2013 Update: Bleach-free Disinfection and Sanitizing for Child Care

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SAN FRANCISCO
Asthma Task Force

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Required infection control for child care

Child care centers and family child care homes have specific disinfecting and sanitizing requirements for the two age groups they serve, infants (0-2 years old) and preschoolers (2-5 years old). *See Tables 1 and 2 on following page*.

California Department of Social Services, Community Care Licensing Division's (CCL) Title 22 Regulations specifically mention bleach as the product that meets the code's disinfecting and sanitizing requirements, and it also gives the amount of bleach concentrate to use when making gallon dilutions. For many years, child care workers have only used bleach solutions, often diluted with questionable accuracy, to meet these requirements, since bleach is relatively inexpensive and offers antimicrobial results after a reasonable contact dwell time on hard surfaces.

Many child care providers had experienced breathing difficulties from the use of bleach, as well as corrosive burns to skin and clothing, and wished to find alternatives that would be in compliance with CCL regulations. Occupational health evidence indicated that bleach exposure caused asthma exacerbations and was a probable cause of new asthma. For these reasons, the San Francisco Asthma Task Force took on the challenge of finding bleach-free disinfectants and sanitizers, issued preliminary recommendations in 2011, and is now updating those recommendations in this 2013 report.

Distinguishing cleaning from infection control

It is important to become familiar with common words that in this context are used in a precise regulatory sense. All disinfectants and sanitizers must be registered with the United States Environmental Protection Agency (USEPA) as antimicrobial pesticides due to their ability to "reduce, or mitigate growth or development of microbiological organisms." [1,2] The USEPA authorizes intended and proper use during the registration process as stated on a product's label and issues a USEPA registration number ("EPA Reg#").[3] For proper infection control, refer to the definitions listed on the following page.

Table 1. Glossary of terms

Term	Definition
Clean	The process of physically removing debris from a surface or area by scrubbing, washing, and rinsing. Sanitizers and disinfectants cannot work on dirty or greasy surfaces.[4] Therefore, cleaning or pre-cleaning the surface is a necessary first step.
Sanitize	To reduce, but not necessarily eliminate, bacteria from the inanimate environment to levels considered safe as determined by public health codes or regulations. A food contact surface sanitizer, termed *sanitizing rinse* by the USEPA, must kill at least 99.999% of the two specified bacteria (*Staphylococcus aureus* and *Escherichia coli*) within 30 seconds.[1,2,5,6]
Disinfect	To destroy or irreversibly inactivate infectious fungi and bacteria but not necessarily their spores, in the inanimate environment. The USEPA registers three types of disinfectants based on the type of efficacy data submitted. For each type, the disinfectant must kill on 59 of 60 carriers for each of three product samples tested against the bacteria specified below: • Limited disinfectant – effective against only a specific major group of microorganisms, such as gram-positive or gram-negative bacteria.[c] For example, a limited disinfectant must kill on 59 of 60 carriers for each of three product samples of either a) gram-positive *Staphylococcus aureus* or b) gram-negative *Salmonella enterica*. • General /Broad-spectrum disinfectant – effective against both gram-positive and gram-negative bacteria. A broad-spectrum or general disinfectant must kill on 59 of 60 carriers for each of three product samples tested against two specified bacteria: *Salmonella enterica* and *Staphylococcus aureus*. • Hospital disinfectant – disinfectant products recommended for use in hospitals, clinics, dental offices, nursing homes, sickrooms, or any other healthcare-related facility. A hospital-level disinfectant must kill on 59 of 60 carriers for each of three batches tested against *Staphylococcus aureus* and *Pseudomonas aeruginosa*.[1,2,7,8,9]

Table 2. Community Care Licensing Division's Title 22 Regulations for disinfecting and sanitizing in child care[10]

Requirement	Surface (Section #)	How Often
DISINFECT	Infant/Toddler classrooms: • Diaper changing areas * (101428) • Potty training chairs * (101428) • Napping equipment ****/** (101239.1, 101439.1)	* After each use ** After each use if soiled *** Daily **** Weekly
	Infant/Toddler/Classrooms with mildly ill children: • Sinks ** (101438.1, 101638.1) • Floors ***/** (101438.1, 101638.1) • Walls/Partitions ****/** (101438.1, 101638.1) • Mouthed objects (including toys) *** (101438.1, 101638.1)	
SANITIZE^	All classrooms: • Dishes/Utensils, Cups * (101227)	* After each use *** Daily
	Infant/Toddler classrooms: • Disposable diaper containers *** (101428, 101628)	

Developed by the San Francisco Asthma Task Force, derived from Title 22 Regulations.

^ Considering national guidelines for child care health and safety, the Task Force recommends that all classrooms SANITIZE meal/snack tables and high chair tables before and after each use.

c. Gram-positive bacteria is normally found on the skin (e.g., *Staphylococcus aureus*); and gram-negative bacteria can be antibiotic resistant and can cause infections such as bloodstream or wound infections, pneumonia, and meningitis (e.g., *Acineobacter, Klebsiella,* and *Escherichia coli)*. Department of Health and Human Services, Centers for Disease Control and Prevention (www.cdc.gov/bloodsafety/bbp/diseases_organisms)

Need for this 2013 Update Report

This report reflects changes in Task Force recommendations since the March 2011 report. The most significant change is that the Task Force has eliminated recommendations for safer bleach dilution methods. The following are Task Force rationale for eliminating safer bleach practices: 1) the portion-controlled pumps, used for safer dispensing of bleach concentrate and more accurate preparation of bleach dilutions, could not withstand bleach corrosion and became unreliable; and 2) bleach is currently designated as an asthma-causing substance, termed *asthmagen*, by the Association of Occupational and Environmental Clinics.[11] Additionally, the Task Force abandoned recommending the IonatorEXP™ for the following reasons: 1) lack of sufficient evidence to support sanitizing claims; and 2) lab analysis from the San Francisco Department for the Environment revealed that the one IonatorEXP™ device tested released chromium and hexavalent chromium, categorized as a human carcinogen and reproductive hazard,[12] in the ionized water sprayed. *See the Update Letters from 2012 for more details; accessible at the Task Force website* **(www.sfgov.org/asthma)**.

Summation of Task Force recommendations

The Task Force strongly recommends a precautionary approach, where child care providers transition as soon as possible to bleach-free sanitizers and disinfectants that are also safe for asthma. Bleach exposure should be limited as much as possible and providers should avoid bleach exceeding 6.15% sodium hypochlorite (the active ingredient for bleach). Several manufacturers are currently selling "Regular Bleach" – brand name and generic – that contains 8.25% sodium hypochlorite; and if centers are using vendors that distribute janitorial supplies (or procuring products from stores that carry janitorial supplies), the center may inadvertently purchase industrial strength bleach (e.g., 12.5% sodium hypochlorite). Therefore, providers should use caution when purchasing. Additionally, the use of sanitizing devices should be avoided.

The Task Force currently recommends the following USEPA-registered bleach-free disinfectants and sanitizer with hydrogen peroxide as the active ingredient:

- **Oxivir® Tb**, a disinfectant used by classroom staff
- **SaniDate®**, a food contact sanitizer used by classroom staff, and
- **Alpha-HP® Multi-Surface Disinfectant Cleaner,** a disinfectant used by custodial staff.

Table 3. Task Force recommended USEPA-registered bleach-free disinfectants and sanitizer

Product	Use	Surface
Oxivir® Tb 	Disinfect hard nonporous, non-food contact surfaces	• Diaper changing tables • Potty training chairs • Cots/cribs • Mouthed objects (including toys) • Sinks • Walls/partitions
SaniDate® 	Sanitize food contact surfaces and non-food contact surfaces	**Food contact surfaces** • Snack/meal tables • High chair tables **Non-food contact surfaces** • Non-mouthed toys
Alpha-HP® Multi-Surface Disinfectant 	Disinfect hard nonporous, non-food contact surfaces	Floors (infant/toddler rooms)

Using this Report

Section I

If you would like to convert a child care site to a bleach-free environment, Section I provides a step-by-step process describing exactly how you can make that change regardless of where your center is located. For this how-to guide, go directly to page 11.

Section II

If you would like to replicate the Task Force project on a larger scale for your community (e.g., consortia of center-based child care, school district Early Education Department centers), Section II provides recommendations on replicating this intervention. For advice on implementation, go to page 21.

Section III

If you would like to learn how to prepare your center for controlling exposure to specific communicable disease cases or outbreaks, Section III provides information about disinfection practices approved for certain diseases. For guidance on communicable disease outbreaks, go to page 30.

Introduction

A. Background

Health rationale: Evidence linking bleach and asthma

Bleach exposure is known to exacerbate asthma symptoms in those who already have asthma and has recently been confirmed as causing new asthma for those exposed to bleach at work. *See Appendix H for related documentation from the California Department of Public Health, Work-Related Asthma Prevention Program.*

Work-Related Asthma (WRA) Studies

WRA associated with exposure to bleach
Statewide: 60% are new-onset asthma

WRA associated with exposure to cleaning products
Statewide: 10% of WRA cases
Nationwie: 72% are new-onset asthma

In educational settings
Cleaning staff are at the highest risk
Teachers and teachers' aides

A 2011 study provides more evidence
Airway response to inhaling bleach

In 2012 bleach designated as an asthmagen

AOEC
www.aoec.org

As further proof of bleach's impact on respiratory health, in May 2012, the Association of Occupational and Environmental Clinics (AOEC), designated bleach (sodium hypochlorite) as an asthmagen, the term used for an asthma-causing substance.[11] The AOEC must carefully review mandated reporting of work-related asthma (WRA) as well as published toxicology and epidemiology peer-reviewed research prior to assigning any toxicity designation to a substance. *See Appendix H of this report for the research basis of AOEC's action.*

The San Francisco Asthma Task Force (Task Force) initiated this project to decrease the environmental risks for asthma faced by child care workers and the children in their care. The Task Force focused on eliminating or reducing bleach exposure because San Francisco child care providers already had access to training programs that taught how to reduce other indoor asthma triggers such as pets, dust and tobacco smoke.

All licensed child care facilities in California must comply with infection control requirements of the California Department of Social Services, Community Care Licensing Division's (CCL) Title 22 Regulations.[10] By 2008, a good number of San Francisco child care providers serving low-income families expressed a desire to replace bleach as their primary disinfectant and sanitizer, due to their concerns about the corrosive and irritant properties as experienced by staff; and breathing difficulties experienced by staff as well as children with asthma in their care. Some child care providers were aware that the State's public health agency was also accumulating work-related asthma data that implicated bleach as being able to cause new onset asthma.

The Task Force began its pilot project in 2008 to help resolve the dilemma faced by local child care providers, public health nurses with the San Francisco Department of Public Health Child Care Health Project (aimed at improving health and safety outcomes of San Francisco children in child care) and child care quality assessors with Gateway to Quality (an initiative aimed at ensuring quality child care in San Francisco), who all wanted to promote optimal infection control without compromising health. As the Task Force and its advisory group began the investigation to find bleach-free antimicrobial agents that complied with CCL requirements, the Task Force also emphasized finding products and methods that child care workers would readily accept for their ease of use and lack of irritating scent.

Health equity rationale: Occupational health risk reduction

The Task Force and Regional Asthma Management and Prevention (RAMP), a non-profit asthma program that supported aspects of this project, consider this effort to reduce or eliminate bleach exposures to child care workers a health equity issue because the majority of child care workers in San Francisco are women of color with low earning potential and low educational attainment, as compared to the median wage and education of the city's adult working population.[13-15] Child care workers have been low wage earners with limited health benefits, traditionally lacking the knowledge to connect new onset asthma with their work environment, and many may fear reporting exposure-related health symptoms or concerns for fear of losing their job, being reported to immigration authorities or other consequences. Additionally, many children in care come from low-income families with limited access to healthy housing, and thus are exposed to many other asthma-causing and asthma-exacerbating housing conditions.

B. Milestones

Pilot project and first report (2011)

From 2008 to 2010, the Task Force and partners researched alternatives to bleach that were USEPA-registered as antimicrobial disinfectants and sanitizers, and one water-ionizing device for which the manufacturer presented data establishing antimicrobial sanitizing properties appropriate for food contact surfaces. The pilot project enrolled 20 child care sites that would represent diverse districts, ethnic communities, and compliance with infection control requirements. Personnel at each site gave the Task Force feedback on the alternative antimicrobials introduced, as well as on the customized training and reinforcement tools provided to the site:

- Soapy water (non-antibacterial) for pre-cleaning prior to disinfecting or sanitizing
- Timers for assuring 1-minute dwell time on surfaces
- Trilingual placards illustrating pilot project use instructions, and
- Two-hour interactive PowerPoint training program, provided in English, Spanish or Cantonese.

The pilot project focused on finding ways to both reduce and eliminate exposure to bleach. The Task Force recognized that some centers were not ready to convert to bleach-free disinfection and sanitizing, or could not afford to do so.

For that audience, the Task Force proposed methods and tools that would improve safety during bleach dilutions and reduce overuse of bleach from inaccurate dilution, including the following:

- Portion-controlled (calibrated) pumps to dispense concentrate
- Recommendation of 5.25% unscented bleach concentrate, and
- Safety glasses, gloves and eye wash stations for handling corrosives.

For both bleach-free and safer bleach using sites, the Task Force staff first observed current practices, then provided customized interactive training in three languages onsite. Following training, Task Force staff visited each site for a week to observe and to ensure that child care staff completed daily and end-of-week questionnaires. The questionnaires provide feedback on worker ease of use and the overall acceptability of all newly-introduced products and methods. After analyzing pilot project findings with an advisory group, and presenting findings to San Francisco's Childcare Planning and Advisory Council, the Task Force issued its recommendations in a March 2011 report.

Support from California Community Care Licensing

The Task Force and its partner RAMP approached CCL to request that CCL inform their regulated community that Task Force-recommended bleach substitutes and methods were acceptable for CCL infection control requirements. In agreement, CCL featured the San Francisco Task Force project and referred to report recommendations in its Spring-2012 Child Care Update.[16, Appendix G] CCL also connected the Task Force with the California Emergency Medical Services Authority (EMSA), the State's agency that provides the mandatory preventive health training for new child care providers. As a result, EMSA may use Task Force work and research as a reference for providers.

Compliance with Cal/OSHA Blood-Borne Pathogen regulation

California Occupational Safety and Health Administration (Cal/OSHA) is the State's program that enforces laws protecting workers from safety hazards in the workplace. Cal/OSHA requires training in Universal Precautions for workers potentially exposed to blood-borne pathogens. A Universal Precautions approach assumes that all human blood and body fluids may transmit communicable diseases, such as HIV, Hepatitis B and Hepatitis C. This is relevant to child care workers because they must frequently respond to body fluid spills, such as blood and vomit, and therefore must use Universal Precautions. The Task Force resource materials help providers meet this requirement for response to body fluid spills by employing Oxivir® Tb which is a USEPA-registered disinfectant for use against HIV, Hepatitis B and Hepatitis C. *See Appendix E for body fluid spills placard, and Table 7 that describes Oxivir® Tb-approved uses against specific disease agents*.

Regulatory oversight of food contact surface sanitization in child care ends

Statewide, Environmental Health inspectors in each county inspect food-serving retail establishments for food sanitization requirements. As of August 2012, child care settings are no longer considered food facilities in the State of California.[17] Therefore, child care operations are exempt from food handling inspections by local environmental health agencies.

Regulatory oversight of Oxivir® Tb against communicable disease agents of concern

Child care providers have expressed concern that bleach-free disinfectants may lead to greater susceptibility for communicable disease outbreaks, meaning that a greater number of cases than expected of a certain disease will

be diagnosed. For this reason, the Task Force researched and included in Section III of this report infection control protocols for three communicable diseases (both reportable and non-reportable) that have been reported as affecting San Francisco children four years of age and younger. In addition, Table 7 of this report compares USEPA registration labels for Oxivir® Tb and 6.15% bleach as to their tested effectiveness against multiple communicable disease agents that may occur in child care settings.

Bringing the project to scale

Subsequently, the Task Force executed a training program to implement report recommendations for a broader group of target sites. Priority for outreach was focused on 121 center-based and 100 home-based child care providers, based on the guidance of public health nurses within the San Francisco Department of Public Health Child Care Health Project, Gateway to Quality assessors and the San Francisco Human Services Agency, which administers vouchered, subsidized child care to eligible families. For example, outreach priorities included center-based child care sites serving CalWORKs and other low-income families, and a home-based provider network serving families that have been homeless or living in domestic violence shelters.

C. Outcomes

Dissemination and adoption of bleach-free practices (as of November 2012)

Number of target sites that have received training on bleach-free practices:

- 67 of 121 **center-based** target sites (55% of target) trained; 3 pending sites are expected to adopt bleach-free recommendations; 25 target sites did not respond and 26 declined training or had management transitions that prohibited their participation
- 62 of 100 **home-based** target sites (62% of target) trained; 38 sites are pending training due to a transition of their network coordination contract.

Number of target sites adopting specific bleach-free practices:

Of 67 center-based child care trainees:

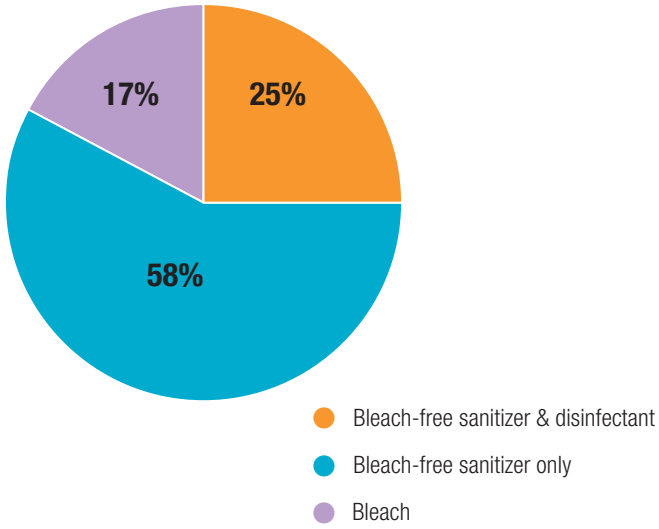
- 29 centers (43% of trained sites) adopted both bleach-free disinfection and sanitizing practices
- 16 centers (24% of trained sites) began conversion by implementing the bleach-free sanitizer alone
- Based on the costs of purchasing bleach-free products, 22 centers (33% of trained sites), have chosen to retain bleach-based infection control.

Of 62 home-based child care trainees:

- 3 sites (5% of trained sites) adopted both bleach-free disinfection and sanitizing practices
- Based on the costs of purchasing bleach-free disinfectants, 59 sites (95% of trained sites) have adopted only bleach-free sanitizing, using Task Force-subsidized SaniDate® product.

The Task Force will be seeking to complete training for all San Francisco target groups by June 2013.

Percentage of trained sites adopting bleach-free practices post-training



Review of where child care operations must employ disinfectants vs. sanitizers:

- Disinfecting is required in child care settings on hard surfaces where diapering or toilet activities are located, and on mouthed toys and objects;
- Sanitizing is required in child care settings on hard surfaces where food is eaten, termed *food contact surfaces*, such as lunch tables and high chair trays, and on non-mouthed toys.

2011 San Francisco Board of Education policy enlarges target group

On June 28, 2011 through concerted advocacy by the Task Force, led by member agency Breathe California Golden Gate Public Health Partnership (a non-profit organization aimed at working to reduce the impact of lung disease), the San Francisco Board of Education adopted *Resolution 116-14A3: In Support of Green Cleaning throughout the San Francisco Unified School District,*[18] introduced by Board member Jill Wynns. The Resolution states that the San Francisco Unified School District (SFUSD) will purchase only approved green cleaning products verified by the San Francisco Department of Environment for use in Early Education, Student Nutrition, Special Education, offices and classroom cleaning for all schools in the District. Furthermore, this policy mandates that the 31 Early Education Department (EED) centers of the SFUSD eliminate bleach and adopt the Task Force bleach-free recommendations for sanitizing and disinfecting. Thirteen EED sites received first priority because they are stand-alone centers, rather than being co-located at K-12 sites. Of the 13 sites trained, 100% have implemented bleach-free sanitizing; and six centers (46% of sites trained) have completely transitioned to both recommended sanitizing and disinfecting products.

2013 Regional Asthma Management and Prevention initiates project expansion to East Bay

RAMP is currently conducting outreach to bring San Francisco Asthma Task Force recommendations and protocols to East Bay child care networks via establishment of a train-the-trainer program.

Section I. Site Implementation

During the pilot project site observation phase, Task Force staff learned of the many demands placed on child care workers and how infection controls practices may suffer. Staff may know of barriers to effective infection control, but have insufficient communication mechanisms for reporting those barriers to management. At the same time, the Task Force encountered site managers who, due to their own demands, were not aware of the day-to-day routines for infection control at their sites and whether or not those routines met CCL requirements.

Quality assessment is an additional factor influencing attention to infection control. Based on their evaluation, quality assessors provide information to funders and key stakeholders on the strengths and needs of a child care program. Therefore, the information provided by quality assessors impacts the subsidies received by child care sites. Some child care sites choose to focus on improving their scores on child development best practices as priority over their scores for health and safety best practices.

The Task Force recommends that site managers first spend time observing day-to-day routines for infection control in order to better understand the baseline knowledge and beliefs of their staff as well as current barriers to meeting infection control requirements. In this manner, site training for implementation of bleach-free infection control can be customized to create greater staff buy-in for the new protocols. The following tips may help managers become effective agents of change as well as provide support for staff with the transition to new practices.

Tip #1 Observe day-to-day work practices

Observe current infection control practices

During site visits, Task Force staff observed that many child care workers used infection control practices that created hazards to themselves and to children in care. Some of the observed hazardous practices included mixing two different disinfectants, inconsistent use of personal protective equipment, recycling spray bottles from other cleaning products to use for bleach solutions, using a spray bottle close to their breathing zone, spraying strong bleach solutions on lunch tables while children were sleeping just below the table on their cots, and leaving surfaces with a wet residue of strong bleach solution that children could access.

Get in touch with the baseline knowledge, skills, beliefs and attitudes that supervisors and staff have about current infection control practices

The Task Force staff observed that infection control practices varied widely, even within the same classroom. Each individual has their own philosophy of what clean is and what the process is for cleaning. Infection control goes beyond cleaning, but builds on those philosophies. Managers should observe current sanitizing and disinfecting practices in the classroom in order to learn the beliefs and attitudes of their staff. This would help customize a training that effectively addresses baseline infection control practices. This is important not only to address CCL

requirements that are not being met, or practices that are unsafe, inconsistent, or incorrect, but also to facilitate behavior change necessary to transform current practices. Having a classroom presence and becoming more aware of how the employees are using products would inform training needs with regards to health and safety, and meeting CCL requirements. *See Appendix B for sample site observation checklist.*

Tip #2 Get your house in order

Take inventory of current cleaning and antimicrobial products at your center

This starts by managers becoming aware of products in the classrooms, custodial closet, storage areas, bathrooms, offices, and kitchens. *See Appendix B for sample inventory checklist.*

Perceptions can impact infection control. Below are examples of comments made by child care workers expressing experiences that might affect work practices.

"My mother/grandmother/guardian used bleach regularly to clean and disinfect. I like bleach because it whitens surfaces and kills everything." These workers may be skeptical of the effectiveness of bleach-free disinfection; additionally, they may think that over-spraying is more effective.

"I use scented cleaning products at home. Sometimes I use products with a strong scent because it makes my house smell clean." These workers may be under the impression that scent is an indicator of cleanliness or product effectiveness.

"I need to use air fresheners at work because it smells bad when my co-workers or the children use the bathroom." These workers may not understand the hazards of using aerosol sprays and air fresheners. They may not understand the need to identify the source of the odors, and the harm in covering or masking them.

Purge the center of products that are not necessary

If there is an overabundance of products, communication with employees is key to understanding who purchased/donated the products, why those products are in the center and why the staff think they are necessary. This could help initiate dialogue with staff regarding harmful chemicals that could negatively impact their health and the children's health, and can identify the potential needs of staff (e.g., training, policies in place, material and tools).

"After our training we eliminated the use of any sprays within the classroom as we learned they can easily trigger asthma."
INFANT/TODDLER CENTER MANAGER

Properly dispose of unnecessary disinfecting products (for information on how to properly dispose of cleaning products, contact your local household hazardous waste facility). Eliminate the purchase or donation of aerosol sprays, deodorizing sprays, air fresheners including plug-ins, solids, and diffusers as they irritate the respiratory system and may cause or exacerbate asthma. Staff should not use such products in hallways or areas designated for adults, such as break rooms, offices and adult bathrooms. These products can adversely affect staff and the volatized chemicals can readily disperse into hallways used for children to reach their classrooms or get into the ventilation system to be spread throughout the building.

Tip #3 Learn how to implement bleach-free disinfection and sanitizing

A. Procurement and product use

If your center has decided to transition to a bleach-free environment based on the Task Force recommendations, your inventory needs only the products listed below to be compliant with CCL requirements. *See Appendix A for ordering information and cost.*

B. Procure triclosan-free or triclocarban-free (non-antibacterial) soap for the pre-clean step

Some antibacterial soaps contain the ingredient triclosan or triclocarban which have been associated with negative health impacts, and studies show that there are no additional benefits using antibacterial soap containing triclosan. *See Appendix F for more information*. For these reasons, the Task Force recommends using non-antibacterial (i.e., triclosan-free or triclocarban-free) soap for the pre-clean step, and for hand washing.

Sanitizing and disinfecting is usually a two-step process. The first step removes the debris that may act as a shield for the viruses and bacteria. If performed properly, with thorough wiping or scrubbing, the pre-clean step will remove most of the viruses and bacteria from the surface.

C. Procure Task Force-recommended products for disinfecting diaper changing and toileting surfaces, sanitizing food contact surfaces, and disinfecting floors (infant/toddler rooms only)

(1) Oxivir® Tb, EPA Reg# 70627-56[3a]

Oxivir® Tb is a *ready-to-use disinfectant* with hydrogen peroxide as the active ingredient. Oxivir® Tb requires a surface contact dwell time of one minute for routine disinfection of hard nonporous surfaces such as diaper changing areas, toilets, potty training seats, sinks, napping equipment, and mouthed objects. The Task Force recommends that staff use safe practices when disinfecting. *See Tip #4 for recommendations on safe work practices.*

Oxivir® Tb is also registered for use against bacteria and viruses that cause infectious diseases such as salmonellosis, shigellosis, HIV, Hepatitis B, Hepatitis C, and norovirus. *See Section III, Table 7, for more information regarding the efficacy of Oxivir® Tb against certain communicable diseases.* The required surface contact dwell time for these situations will vary, refer to the label on the product for this information, or refer to Table 7 for the contact dwell times as specified in the 2012 USEPA registration for Oxivir® Tb. When responding to such situations, gloves, safety goggles, an apron/smock, and a face mask are recommended for use when appropriate (e.g., for disinfecting surfaces soiled with blood or other potentially infectious body fluids).

(2.) SaniDate®, EPA Reg# 70299-9[3b]

SaniDate® is a ready-to-use food contact sanitizer with hydrogen peroxide as the active ingredient. SaniDate® requires a surface contact dwell time of one minute for sanitizing meal/snack tables, high chair tables, and non-mouthed toys. Although this sanitizer is not as hazardous as a disinfectant or bleach, staff should continue to use safe work practices. *See Tip #4 for recommendations on safe work practices.*

(3) Alpha-HP® Multi-Surface Disinfectant, if caring for infants 2 years of age and younger; EPA Reg# 70627-62[3c]

Alpha-HP® Multi-Surface Disinfectant (called "Alpha-HP® Multi-Surface Disinfectant *Cleaner*") is a *concentrated ready-to-dilute (RTD)* product with the following dilutions and uses:

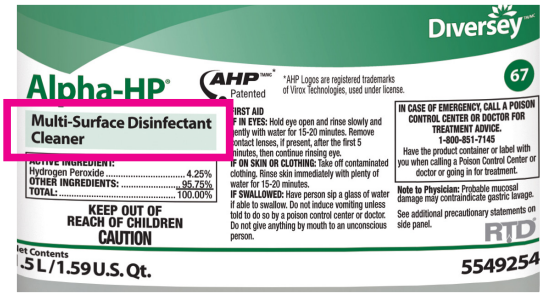
- 1:64 for use as a disinfectant (10 minutes surface contact dwell time)
- 1:128 for use as a sanitizer (3 minutes surface contact dwell time), and
- 1:256 for use as a general cleaner (no surface contact dwell time required).

Alpha-HP® Multi-Surface Disinfectant is a USEPA-registered disinfectant with hydrogen peroxide as the active ingredient. Use of Alpha-HP® requires a utility sink for dilution since the product uses a closed system to dilute product into spray bottles (which has a shelf life of two weeks) or into a mop bucket. Alpha-HP® Multi-Surface Disinfectant is used by custodial staff to disinfect floors in infant/toddler rooms which is required by CCL;[10] and is also used on hard nonporous surfaces such as walls/partitions, sinks, and toilets. Pre-cleaning is not required with the use of Alpha-HP® unless the surface is "heavily soiled".[3c] Use of microfiber mops is recommended for more effective mopping of floors and to reduce cost (using cotton string mops requires more product and is therefore more expensive).

Alpha-HP® Multi-Surface Disinfectant is a concentrated product, and prior to dilution, is more hazardous than the ready-to-use disinfectant and sanitizer mentioned above. Safe use of this system requires proper training of staff. *See Tip #4 for more information on safe work practices.*

The same disinfecting regulations for floors do not apply if caring only for children who are preschool age. Therefore, instead of using the Alpha-HP® disinfectant, the Task Force recommends using the less corrosive, less acidic, Green Seal™ and EcoLogo™ certified Alpha-HP® Cleaner listed as recommendation (4). Note that the packaging and labels for the disinfectant and the cleaner are similar.

Table 4. Alpha-HP® Multi-Surface Disinfectant Cleaner and Alpha-HP® Multi-Surface Cleaner labels

Name	Product	Product Label
3) Alpha-HP® Multi-Surface Disinfectant Cleaner		
4) Alpha-HP® Multi-Surface Cleaner		

(4) Alpha-HP® Multi-Surface Cleaner, Green Seal™ and EcoLogo™ certified,[19] can be used if caring only for children who are preschool age

Alpha-HP® Multi-Surface Cleaner is a different product from the disinfectant specified above. Alpha-HP® Multi-Surface Cleaner is Green Seal™ and EcoLogo™ certified,[19] and is not registered with the USEPA as a disinfectant (i.e., is not reviewed by the USEPA and is not issued an EPA Reg#). Alpha-HP® is used by custodial staff as a general cleaner only, and is not intended to sanitize or disinfect. Since Alpha-HP® Multi-Surface Cleaner is not a USEPA-registered disinfectant, this cleaner will not disinfect surfaces soiled with body fluids such as blood, vomit, feces, or tissue discharge. Therefore, if the center has a communicable disease outbreak, Alpha-HP® Multi-Surface Cleaner is not sufficient to control exposure.

Alpha-HP® Multi-Surface Cleaner is a *concentrated ready-to-dilute (RTD)* product with the following dilutions and uses:

- 1:64 for use as a heavy-duty spray cleaner for carpets or bathrooms
- 1:128 for use as a medium-duty spray cleaner on surfaces such as glass, and
- 1:256 for use on floors.

Alpha-HP® Multi-Surface Cleaner contains the active ingredient hydrogen peroxide. Use of Alpha-HP® requires a utility sink for dilution since the product uses a closed system to dilute product into spray bottles or into a mop bucket. Alpha-HP® Multi-Surface Cleaner is a concentrated product prior to dilution, and safe use of this system requires proper training of staff. *See Tip #4 for more information on safe work practices.* Alpha-HP® can be used on surfaces such as floors, walls/partitions, sinks, toilets and carpet. Pre-cleaning and surface contact dwell time are not required for Alpha-HP® Multi-Surface Cleaner.

Tip #4 Provide staff training on infection control best practices and safe practices

A. Establish Task-Force recommended safe work practices for sanitizing and disinfecting

For all recommended products:

- Complete the pre-clean step properly according to instructions on the label
- Use personal protective equipment, also known as "PPE" (refer to the USEPA product registration or the material safety data sheets, "MSDS," for recommended PPE)
- Ensure increased ventilation by opening windows and doors if safe to do so
- Ensure that the children are in another area when diluting, sanitizing or disinfecting
- Avoid spraying sanitizer on meal/snack tables if children are napping on cots next to the table
- Avoid spraying sanitizers and disinfectants on vertical surfaces (such as windows, mirrors, and partitions) close to the face
- Spray the sanitizer or disinfectant on the surface while holding the spray bottle away from the breathing zone (nose and mouth) at a safe distance
- Avoid over-spraying that results in pools or puddles of sanitizer or disinfectant on the surface
- Wipe surfaces dry after the required contact dwell time has lapsed, and
- Ensure that surfaces are dry when the children return to the area.

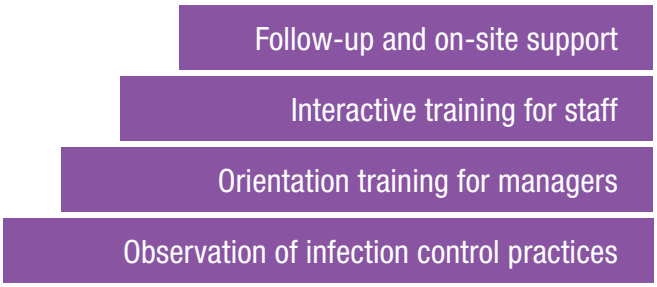
For Alpha-HP®, which requires dilution, additional precautions should be taken:

- Use the following PPE: gloves, safety goggles (i.e., protective eyewear), smock or apron
- Dilute Alpha-HP® while holding the bottle of concentrate at a safe distance from the face
- Hold the Alpha-HP® concentrate bottle firmly while diluting into a mop bucket or spray bottle
- Avoid mopping the floor in the same area where children are napping on cots
- Store Alpha-HP® in the "Off" position by setting the dial to: 

B. Provide infection control training

1) Rethink your center's in-service training process, methods and materials

The Task Force staff recognized early in the project that a single lecture-style in-service was not an effective training method. Therefore, a training process was established that included implementation of orientation for managers prior to staff training, trilingual participatory training for staff with provision of toolkits that included instructional placards and safety materials, and continued onsite support for staff. This type of training will allow managers and staff to understand areas needing re-enforcement for health and safety, identify what materials and tools are needed, identify barriers to meeting infection control requirements, and promote consistency of practices among staff. *See Appendix C for an example of the recommended training outline.*



2) Review your center's written infection control policies and procedures

When assessing your existing system for infection control, this is the ideal time to review your center's policies and procedures with regard to infection control, exposure control, immunizations, health screenings, and training requirements or notifications regarding health-related issues. Refer to the American Academy of Pediatrics for their recommendations on written policies and procedures.[20]

3) Establish an exposure control plan or policy for dealing with disease outbreak situations

California Code of Regulations, (Vol. 22), Title 17 (Section 20), Public Health defines a disease *outbreak situation* as:

> "the occurrence of cases of a disease (illness) above the expected or baseline level, usually over a given period of time, in a geographic area or facility, or in a specific population group. The number of cases indicating the presence of an outbreak will vary according to the disease agent, size and type of population exposed, previous exposure to the agent, and the time and place of occurrence. Thus, the designation of an outbreak is relative to the usual frequency of the disease in the same facility or community, among the specified population, over a comparable period of time. A single case of a communicable disease long absent from a population or the first invasion by a disease not previously recognized requires immediate reporting and epidemiologic investigation."[21]

An exposure control plan or policy is important for having a procedure for addressing disease outbreak situations. The plan should specify who to contact (i.e., parents/guardians, your city's communicable disease program), inclusion/exclusion guidelines, signs and symptoms for early detection, procedures for areas needing immediate infection control, and procedures for personal protection and hygiene. The plan should be linguistically appropriate and shared with all staff – teachers, helpers, volunteers, students, food handlers – and managerial staff should review the plan annually and with each new hire. For recommendations on exclusion, standard precautions, age-appropriate vaccinations, and detailed information on infectious diseases, refer to the "Children in Out-of-Home Child Care" section in the American Academy of Pediatrics Red Book.[20] *See Section III and Table 7 for further infection control recommendations; and see Websites section for more information on exposure control.*

4) Provide Hazard Communication training

There is an obvious need for managers to understand the risks of the site's chemical products in order to prevent injury and illness among staff and the children in their care. Cal/OSHA law requires all employers to provide their employees Hazard Communication training, including product safety information for chemical products in use. This law applies to the use of cleaners, sanitizers, and disinfectants as well as other chemical products and managers should implement Hazard Communication training for their staff. Form a list of approved products for your center, and prohibit products that are not on your list. A binder dedicated to infection control should include the list of products, ordering information, MSDS, training material, and CCL and Environmental Rating Scales requirements. *See Websites section for information on Hazard Communication.*

Tip #5 Anticipate questions and concerns your staff may have when implementing bleach-free sanitizers and disinfectants

When managers become well informed of CCL-required infection control practices and how new product protocols meet those requirements, they will be better equipped to address concerns of their staff.

Myth 1: We will get "dinged" by our quality assessors for using bleach-free products, as we are mandated to only use bleach.

Fact: Alternatives to bleach are acceptable in the State of California according to Community Care Licensing's Title 22 Regulations. Section 101438.1 (f) of Article 7 (Physical Environment: Infant Care General Sanitation) states that "*Commercial disinfecting solutions, including one-step cleaning/disinfecting solutions, may be used in accordance with label directions.*"[10]

Additionally, bleach-free USEPA-registered sanitizers and disinfectants are acceptable for quality assessors using the Early Childhood Environment Rating Scale (ECERS), Infant/Toddler Environment Rating Scale (ITERS) and Family Child Care Environment Rating Scale (FCCERS). The Environment Rating Scales Institute, the organization that has developed the scales, has issued updated clarification regarding cleaning, sanitizing, and disinfecting in their Additional Notes for Clarification for ECERS-R/ITERS-R/FCCERS-R. *See References for links to notes, accessible online.* They have stated that USEPA-approved sanitizers and disinfectants can be used in the place of bleach, and must be used according to their label.[22-22c]

Myth 2: The new products don't smell, they must not clean very well, I have to spray a lot to get the same effect as bleach.

Fact: A strong scent is not necessary in order for sanitizers and disinfectants to be effective. Sanitizers and disinfectants are held to the same USEPA standards, and should be comparable regardless of scent/lack of scent. Additionally, if the surface is cleaned thoroughly with soapy water and wiped adequately to remove all debris, this will remove most of the germs from the surface. Sanitizers and disinfectants will then remove any residual germs that remain. To obtain the desired effectiveness, sanitizers or disinfectants should be sprayed only to visibly wet the surface. Over-spraying such that wet puddles are visible on the surface only leads to higher use and increased cost.

Myth 3: Using two products instead of one will create more work for me and will take longer.

Fact: The sanitizer and disinfectant recommended for classroom use are ready-to-use and have a shorter dwell time than bleach (one minute vs. two minutes for bleach). Therefore, the process for using the bleach-free sanitizer and disinfectant will take less time than bleach.

"Since we started using the new products, some of the staff said it was easy to use because it was replacing bleach and water mixture at the beginning of the day. Since they don't have to mix the bleach anymore there are no accidents from usage of these products. ." CENTER SUPERVISOR

Myth 4: The bleach-free products are completely safe; therefore, I do not need to use PPE or take pre-cautions that I do when using bleach.

Fact: In order to reduce or destroy microorganisms, bleach-free products contain chemicals. Staff should still take precautions when sanitizing and disinfecting. Refer to the product-specific USEPA registration or the MSDS for recommended PPE. *See Tip #4 of this report for recommended safe work practices.*

Myth 5, Part 1: The bleach-free products have not been well-studied and are not as effective as bleach.

> **"I noticed since we've gone bleach-free that my staff is cleaning and disinfecting more often, and there is no more irritating bleach odor in the center."**
> CENTER SUPERVISOR

Fact: All sanitizers and disinfectants are "public health" antimicrobial pesticide products and require registration with the USEPA. As such, "Registrants of public health antimicrobial pesticide products must submit efficacy data to support their application for registration or amendments to add public health claims." Therefore, manufacturers of sanitizers are required to submit data showing that the sanitizer "reduces the bacterial population in the inanimate environment by significant numbers, (e.g., 3 $\log^{10}$ reduction) or more, but does not destroy or eliminate all bacteria."[1] Likewise, manufacturers of disinfectants are required to submit data showing that the disinfectant "destroys or irreversibly inactivates bacteria, fungi and viruses, but not necessarily bacterial spores, in the inanimate environment." Efficacy data submitted is based on the type of disinfectant – limited, general (or broad-spectrum), and hospital.[1]

Myth 5, Part 2: If we have an outbreak, I need to go back to using bleach.

Fact: Manufacturers of antimicrobial disinfectants, including Oxivir® Tb, voluntarily submit additional tests for registration against certain human public health bacteria and viruses. If your site has an outbreak of a communicable disease, you may be told to go back to using bleach. However, Oxivir® Tb is USEPA-registered for killing all of the same communicable disease agents as 6.15% bleach, with the exception of Hepatitis A. *See Section III and Table 7 for more information.*

Myth 6: Since the Task Force is recommending hydrogen peroxide products, any product with hydrogen peroxide that I find in stores should meet our needs.

> **"I've noticed less flu and illness over the last 4-5 months since we started using the bleach-free sanitizer. My staff are more willing to clean surfaces they normally wouldn't clean- furniture, mirrors, flat surfaces. My classrooms are definitely getting more attention than they used to."**
> CENTER PROGRAM COORDINATOR

Fact: Only USEPA-registered hydrogen peroxide-based disinfectants and sanitizers meet infection control requirements in child care. Hydrogen peroxide (3-3.5%) that is used as a skin antiseptic is regulated by the United States Food and Drug Administration (FDA) not the USEPA, and does not meet infection control requirements.

Fact: Not all hydrogen peroxide-based disinfectants are the same. USEPA-registered disinfectants are composed of a mixture of chemicals, and some new widely available hydrogen peroxide-based disinfectants contain synthetic fragrances. Therefore, not all new hydrogen peroxide-based disinfectants are safer for asthma. Additionally, they have various surface contact dwell times and may not work in a reasonable amount of time. *See Tip #8 for information on how to choose a safer disinfectant.*

Tip #6 Sustaining staff buy-in for the new products and practices requires an ongoing effort

In order for employees to transform existing practices, onsite guidance and regular evaluation are recommended to facilitate behavior change. Sustaining best practices and maintaining a safe environment are ongoing processes. If the manager is not regularly accessible to staff, the center can appoint another person (i.e., health advocate or health manager) who is linguistically compatible and readily available in the center and classroom for the following:

- To serve as a mentor for teaching staff
- To help implement proper use of different products
- To help tailor current practices and set up the classroom environment that is best for maintaining safe use of products, and
- To help encourage teambuilding in developing efficient processes to maintain infection control.

"We are putting on our agenda to address how to roll out a monitoring system to be effective [to monitor best practices]. The new products are less prep-time for staff, healthier products, and there are less allergic break-outs." CENTER MANAGER

Postings can be a useful way to share updated instructional material that is easily accessible and linguistically-appropriate. This information can promote standardized best practices for staff and volunteer parents, students, floaters, volunteers and helpers particularly around the issue of disinfecting and sanitizing. Some suggestions to communicate these important guidelines in a way that might minimize confusion include:

- Displaying information that is compliant with regulating bodies such as CCL and the USEPA
- Establishing instructions that are simple, explicit, and easy to follow
- Displaying placards related to the sanitizers or disinfectants in the specific area of use
- Clearing the posting space of extraneous flyers and other materials, and
- Reviewing the postings/placards periodically to ensure that the instructions are correct and updated.

Observation is another way to encourage safe and best practices. Informal observation when visiting/checking in with the classrooms allows managerial staff evaluation of regular infection control practices. In addition to observing proper products and procedures, keep in mind safe practices such as location of children and how staff spray antimicrobials (i.e., over-spraying, spraying close to the breathing zone/face). To establish maximum air flow, observe if staff open windows and doors, if safe to do so, when sanitizing and disinfecting; and verify routine maintenance and service of your center's Heating, Ventilating, and Air Conditioning (HVAC) Systems. These observations are essential because sanitizers and disinfectants sprayed frequently throughout the day affect indoor air quality. Ensuring increased air flow and having well-maintained HVAC systems are important since ventilation in child care settings is often inadequate. Further research is warranted regarding air change rates in these settings.

"When we went bleach-free, it was challenging to get into practice using the new products, but now it's gotten much easier… After training the supervisors came to check up and make sure products are still being used properly." CENTER TODDLER TEACHER

Finally, adding a question to your agenda at staff meetings, in-services, or training sessions that engages the staff with regards to CCL requirements and products used is a way to gather information on:

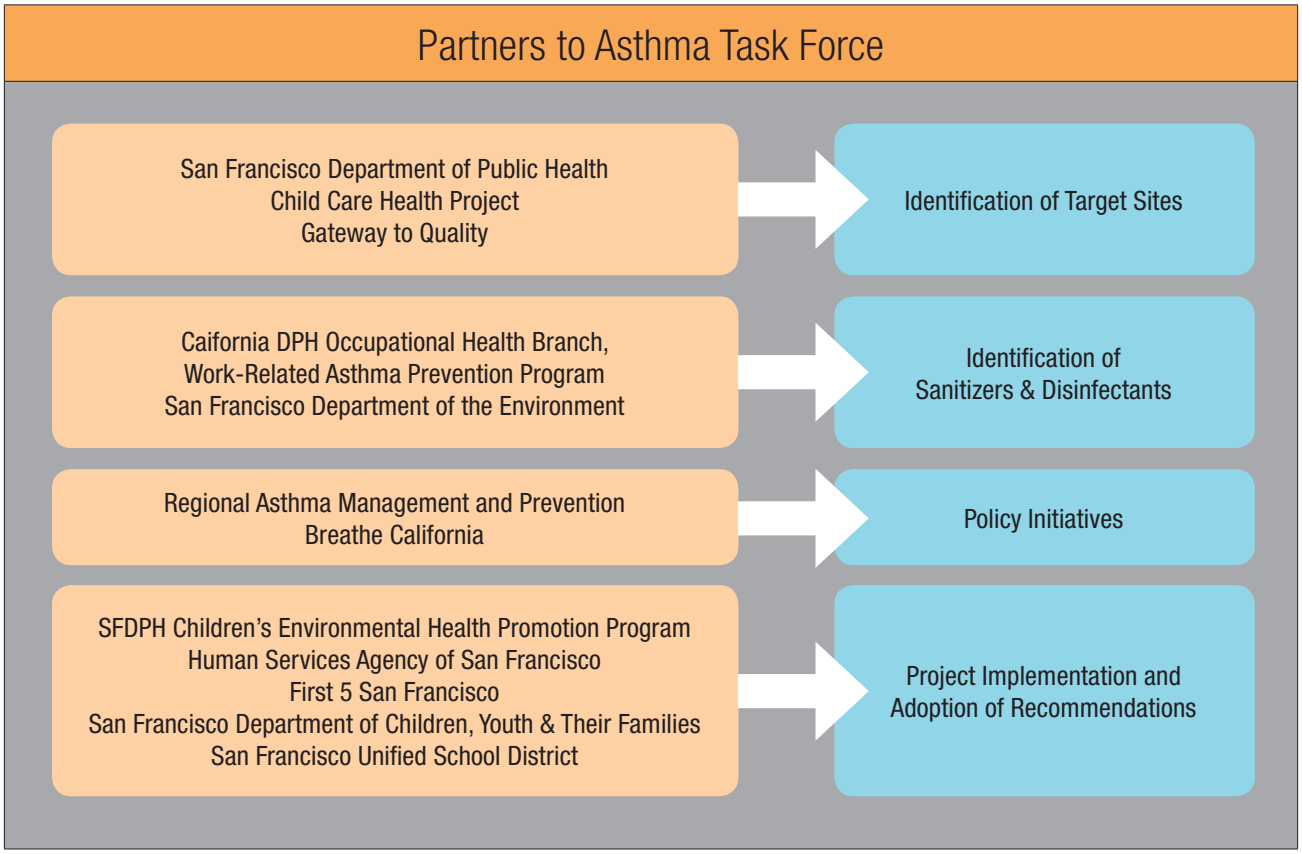
- Training needs
- Need for material
- Concerns of staff, and
- Concerns expressed by parents to staff

Section II. Large-Scale Replication

Tip #7 Establish a broad coalition of advisory partners

In order to be successful, your partners should be key informants about the following sets of knowledge:

- Regulatory requirements for infection control at licensed child care sites
- Inner workings and barriers to adoption of new practices at the child care target sites
- Quality assurance (QA) evaluation standards and QA assessment practices in the field
- Antimicrobial efficacy and label specification for USEPA-registered bleach-free disinfectants and sanitizers, and
- Data establishing work-related asthma due to bleach and other disinfectants and sanitizers.



Tip #8 Be aware of the rapidly-changing market and choose new sanitizers and disinfectants carefully

Sanitizers and disinfectants are regulated as antimicrobial pesticides by the USEPA. "Antimicrobial pesticides are substances or mixtures of substances used to destroy or suppress the growth of harmful microorganisms whether bacteria, viruses, or fungi on inanimate objects and surfaces."[2] Therefore, by law they require registration with the USEPA and the California Department of Pesticide Regulation. Additionally, the USEPA must approve a product's label for intended and proper use prior to authorizing registration. The USEPA is still improving their registration process to provide better review of the data submitted validating manufacturer disinfecting and sanitizing claims.

A. Task Force criteria for choosing new products

The Task Force Advisory Group used the following criteria in product selection:

(1) Bleach-free USEPA-registered disinfectants and sanitizers were chosen that did not have ingredients known to cause or exacerbate asthma; more specifically, the active ingredients were not known by the AOEC to be associated with work-related asthma.

(2) Products were chosen that were not associated with other negative health or safety impacts, such as respiratory irritation from odor or scents. For example, the Task Force has not endorsed any thymol-based disinfectants or sanitizers to date primarily because of feedback obtained from 115 child care workers at eleven child care centers who field-tested a thymol-based food contact sanitizer over a 1-2 week period during the pilot project.

Of the 115 respondents, 62 (54%) reported the scent as being bothersome and when they answered the question: "What do you like *least* about the product?" 69 (60%) of the workers indicated odor, scent or smell. Additionally, 40 (35%) indicated that they would not recommend that their center purchase the sanitizer due to the scent. Thirty-five individual workers (30%) reported that using the sanitizer resulted in at least one of the following adverse health effects: headache (19); nausea (8); irritation skin (6), respiratory (5), eye (4); feeling allergic (2); and dizziness (2).

(3) Products were chosen that had convenient surface contact dwell times, as specified by the product's USEPA registration label, based on awareness that operator acceptance and compliance would be related to the product's ease of use.

Product choices must be feasible for the demands of the child care setting, or the products may not be widely accepted by child care staff. Alpha-HP® and Seventh Generation™ Multi-Surface Cleaner, a thymol- based product, were ruled out for use at diaper changing tables because the required 10-minute surface contact dwell time for disinfecting was too long for the work pace needed at diaper changing tables.

(4) Products were chosen that would be in compliance with CCL regulations and a national guidance for child care health and safety.

Given these criteria, one of the barriers for the Task Force was the limited selection of USEPA-registered sanitizers and disinfectants without asthma risks or other known negative health impacts. Furthermore, sanitizers that will be used on snack and meal tables must be registered with the USEPA for use on food contact surfaces. The number of bleach-free asthma-safe sanitizers also registered for use on food contact surfaces is very limited.

The manufacturing world is just catching up with the market demand for bleach alternatives, and thus, product lines are constantly changing. Though new antimicrobial products are becoming widely available, this product market is ever-evolving and totally out of the consumer's control. For example, although the active ingredient "thymol" was classified as an asthmagen by the AOEC at the time of the 2011 report, the AOEC has since removed this designation for thymol. At the same time, a popular water-ionizing sanitizing device manufacturer has gone out of business while the validity of the device's sanitizing claims was being questioned by USEPA and others.

In conclusion, the selection of antimicrobial products that are safer for asthma is improving but still limited at this time.

B. Tips to help you choose new products

The following tips may help you identify whether the products you find in the store are safer and meet CCL requirements.

(1) Read the label

It is important to read a product's label for several reasons:

a. To determine if the product is USEPA-registered

b. To find the active ingredient

c. To use the product properly and safely, and

d. To identify the required surface contact dwell time (i.e., the amount of time a sanitizer or disinfectant has to remain on a surface in order to reduce or kill microbial organisms).

(2) Choose USEPA-registered sanitizers and disinfectants

Antimicrobials that are compliant with CCL regulations are disinfectants and sanitizers that are registered with the USEPA. If the product's label does not have an "EPA Reg#" then that product is only a cleaner, and is not compliant with CCL regulations for sanitizing and disinfecting.

(3) If your center is in California, verify that product registration with the California Department of Pesticide Regulation (CDPR) is active

In addition to USEPA registration, all sanitizers and disinfectants sold and used in the state of California are mandated to have an active registration with CDPR. To determine the status of a product's registration, visit the CDPR website. *See Websites section for more information.*

(4) Avoid active ingredients that have been designated as AOEC asthmagens, or chemicals that are associated with other negative health impacts

The AOEC list of asthmagens can be found by accessing the Association's Exposure Code Lookup.[11] Asthmagen designations in the Exposure Code List are reviewed and updated on a regular basis. When you are choosing a new sanitizer or disinfectant, use the AOEC asthmagen list as a guide to keep you up-to-date on active ingredients associated with asthma risks.

Additionally, avoiding the chemicals listed in Appendix F will help eliminate sanitizers and disinfectants that contain asthmagens or that could potentially negatively impact the health of child care providers and the children they serve.

(5) Avoid purchasing scented or fragranced antimicrobials

Fragranced (i.e., scented) antimicrobials can irritate the respiratory system, can cause or exacerbate asthma, and are associated with other negative health impacts. *See Appendix F for more information.* Although hydrogen peroxide is safer for asthma, there are some new, widely available hydrogen peroxide-based disinfectants and sanitizers that contain fragrances. Avoid purchasing fragranced antimicrobials even if the active ingredient may be safer for asthma.

(6) Be aware of contact dwell times specified on the label

Reading the label to find the required surface contact dwell time will help you determine if a product will be convenient for your center. For example, some new hydrogen peroxide-based disinfectants and sanitizers have a contact dwell time of 10 minutes that may not be reasonable for your staff. The Task Force recommended disinfectants and sanitizers have a surface contact dwell time that is less than the two minutes required for routine disinfecting using bleach.

(7) Read the MSDS for the pH of food contact sanitizers

Choose food contact sanitizers that have a pH value that is closer to 7 (i.e., neutral) since they will be safer to use on meal/snack tables in close proximity to napping children. Some food contact sanitizers are too acidic for use on tables in close proximity to children napping on their cots. The Task Force recommendation is to avoid spraying sanitizers on meal/snack tables if children are napping on cots next to the table.

The pH scale ranges from 0-14 where a pH value of 7 is neutral, and pH values below 7 are acidic. Your sanitizer will be more acidic the closer the pH value is to 0. The MSDS provides the pH for the product. For example, SaniDate® ready-to-use product is pH 3.6, and another product based on citric acid is pH 2.4. Therefore the SaniDate® is preferable.

(8) Avoid sanitizers and disinfectants that require a rinse step on food contact surfaces

Sanitizers used on meal tables must be registered with the USEPA as “food contact sanitizers”. If the label of a product (can be disinfectants or sanitizers) specifies that it can be used as a sanitizer, but requires a rinse step with potable water after sanitizing, the product may not be registered for use on surfaces where meals are served. Avoiding such products will eliminate the extra step of ensuring that the rinse step has been performed properly and no residue of sanitizer or disinfectant is left on the surface.

(9) Avoid purchasing devices with antimicrobial claims

The USEPA does not have the authority to regulate antimicrobial devices, as they do for chemical antimicrobial pesticides such as those currently recommended by the Task Force.[23] Therefore, manufacturers of devices are not required to submit data to the USEPA verifying their antimicrobial claims, and devices are not issued USEPA registration numbers or labels. Additionally, since antimicrobial devices are new to the market, they may not have been completely tested for safety. Therefore, avoiding devices altogether is prudent until they are regulated.

Tip #9 Take time to understand the limitations of infection control regulations and guidelines

Oversight agencies may have incompatible health and safety assurance protocols, or use incorrect information to set their standards. Be prepared to do the collaborative work that will win over these agencies as project allies.

Environment Rating Scales not in accordance with USEPA product registration

Widely-used Environment Rating Scales criteria are not in accordance with USEPA product registration labels for bleach, although their revision is being considered. The Environment Rating Scales used at the beginning of the Task Force project incorrectly told quality assessors to use 10 seconds as the benchmark for effective disinfecting and sanitizing of required surfaces with bleach. This contradicted the much longer surface contact dwell times required by bleach manufacturers' USEPA registration labels. After contacting the University of North Carolina academics who publish several internationally used Environment Rating Scales, the Task Force was informed that they would change this recommendation to reflect the required dwell time for bleach. Before that change happens, the Environment Rating Scales Institute may address this issue in upcoming Additional Notes for Clarification. Additionally, in September, they had stated that USEPA-approved sanitizers and disinfectants can be used in the place of bleach, and must be used according to their label.[22-22c]

Independent quality assessment organizations using any of the published Environment Rating Scales [Early Childhood Environment Rating Scale (ECERS), Infant/Toddler Environment Rating Scale (ITERS), and Family Child Care Environment Rating Scale (FCCERS)] should provide training for their analysts, observers, and coaches in order to disseminate the correct information when providing on-site coaching, training, or feedback for child care workers.

CCL disseminates information not in accordance with Title 22 Regulations

The role of a county's "Evaluator" may include providing training for orienting providers (center and home-based), answering providers' questions when assigned to the support desk, and performing onsite evaluations. During provider orientation, Task Force staff observed that evaluators provided incorrect information with regard to mandated disinfectants, proper dilution of bleach, and areas to sanitize and disinfect. According to Community Care Licensing Division's Title 22 Regulations, "*Commercial disinfecting solutions, including one-step cleaning/disinfecting solutions, may be used in accordance with label directions.*"[10] Therefore, the use of a webinar or supplemental guide for evaluators containing information on areas to sanitize and disinfect as well as alternative, bleach-free products may be useful. Additionally, since the CCL regulations specify the use of bleach, the supplemental guide should highlight the proper way to dilute and use bleach in order to prevent accidents or misuse of bleach that can be hazardous to the workers and children served.

Lack of USEPA oversight for antimicrobial devices

Because the IonatorEXP™ is a device rather than an antimicrobial pesticide, its efficacy claims are not regulated by the USEPA. Device manufacturers are required only to have an establishment number from the USEPA indicating the place or facility where the device is produced, and to make only antimicrobial claims that are not "false or misleading" (i.e., claims they can substantiate). Refer to the USEPA's Pesticide Registration Manual: Chapter 13 – Devices, section 40 CFR 156.10(a)(5).[22]

USEPA Antimicrobial Testing Program evaluation occurs post-registration

The USEPA registration process for antimicrobial pesticides includes, but is not limited to, the submittal of product-specific effectiveness data by the manufacturer to the USEPA. The Agency then reviews all requirements for the product's registration and if those requirements are met, the USEPA issues an EPA registration number ("EPA Reg#").[3]

After product registration, the USEPA's Antimicrobial Testing Program (ATP) tests only hospital-level disinfectants to ensure that efficacy standards are met. The USEPA's ATP evaluates antimicrobial effectiveness by way of the USEPA, rather than the manufacturer, testing the efficacy of registered hospital-level disinfectants against the following bacteria: *Staphylococcus aureus* and *Pseudomonas aeruginos,* and *Mycobacterium bovis* BCG (if the product is registered as effective against tuberculosis). At this time, the program does not test to validate other bacteria than those specified above, and the program does not test to validate virucidal claims.[24]

On May 9, 2012, the USEPA posted an ATP status table of approximately 800 EPA-registered hospital-level disinfectants and 150 tuberculocides that have been tested. If a product does not meet post-registration efficacy standards under the ATP, the USEPA may take any of the following actions: request that the manufacturer relabel their product, ask the manufacturer to voluntary cancel product registration, or initiate "removal of the product from the market place (e.g., stop sale orders)". For disinfectants with the status "Agency Taking Action", the Agency is considering the best course of action and whether the disinfectant requires further testing or review, or the Agency's initiation of regulatory/enforcement action.[25]

The Agency is in the process of updating the ATP website and anticipates having the updated version of the status table available to the public in 2013. Additionally, the Agency is currently conducting a pilot program that is focused on food contact sanitizers.[26]

Tip #10 Prepare to solve barriers to implementation

In the course of dissemination, project staff realized that the various types of child care facilities have distinct support needs when implementing bleach-free disinfection and encouraging sustainability of best practices. In order to provide the appropriate support for large center-based child care, consortia of center-based child care, school district Early Education Department centers, and home-based family child care providers, the Task Force suggests considering creating a program plan or strategy to help address potential obstacles in advance.

Center-based child care

Justification of cost for governing boards

Large center-based child care, or centers that are part of a consortium, have the infrastructure in place to provide on-site support for staff. However, these centers may have a Board that reviews the center's budget. The Board may ask for justification of the increased annual cost. The Task Force asked the Director of the Pediatric Environmental Health Specialty Unit of the University of California, San Francisco to write a letter in support of reducing bleach in child care. Additionally, centers may use studies the AOEC reviewed to support the classification of bleach as an asthmagen.[27-29, Appendix H]

Cost planning

State and City subsidized center-based child care consortia may view the upfront cost of purchasing a supply of sanitizer and disinfectant for the whole consortium as a barrier to implementation. As experienced during dissemination, consortia typically would not buy in to the increased cost, and would choose to continue bleach use. However, centers that were independently able to transition to a bleach-free consortium, including the San Francisco Unified School District (SFUSD) Early Education Department (EED) Program, reviewed and utilized existing funds at the end of the fiscal year to purchase a starter supply of sanitizers and disinfectants. Based on the amount of product used from the starter supply, they either created a financial plan that allocated funds towards the new sanitizer/disinfectant in the new fiscal year, or they placed large bulk orders intended to last one year.

Group purchasing

Group purchasing or ordering in bulk will be more cost-effective. Another cost to keep in mind when purchasing orders is shipping, which is often free or reduced with large orders. When placing larger orders, having a plan for storage and distribution would allow for a more efficient system as well as a method to track product use. This will help center/school staff with procuring products, and this would benefit managerial staff in budgeting for the next year or the next order.

Home-based family child care providers

On-site support

Home-based family child care providers often had the motivation and the means to buy-in to the bleach-free system. Since the providers work in their homes, they are invested in maintaining a safe work/home environment. Home-based providers have the benefit of less confined spaces and increased airflow compared to center-based facilities. Implementation and sustainability of best practices increases in a home-based setting due to the smaller numbers

of staff, less turnover, and the mentoring system that providers use for support and coaching. However, provision of on-site support for project staff was more challenging since most providers attended training in a larger group setting and rely on their support networks rather than outside trainers.

Communication

Communication was another challenge for project staff since most home-based providers were monolingual in Spanish or Cantonese. Their preferred form of communication was by word of mouth within neighborhood networks or within ethnic groups. This posed a challenge for outreach prior to training. Outreach capacity improved upon distribution of linguistically appropriate outreach flyers with specific information stating a) the bleach-free sanitizer is acceptable by both CCL and Quality Assessors, and b) a starter supply of the sanitizer would be provided as a donation to their child care for having attended training. Outreach also expanded by finding a mentor/leader in a neighborhood network or ethnic group, who had already attended an initial training, and approaching them for help.

During training, monolingual providers expressed hesitation to order online from different vendors or having to order over the telephone. Project staff encouraged group purchasing (see below) to decrease cost, and to identify and encourage providers who felt more comfortable ordering online/over the telephone on behalf of the group.

Group purchasing

Given the neighborhood networks or ethnic group support systems for family child care providers, there is potential to drive down the cost with group purchasing. Coordination is the key to group purchasing which involves coordinating several providers, collecting fees, ordering from different vendors, determining a location of delivery and interim storage, and informing the group to pick up their products.

School district-based Early Education Department centers

Program plan

As an example of how project implementation could be integrated with a school district-based early education program, here is a description of the Task Force's collaboration with the SFUSD. The SFUSD EED centers already had the space, facilities, and personnel to support the conversion to a bleach-free program (i.e., custodial closet with the correct faucet threading for Alpha-HP®, more storage, staff assigned for cleaning, buildings and grounds). However, the fragmentation of the organization on a larger scale posed as a challenge for informing centers of the Resolution, coordinating purchasing and training, defining purchasing responsibilities, and supplying the centers with the appropriate products, tools, and support.

Having a well-defined program plan that includes a flow chart to illustrate the strategy is highly recommended. The program plan should include personnel responsibilities, purchasing, timeline, and evaluation at regular intervals (to determine if unapproved products are in use, to monitor practices leading to product overuse, and to evaluate if best practices are sustainable). The Task Force also recommends designating personnel to provide onsite coaching to ensure that unapproved products are not in use, and to ensure best practices. This would help provide the essential support to human resources necessary for implementation and sustainability.

Centralize purchasing

Creating a centralized purchasing and distribution system helped standardize individual stand-alone centers in the SFUSD EED Program. Prior to implementation of the Resolution, each stand-alone center purchased their own supplies from various vendors with their own funds. Centralizing purchasing can help reduce cost, creates an easier system for procuring products, and creates a method for tracking expenditures.

Support Special Education classrooms

In California, CCL does not license Special Education classrooms in the EED Department Program. Special Education classrooms fall under the jurisdiction of the California Department of Education. Therefore, although the need for infection control is similar or higher in Special Education classrooms, they may not receive the same services or supplies as general education classrooms in the same school. Special Education teachers may disinfect more often than general education teachers; and since teachers are at a higher risk for developing asthma in educational settings,[30] there may be a greater need in Special Education classrooms for disinfectants that are safer for asthma.

In collaboration with the SFUSD Special Education nurse, the Assistant Superintendent of Special Education Services was informed of the Resolution and the associated need for provision of bleach-free disinfectants. As a result of the Superintendent's advocacy, the Custodial Services Department provided bleach-free disinfectants for all Special Education classrooms and arranged centralized purchasing

Section III. Guidance for Communicable Disease Outbreaks

Tip #11 Learn how early childhood communicable diseases are transmitted

A child in care may be diagnosed with a communicable disease, and the child's parents, guardians or treating physician may report this occurrence to the care provider. If the disease affects enough children or care providers, this might be considered an outbreak situation. In order to control exposure, infection control steps will differ from daily routines. If your site has an outbreak of a communicable disease, you may be told to go back to using bleach. However, Oxivir® Tb is USEPA-registered for killing all of the same agents that cause some diseases of concern in child care (listed in Table 7) as 6.15% bleach, with the exception of Hepatitis A. Table 7 gives the surface contact dwell time required by Oxivir® Tb and by 6.15% bleach for each of these communicable diseases.

Each communicable disease and infection has a well-established mode of transmission from one individual to another; see Table 5 below. Exposure control involves various practices. Frequent hand washing that is performed properly is one of the most important ways to stop the spread of infection.[31] *See Appendix E for hand washing placard.* For example, proper hand washing can help stop the spread of infections that are transmitted via the fecal-oral route, such as norovirus. The fecal-oral route is the "spread of microorganisms from the infected stool of one person into the mouth of another".[32] This may occur by ingestion of food or drink that have been contaminated by fecal matter or by hand-to-mouth transmission after contact with items contaminated with infectious fecal matter.

Other practices that help control exposure include spatial separation, limiting person-to-person contact, and practicing cough and sneeze etiquette. Additionally, proper food handling (per the California Health and Safety Code: Part 7 – California Retail Food Code[33]), proper sanitizing of food contact surfaces and proper disinfecting help control indirect transmission.

As stated above, during an outbreak, hard nonporous surfaces require disinfection that is different from routine disinfecting. Depending on the product, disinfection may require longer surface contact dwell time or stronger dilutions in order to effectively control the spread of diseases that occur through indirect transmission (i.e., skin-to-surface contact). This type of transmission occurs by touching inanimate surfaces such as toys, tables, food contact surfaces, soiled clothes or bedding, or eating utensils that have been contaminated with infectious body fluids. A disinfectant's label indicates the proper instructions if the product is registered with the USEPA as effective against the disease of concern.

Disease transmission pathways for three early childhood communicable diseases of concern, Pertussis (Whooping Cough), Norovirus and Hand, Foot, and Mouth Disease, are illustrated in this section. San Francisco 2010 disease statistics are provided as a reference as how likely these diseases may occur in the child care-age population.

Table 5. Examples of modes of transmission of infectious diseases in child care [d,20, 34]

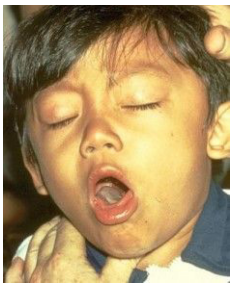
Transmission	Mode	How does transmission happen?
Airborne	Inhalation of microbial aerosols (i.e., infectious particles)	Person-to-person proximity and proximity of the breathing zone
Direct	Contact (skin-to-skin)	• Contact with infectious body fluids - through breaks in the skin such as open cuts, sores, rashes - through mucus membranes (located in the eyes, nose, and mouth); includes droplet spray from sneezing, coughing, speaking, spitting • In child care, risk factors include biting, frequent scratching, generalized dermatitis, and persons with bleeding problems (note that staff with bloodborne infections, especially those with open wounds or lesions, should seek medical advice on when it is safe to return to work)
	Ingestion (foodborne)	Eating infected food
Indirect	Contact (skin-to-skin)	Touching inanimate surfaces (e.g., toys, tables, soiled clothes or bedding, eating utensils or food contact surfaces) contaminated with infectious body fluids
	Fecal-oral	• Hand-to-mouth activity after contact with items contaminated with infectious fecal matter • Ingestion of food or drink contaminated with infectious fecal matter

Disease transmission illustrated by three early childhood communicable diseases of concern: Pertussis (Whooping Cough), Norovirus and Hand, Foot, and Mouth Disease

(San Francisco 2010 statistics used as example)

A. Pertussis ("Whooping Cough"): 23 cases children four years of age or younger in SF in 2010.

All adults working in infant care settings should receive a pertussis vaccination in order to protect the infants in their care (also known as "cocooning").[e]



Source: Centers for Disease Control and Prevention

Between Jan. – Oct. 2010, there was an epidemic of pertussis where 9,156 cases with onset in 2010 were reported in the state of California. This was the highest number of reported cases in over 60 years. Of these cases, 455 infants under the age of three months were hospitalized and 10 infants died. As a result, the State Health Department partnered with local health departments and providers to implement disease control strategies, release informational alerts, and offer free vaccination. Since that time, the rates of pertussis have declined and 289 known hospitalized infants under three months with no deaths have occurred.[35]

Infants six months old or younger have immature immune systems and are at the greatest risk for becoming infected with pertussis. They have more severe complications from the illness, including death. Pertussis is a highly contagious respiratory illness caused by infection with the bacteria *Bordetella pertussis* that causes cold-like symptoms. Symptoms may include a runny nose, low-grade fever, mild or severe coughing which can last for

d. The AAP recommends practicing standard precautions to help prevent transmission. Standard precautions as described by the AAP include the following: PPE use (especially the use of gloves to clean up accidents involving body fluids), absorb blood or body fluids containing blood with disposable paper towels, disinfect with bleach or appropriate USEPA-approved disinfectant, avoid contact with breaks in the skin, hand hygiene, and proper disposal of contaminated material.

e. When workers are vaccinated, they are less like to spread Whooping cough to infants in care. Instead, they surround the baby with a "cocoon" of protection until the infants receive all of their vaccinations. Immunization Action Coalition http://www.immunize.org/catg.d/p4039.pdf

weeks (the coughing symptoms may vary depending on the age of the child), coughing fits followed by a "whooping" sound as the child tries to inhale, and apnea (a pause in breathing patterns) in infants. Infected persons might also experience vomiting and lethargy as a result of severe coughing. Serious complications may occur in infants and young children, especially children who have not been fully vaccinated; they include pneumonia, convulsions, encephalopathy, and death.[36-38]

Pertussis is transmitted by close contact with a person who has been infected. A person can become infected through inhalation of the bacteria that is contained in the "wet drops" released upon coughing, sneezing, or talking (person-to-person transmission).[39] Avoiding close contact, monitoring contact between children, ensuring spatial separation of cots or beds (at least three feet apart), exclusion of children or child care workers suspected of having pertussis, notification of parents regarding the situation (if necessary), and medical examination (of children and workers suspected of having pertussis) are recommended.[20,40]

Neither 6.15% bleach nor Oxivir® Tb has provided testing data to the USEPA to add *Bordetella pertussis*, the bacteria that causes pertussis, to its registration label.

B. Norovirus: Two suspected outbreaks and one confirmed outbreak in San Francisco child care in 2010 (116 cases children four years of age or younger were reported)

There has been one occurrence of a norovirus outbreak at a SF high school (St. Ignatius College Preparatory High School) in the last year. Illness onsets began on January 30, 2012 and within four days, the virus had affected more than 400 students and 30 teachers. The outbreak was investigated by the San Francisco Department of Public Health Communicable Disease Control & Prevention (SFDPH CDCP). The school was closed for one week and was disinfected with bleach.[41]

In 2010, two suspected norovirus outbreaks occurred in preschool type settings and one occurred in a daycare setting.[42] Altogether, 116 children were reported to have been affected by norovirus at that time. Although norovirus is not on the list of reportable infectious diseases, norovirus is a concern in child care settings since it can spread quickly and is a serious illness for young children. Therefore, when children or staff experience vomiting and/or diarrhea, infection control measures should be initiated immediately in order to limit transmission. Norovirus illness is a viral infection that causes inflammation of the stomach and/or intestines (also known as "acute gastroenteritis"), which leads to stomach pain, nausea, diarrhea, and vomiting. The viruses that cause norovirus include norwalk-like viruses, caliciviruses, and small round structured viruses.[42,43]

Norovirus is highly contagious and is transmitted through contact with infected persons, inhalation of wet droplets from vomiting, ingestion of food or water contaminated with norovirus, or touching surfaces contaminated with vomit or stool (fecal-oral) followed by putting hands or fingers in the mouth.[42] Since norovirus can live on inanimate surfaces for up to approximately seven days,[44,45] body fluid spills involving vomit and diarrhea require pre-cleaning and disinfecting.

In addition to frequent hand washing, centers should limit person-to-person contact, ensure spatial separation of cots or beds (at least three feet apart),[20] use personal protective equipment, and disinfect contaminated surfaces to help prevent the spread of infection. Bleach (6.15%) or a USEPA-approved disinfectant (i.e., Oxivir® Tb) for norovirus should be used during an outbreak (refer to the USEPA's Office of Pesticide Programs "List G: EPA's Registered Antimicrobial Products Effective Against Norovirus (Norwalk-like virus)" January 9, 2009).[46]

Oxivir® Tb and 6.15 % bleach have both provided testing data to the USEPA to add the virus that causes Norovirus to their product label. Oxivir® Tb requires a one-minute surface contact dwell time whereas a dilution using 6.15%

bleach requires a dwell time of five minutes. However, at this time, the San Francisco Department of Public Health Communicable Disease Control and Prevention section is not willing to accept other disinfectants than bleach in response to norovirus. Note that 5.25% and 6.0% bleach are not registered with the USEPA as effective against norovirus. Per the USEPA registration for 6.15% bleach, a center would use the following instructions to disinfect surfaces contaminated with norovirus:

- Using the appropriate PPE, dilute 6.15% bleach: 2 oz. (4 Tablespoons) of bleach to one quart (32 oz.) of water (1:16 dilution)
- Pre-clean the surface using soapy water
- Spray the diluted bleach on the surface
- Leave the surface wet with bleach solution for 5 minutes, and
- Rinse the surface.

For the most up-to-date information about disinfecting recommendations please visit your city's communicable disease program.

Source: Centers for Disease Control and Prevention

C. Hand, Foot, and Mouth Disease (has been known to occur in SF child care settings)

Hand, Foot, and Mouth Disease (HFMD) is another disease that is of concern in child care settings since it affects mostly infants and young children and is very contagious. HFMD is a viral illness caused by a class of viruses called enteroviruses; more specially, Coxsackievirus A16 (the most common cause of HFMD) and Enterovirus 71 (the type associated with HFMD outbreaks).

HFMD causes fever, loss of appetite, lethargy, sore throat, sores in the back of the mouth, inside of cheeks, gums and tongue that may become blisters, and skin rash with raised or flat spots commonly found on the palms of hands and soles of feet (but may affect other areas of the body such as knees, elbows, buttocks or genital area). On very rare occasions, HFMD complications may include temporary fingernail and toenail loss, viral meningitis (headache, stiff neck, and fever), or encephalitis (swelling of the brain) that may become fatal if severe.[47]

HFMD is transmitted by touching contaminated surfaces or through direct contact with saliva, sputum, nasal mucus, fluid from blisters, and stool of infected persons. Although an infected person is most contagious during the first week, the virus can remain in a person's body for weeks after symptoms have gone away. Therefore, a person is still infectious to others for weeks after they are asymptomatic. Since Coxsackie virus can live on inanimate surfaces for days,[48] similar precautions taken for norovirus including frequent hand washing, limiting person-to-person contact, using personal protective equipment, and disinfecting contaminated surfaces (including toys) help prevent the spread of infection.[34] Exclusion of infected children is recommended, until they no longer have a fever and their mouth sores have healed.[47]

Neither 6.15% bleach nor Oxivir® Tb has provided testing data to the USEPA to add the Coxsackie virus (that causes HFMD) to its registration label. At this time, only 14 disinfectants are registered with the USEPA as effective against Coxsackie virus. *See Table 6 on the following page.*

Each of these 14 registered disinfectants approved for Coxsackie virus contain an active ingredient that is considered a respiratory irritant or that causes asthma. Therefore, the Task Force is not able to recommend one of these products as being safer for asthma. *See Websites section on page 46 for information on accessing this list.*

Table 6. Disinfectants registered with the USEPA as effective against Coxsackie virus

EPA Reg#	Name of product (note that the name listed may be the USEPA registered product name)	Active ingredient of concern for asthma
777-99	Professional Lysol® Brand III Disinfectant Spray	Quaternary ammonium compound
777-105	Lysol® Brand IV I.C. Disinfectant	Quaternary ammonium compound
1677-216	Exspor Base Concentrate	Bleach
5813-21	Clorox® Clean-Up Cleaner with Bleach-Old Product	Bleach
5813-97	Brac	Quaternary ammonium compound
67619-17	Clorox Commercial Solutions® Clorox® Clean-Up® Disinfectant Cleaner with Bleach	Bleach
67619-21	Clorox Commercial Solutions® Clorox® Disinfecting Spray	Quaternary ammonium compound
6659-3	Spray Nine Multi-Purpose Cleaner/Degreaser	Quaternary ammonium compound
9804-1	BioVex® BioCide	Bleach
10088-105	Decident Disposable Disinfectant Sleeve	Phenylphenol
55195-3	Coldcide 0.25%	Phenylphenol, glutaraldehyde
55195-4	Coldcide 0.25% Disinfecting Wipes	Phenylphenol, glutaraldehyde
56392-2	Citrace® Hospital Germicide	Phenylphenol
70369-1	Microstat 2 Disinfectant	Releases chlorine

Tip #12 Compare 6.15% bleach and Oxivir® Tb effectiveness against specific communicable diseases

Searching USEPA antimicrobial website

Manufacturers of antimicrobial disinfectants submit mandatory test data, for specific bacteria, to the USEPA for product registration. The public can use USEPA's website to access each individual product's label listing the substantiated claims.

In addition, manufacturers of antimicrobial disinfectants voluntarily submit additional tests for registration against certain human public health bacteria and viruses. The USEPA has provided a public look-up website for selected communicable disease agents, showing which products have tested effective against that disease agent. *See Websites section for more information.* Antimicrobials should be used according to the product label in order to disinfect effectively since surface contact dwell time will vary from routine use. *See Table 7 for more information on USEPA-registered disinfectants approved for specific communicable diseases.*

Mandatory Communicable Disease reporting

All health care providers in the state of California are mandated by Title 17, California Code of Regulations to report to their local health authority[49] the occurrence of specific diseases and other conditions (such as those characterized by lapses of consciousness and pesticide-related illness or injury).[50] This allows for public health agencies to identify, prevent, and control infectious diseases in a timely manner; and to plan and evaluate disease prevention and control programs. To this end, nationwide (United States Department of Health and Human Services, Centers for Disease Control and Prevention, CDC) and statewide (California Department of Public Health's Division of Communicable Disease Control) agencies[51] provide information for communicable, infectious, and chronic diseases. Information includes signs and symptoms, transmission, diagnosis and treatment, prevention, and other resources. For more information on reportable diseases and conditions, visit the communicable disease control website of your local jurisdiction. Although a disease or condition may not be specified on a county's list of reportable diseases, this means that individual cases are not reportable, but outbreaks of any disease are reportable.

In San Francisco, treating clinicians are mandated to report the occurrence of specific infectious diseases and conditions to the Department of Public Health Communicable Disease Control and Prevention (SFDPH CDCP). **Table 7** on the following page cites data captured by SFDPH CDCP for children four years of age or younger as an example of disease frequency, and compares the effectiveness of 6.15% bleach and Oxivir® Tb in the following categories:

- **Reportable** communicable diseases
- **Non-reportable** communicable diseases, and
- **Reportable** diseases not typically reported for this demographic.

Table 7. Communicable diseases of concern in child care and the comparison of Oxivir® Tb and 6.15% bleach USEPA registration labels (EPA Reg# 70627-56[3a] and EPA Reg# 67619-8[3d], respectively) for effectiveness against the associated microbial organisms.

Communicable diseases in child care with the associated modes of transmission, symptoms to observe, and recommendations for controlling exposure. Purple shading indicates the disease where Oxivir® Tb and 6.15% bleach differ in whether they are USEPA-registered as effective in killing the microorganism associated with that disease. For this comparison, 6.15% bleach is used since 5.25% and 6.0% bleach are not registered as effective against norovirus, Hepatitis B and Hepatitis C.

A=American Academy of Pediatrics, B=Centers for Disease Control and Prevention, C= California Department of Public Health, D= SFDPH CDCP

A) Reportable diseases affecting children 4 years of age or younger	# Cases (SF 2010)[b]	Modes of transmission & viability on hard surfaces	Symptoms	USEPA label indicates is effective against specific microbe & required contact time on surface		Infection control recommendations
				Oxivir® Tb	6.15% Bleach	
1. Campylo-bacteriosis (Foodborne bacteria)	33	• Ingestion of contaminated food or drinks • Cross-contamination of surfaces or other food from raw meat	• Diarrhea • Vomiting • Fever • Abdominal pain • Nausea	**No**	**No**	• Frequent hand-washing • Exclude staff with diarrhea from handling food[A]
2. Salmonellosis (Foodborne bacteria)	33	• Fecal-oral • Ingestion of contaminated food or drinks • Handling animals	• Diarrhea • Vomiting (some cases) • Fever • Abdominal cramps • Dehydration	**Yes (1 minute)**	**Yes (5 minutes followed by rinse step)**	• Frequent hand-washing • Oxivir® Tb *or* • 6.15% Bleach: 2 oz. (4 Tablespoons) of bleach to one quart (32 oz.) water (1:16 dilution) • Exclude child with diarrhea or vomiting[A]
3. Pertussis also known as "Whooping Cough" (Airborne bacteria)	23	• Person-to-person contact via inhalation of infected droplets released from talking, sneezing, coughing	• Cold-like symptoms • Runny nose • Low-grade fever • Mild or severe long lasting cough • Coughing fits followed by a "whooping" sound • Vomiting and lethargy (as a result of incessant coughing)	**No**	**No**	• Frequent hand-washing • Vaccination of staff • Exclude child/staff a) If person is receiving treatment, exclude until after 5 days of antibiotic treatment, *or* b) If person is not receiving treatment, exclude for 21 days after cough onset[A,C] • Spatial separation of cots or beds (at least three feet apart)[A]
4. Giardiasis (Parasite)	14	• Fecal-oral • Ingestion of contaminated food or water	• Diarrhea • Abdominal cramps • Nausea • Bloating and gas • Lethargy • Weight loss • Dehydration	**No**	**No**	• Frequent hand-washing • Exclude child/staff with diarrhea • Some child care centers require exclusion until person's stool culture is negative for *Giardia*[C]

Table 7. *(continued)*

A=American Academy of Pediatrics, B=Centers for Disease Control and Prevention, C= California Department of Public Health, D= SFDPH CDCP

A) Reportable diseases affecting children 4 years of age or younger	# Cases (SF 2010)[D]	Modes of transmission & viability on hard surfaces	Symptoms	USEPA label indicates is effective against specific microbe & required contact time on surface		Infection control recommendations
				Oxivir® Tb	6.15% Bleach	
5. Amebiasis (Parasite)	2	• Fecal-oral • Ingestion of contaminated food or water	• Loose stool • Stomach pain • Cramping	**No**	**No**	• Frequent hand-washing • Maintain personal hygiene
6. Shigellosis (Foodborne bacteria)	2	• Fecal-oral • Ingestion of contaminated food or water • Person-to-person contact	• Diarrhea (often bloody) • Fever • Dehydration • Abdominal cramps • May experience very few symptoms	**Yes (1 minute)**	**Yes (5 minutes followed by rinse step)**	• Frequent hand-washing • Oxivir® Tb *or* • 6.15% Bleach: 2 oz. (4 Tablespoons) of bleach to one quart (32 oz.) water (1:16 dilution) • Exclude child/staff with diarrhea until a) At least 24 hours or more after diarrhea stops[A] b) In some states, exclude until two stool cultures are negative for *Shigella* • Eliminate shared water play[A]

B) Non-Reportable diseases affecting children 4 years of age or younger	# Cases (SF 2010)[D]	Modes of transmission & viability on hard surfaces	Symptoms	USEPA label indicates is effective against specific microbe & required contact time on surface		Infection control recommendations
				Oxivir® Tb	6.15% Bleach	
1. Norovirus (Norwalk virus)	116 (two suspected outbreaks and one confirmed outbreak)	• Contact with surfaces contaminated with vomit or stool (fecal-oral) followed by putting hands or fingers in the mouth • Inhalation of airborne infected droplets from vomit • Ingestion of contaminated food or drinks • Person-to-person contact (includes caring for an ill child/adult, sharing eating utensils, or sharing food) • Norovirus can live on inanimate surfaces for up to approximately seven days[46,47]	• Diarrhea • Vomiting • Stomach pain • Nausea	**Yes (1 minute)**	**Yes (5 minutes followed by rinse step)**	• Frequent hand-washing • Oxivir® Tb *or* • 6.15% Bleach: 2 oz. (4 Tablespoons) of bleach to one quart (32 oz.) of water (1:16 dilution) • Exclude child/staff with diarrhea or vomiting • Spatial separation of cots or beds (at least three feet apart)[A]

Table 7. *(continued)*

A=American Academy of Pediatrics, B=Centers for Disease Control and Prevention, C= California Department of Public Health, D= SFDPH CDCP

B) Non-Reportable diseases affecting children 4 years of age or younger	# Cases (SF 2010)[D]	Modes of transmission & viability on hard surfaces	Symptoms	USEPA label indicates is effective against specific microbe & required contact time on surface		Infection control recommendations
				Oxivir® Tb	6.15% Bleach	
2. Hand, Foot & Mouth Disease (Coxsackie virus)		• Direct contact with saliva, sputum, nasal mucus, fluid from blisters, and stool of infected persons • Contact with surfaces contaminated with body fluids of infected persons • Coxsackie virus can live on inanimate surfaces for days[50]	• Sores in the back of the mouth, inside of cheeks, gums • Sore throat • Skin rash with raised or flat spots commonly found on palms of hands and soles of feet but can appear on other areas of the body • Fever • Loss of appetite • Lethargy	**No**	**No**	• Frequent hand-washing • Exclude child a) With fever, and b) Until mouth sores have healed[C]
3. Methicillin-Resistant Staphylococcus Aureus also known as "MRSA" (Bacteria: *Staphylococcus aureus*, also known as "staph")		• Skin-to-skin contact • Contact with an inanimate object or surface that has been contaminated by pus drainage from wounds or lesions of an infected person • MRSA is not passed through the air • MRSA can survive for months on a dry, inanimate surface[48]	• Redness • Warmth • Swelling, and • Tenderness of the skin • Possible fever and/or chills • Boils, blisters, pustules or abscesses may develop	**Yes (1 minute)**	**Yes (5 minutes followed by rinse step)**	• Frequent hand-washing • Oxivir® Tb *or* • 6.15% Bleach: 2 oz. (4 Tablespoons) of bleach to one quart (32 oz.) of water (1:16 dilution) • Cover skin infections • Avoid sharing personal items with the infected staff or child • If lesions cannot be covered, exclude staff or child from activities involving skin-to-skin contact a) Until lesions are healed, *or* b) Until lesions can be covered and contained adequately[D] c) Until return to activities is approved by school official or the treating medical personne[D,C]

Table 7. *(continued)*

A=American Academy of Pediatrics, B=Centers for Disease Control and Prevention, C= California Department of Public Health, D= SFDPH CDCP

B) Reportable diseases not typically reported for children 4 years of age or younger	# Cases (SF 2010)[D]	Modes of transmission & viability on hard surfaces	Symptoms	USEPA label indicates is effective against specific microbe & required contact time on surface		Infection control recommendations
				Oxivir® Tb	6.15% Bleach	
1. Human immunodeficiency virus also known as "HIV" (Virus)		• Person-to-person contact (through a break in the skin/mucus membranes) • Direct contact with blood or other body fluids • HIV cannot live outside of the human body, transmission does not occur from toilets, phones or water fountains[D]	• Immune status verified by blood testing	**Yes (1 minute)**	**Yes (5 minutes followed by rinse step)**	• Frequent hand-washing • Oxivir® Tb *or* • 6.15% Bleach: 2 oz. (4 Tablespoons) of bleach to one quart (32 oz.) of water (1:16 dilution) • Standard precautions[A]
2. Hepatitis A (Virus: Foodborne)		• Fecal-oral • Person-to-person contact • Ingestion of contaminated food or drinks	• Diarrhea • Jaundice • Fever • Dark-colored urine • Light-colored stool • Fatigue • Abdominal pain • Loss of appetite • Nausea • May be asymptomatic	**No**	**Yes (5 minutes followed by rinse step)**	• Frequent hand-washing • 6.15% Bleach: 2 oz. (4 Tablespoons) of bleach to one quart (32 oz.) of water (1:16 dilution) • Exclude child for seven days after illness onset[A] • Exclude staff for two weeks after illness onset[D]
3. Hepatitis B (Virus)		• Person-to-person contact • Direct contact with blood or other body fluids • Hepatitis B virus can survive on inanimate surfaces (and can cause infection) for at least 7 days[B]	• Diarrhea • Jaundice • Fever • Dark-colored urine • Light-colored stool • Fatigue • Abdominal pain • Loss of appetite • Nausea • May be asymptomatic	**Yes (1 minute)**	**Yes (5 Minutes followed by rinse step)**	• Frequent hand-washing • Oxivir® Tb *or* • 6.15% Bleach: 2 oz. (4 Tablespoons) of bleach to one quart (32 oz.) of water (1:16 dilution) • Limit potential saliva contamination of surfaces • Standard precautions[A]
4. Hepatitis C (Virus)		• Person-to-person contact • Direct contact with blood or other body fluids • Hepatitis C virus can survive on inanimate surfaces (and can cause infection) for at least 16 hours and no longer than 4 days[B]	• Diarrhea • Jaundice • Fever • Dark-colored urine • Light-colored stool • Fatigue • Abdominal pain • Loss of appetite • Nausea • May be asymptomatic	**Yes (1 minute)**	**Yes (5 minutes followed by rinse step)**	• Frequent hand-washing • Oxivir® Tb *or* • 6.15% Bleach: 2 oz. (4 Tablespoons) of bleach to one quart (32 oz.) water (1:16 dilution) • Standard precautions[A]

Table 7. *(continued)*

A=American Academy of Pediatrics, B=Centers for Disease Control and Prevention, C= California Department of Public Health, D= SFDPH CDCP

B) Reportable diseases not typically reported for children 4 years of age or younger	# Cases (SF 2010)[D]	Modes of transmission & viability on hard surfaces	Symptoms	USEPA label indicates is effective against specific microbe & required contact time on surface		Infection control recommendations
				Oxivir® Tb	6.15% Bleach	
5. Tuberculosis also known as "TB" (Bacteria: *Mycobacterium tuberculosis*)		• Person-to-person contact via inhalation of infected airborne droplets released from talking, sneezing, coughing • TB can survive in the air for several hours depending on the environment[B]	• Bad cough lasting three weeks or longer • Fever • Coughing up blood or sputum • Chest pain • Lethargy • Weight loss • Loss of appetite • Chills • Night sweat	**Yes (5 minutes)**	**Yes (5 minutes followed by rinse step)**	• Frequent hand-washing • For active TB, exclude child/staff until determined to be non-infectious by medical or health department personnel • Oxivir® Tb *or* • 6.15% Bleach: 3 oz. (6 Tablespoons) of bleach to one quart (32 oz.) water (~1:10 dilution) • Spatial separation of cots or beds (at least three feet apart)[A]

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Websites

Project report and associated material

San Francisco Asthma Task Force site: **www.sfgov.org/asthma**
Regional Asthma Management and Prevention site: **www.rampasthma.org**

United States Environmental Protection Agency pesticide registrations

1) Performance test guidelines

To access the United States Environmental Protection Agency's (USEPA) Office of Chemical Safety and Pollution Prevention's Product performance test guidelines for sanitizers and disinfectants, visit:
http://www.epa.gov/ocspp/pubs/frs/publications/Test_Guidelines/series810.htm

2) Product registrations

To access the United States Environmental Protection Agency's antimicrobial registrations, visit the United States Environmental Protection Agency's *Pesticide Product Labeling System (PPLS),* and search by USEPA registration number ("EPA Reg#"); *see table below for EPA Reg#s* **http://iaspub.epa.gov/apex/pesticides/f?p=PPLS:1**

3) Disinfectants registered against certain public health bacteria and viruses

To access the United States Environmental Protection Agency's lists of *Selected EPA-registered Disinfectants : EPA's Registered Sterilizers, Tuberculocides, and Antimicrobial Products Against Certain Human Public Health Bacteria and Viruses,* visit: **http://www.epa.gov/oppad001/chemregindex.htm**

California Department of Pesticide Regulation pesticide registrations

To access the California Department of Pesticide Regulations' (CDPR) antimicrobial registration information, visit the Pesticide Products by California Registration Number: Pesticide Products by California Registration Number, and search by EPA Reg#; *see table above for EPA Reg#s.* **http://www.cdpr.ca.gov/docs/label/epanum.htm**

United States Environmental Protection Agency and California Department of Pesticide Regulation registration numbers for Task Force recommended sanitizers and disinfectants

Name of antimicrobial	EPA Reg#	CDPR Registration Number
Oxivir® Tb	70627-56	70627- 56-AA
SaniDate®	70299-9	70299- 9-AA
Alpha-HP® Multi-Surface Disinfectant Cleaner	70627- 62	70627- 62-AA

California Occupational Safety & Health Administration (Cal/OSHA)

To access information from the California Department of Industrial Relations – Division of Occupational Safety and Health – on Hazards Communication training, see the "Guide to the California Hazard Communication Regulation" at **http://www.dir.ca.gov/dosh/dosh_publications/HazCom.pdf**

To access information from the California Department of Industrial Relations – Division of Occupational Safety and Health – on exposure control, see the "Exposure Control Plan for Bloodborne Pathogens" at **http://www.dir.ca.gov/dosh/dosh_publications/expplan2.pdf**

Occupational Safety & Health Administration's factsheets

To access the United States Department of Labor, Occupational Safety & Health Administration's (OSHA) factsheets and quick guides, visit **http://www.osha.gov/pls/publications/publication.html** Factsheets for "Cleaning Chemicals: Protect Yourself – Cleaning Chemicals and Your Health Poster" and Bloodborne Pathogens are available.

Association of Occupational and Environmental Clinics: Exposure Code List

The Association of Occupational and Environmental Clinics (AOEC) maintains an Exposure Code List of chemical substances, materials, and physical hazards. The AOEC has an asthmagen designation for asthma-causing substances and materials. This list of asthmagens (AOEC Exposure Code List, Display All Asthmagens), which is updated on a regular basis, can be found by accessing their Exposure Code Lookup at **www.aoecdata.org/ExpCodeLookup.aspx**

Communicable diseases

San Francisco Department of Public Health, Communicable Disease Control and Prevention
Main web page: **www.sfcdcp.org**
Annual reports of communicable diseases in San Francisco: **www.sfcdcp.org/publications.html**

California Department of Public Health, Division of Communicable Disease Control
Disease index: **www.cdph.ca.gov/HealthInfo/discond/Pages/default.aspx**

United States Department of Health and Human Services, Centers for Disease Control and Prevention
Diseases and conditions: **www.cdc.gov/DiseasesConditions**

Disinfectants registered with the United States Environmental Protection Agency as effective against Coxsackie virus (the virus that causes Hand, Foot, and Mouth Disease)

Pesticide Action Network (PAN) Pesticide Database (maintained by Pesticide Action Network North America)
Pesticide Product Search page: **http://pesticideinfo.org/Search_Products.jsp**
Type "coxsackie" in the "Pest" box at the bottom of the page

Appendices

Appendix A. Vendors and Costs (Sept. 2012 price quotes)

Product	Predominant Use	Approximate Quantity Used per Month[f]	Ordering Information[g]	Product Number (Item #)	Bottles per Case	Cost per Case ($) May not include S&H	Cost per Qt ($)
Oxivir® TB Sold as 946mL/ 1 US Qt 	Classroom Use • Diaper Changing Tables • Sinks • Toilets • Activity Tables	2 Qt. Oxivir® Tb per infant/toddler room per month	Quill.com www.quill.com 1-800-982-3400	901-4277285	12 x 1Qt.	54	4.50
			Office Max www.officemax.com 1-800-283-7674	23380707	12 x 1Qt.	56	4.67
			Waxie Sanitary Supp. www.waxie.com 1-800-995-4466	4277285	12 x 1Qt.	80	6.67
SaniDate® RTU Hard Surface Sanitizer Sold as 946mL/ 1 US Qt 	Classroom Use • Food Contact Surfaces • Non-mouthed Toys	1 - 2.5 Qt. SaniDate® per month	EnviroSelects, LLC www.enviroselects.com 1-877-358-1299	2018-32	12 x 1Qt	90	7.50
						Pallets[h] Partial 72 Full 67	Pallets[h] Partial 6.00 Full 5.58
SaniDate® RTU Hard Surface Sanitizer, Refills Sold as 1 Gal		1 - 1.5 Gal. per month		2017-1	4 x 1Gal.	96	6.00
						Pallets[h] Partial 71 Full 63	Pallets[h] Partial 4.44 Full 3.94
Alpha-HP® Multi-Surface Disinfectant Cleaner, RTD Sold as 1.5L 	Custodial Use Infant/Toddler Rooms • Floors • Sinks • Toilets	1.5 L Alpha-HP® produces[i] • 25 diluted gallons at 1:64 • 50 diluted gallons at 1:128 • 75 diluted gallons at 1:256	www.waxie.com 1-800-995-4466	328077	2 x 1.5L	83	0.83 Using 1:64 dilution
Alpha-HP® Multi-Surface Cleaner, RTD Sold as 1.5L 				328121		81	0.28 Using 1:256 dilution

f. The volumes of products used are approximations based on measurements taken by Task Force staff. Use may vary depending surface size, number of children served (i.e., children using diapers), and # hours/week the site is operating.
g. The vendors listed serve the San Francisco Bay Area, and may not apply to all locations.
h. Reduced cost for purchasing pallets: **Partial pallet** – 2 cases spray bottles ($72/ea or $6/Qt), 3 cases refills ($71/ea or $4.44/Qt), total= $355 (includes S&H); **Full pallet** – 8 cases spray bottles ($67/ea or $5.58/Qt), 24 cases refills ($63/ea or $3.94/Qt), total= $2030 (includes S&H). Prices are subject to change.
i. The average custodial mop bucket and wringer system (on wheels) holds between 6.5-8.75 Gallons.

Appendix B. Inventory and Site Observation Checklists

Inventory Checklist	
Are sanitizers and disinfectants stored out of the reach of children?	❑ Yes ❑ No
Where are the sanitizers and disinfectants stored?	❑ Closet ❑ Kitchen ❑ Bathroom ❑ Office ❑ Classroom
How many sanitizers and disinfectants are used in the center?	
When in storage, are the disinfectants capped properly?	❑ Yes ❑ No
Are the disinfectants stacked on top of each other?	❑ Yes ❑ No
Are the disinfectants stored in secondary containment?	❑ Yes ❑ No
Are more than one sanitizer and one disinfectant used in the classrooms? Why?	❑ Yes ❑ No
Is there a list of specified products for use in the center?	❑ Yes ❑ No
Are different products used in different classrooms?	❑ Yes ❑ No
Do the sanitizer/disinfectants or other products used by the center contain any of the following ingredients?	❑ Quaternary ammonium compounds Including alkyl dimethyl benzyl ammonium chloride and didecyl dimethyl benzyl ammonium chlorides or have names sounding like: ❑ Benzalkonium chloride ❑ Benzyl-C10-16-alkyldimethyl, chlorides ❑ Dodecyl-dimethyl-benzyl ammonium chloride ❑ Lauryl dimethyl benzyl ammonium chloride ❑ Benzyl-C12-18-alkyldimethyl, chlorides ❑ Benzyl-C12-16-alkyldimethyl, chlorides ❑ Benzyl-C16-18-alkyldimethyl, chlorides ❑ Ethylene glycol butyl ether (2-butoxyethanol) ❑ Triclosan/triclocarban
Does the center have any of the following?	❑ Air freshener ❑ Deodorizing sprays ❑ Plug-ins ❑ Oil diffusers ❑ Solid air fresheners ❑ Pesticides (ant/roach sprays) ❑ Antibacterial soap ❑ Additional general cleaners besides soapy water
Notes:	
Does the sanitizer/disinfectant require dilution?	❑ Yes ❑ No
Is dilution required daily?	❑ Yes ❑ No
If not, what is the shelf-life of diluted product?	
How do the staff members know when to replace the diluted product?	

Appendix B. Inventory and Site Observation Checklists
(continued)

Inventory Checklist *(continued)*	
Is dilution performed with PPE and according to instructions?	❑ Yes ❑ No
Notes:	
Is there a stock of Personal Protective Equipment (PPE)?	❑ Yes ❑ No
What PPE is used?	❑ Gloves ❑ Eye protection ❑ Mask ❑ Apron
Does the center have an Emergency eye wash station?	❑ Yes ❑ No
Is the infection control material contained in one binder in a known location?	❑ Yes ❑ No
Does the center have an exposure control plan for outbreak situations?	❑ Yes ❑ No
Notes:	
Are the spray bottles old?	❑ Yes ❑ No
Do the nozzles spray properly?	❑ Yes ❑ No
Does the center need to replace the spray bottles currently in use?	❑ Yes ❑ No
Are distinct bottles designated for cleaning, sanitizing, disinfecting vs. those used for water play?	Sanitizing ❑ Yes ❑ No Disinfecting ❑ Yes ❑ No
If using different products, does the center recycle spray bottles to use with both products?	❑ Yes ❑ No
Are the bottles labels appropriately (i.e. with a label stating the contents)?	❑ Yes ❑ No
Notes:	
Is the airflow in the bathroom/classroom adequate?	❑ Yes ❑ No
Are windows and doors open when cleaning if safe to do so?	❑ Yes ❑ No
Is the HVAC system maintained?	❑ Yes ❑ No
Are there lingering odors in the air?	❑ Yes ❑ No

Appendix B. Inventory and Site Observation Checklists
(continued)

Site Observation Checklist	
Does the staff dilute or mix products?	❑ Yes ❑ No
Where are the children with respect to areas being sanitized/disinfected?	❑ Yes ❑ No
Is a pre-clean step performed?	❑ Yes ❑ No
Are the sanitizers and disinfectants used according to their label?	❑ Yes ❑ No
Are staff wearing the appropriate PPE?	❑ Yes ❑ No
Are staff keeping a safe distance while diluting/spraying products? (i.e., are the staff spraying at eye level or close to their face?)	❑ Yes ❑ No
Is the surface wet with sanitizer/disinfectant as specified on the label?	❑ Yes ❑ No
Is the surface completely dry when the children enter the room?	❑ Yes ❑ No
What system is used to properly dilute concentrated product to sanitizing level?	❑ Closed dilution system ❑ Tablespoon/Teaspoon ❑ Measuring cup ❑ "Eyeball" method
Notes:	
Is the MSDS for each sanitizer and disinfectant in a known location?	❑ Yes ❑ No
Are staff knowledgeable about the hazards associated with the products in use?	❑ Yes ❑ No
Does the center have instructional placards for sanitizing and disinfecting in the area of use?	❑ Yes ❑ No
Are there too many instructional placards on the wall?	❑ Yes ❑ No
Is the information on the placards outdated?	❑ Yes ❑ No
Are the instructional placards easy to understand?	❑ Yes ❑ No
Do the placards support the languages spoken by the staff?	❑ Yes ❑ No
Were the children in another area when the disinfecting process was performed?	❑ Yes ❑ No
Areas disinfected:	❑ Diaper changing table ❑ Potty training chairs ❑ Toilets ❑ Sinks ❑ Activity tables ❑ Toys ❑ Other
Was the surface pre-cleaned?	❑ Yes ❑ No

Appendix B. Inventory and Site Observation Checklists
(continued)

Site Observation Checklist *(continued)*	
Was the solution sprayed away from the breathing zone?	❑ Yes ❑ No
Did the surface remain wet with disinfecting solution for the correct dwell time specified on the label?	❑ Yes ❑ No
How was dwell time measured?	❑ Digital timer ❑ Wall clock ❑ Watch ❑ Other
Was the surface rinsed?	❑ Yes ❑ No
What was used to wipe the surface?	❑ Rag/towel ❑ Paper towel ❑ Wipes ❑ Air dry
Were the surfaces wiped dry when children came in contact with them?	❑ Yes ❑ No
Were the children in another area when the disinfecting process was performed?	❑ Yes ❑ No
Areas disinfected:	❑ Diaper changing table ❑ Potty training chairs ❑ Toilets ❑ Sinks ❑ Activity tables ❑ Toys ❑ Other
Was the surface pre-cleaned?	❑ Yes ❑ No
Was the solution sprayed away from the breathing zone?	❑ Yes ❑ No
Did the surface remain wet with disinfecting solution for the correct dwell time specified on the label?	❑ Yes ❑ No
How was dwell time measured?	❑ Digital timer ❑ Wall clock ❑ Watch ❑ Other
Was the surface rinsed?	❑ Yes ❑ No
What was used to wipe the surface?	❑ Rag/towel ❑ Paper towel ❑ Wipes ❑ Air dry
Were the surfaces wiped dry when children came in contact with them?	❑ Yes ❑ No
Notes:	
How often were the meal/snack tables sanitized?	❑ Before every meal ❑ After every meal ❑ After activities
How often was the diaper changing table disinfected?	❑ After every child ❑ Other:
How often was the training chair disinfected?	❑ After every child ❑ Other:
How often was the toilet disinfected?	❑ After every child ❑ Other:

Appendix B. Inventory and Site Observation Checklists
(continued)

Site Observation Checklist *(continued)*	
How often was the sink disinfected?	❑ After tooth-brushing ❑ After toileting ❑ Other:
Other surfaces: Mouthed toys with hard surfaces Activity tables	Disinfecting frequency: ❑ Daily ❑ Weekly ❑ Monthly ❑ Daily ❑ Weekly ❑ Monthly
Soft toys Cots	❑ Daily ❑ Weekly ❑ Monthly ❑ Daily ❑ Weekly ❑ Monthly
Notes:	
Was disposable paper used on the diaper changing table?	❑ Yes ❑ No
Was the diaper changing table disinfected even though disposable paper was used?	❑ Yes ❑ No
Was the toileting process monitored to detect bodily fluid spills that require disinfecting?	❑ Yes ❑ No
Were mouthed toys separated and placed in a designated labeled container before disinfecting?	❑ Yes ❑ No
Notes:	
Were infection control practices standardized within a classroom?	❑ Yes ❑ No
Were infection control practices standardized among classrooms?	❑ Yes ❑ No
If applicable, are infection control practices standardized among the following: Parents Interns/students Volunteers?	 ❑ Yes ❑ No ❑ Yes ❑ No ❑ Yes ❑ No
Notes:	

Appendix C. Training Outline

All training material can be found in the toolkit – accessible at the websites for the San Francisco Asthma Task Force and Regional Asthma Management and Prevention.

I. Asthma

A. Work-related asthma

B. Childhood asthma

C. Asthma basics

1) Definition of asthma
2) Asthma triggers
3) Signs of asthma

II. Infection control

A. Importance of infection control

B. Products used for infection control in child care (and health impacts)

C. Cleaning, sanitizing and disinfecting

1) Definitions
2) CCL regulations for sanitizing and disinfecting

III. Ways to reduce exposure to sanitizers and disinfectants

A. Information on antimicrobial products and Hazards Communication

1) Product label
2) Material Safety Data Sheets (MSDS)
3) Required Personal Protective Equipment (PPE)

B. Hazards communication and safe work practices

1) Possible hazards associated with products in use
2) Product safety information for chemical products in use
3) *See Tip#4 for safe work practices for recommended products*

C. Sanitizers and disinfectants

1) Area of use for each product
2) How to use each product properly (routine use)
3) Address potential obstacles to meeting CCL requirements

D. What to do in case of an outbreak (exposure control)

1) What disinfectant to use for certain diseases
2) Required PPE
3) Proper disinfection process for each disease
4) Recommendations for controlling exposure such as frequent hand washing, limiting person-to-person contact, limiting sharing of items, ensuring spatial separation, etc.
5) Who to contact in case of a disease occurrence (local health department, medical personnel, parents, etc.)

IV. Demonstration of materials (toolkit)

A. Instructional material

1) Placards
2) MSDS
3) Training material and resources

B. Tools

1) Digital timers
2) Properly labeled spray bottles for soapy water (vs. bottles used for water play)

C. Safety equipment

1) Gloves
2) Protective eyewear
3) Eye wash stations
4) Aprons, smocks

D. Sanitizers and disinfectants: demonstration

1) Area of use for each product
2) How to use each product safely and properly using the tools above

All training material can be found in the toolkit accessible at the websites for the San Francisco Asthma Task Force and Regional Asthma Management and Prevention.

Appendix D. Hand Washing Placard

Proper Hand Washing Helps Stop the Spread of Infection

Wet hands with warm water

Apply non-antibacterial soap

Scrub backs of hands, wrists, between fingers and under fingernails for at least 20 seconds

Continue to scrub while rinsing hands with warm water until the soap and soil are washed away

Dry hands with a clean paper towel

CAREGIVERS SHOULD WASH THEIR HANDS

Upon arriving at work, and

BEFORE & AFTER

- Handling food
  (Includes eating and feeding children)
- Giving medication

AFTER

- Using the bathroom
- Changing a diaper or assisting in toileting
- Wiping their nose or a child's nose, sneezing, or coughing; assisting ill children
- Handling animals
- Taking out the garbage
- Contact with body fluids
- Cleaning, sanitizing, and disinfecting
- Removing gloves

OR IF VISIBLY SOILED

ENSURE THAT CHILDREN WASH THEIR HANDS

Upon arriving at child care, and

BEFORE & AFTER

- Handling food
  (Includes eating)

AFTER

- Using the bathroom or having diapers changed
- Wiping their nose, sneezing, or coughing
- Handling animals
- Being cleaned up after an accident
- Water play or sand play
- Playing outdoors

OR IF VISIBLY SOILED

Appendix E. Body Fluid Spill Placard

DISINFECTING Body Fluid Spills with Oxivir® Tb*

Body Fluid Spills

Blood
Vomit
Diarrhea
Tissue Discharge

Pre-Clean
Remove excess waste then clean the surface with soapy water

Spray the surface with OXIVIR® Tb

Leave surface wet for 1 Minute
(5 Minutes for tuberculosis)

Wipe dry with a clean paper towel

For outbreak situations, please refer your county's communicable disease program.
*Oxivir® Tb is registered with the United States Environmental Protection Agency (USEPA) as **effective against norovirus, HIV, Hepatitis B, and Hepatitis C after the surface remains wet with Oxivir® Tb for one minute; and tuberculosis (TB) after the surface remains wet with Oxivir® Tb for five minutes.**

Personal Protection:

使用 Oxivir® Tb* 消毒受身體內濺出的液體所污染的物件

身體內濺出的液體

血
嘔吐物
腹瀉
組織的排放

先清潔物件的表面
先清除過量從身體內濺出的排洩污垢，然後用肥皂水清潔物件的表面

噴 OXIVIR® Tb 於物件的表面上

讓 OXIVIR® Tb 停留於物件的表面上 1 分鐘
（消除肺结核病毒則需 5 分鐘）

使用清潔的紙巾拭乾

關於出現疫情爆發，請參考閣下縣或市的傳染性疾病計劃的指引。
*Oxivir® Tb於美國環境保護署註冊為有效抵抗諾沃克、愛滋、及乙和丙型肝炎等病毒（如應用時間為一分鐘）；以及肺结核病毒（如應用時間為五分鐘）。

個人保護:

DESINFECTANDO Derrames de Fluidos del Cuerpo Con Oxivir® Tb*

Fluidos del Cuerpo

Sangre
Vomito
Diarrea
Deshechos Humanos

Pre-Limpiar
Remover el exceso de desechos y luego limpie la superficie con agua jabonosa

Rociar la superficie con OXIVIR® Tb

Dejar la superficie mojada por 1 Minuto
(5 Minutos para tuberculosis)

Secar con una toalla limpia de papel

En la situación de un brote de enfermedades, por favor consulte el programa de enfermedades transmisibles de su condado.
*Oxivir® Tb esta registrado con la Agencia de Protección Ambiental de Estados Unidos (USEPA) como **eficaz contra el norovirus, HIV, Hepatitis B, y Hepatitis C después de que la superficie se mantenga mojada con Oxivir® Tb por un minuto; y tuberculosis (TB) después de que la superficie se mantenga mojada con Oxivir® Tb por cinco minutos.**

Protección Personal:

San Francisco Asthma Task Force, Dec. 2012, www.sfgov.org/asthma

Appendix F. Chemical Products to Avoid

One reason why reading labels is important is to become familiar with the ingredients in your products. Avoid products that do not list their active ingredients or the concentration of the active ingredients (especially if the product requires dilution). When looking at products, consider all ingredients if possible, not just the active ingredient since some manufacturers are merging their cleaning products (e.g., there are products that are "powered by/contain bleach") or adding popular fragrances or masking deodorizers. Use caution when purchasing – just because the active ingredient may be safer for asthma, doesn't mean the product as a whole is safer.

Active ingredient	Examples of Products with these Ingredients	Potential Health Risks
Sodium hypochlorite (also known as "Bleach")	• Bleach • Clorox® Clean-Up® Cleaner with Bleach • Lysol® All-Purpose Cleaner with Bleach	Sodium hypochlorite is classified as an asthmagen by the Association of Occupational and Environmental Clinics (AOEC). This means that bleach is considered an asthma-causing substance.[j]
Quaternary ammonium compounds (also known as "Quats") These compounds include alkyl dimethyl benzyl ammonium chloride and didecyl dimethyl benzyl ammonium chlorides. There are many synonyms for this class of chemicals. The most commonly used synonyms include the following: • Benzalkonium chloride • Benzyl-C10-16-alkyldimethyl, chlorides • Dodecyl-dimethyl-benzyl ammonium chloride • Lauryl dimethyl benzyl ammonium chloride • Benzyl-C12-18-alkyldimethyl, chlorides • Benzyl-C12-16-alkyldimethyl, chlorides • Benzyl-C16-18-alkyldimethyl, chlorides	• Lysol® Disinfectant Spray • Clorox® Disinfecting Wipes, Bleach-Free • Lysol® Brand Dual Action Disinfecting Wipes • Fantastik® Antibacterial All-Purpose Cleaner • Formula 409® Kitchen Antibacterial All Purpose Cleaner • Cling Free® Fabric Softener, Static Stopping Sheets	Quaternary ammonium compounds are classified as asthmagens by the AOEC.[j] Animal studies suggest that exposure to quats may have negative reproductive effects.[k]
Ethylene glycol butyl ether (2-butoxyethanol, butyl cellosolve)	• DampRid Mildew Stain Remover Plus Blocker • Simple Green® All-Purpose Cleaner • Windex® Glass Cleaner Powerized Formula (institutional)	Ethylene glycol butyl ether is a possible carcinogen. Additionally, animal studies have associated 2-butoxyethanol with: • liver damage/cancer • red blood cell damage causing anemia • impaired fertility, and • reproductive and developmental toxicity.[l]
Ammonia	• Ammonia • Windex® Foaming Glass Cleaner • Windex® Mini Concentrated Glass and Surface Cleaner	Ammonia is classified as an asthmagen by the AOEC.[j] As a strong irritant, ammonia can cause • skin burns and • eye damage.[m] Ammonia also poses as a concern in child care since when mixed with bleach, hazardous chlorine gas is released into the air.
Pine oils	• Pine-Sol® • Hexol® Pine Oil General Purpose Cleaner & Deodorant • Genuine Joe Pine Oil Cleaner	Pine oils contain terpenes which can react with trace levels of ozone in the air, and can indirectly form formaldehyde which is carcinogenic and an asthmagen.[n]

NOTE: As reported by the Environmental Working Group, the carcinogen formaldehyde (an indoor air contaminant released by cleaning products), was detected in the following commonly used products in childcare: Comet®, Disinfectant Powder Cleanser, Pine-Sol®, Simple Green® Concentrated Cleaner/Degreaser/Deodorizer, Nov 2009, www.ewg.org/schoolcleaningsupplies.

Appendix F. Chemical Products to Avoid *(continued)*

Active ingredient	Examples of Products with these Ingredients	Potential Health Risks
Triclosan and triclocarban	• Ultra Dawn Dishwashing Liquid and Antibacterial Hand Soap • Dial® Antibacterial Liquid Hand Soap • Softsoap® 2 in 1 Antibacterial Hand Soap Plus Moisturizing Lotion • Softsoap® Aquarium Antibacterial Liquid Hand Soap	Studies show there are no additional benefits using antibacterial soap containing triclosan. This ingredient is currently under review by the FDA as an additive. The FDA considers triclosan a category 3 product: "insufficient information on the safety and effectiveness". Animal studies suggest triclosan may enable the spread of antibiotic-resistant bacteria, and may mimic hormones resulting in possible health risks such as: • reproductive harm and • developmental effects on the nervous and endocrine systems.[o]
Fragrances/scents/deodorizers	• Glade® Sense & Spray® Automatic Freshener • Lysol® Neutra Air® Freshmatic® • Air Wick® Freshmatic Ultra Automatic Spray • Febreze® Air Effects® Spray • Febreze® Noticeables Scented Oil Plug In	A single fragrance in a product can contain a mixture of hundreds of chemicals. Common chemicals used in scented products have been associated with the following: • asthma • cancer • respiratory illness • skin conditions • neurologic problems including seizures, and • irritation.[p]

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Appendix G. California Department of Social Services, Community Care Licensing Division, *Child Care Update, Spring – 2012*

In 2012, California Department of Social Services, Community Care Licensing Division invited the San Francisco Asthma Task Force to write an article for their Spring Quarterly Update to the Child Care Community announcing that alternatives to bleach meet infection control requirements in child care settings. Below is the article that was published. The original article can be found on the bottom of page 9 of the Update which is posted on the California Department of Social Services website, accessible at **http://www.ccld.ca.gov/res/pdf/CCUpdateSpring2012.pdf**

Meeting California Child Care Infection Control Requirements: Allowable Alternatives to Bleach

In California, child care centers must comply with California Child Care Licensing regulations for sanitizing and disinfecting in order to maintain infection control. Bleach is cost-effective and widely used to meet those requirements. However, contact with bleach can burn the skin and eyes, and breathing bleach fumes can cause asthma symptoms, and irritation in the throat and lungs. According to the State's Work-Related Asthma Program, exposure to bleach has also been associated with new asthma cases. While controlling the spread of infection in child care is important, the use of safer products to protect the health of child care workers and children from asthma is also critical. For these reasons, the San Francisco Asthma Task Force looked for ways to reduce or eliminate bleach exposure in child care settings, and published their recommendations in a March 2011 report.

This article is intended to give you, as workers in licensed centers, information about alternatives to bleach that meet the State's requirements. Bleach is not the only product that meets the requirements. Licensing regulations, Title 22, Section 101438.1 (f) states that, "Commercial disinfecting solutions, including one-step cleaning/disinfecting solutions, may be used in accordance with label directions."

California Child Care Licensing Requirements for Sanitizing and Disinfecting

Requirement	Surface (Regulation code)	How Often
DISINFECT	Infant/Toddler Classrooms: ✓ Diaper Changing Areas -- 101428 (7)	After each use
	✓ Potty Training Chairs -- 101428 (e)	After each use
	Napping Equipment: ✓ 101239.1 (b)(4)	Weekly, or if soiled or wet
	Napping Equipment—Infants: ✓ 101439.1 (B)	Daily, or if soiled/wet
	Infant/Toddler/Classrooms with Mildly Ill Children: ✓ Sinks -- 101438.1 (c) (5), 101638.1 (e)(5)	After each use
	✓ Floors -- 101438.1 (c)(1), 101638.1 (e)(1)	At least daily, or more often if necessary
	✓ Walls/Partitions -- 101438.1 (c)(3), 101638.1(e)(1)	At least weekly, or more often if necessary
	✓ Mouthed Objects (Including Toys) -- 101438.1 (d), 101638.1(f)	At least daily, or more often if necessary
SANITIZE	All Classrooms: ✓ Dishes/Utensils, Cups -- 101227 (a)(21)	After each use
	Infant/Toddler Classrooms: ✓ Disposable Diaper Containers -- 101428 (d)(3)(a), 101628 (d)(2)	Daily

NOTE: The Task Force recommends sanitizing snack/meal tables and high chair tables after each use.

Recommendations for Disinfecting and Sanitizing without Bleach

The San Francisco Asthma Task Force is recommending the use of disinfectants and sanitizers that are safer for asthma. The recommended products do not contain bleach, and meet the State requirements for disinfecting and sanitizing in your child care center. The following list provides a basic overview of the products. More detailed information about the products that were tested for this project is available in the full report *(See "Resources" for how to access the report).*

- For disinfecting hard, non-porous surfaces such as diaper changing tables, the recommended alternative is a ready-to-use disinfectant with accelerated hydrogen peroxide as the active ingredient.
- For sanitizing food contact surfaces such as snack and meal tables, the recommended alternative is also ready-to-use and bleach-free.
- The Task Force is also recommending a floor cleaner with accelerated hydrogen peroxide as the active ingredient.

Recommendations for Reducing Bleach Exposure (if continuing to use bleach)

If your child care center continues to use bleach for sanitizing and disinfecting, the Task Force recommends several methods and tools to reduce exposure to bleach and create a safer environment. Materials in English, Spanish and Chinese have been developed on how to use bleach correctly. The recommendations regarding safer use of bleach include simple tools that reduce exposure, such as:

- pumps that put the exact amount of bleach into your spray bottle (without metal parts that can rust)
- funnels that reduce bleach spills and splashes
- quart-size (32 ounces) spray bottles with ready-made labels to ensure the right bleach/water mixture
- digital timers to ensure the surface remains wet with bleach/water mixture for two minutes
- protective equipment such as eyewear (for example, goggles or glasses), gloves, and aprons.

Resources

The SF Asthma Task Force report also provides recommendations and guidelines for specific training needs of management, staff, and parents. The goal of these recommendations is to encourage the sustainability of best practices while protecting the health of child care workers and the children served.

Resources available as a result of this project include:

- products without bleach – cost and how to order
- tools to reduce exposure to bleach (if your center continues to use bleach)
- instructional signs and labels in English, Spanish, and Chinese for products without bleach and for using bleach/water mixtures.

To access the full project report and supplemental material, please visit either website:

- San Francisco Asthma Task Force, http://www.sfgov3.org/index.aspx?page=721
- Regional Asthma Management and Prevention, www.rampasthma.org

The San Francisco Asthma Task Force conducted this grant-funded* pilot project to identify methods for infection control practices that eliminate or reduce child care operator exposure to bleach and published its report in March of 2011.

*Funding was provided by San Francisco Foundation, Regional Asthma Management & Prevention, a private donor, and the San Francisco Public Health Foundation.

Appendix H. References for Designating Bleach as an Asthmagen

Nationwide and statewide work-related asthma data

New onset work-related asthma (WRA) case finding and the exacerbation of asthma in the workplace substantiate the concerns of stakeholders. Ongoing statewide surveillance from 1993 to the present links bleach to work-related asthma (77 WRA cases of 4417).[q] Forty percent of the WRA cases had pre-existing asthma that was exacerbated by bleach exposure, while 60% were cases of new onset asthma. Nationwide surveillance of WRA conducted from 1993-1997 found that 12% of reported WRA cases (236 out of 1915) were associated with exposure to cleaning products. California contributed 92 of the 236 WRA cases with 72% of the cases being new onset asthma.[r] Such data validate the need to promote asthma-safe disinfectants and sanitizers and consistent use of protective equipment.

Additionally, surveillance data collected from 1993-2000 in educational settings serving children over five years of age show that cleaning staff in these settings are at the greatest risk for developing asthma in the workplace.[s] Cleaning staff had the highest proportion of new onset asthma, with bleach being among the most commonly reported exposures. Since staff members in child care settings are continually spraying bleach throughout the day, some of their exposures can be thought of as similar to cleaning staff. However, WRA for staff in child care settings is unlikely to make it into reporting systems for several reasons: limited health care access as low wage earners, lack of knowledge connecting new onset asthma with their work environment, and lack of reporting to employers for fear of losing their job, deportation, or other consequences.

Websites

Centers for Disease Control and Prevention: National Institute for Occupational Safety and Health (NIOSH). Workplace Safety & Health Topics: Asthma and Allergies. Accessible at **http://www.cdc.gov/niosh/topics/asthma/**

California Department of Public Health: Occupational Health Branch. Tracking Work-Related Asthma. Accessible at **http://www.cdph.ca.gov/programs/ohsep/Pages/Asthma.aspx**

AOEC references for designating bleach an asthmagen

The Association of Occupational and Environmental Clinics (AOEC) developed an Exposure Code List for its members in order to "systematically identify both existing and emerging occupational and environmental health concerns". The AOEC updates this list regularly to reflect the findings of their reviews. In order to classify substances as asthmagens, the term used for asthma-causing substances, the AOEC carefully reviews mandated reporting of work-related asthma (WRA) as well as published toxicology and epidemiology peer-reviewed research. In May 2012, the AOEC designated bleach (sodium hypochlorite) as an *asthmagen*. *See the references below that were used by the AOEC for this designation.*

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