

## Instructor Guide

### Module 2: Understanding Disinfectants

**Instructions for facility educators:** Use this instructor checklist to provide hands-on training and reinforce learned concepts in the slide presentation. Select one or more topics to review with your EVS staff and use the check boxes to indicate if the topic was reviewed with staff.

Elements of this guide may be adapted for use in a huddle, in-service, just-in-time training, or formal presentation to accommodate schedules or training needs. You may also use this tool to orient new EVS Managers or Infection Preventionists on your team.

*All training topic discussions are meant to be opportunities for collaboration where everyone is able to learn. As the instructor, it is essential to create a safe and supportive teaching environment. Use this time to improve processes and offer support to staff so that they will feel comfortable coming to leadership when needed. There are prompts throughout this resource to help you engage staff in discussion. Happy training!*

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<b>Environmental Services (EVS) Closet</b>	
<b>Demonstration Prompts</b>	<b>Rationale</b>
Walk through the facility with your staff when applicable.	
<input type="checkbox"/> Look to see if area is clean, dust free, and uncluttered.	<ul style="list-style-type: none"><li>• Become familiar with available supplies.</li><li>• Having an organized EVS closet may prevent injuries, spills, or accidental mixing.</li></ul>
<input type="checkbox"/> Look to see if area is free of personal belongings including food and drinks.	<ul style="list-style-type: none"><li>• Personal belongings can become contaminated with germs.</li></ul>

<input type="checkbox"/> Look to see if disinfectant is at its designated space with lids closed.	<ul style="list-style-type: none"> <li>• Keeping lids closed will prevent product from evaporating and will maintain its proper concentration.</li> </ul>
<input type="checkbox"/> Check disinfectant expiration dates.	<ul style="list-style-type: none"> <li>• Follow your policy to ensure proper labeling and disposal of expired product.</li> </ul>
<input type="checkbox"/> Ensure proper disinfectant storage to prevent dangerous spills or mixing.	<ul style="list-style-type: none"> <li>• Prevent mixing of multiple disinfectants which may result in noxious gases (e.g., bleach and quaternary disinfectants are not stored side by side).</li> </ul>
<input type="checkbox"/> Check the number of cleaners stored and determine if all are needed.	<ul style="list-style-type: none"> <li>• Minimizing the number and types of cleaners will reduce the chance of unintentional mixing and staff confusion about product use.</li> </ul>

<b>Personal Protective Equipment (PPE)</b>	
<b>Demonstration Prompts</b>	<b>Rationale</b>
Check cleaner/disinfectant manufacturer's instructions or Safety Data Sheet (SDS) with staff.	
<input type="checkbox"/> Is PPE available to staff as per the cleaner/disinfectant manufacturer's instructions?	<ul style="list-style-type: none"> <li>• Staff should have a convenient (e.g., near point of use) location to access PPE.</li> </ul>
<input type="checkbox"/> Are staff using the correct PPE as per the cleaner/disinfectant manufacturer's instructions?	<ul style="list-style-type: none"> <li>• Staff should be trained to use the correct PPE per cleaner/disinfectant (e.g., post PPE donning/doffing diagram on EVS closet wall)</li> </ul>

<b>Cleaning and Disinfectants – Cleaner Only</b>	
<b>Demonstration Prompts</b>	<b>Rationale</b>
Walk through the facility with your staff when applicable.	
<input type="checkbox"/> Staff should know the difference between a cleaner, a cleaner and disinfectant combination, and a disinfectant product. <input type="checkbox"/> Solution is labeled with key dates (manufacturer's expiration date, open date, mix date) and is discarded according to manufacturer's instructions. <input type="checkbox"/> If the facility has multiple cleaning products ask the staff if they know what	<ul style="list-style-type: none"> <li>• Cleaning removes germs. Disinfection is done to kill the remaining germs. If cleaning does not occur first, soil/dirt can shield germs from being killed by the disinfectant.</li> <li>• Manufacturer's expiration date is designated by the manufacturer; open date is the initial date the container was</li> </ul>

<p>to use, when to use, and how to use each product.</p> <ul style="list-style-type: none"> <li>❑ Ask the staff how they use the cleaner. The staff’s response should match the manufacturer’s instructions.</li> <li>❑ Ensure staff know not to refill or “top off” bottles.</li> </ul>	<p>opened; mix date is the date a product is first mixed with water.</p> <ul style="list-style-type: none"> <li>• Staff should be knowledgeable about cleaning products that are available.</li> <li>• A soap or neutral cleaner may be used for the floor.</li> <li>• If the original or refill bottle is contaminated, it could contaminate the other bottle.</li> </ul>
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<b>Cleaning and Disinfectants – Cleaner and Disinfectant Combination</b>	
<b>Demonstration Prompts</b>	<b>Rationale</b>
<p>Walk through the facility with your staff when applicable.</p> <ul style="list-style-type: none"> <li>❑ Staff should know the difference between a cleaner, a cleaner and disinfectant combination, and a disinfectant product.</li> <li>❑ Solution is labeled with key dates (manufacturer’s expiration date, open date, mix date) and is discarded according to manufacturer’s instructions.</li> <li>❑ Ask the staff if the cleaner/disinfectant has expired.</li> <li>❑ Ensure cleaner/disinfectant solution list is mentioned in an electronic or paper reference (e.g., in the EVS closet in a binder), and includes basic product properties (e.g., contact/wet time).</li> <li>❑ Ask staff how they use the cleaner/disinfectant. The staff’s response should match the manufacturer’s instructions.</li> <li>❑ If the facility has multiple disinfectant products ask the staff if they know what to use, when to use, and how to use each product.</li> </ul>	<ul style="list-style-type: none"> <li>• Cleaning remove germs. Disinfection is done to kill the remaining germs. If cleaning does not occur first, soil/dirt can shield germs from being killed by the disinfectant.</li> <li>• Manufacturer’s expiration date is designated by manufacturer; open date is the initial date the container was opened; mix date is the date a product is first mixed with water.</li> <li>• Staff should be knowledgeable about cleaning/disinfectant products that are available.</li> <li>• If the facility uses multiple products, staff should know how to use each one. Having too many products means a greater chance there may be inappropriate mixing or inability for staff to be familiar with each product.</li> </ul>

<input type="checkbox"/> Ensure staff do not mix different products (e.g., quaternary agent with bleach).	<ul style="list-style-type: none"> <li>• Staff should never mix different types of disinfectants, as this could cause the formation of a toxic gas.</li> </ul>
<input type="checkbox"/> During an outbreak, ensure the cleaner/disinfectant in use has a kill claim for the organism.	<ul style="list-style-type: none"> <li>• Staff should use EPA-registered disinfectants. Refer to the <a href="http://www.epa.gov/pesticide-registration/selected-epa-registered-disinfectants">EPA-registered disinfectants list</a> – (www.epa.gov/pesticide-registration/selected-epa-registered-disinfectants)</li> <li>• Ideally, facilities should follow the longest contact/wet time when using a disinfectant to clean the surface.</li> <li>• Refer to <a href="http://www.cdc.gov/hai/pdfs/HowToReadALabel-Infographic-508.pdf">“How to Read a Disinfectant Label” guide</a> - (PDF) (www.cdc.gov/hai/pdfs/HowToReadALabel-Infographic-508.pdf)</li> </ul>

<b>Cleaning and Disinfectants – Disinfectants Only</b>	
<b>Demonstration Prompts</b> Walk through the facility with your staff when applicable.	<b>Rationale</b>
<input type="checkbox"/> Staff should know the difference between a cleaner, a cleaner and disinfectant combination, and a disinfectant product.  Note: CDC recommends use of a one-step cleaner and disinfectant product. Staff should know why they are choosing a disinfectant-only product.	<ul style="list-style-type: none"> <li>• Cleaning remove germs. Disinfection is done to kill the remaining germs. If cleaning does not occur first, soil/dirt can shield germs from being killed by the disinfectant.</li> <li>• Use a one-step process and an EPA-registered hospital disinfectant/detergent designed for general housekeeping purposes in patient-care areas when uncertainty exists as to the nature of the soil on these surfaces (e.g., blood or body fluid contamination versus routine dust or dirt; presence or absence of multidrug-resistant organisms on such surfaces).</li> </ul>
<input type="checkbox"/> Solution is labeled with key dates (manufacturer’s expiration date, open	<ul style="list-style-type: none"> <li>• Manufacturer’s expiration date is designated by manufacturer; open date is the initial date the container was opened;</li> </ul>

<p>date, mix date) and is discarded according to manufacturer’s instructions.</p> <p><input type="checkbox"/> Ask the staff if the disinfectant has expired.</p>	<p>mix date is the date a product is first mixed with water.</p>
<p><input type="checkbox"/> Ensure disinfectant product is listed in an electronic or paper reference (e.g., in the EVS closet in a binder), and includes basic product properties (e.g., contact/wet time).</p> <p><input type="checkbox"/> Ask the staff how they use the disinfectant. The staff’s response should match the manufacturer’s instructions.</p>	<ul style="list-style-type: none"> <li>• Staff should be knowledgeable about disinfectant products that are available.</li> </ul>
<p><input type="checkbox"/> Ensure staff clean before using disinfectant product.</p>	<ul style="list-style-type: none"> <li>• A disinfectant will not work if cleaning does not occur first.</li> </ul>
<p><input type="checkbox"/> If the facility has multiple disinfectant products ask the staff if they know what to use, when to use, and how to use each product.</p> <p><input type="checkbox"/> Ask the staff how they use the disinfectant. The staff’s response should match the manufacturer’s instructions.</p>	<ul style="list-style-type: none"> <li>• If the facility uses multiple products, staff should know how to use each one. Having too many products means a greater chance there may be inappropriate mixing or inability for staff to be familiar with each product.</li> </ul>
<p><input type="checkbox"/> Ensure staff do not mix different products (e.g., quaternary agent with bleach).</p>	<ul style="list-style-type: none"> <li>• Staff should never mix different types of disinfectants, as this could cause the formation of a toxic gas.</li> </ul>
<p><input type="checkbox"/> During an outbreak, ensure the disinfectant in use has a kill claim for the organism.</p>	<ul style="list-style-type: none"> <li>• Staff should use EPA-registered disinfectants. Refer to the <a href="http://www.epa.gov/pesticide-registration/selected-epa-registered-disinfectants">EPA-registered disinfectants list</a> – (www.epa.gov/pesticide-registration/selected-epa-registered-disinfectants)</li> <li>• Ideally, facilities should follow the longest contact/wet time when using a disinfectant to clean the surface.</li> <li>• Refer to “<a href="http://www.cdc.gov/hai/pdfs/HowToReadALabel-Infographic-508.pdf">How to Read a Disinfectant Label</a>” guide - (PDF) (www.cdc.gov/hai/pdfs/HowToReadALabel-Infographic-508.pdf)</li> </ul>

<b>Disinfectant Dilution - Premixed (Ready to Use)</b>	
<b>Demonstration Prompts</b>	<b>Rationale</b>
Look at a premixed disinfectant.	
<input type="checkbox"/> Check expiration date.	<ul style="list-style-type: none"> <li>You should not use expired product.</li> </ul>
<input type="checkbox"/> Check contact/wet time.	<ul style="list-style-type: none"> <li>Staff should be knowledgeable about disinfectant products that are available.</li> </ul>
<input type="checkbox"/> Check appropriate surfaces for product use.	<ul style="list-style-type: none"> <li>Disinfectants may damage or discolor surfaces</li> </ul>
<input type="checkbox"/> Check if there are any issues with the solution (e.g., unusual odor, different consistency).	<ul style="list-style-type: none"> <li>Known product with unusual characteristics (e.g., smell, texture, consistency) may indicate issue with the product (e.g., contamination, expiration).</li> </ul>
<input type="checkbox"/> On first use, if the container has a seal, check to see if the seal is broken prior to use.	<ul style="list-style-type: none"> <li>Broken seal may affect product shelf life or effectiveness.</li> </ul>

<b>Disinfectant Dilution - Disinfectant Dispensing Machine</b>	
<b>Demonstration Prompts</b>	<b>Rationale</b>
Walk through the facility with your staff when applicable.	
<input type="checkbox"/> Look for the manufacturer's instructions: Are they close to the dispenser? In a binder in the EVS closet? <input type="checkbox"/> Are staff trained to use the dispenser? <input type="checkbox"/> Check if the dispenser is labeled with the appropriate label; the disinfectant bottle in the dispenser should match the label. <input type="checkbox"/> If there are multiple dispensing systems installed, ask staff to identify which one is currently in use. <input type="checkbox"/> Staff should know how and when the automatic dispenser is calibrated. <input type="checkbox"/> Ensure spray bottles are not used to dispense the disinfectant. Spray bottles should be replaced with cloths saturated in a container with disinfectant solution.	<ul style="list-style-type: none"> <li>Spray can aerosolize the disinfectant and may cause respiratory, skin, or eye irritation.</li> </ul>

<b>Disinfectant Dilution - Manual Mixing</b>	
<p><b>Demonstration Prompts</b> Walk through the facility with your staff when applicable.</p> <p>Note: CDC discourages the use of manually mixed bleach. If the bleach is a household bleach and not specifically manufactured for healthcare, or if the EPA number cannot be found on list K or P it should not be used.</p>	<b>Rationale</b>
<ul style="list-style-type: none"> <li><input type="checkbox"/> Locate the instructions to mix bleach solution. Is it available in a binder or on a poster in the EVS closet?</li> <li><input type="checkbox"/> Review manual mixing steps/protocol.</li> <li><input type="checkbox"/> Review required PPE before mixing the bleach solution.</li> <li><input type="checkbox"/> Review how often bleach is prepared, how it is stored, and for how long they keep the solution.</li> <li><input type="checkbox"/> Ensure staff can locate the measuring cup.</li> <li><input type="checkbox"/> Ensure staff are able to perform appropriate mixing using the measuring cup or other measure (e.g., a mark on the bottle).</li> </ul>	<ul style="list-style-type: none"> <li>• Bleach is the most common disinfectant that is mixed manually.</li> <li>• Note: Facilities should have written documentation instead of having a verbal explanation.</li> <li>• Check the bleach bottle to identify if its pre-mixed or concentrated. <ul style="list-style-type: none"> <li>○ If pre-mixed, no need to look for the instructions.</li> <li>○ If the solution is concentrated, the recommended mixing ratio is 1 part bleach and 9 parts water (1:10). Everyone should be able to prepare the solution instead of just one designated staff.</li> </ul> </li> <li>• Manually mixed bleach can only be stored for 24 hours.</li> <li>• Only manually mixed bleach has an immediate expiration date whereas pre-mixed does not have an immediate expiration date.</li> </ul>

<b>List of High-Touch Surfaces</b>	
<b>Demonstration Prompts</b>	<b>Rationale</b>
<p>Walk through the facility with your staff when applicable.</p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Check if staff have access to a list of high-touch surfaces, e.g., in a binder in the EVS closet, laminated list on door, list attached to EVS cart.</li> <li><input type="checkbox"/> List should include all necessary surfaces to clean and disinfect during cleaning and disinfection. Note: This list may be specific to certain units (e.g., subacute or memory care unit).</li> </ul>	<ul style="list-style-type: none"> <li>• High-touch surfaces are surfaces and equipment that can reasonably be expected to be contaminated by germs.</li> <li>• High-touch surfaces include bedrails, call bells, light switches, IV pumps, IV poles, bedside tables, telephones, respiratory equipment, chairs, and other bedside equipment.</li> <li>• Refer to <a href="#">sample list</a> (can be adapted by facility): (<a href="http://www.cdph.ca.gov/Programs/CHCQ/HAI/CDPH%20Document%20Library/WhoCleansWhatReminderTemplateFlyer_WORD.docx">www.cdph.ca.gov/Programs/CHCQ/HAI/CDPH%20Document%20Library/WhoCleansWhatReminderTemplateFlyer_WORD.docx</a>)</li> </ul>