

Guidelines for the Use of Sanitizers and Disinfectants in Child Care Facilities

Selection

The selection of cleaning and disinfection solutions should be based primarily on the safety and efficacy of the product and the surface to be cleaned and/or disinfected.

All disinfectants should be registered by the Environmental Protection Agency (EPA). Information on EPA-registered disinfectants can be found on their website at: <http://epa.gov/oppad001/chemregindex.htm>.

Although most EPA registered disinfectants are effective against most organisms commonly found in child care settings, certain organisms such as norovirus are more difficult to kill. In addition, special attention should be given to areas contaminated with blood and body fluid spills.

Sodium hypochlorite or chlorine bleach is an effective and safe alternative in disinfecting most surfaces in child care settings when diluted and applied appropriately. It is effective against norovirus and bloodborne pathogens.

A number of facilities are moving toward using “green” products. If using green products, these facilities must follow the same guidelines put forth by the EPA and be certain the products are EPA-registered.

Definitions

Cleaning- Removing, usually by using a mild detergent and water visible dirt, soil and other debris.

Sanitization- Reducing the number of bacterial contaminants to safe levels. Most effective on hard surfaces and on items not contaminated with body fluids.

Disinfecting- The destruction of pathogenic and other microorganisms on surfaces.

Common Types of Disinfectants

Phenolics-environmental disinfectants that are bactericidal, virucidal, fungicidal, and tuberculocidal. Commercial phenolics are not sporacidal. Some studies have shown that higher concentrations are needed to effectively kill some viruses seen in child care centers. They are typically used in hospitals to clean the environment and noncritical medical equipment. Some products can be irritating to the skin. All safety warnings should be carefully considered, especially when using on bassinets and cribs.

Quaternary ammonia-environmental disinfectants that are bactericidal, fungicidal, and virucidal (enveloped viruses). They are not tuberculocidal, sporocidal or effective against nonenveloped viruses (norovirus). They are typically used to clean floors, furniture, walls and equipment that touches intact skin (blood pressure cuffs).

Chlorine (sodium hypochlorite)-is a safe, inexpensive and effective broad spectrum disinfectant when diluted appropriately. Chlorine is considered bactericidal, virucidal, fungicidal, sporicidal and tuberculocidal depending on the concentration. Bleach can be used on a variety of surfaces. Specific precautions when using bleach are listed below.

Cleaning and Disinfecting Procedures

All facilities should have a written procedure that includes the steps to take in cleaning and disinfecting environmental surfaces. The procedure should include any recommendations that should be considered when using specific products, e.g., proper dilutions, storage, safety measures.

Surfaces must be cleaned prior to applying any disinfectant. Specifically, surfaces must be washed then rinsed of soap and debris and then disinfected by submerging or soaking with the appropriate solution and allowed to air dry.

Soft furnishing and play equipment in Infant and Toddler settings should be equipped with removable covers that can be laundered. To clean or disinfect, wash soiled soft items/linens/soft toys in detergent and hot water at least 140-160° F and dry completely on highest heat dryer setting. Studies have shown that bleach adds an extra margin of safety and can be activated at water temperatures between 135°-145°F.

Disinfecting specific surfaces

For any surfaces with visible debris, remove debris and clean with a mild detergent before applying the disinfectant.

Blood or body fluid spills- First absorb spill with absorbent chemical or material (paper towel) and place in appropriate disposal container. Clean area with detergent and rinse. Liberally apply disinfectant and air dry.

Hard surfaces-Remove debris, clean area with detergent and apply EPA-registered disinfectant.

Carpet/Upholstered Furniture- Remove visible debris with absorbent material. Steam clean (heat activation) 158° F for 5 minutes or 212°F for 1 minute for complete activation.

Linens/clothing/textiles- Remove debris. Separate contaminated from uncontaminated clothing. Minimize movement of soiled linens and laundry. Ideally wash heavily contaminated items in detergent and hot water at least 140-160° F and dry completely on highest dryer setting. Studies have shown that bleach adds an extra margin of safety and can be activated at water temperatures between 135°-145°F.

Corrodible surfaces (damaged by bleach)- Select and EPA-registered disinfectant safe and effective in cleaning the surface.

Personal Protective Equipment

Cleaning and disinfection procedures should always be performed wearing appropriate person protective equipment (PPE), e.g., gloves, gowns and face shields. Gloves should always be used when handling disinfectants and cleaning surfaces, additional PPE should be selected based on the likelihood of exposure to other parts of the body. If vigorous cleaning is anticipated, utility gloves should be provided. Hands should be thoroughly washed after removing gloves.

Chlorine Bleach considerations and recommendations

Household bleach is an effective agent against most bacteria and viruses. It is important to follow recommended dilution guidelines for specific surfaces. Certain precautions should always be adhered to when using bleach, including:

- Dilute and perform disinfection procedures and in a well-ventilated area. Adverse effects of inappropriate mixtures of household cleaners usually are caused by prolonged exposure to an irritant gas in a poorly ventilated area
- Avoid combining bleach with acids (like vinegar) or ammonia (Windex). Potential irritants released from such mixtures are chlorine gas, chloramines and ammonia gas
- Wear appropriate personal protective equipment as chlorine bleach is corrosive and irritating to mucosal tissue, skin, eyes and upper and lower respiratory tract
- It is recommended using a “pump” or “pour” bottle instead of a spray bottle to avoid aerosolizing the bleach solution
- Prepare bleach solutions daily.
- Open bottles of chlorine bleach should be discarded after 30 days
- If a splash occurs to mucosal tissues, immediately flush with water

A number of child care settings choose **not** to use a bleach based agent. If you are a facility that does **not** use a bleach based agent, be sure that it is an EPA-registered BACTERICIDAL agent, not a BACTERIAL STATIC agent. You will also need to be aware of what specific bacteria and viruses the agent kills. This will be listed on the bottle or package insert.

Recommended bleach concentrations and mixing instructions

Application	¹ Bleach per Gallon of Water	Household Concentration	Dilution	Recommended Labeling
Dishes, eating utensils and mouthed toys (after detergent cleaned and rinsed) to be submerged in bleach solution for at least one minute	1 teaspoon	~50 ppm (parts per million)	1:1000	Sanitizer for eating utensils and mouthed toys – for submersion purposes
Tables, food prep areas, non-mouthed toys, cots	1 Tablespoon	<200 ppm	1:200	Sanitizer for food contact areas – spray until glistening and leave for 2 minutes prior to wiping dry
Diaper changing areas, toilets, surfaces contaminated with bodily secretions/excretions	¼ cup	~600 ppm	1:100	Disinfectant for diaper changing station, toileting areas
For areas saturated with blood or blood products (OSHA standard)	1 1/2 cup	~6000 ppm	1:10	This dilution should always be used for blood spills.

Use only household chlorine bleach (6.00% sodium hypochlorite)

These recommendations include CDC guidelines for bleach dilutions using household bleach measurement terms and equivalent parts per million (ppm) that can be used to translate recommendations for use in the clinical setting. Premier's Safety Institute has expanded the information to include the use of chlorine bleach as a sanitizing agent in dietary settings consistent with EPA U.S. Gov't regulations (21CFR Part 178)

Please note: The concentration of bleach solutions sold in stores has changed in many areas of the country. The new bleach solution available in many stores is **8.25% sodium hypochlorite solution (higher than the** formerly available bleach solution of 5.25%-6%). The 8.25% solution is **being produced by both** brand name companies as well as companies that produce generic products. Several companies have communicated to us that they have discontinued manufacturing the 5.25%-6% sodium hypochlorite bleach solution and will no longer be available at many stores.

References

Guideline for Disinfection and Sterilization in Healthcare Facilities, CDC, HICPAC, 2008.
http://www.cdc.gov/ncidod/dhqp/pdf/guidelines/Disinfection_Nov_2008.pdf

Guidelines for the Use of Sanitizers and Disinfectants in Child Care Facilities
 Colorado Department of Public Health and Environment,
http://www.cdph.state.co.us/cp/Institutions/childcarecenters/CPDGuideline350_revE_Sanitizersdisinfectants.pdf

Guidelines for Environmental Infection Control in Healthcare Facilities. CDC, HICPAC, 2003.
http://www.cdc.gov/ncidod/dhqp/gl_environinfection.html

Guidelines for Environmental Cleaning and Disinfection of Norovirus, Michigan Department of Health, 2009, http://www.michigan.gov/documents/Guidelines_for_Environmental_Cleaning_125846_7.pdf

Premier Safety Share, Premier Safety Institute, November 24, 2008. http://www.premierinc.com/quality-safety/tools-services/safety/pSS/Bulletin_CDCGuide-11202008.htm

Important addendum regarding mixing bleach solutions for use in Child Care Programs

Please distribute to all child care programs and providers:
 In late 2012, the concentration of bleach solutions sold in stores changed in many areas of the country. The new bleach solution available in many stores is higher than the formerly available bleach solution.
 Regular household bleach typically contains between 5% and 6% sodium hypochlorite, most often 5.25% sodium hypochlorite. Some manufacturers are now producing a **concentrated** bleach, which is 8.25% sodium hypochlorite (one example is Clorox® Concentrated Regular-Bleach). According to one manufacturer of both the regular and concentrated bleach solutions, they will continue to produce both solutions, but stores may choose to carry only the concentrated bleach solution because of limited shelf space. The table below shows the differences between the regular and concentrated sodium hypochlorite solutions. For all sanitizing and disinfecting activities, *unscented* bleach should be used.

	Regular household bleach	Concentrated household bleach
Percent (%) sodium hypochlorite in an undiluted container	5.25% (Range 5-6%)	8.25%
Parts per million (ppm) of available chlorine (AvChl) in an undiluted container	52,500 ppm AvChl	82,500 ppm AvChl
Standard disinfection (if no specific instructions exist for an agent)	¼ cup regular bleach to 1 gallon of water	3 tablespoons concentrated bleach to 1 gallon of water
Norovirus disinfection in heavily contaminated areas (~5,000 ppm)	1 part regular bleach to 9 parts water, or ~1 ¾ cups of regular bleach per gallon of water	1 part concentrated bleach to 15 parts water, or ~1 cup of concentrated bleach per gallon of water

