third of childhood cancer is due to environmental causes.



Why is Adopting a Green Cleaning, Sanitizing, and Disinfecting Program so Important in ECE?

- Young children have more years to develop diseases from early environmental exposures than adults.
- Pregnant women, often on staff in ECE, and their unborn babies, are particularly vulnerable to the health effects of hazardous products used in ECE.
- “Precautionary Principle”.



By the End of This Presentation You Will be Able to:

- Recognize the hazards of group care for young children
 - provides ideal conditions for the transmission of infectious disease.
- Protect young children (and ECE staff) from
 - infectious diseases
 - the harmful health effects of hazardous products
- Choose and use the least harmful products to clean, sanitize and disinfect.



By the End of This Presentation You Will be Able to:

- Understand how behaviors can reduce the risk of infectious disease as well as, or better than, chemical products.
- **Start your own Green Cleaning, Sanitizing and Disinfecting Program.**



Toolkit Overview

The Toolkit includes:

- A 64 page *Green Cleaning, Sanitizing, and Disinfecting for Early Care and Education* curriculum booklet.
- 4 Posters
- 9 stand alone fact sheets for ECE providers
- 2 fact sheets for families



Toolkit Overview

- *A Choosing Green Cleaners, Sanitizers and Disinfectants Wallet Card.*
- *A Green Cleaning, Sanitizing and Disinfecting in ECE Checklist* to help you develop and maintain a Green Cleaning, Sanitizing and Disinfecting Program.



Toolkit Contents

Breaking the Chain of Infection in E

You can help break the chain of infection!

- When you get enough sleep and exercise, and eat healthy food your immune system is better at fighting infections.
- When you get vaccinations against infectious disease you are less likely to get sick with those diseases. If you don't get sick, you won't expose others who are vulnerable, especially infants, elderly people, and people with chronic illnesses who don't have well-functioning immune systems.

Germ get into our bodies when we touch an object or surface where germs are living and then we touch our nose or mouth, or we touch an open sore on our body, or we breathe germs in the air into our lungs.

Germs need a susceptible victim. When you are tired or rundown, your immune system doesn't work very well. If you haven't been vaccinated, you can get dangerous infectious diseases like measles, hepatitis, and whooping cough.

We can break the chain of infection by:

- cleaning, and by sanitizing and disinfecting when and where necessary
- opening windows or using properly working ventilation equipment to bring in fresh air and dilute the germs in the air

Germs need a victim, person who is not immune to the germ.

Infectious diseases are caused by germs. Bacteria and viruses are germs that cause most illness in early care and education. Germ also called microbes.



Toolkit Contents

Green Cleaning, Sanitizing, and Disinfecting:
A Toolkit *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.

Green Cleaning, Sanitizing, and Disinfecting:
A Curriculum *for* Early Care and Education



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Green Cleaning, Sanitizing and Disinfecting:
A Checklist *for* Early Care and Education



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The Toolkit Curriculum Contains:

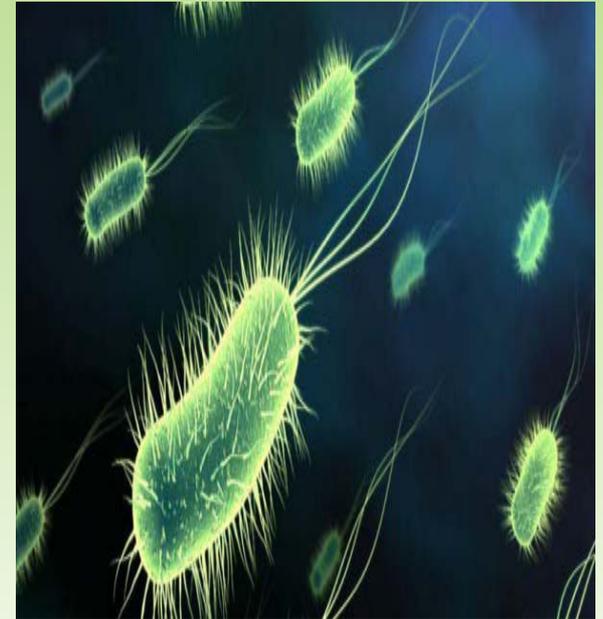
- ▶ Policies and protocols for:
 - establishing a green cleaning program.
 - purchasing and using safer cleaning and disinfecting products
 - negotiating a contract for cleaning services with an outside vendor



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 get into our bodies in different ways.



The Importance of Microbes to Our Health

- ▶ Microbes are essential to our health.
- ▶ We have more microbial cells in our bodies than human cells, most are in our gut.
- ▶ We are just beginning to understand the role that microbes play, but we now know that they:
 - help us to digest our food
 - regulate our immune system so it knows the difference between friend and foe (which prevents the development of allergies)
 - help protect us from disease-causing microbes (pathogens)





The Importance of Microbes to Our Health

- ▶ Our biome may influence our health as much as the genes we inherit from our parents.
- ▶ Only a very small percentage of microbes cause disease.
- ▶ We have to change the way we think about microbes.
- ▶ Exposure to common childhood infectious diseases in early childhood is important for immune system development.

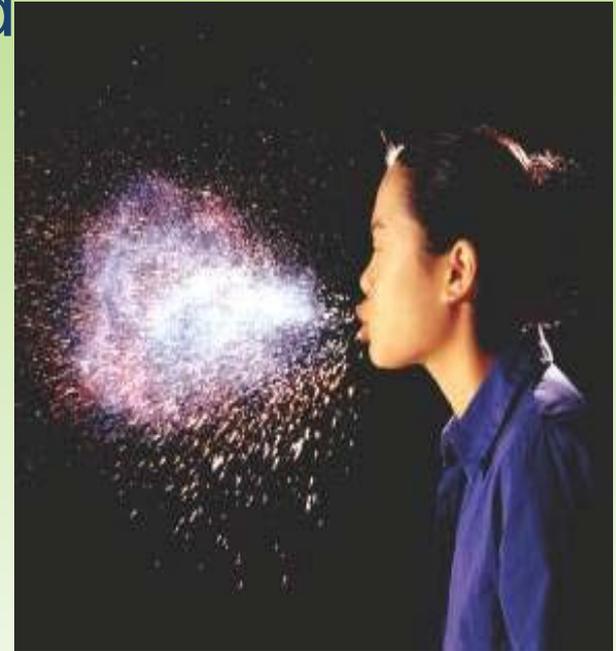




How are Infectious Diseases Spread?

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!

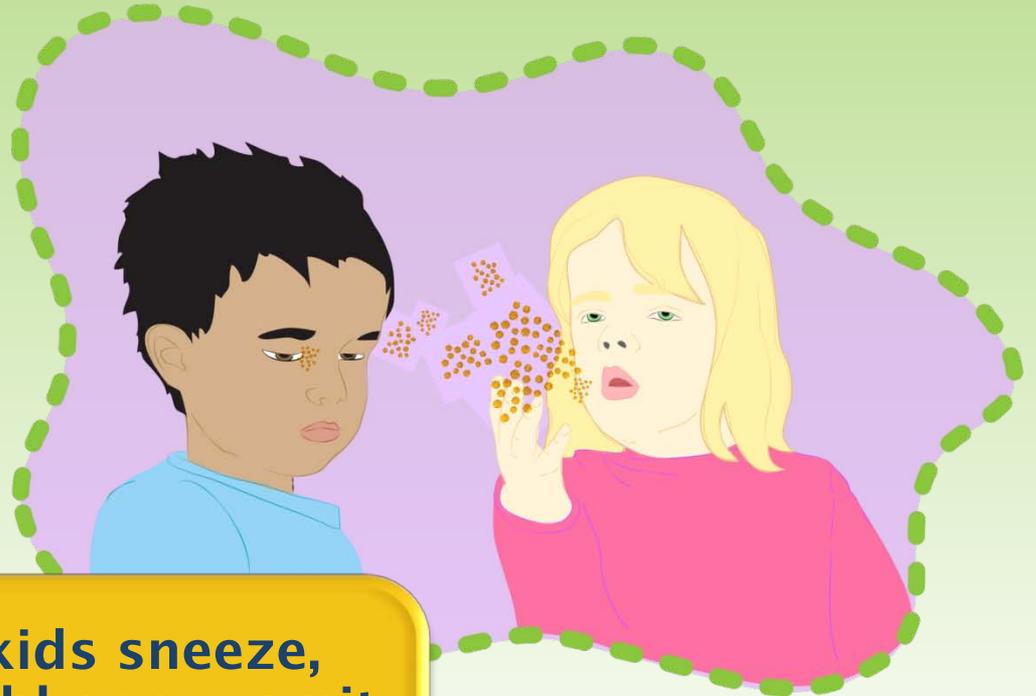


Infectious Diseases Are Spread By:

1.) Direct contact: body fluids are directly transferred from one person to another. Examples of direct contact are touching and kissing.



Infectious Diseases Are Spread By:



2.) Droplets: when kids sneeze, cough, spit, drool, slobber or vomit into the air and then land on another person or a hard surface. This is how flu is spread!



Infectious Diseases Are Spread By:



3.) Airborne transmission: germs that float suspended in the air attached to moisture, droplets, or dust particles, and travel more than 3 feet.



Steps to Reduce the Spread of Infectious Disease

Development of formal written policies for reducing the risk of infectious disease, including vaccination of children and staff.

Formal education of child care center staff concerning infection control.

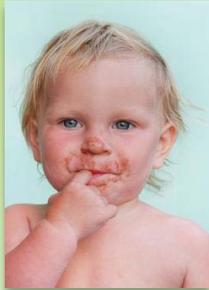
Good hand hygiene by both staff and children.

Appropriate cleaning and targeted disinfection, when necessary, of contaminated surfaces.

Separation of food preparation, toileting and diaper changing activities.



Other Ways Germs Spread



Fecal oral transmission: Germs in the stool of one infected person make their way into the mouth of another person. These germs usually cause vomiting and diarrhea.



Blood: Many of the germs that can be found in blood can cause life-threatening disease when an infected person's blood enters another person's body through a break in the skin.



Insects: can carry bacteria and viruses and can transmit them when they bite humans.



How Can We Reduce the Spread of Infectious Disease?

- **By cleaning, sanitizing, and disinfecting**
 - Cleaning washes germs down the drain.
 - Sanitizing and disinfecting with chemicals or devices kills germs.
- **Vaccinations!**



How Can We Reduce the Spread of Infectious Disease?

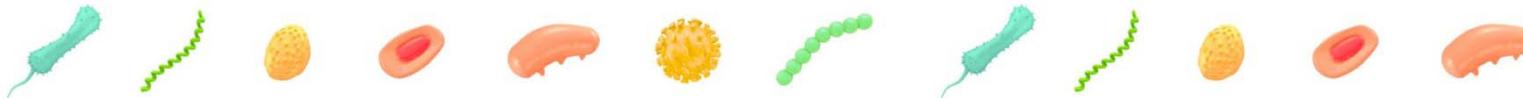
- **By our personal behaviors, when we:**
 - Wash our hands to remove germs so we don't transfer them to others.
 - Stay home when we are ill.
 - Cover our coughs and sneeze into our sleeves. Germs get caught in our clothing instead, where they don't live very long!



Why is it Important to Clean in ECE?

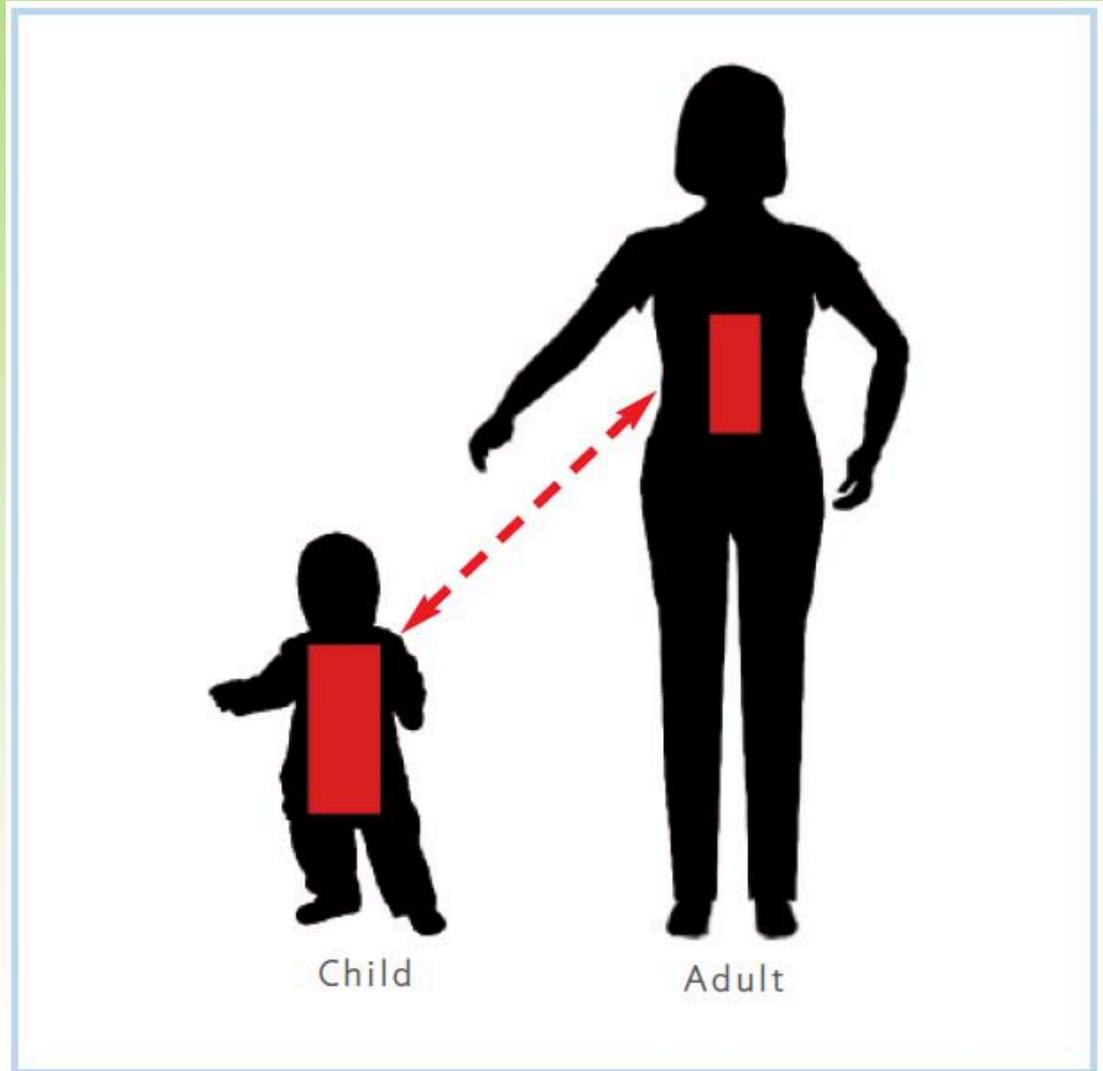
Young children are more vulnerable to toxic chemicals and allergens in the physical environment.

- ▶ They breathe more air for their size, compared to adults.
- ▶ Their skin touches the ground (where harmful chemicals collect) much more than an adult.
- ▶ 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.



Why is it Important to Clean in ECE?

- Research shows that when schools improve their physical environments children are able to feel better about themselves and their school.
- Studies also show that these children learn more as a result!
- Getting rid of clutter helps makes it easier to focus on tasks. It also gets rid of hiding places for pests like rodents and cockroaches.



Why is it Important to Clean in ECE?

- The presence of moisture, standing water and mold can cause respiratory problems such as asthma, and allergies.
- Cleaning:
 - Removes germs that may cause infectious disease
 - Removes oil and grease that could prevent sanitizers and disinfectants from coming in contact with germs
 - Removes biofilms that hide bacteria
 - Protects the life cycle of materials used in facilities:
 - Carpet, tile, walls, furniture and fixtures.



Why is it Important to Clean in ECE?

- ▶ Children in ECE get sick more often than children cared for at home, and are often sicker.
- ▶ Infectious illnesses like colds, flu and asthma are the most common reason children are absent from ECE.



Hazards of Cleaners, Sanitizers and Disinfectants

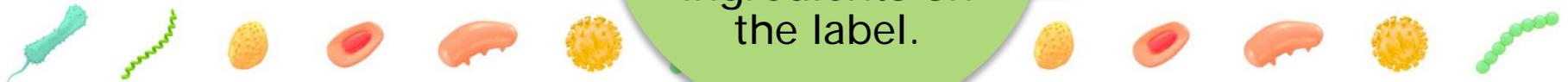
Most cleaning, sanitizing or disinfection products sold are not safe, even though they are available at most stores.

Many cleaning and sanitizing chemicals can cause health problems in children and staff.



Only the chemicals that kill bacteria, viruses, or mold (disinfectants) have to be labeled.

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



Health Hazards of Cleaners, Sanitizers and Disinfectants

Key Points:

- The words “natural,” “nontoxic,” and “green” that appear on product labels are unregulated by the government.
- Researchers have found that products labeled “green” often have as many toxic chemicals as conventional cleaning products.
- Cleaning products do not have to list ingredients on the label and manufacturers do not have to prove that they are safe before they market them.
- These gaps in ingredient information on product labels make it difficult for the consumer to make wise choices when purchasing cleaning products.



Risk vs. Hazard

- ▶ Hazard
 - toxicity of the product.
 - its potential to cause harm.
- ▶ Risk:
 - the probability that a person will be harmed or experience an adverse health effect by **the way they are using** a hazardous product.



Risk vs. Hazard

- Example: If the hazard of a product is low, but you take a bath in it, your risk of health effects is high.
- Example: If you disinfect a bathroom once a week with diluted bleach, the risk to your health is low. If you use bleach to disinfect a changing table in an infant/toddler classroom 25 times a day the risk is much higher. The risk is even higher if you use bleach that has a higher concentration than is necessary to disinfect.

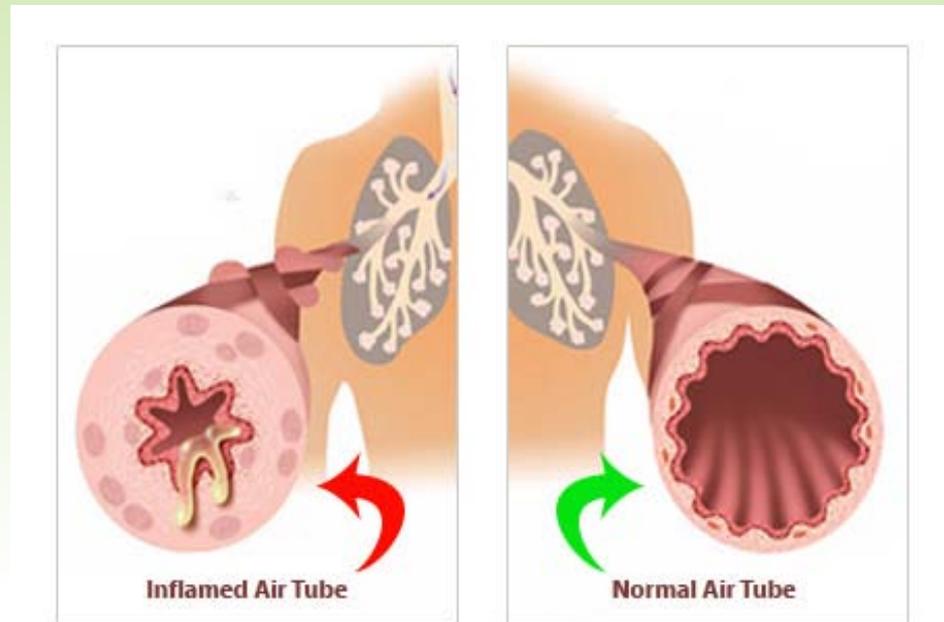


Asthma and Asthmagens

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



Asthma and Asthmagens

Asthma Triggers:
Once a person has asthma, exposure to “triggers” can cause an episode of asthma.

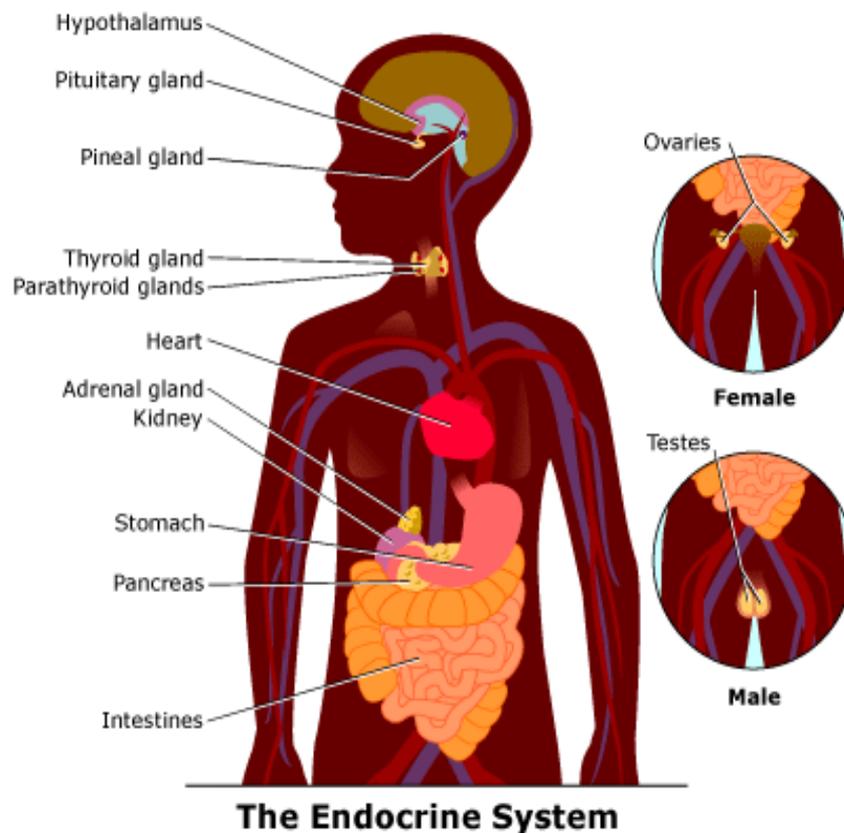
These triggers include:

- Household dust and dust mites
- Pets
- Cockroaches
- Mold
- Cigarettes
- Cleaning, sanitizing and disinfecting products



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 in women and men
 - early puberty in girls
 - increases in cancers of the breast, ovaries, and prostate.



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.

What About the Environment?

Many cleaners, sanitizers, disinfectants, and fragrances (even those marketed as 'green') pollute the air, water, and soil.

A clean ECE Center



may cause

damage to the environment



Triclosan

Many cleaning, sanitizing and disinfecting products contain the germ-killing chemicals triclosan and its relative, triclocarbon.

These active ingredients act to slow or stop the growth of bacteria, fungi, and mildew.

They are found in antibacterial soaps, deodorants, sponges and household cleaners and disinfectants.

Triclosan ends up in our drains, sewage systems and, eventually, our waterways and agricultural fields. Over 400,000 pounds, to be exact.

Much of the triclosan we flush, wash away, and dispose of in other ways ends up in the soil, where it may be absorbed by growing fruits and vegetables.

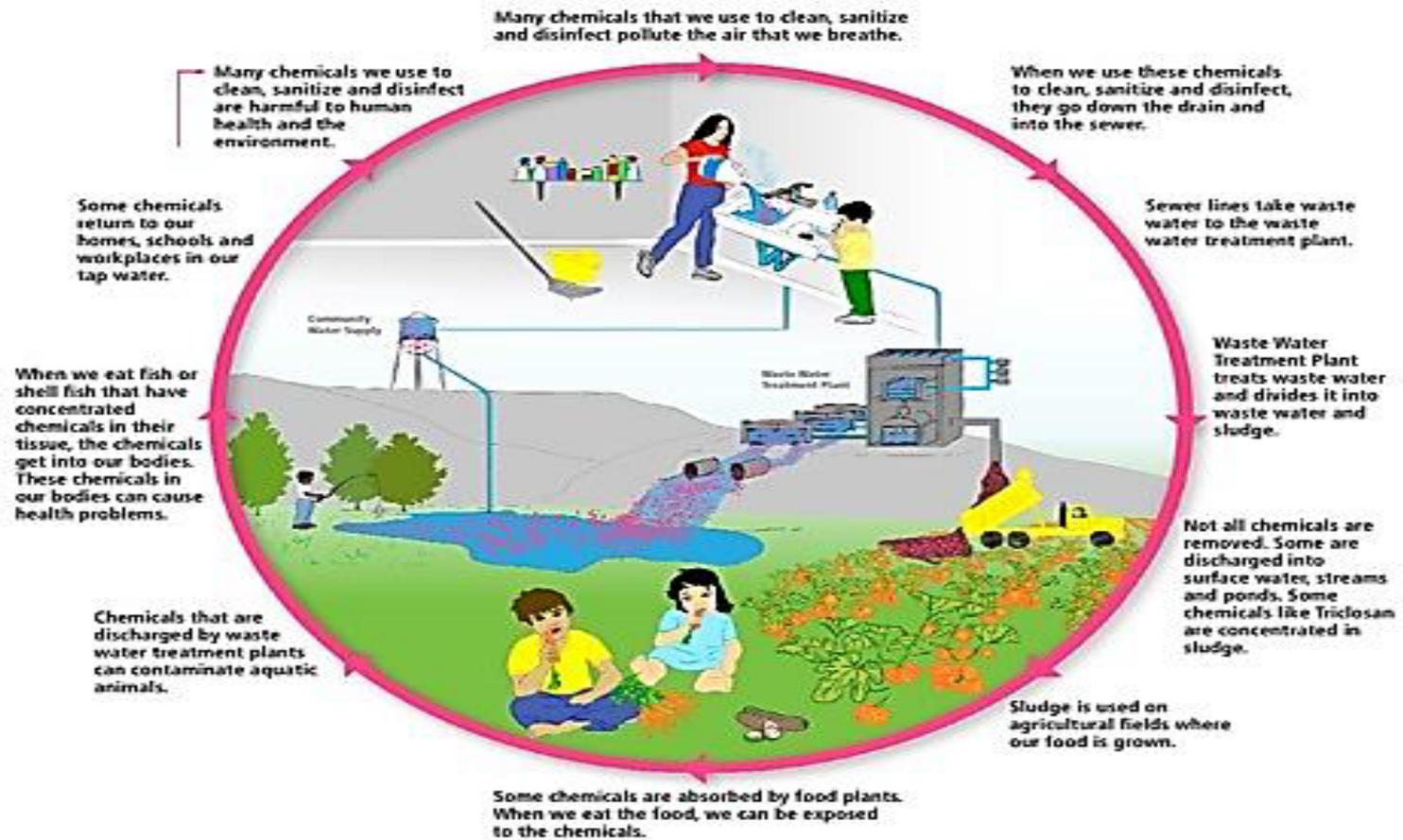


Triclosan

- ▶ 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).
- ▶ Can cause skin irritation.
- ▶ In a recent study, when researchers exposed fish and mice to triclosan, their skeletal and heart muscles didn't contract normally.



Cleaning, Sanitizing and Disinfecting Chemicals *and* The Cycle of Environmental Pollution



Fragrances

Fragrances are found in most cleaning, sanitizing and disinfecting products, and contain chemicals called volatile organic compounds (VOCs).

VOC's impact both indoor and outdoor air quality, as well as the water supply.

Like Triclosan, VOCs are not filtered out by water treatment, which results in contamination of our lakes, rivers and bays.

In fact, nearly all shellfish and fish in the United States now have measurable levels of fragrances in their tissues!



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

- ▶ Even 'unscented' or 'fragrance-free' products may actually contain fragrances which are added to mask the smell of the chemicals in the product.
- ▶ The chemicals contained in these fragranced products may enter the body in many ways. They are:
 - Absorbed through the skin
 - Swallowed
 - Inhaled into the lungs



Fragrances and Human Health

What You Can Do About It:

- Consider using fragrance-free, non-chlorine bleaches containing hydrogen peroxide instead of those that are scented.
- Choose unscented cleaning products that have been certified by third party organizations such as Green Seal, EcoLogo or Design for the Environment.



Fragrances and Human Health

- 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.



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



How Do We Know What Process to Use?

K

Caring for Our Children: National Health and Safety Performance Standards

Guide for Cleaning, Sanitizing, and Disinfecting

Areas	Before Each Use	After Each Use	Daily (At the End of the Day)	Weekly	Monthly	Comments
Food Areas						
• Food preparation surfaces	Clean, Sanitize	Clean, Sanitize				Use a sanitizer safe for food contact
• Eating utensils & dishes		Clean, Sanitize				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





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 safer level - at least 99.9%.
- For food 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.

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



Disinfecting

- **Inactivates 99.999% of germs** on surfaces or objects if allowed to sit visibly wet or “dwell” on the surface for the recommended amount of “dwell” time.
- For use on:
 - changing tables
 - bathroom sinks and toilets
 - high risk areas that collect lots of germs, such as doorknobs, cabinet handles and drinking fountains.

A disinfectant must stay on the surface for at least the recommended dwell time or it will not ‘kill’ all of the germs. This may lead to the creation of “super bugs”.



Why Can't We Just Use a Disinfectant/ Cleaner Everywhere?

- 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 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
 - pilot disinfectant project.



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)*.
- Generally less expensive.

It is easier to find institutional products that are certified as safer by a third-party (Green Seal, EcoLogo or Design for the Environment)



Retail 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, EcoLogo or Design for the Environment).
- Do not come with OSHA-required Safety Data Sheets.

Retail Products are often more expensive and not labeled as completely as institutional products



Choosing Safer Cleaning Products

▶ Look for the Following:

- Products that are third-party certified.
- The signal word **Warning** rather than **Danger** on the label.
- Non-aerosol.
- Fragrance-free and dye-free.
- All ingredients listed on the label or a website.
- No overwhelming chemical odor.



Ingredients To Avoid: Asthmagens or Asthma Triggers

Benzalkonium Chloride

Bisphenol A (BPA)

Bleach

Ethanolamines

- monoethanolamine [MEA]
- diethanolamine [DEA]
- triethanolamine [TEA]

Fragrance Ingredients

Parabens and Phthalates

Quaternary ammonium compounds: alkyl dimethyl benzyl ammonium chloride (ADBAC), benzalkonium chloride, and didecyl dimethyl benzyl ammonium.

Volatile Organic Compounds – found in aerosol products etc.



Choosing Safer Sanitizers

▶ Look for the Following:

1. EPA registration number (verifies that that the product is registered by them to kill the germs claimed on the label).
2. Approval for food contact surfaces.
3. 0 rating on the Hazardous Materials Identification System (HMIS) health rating scale found on the SDS.
4. The signal words **Caution** or **Warning** rather than **Danger** on the label.
5. Short dwell 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. 0 rating on the Hazardous Materials Identification System (HMIS) health rating scale.
3. The signal word **Caution** or **Warning** rather than **Danger** on the product label.
4. Hospital-grade classification (this is a requirement of child care licensing agencies in most states).
5. Short dwell time or the time the disinfectant must be left visibly wet on the surface.



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 corrodes many metals. It should never be used on stainless steel, aluminum, copper, brass, marble, or granite.
- ▶ 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.



Dilution of Bleach

- ▶ A new, more concentrated form of bleach containing **8.25% sodium hypochlorite solution (higher than the formerly available bleach solution of 5.25%- 6%) is now sold in stores.**
 - It requires different dilution rates
 - It is more hazardous to staff who dilute it, because it is more concentrated
- ▶ If you are using bleach, it is very important to identify the concentration of sodium hypochlorite in the product so that you can mix the correct amount of bleach and water.



Dilution of Bleach

- ▶ Refer to the National Resource Center for Health and Safety in Child Care and Early Education website for dilution information:
<http://cfoc.nrckids.org/Bleach/Bleach.cfm>.
- ▶ Use only an EPA-registered product. The product you purchased should have a label that says EPA Reg# and lists the number.
- ▶ Follow the manufacturer's instructions.
- ▶ Continue to follow the dilution and contact time instructions provided in [Appendix J](#) of *Caring for Our Children*, available at:
<http://cfoc.nrckids.org/WebFiles/AppedicesUpload/AppendixJ.pdf> if you are using a 5.25-6% sodium hypochlorite (bleach) solution.



Devices

Dry steam vapor technology:

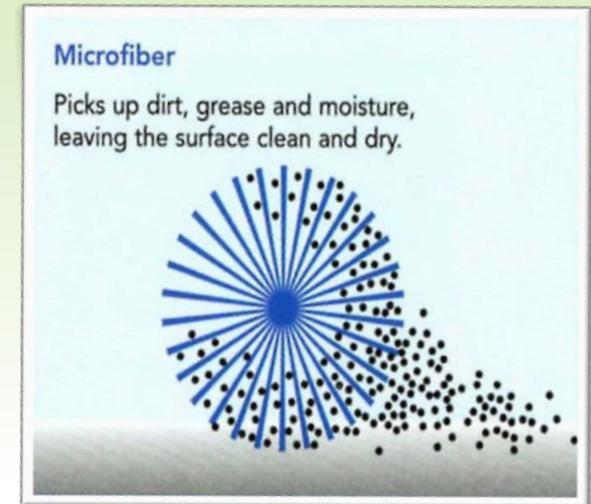
- Very effective for cleaning and rapid sanitizing/disinfecting.
- Approved for most surfaces, including food contact surfaces.
- Unfortunately, still very expensive.



Microfiber Cloths and Mops

GREAT alternative to normal cotton rags or paper towels!

- Remove organic matter (dirt, oils, grease) as well as germs (up to 99%) from surfaces.
- Washable 500-1,000 times.
- Reduce landfill waste.
- Work well with green cleaning products/need less cleaning detergent to be effective.



Sponges

Avoid using sponges in your kitchen. Use microfiber instead.

Sponges are perfect breeding grounds for germs. They are dirty and wet, providing food and liquid for germs to grow.

If you want to use a sponge, microwave it for two minutes every day (make sure your sponge is wet and doesn't contain any metal), or put it in the dishwasher every time you run it.



Examples of Safer Products

Sanitizers - Accelerated Hydrogen Peroxide- Based

Food contact surface sanitizers:

- Sanidate Ready-To-Use

Non food contact surface sanitizers:

- Alpha HP
- H2O 118



Examples of Safer Products

Disinfectants

Ready-To-Use (RTU)

- Clorox Hydrogen Peroxide Disinfecting Cleaner
- 30 second – 1 minute dwell time
- OxivirTb – 1 minute dwell time
- CleanCide (DfE certified) – 5 minute dwell time

Concentrate

- Oxivir Five 16 – 5 minute dwell time



Resources

2013 Update: Bleach Free Disinfection and Sanitizing for Child Care
<http://www.sfgov3.org/modules/showdocument.aspx?documentid=3822>

Design for the Environment – list of products available at:
<http://www.epa.gov/dfe/>

EcoLogo – list of products available at:
http://www.ecologo.org/en/certifiedgreenproducts/?category_id=21#21

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

GreenGuard Environmental Institute – Gold Certification (formerly Children and Schools certified cleaning products). Available at: <http://www.greenguard.org/en/SearchResults.aspx?CategoryID=30&pageNumber=1>

Green Cleaning for Dummies – Ashkin, Holly – <http://www.dummies.com/store/product/Green-Cleaning-For-Dummies.productCd-0470391065.html>

Green Seal – list of products available at: <http://www.greenseal.org/FindGreenSealProductsAndServices.aspx>.

Women’s Voices for the Earth – Information on what’s in specific cleaning products. Available at: <http://www.womensvoices.org/protect-your-health/cleaning-products/>.



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

Available as a PDF at the following websites:

Center for Environmental Research and Children's Health -

<http://cerch.org/greencleaningtoolkit/>

EPA's Healthy Childcare Website -

http://www2.epa.gov/sites/production/files/documents/ece_curriculumfinal.pdf

Informed Green Solutions -

<http://www.informedgreensolutions.org/?q=publication/green-cleaning-toolkit>



Green Cleaning Toolkit *for* Early Care and Education

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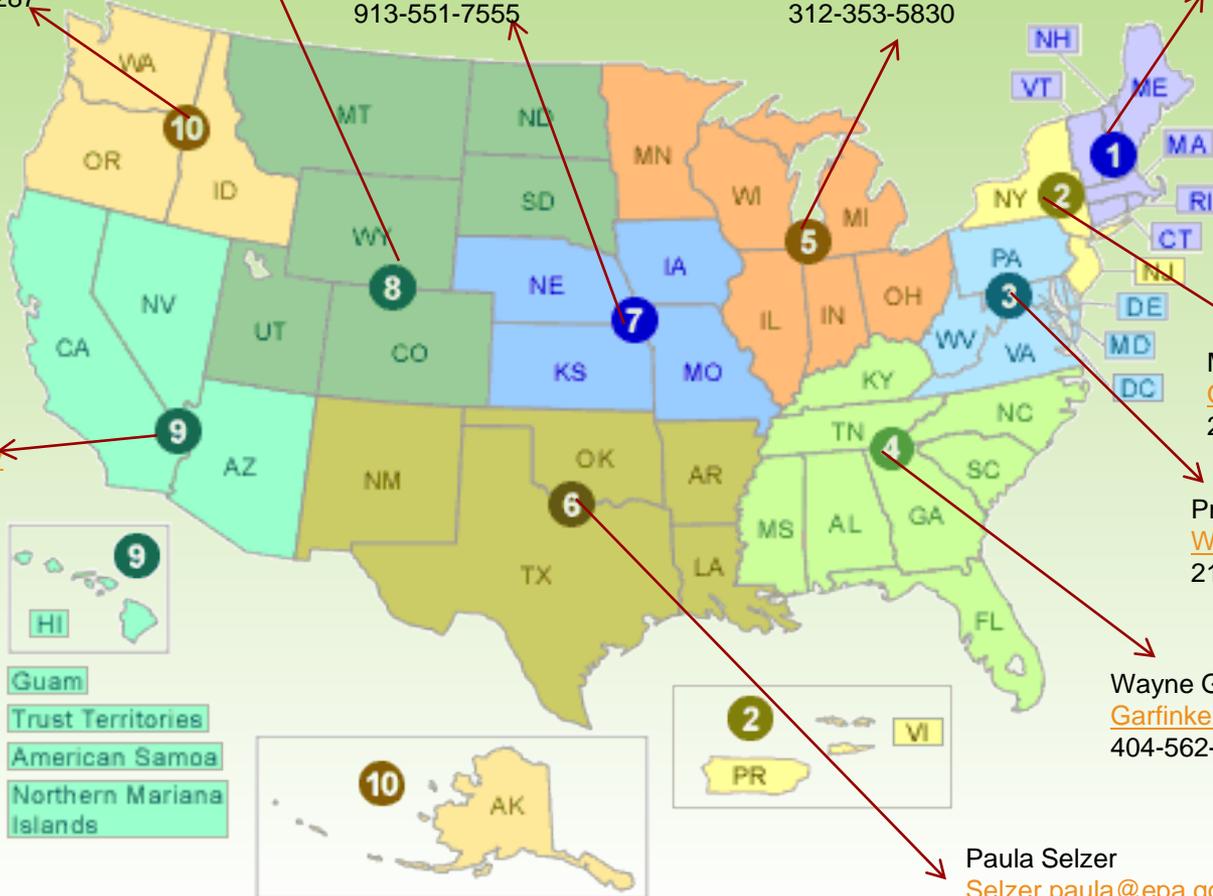
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