



## Mixing and Using Chlorine Solutions in West African General (Non-ETU) Healthcare Settings

Mixing and using chlorine solution correctly can help prevent Ebola from spreading and save lives.

Ebola is spread through direct contact with the blood or body fluids of a person sick with Ebola and by coming in contact with contaminated surfaces or equipment, including linen soiled by infected body fluids. This type of spread can be prevented by mixing and using chlorine solutions correctly.

**Ebola virus disease** is a severe illness that is highly infectious and rapidly fatal, but it can be prevented in part through proper disinfecting of contaminated materials. The virus can be eliminated with hypochlorite (chlorine bleach) at appropriate concentrations. Correctly mixed and applied **chlorine solutions will damage Ebola virus** on personal protective equipment (PPE) and other surfaces so that it can no longer infect patients and healthcare workers.

There are two strengths of chlorine solution hospitals and clinics can use to disinfect for Ebola virus.

- **Strong solution (0.5%)** includes a higher concentration of HTH\* chlorine that can be used for disinfecting surfaces, objects, medical equipment, and gloved hands. Other uses include
  - Floors: Use a rag soaked in 0.5% to carefully clean up any body fluids. Then follow up with soap and water. If there is a lot of fluid, use a rag or towel to wipe up the fluid before using the chlorine solution (followed by soap and water).
  - Toilets and bathroom: Let chlorine solution stand on surface for 15 minutes before wiping off.
  - Mattress covers: Let chlorine solution stand on surface for 15 minutes before wiping off.
  - Visibly soiled linens: Soak fully and deeply in solution for 10-15 minutes before washing with soap and water.
  - Foot baths
  - Contaminated waste for disposal
  - Corpses: Wipe body, body bag, and coffin.
  - Layers of packaging for transporting blood samples: Spray each layer before packing into the next layer.
- **Mild solution (0.05%)** is a more gentle solution of HTH\* chlorine that can be used for washing bare hands in settings where other methods, such as soap and running water or alcohol based hand rubs, are not available or cannot be used. **Warning:** Washing bare hands with the strong solution (0.5%) can cause chlorine burns on hands. Mild solution can also be used to disinfect other things that come into direct contact with the skin or body, including:
  - Medical equipment, including thermometers
  - Patient bedding and clothing that is not visibly soiled: soak for 30 minutes
  - Plates, cups, and eating utensils

- Everyday cleaning of surfaces and floors when there is no visible body fluids

\***High Test Hypochlorite (HTH)** chlorinating granules (also known as Calcium Hypochloride, or  $\text{CaOCl}_2$ , or High Test Chlorine) can be carefully mixed with water to create some types of chlorine solutions used for cleaning or hand-washing to protect against Ebola.

## How to prepare chlorine solutions

Chlorine solutions that are correctly mixed and applied will damage Ebola on personal protective equipment (PPE) and other surfaces to help prevent infection. Chlorine solutions are an important component of cleaning and disinfection procedures and must be made daily to be effective.

**Remember chlorine is very strong. Always wear gloves, face mask, and either goggles or a face shield when handling chlorine granules and strong solutions.**

Here are the items you need:

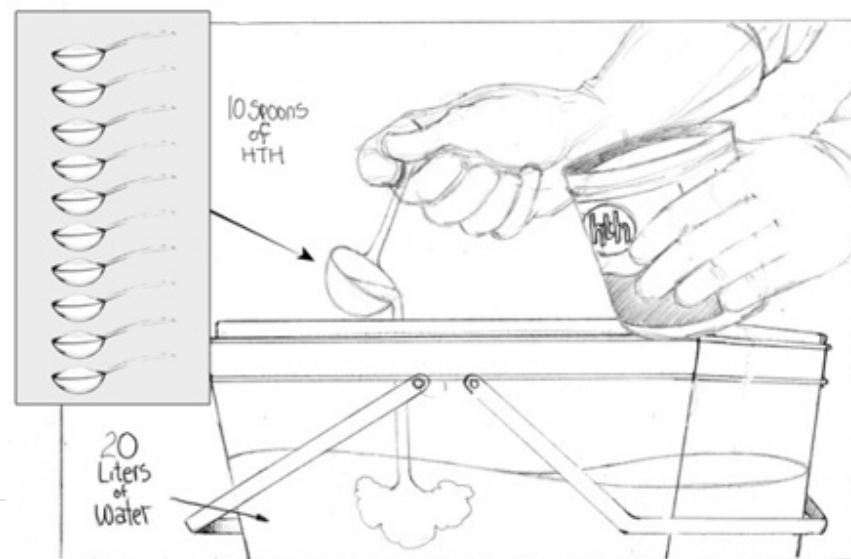
- Gloves, goggles and face mask for protection
- Plastic or metal bucket (plastic preferred, as chlorine damages metal)
- Water
- HTH also known as High Test Hypochlorite
- A tablespoon or soup spoon (note that one tablespoon will hold about 14 grams)
- A measuring cup or 1 liter bottle
- A stick to stir the solution

To make a strong (0.5%) chlorine solution:

1. Fill the bucket with 20 liters of water.
2. Add 10 heaping tablespoons (1 tablespoon = 14 grams) of High Test Hypochlorite (HTH).
3. Stir the solution with a stick.

To make a mild (0.05%) chlorine solution:

1. Fill the bucket with 20 liters of water.
2. Add 1 heaping tablespoon (1 tablespoon = 14 grams) of High Test Hypochlorite (HTH).
3. Stir the solution with a stick.

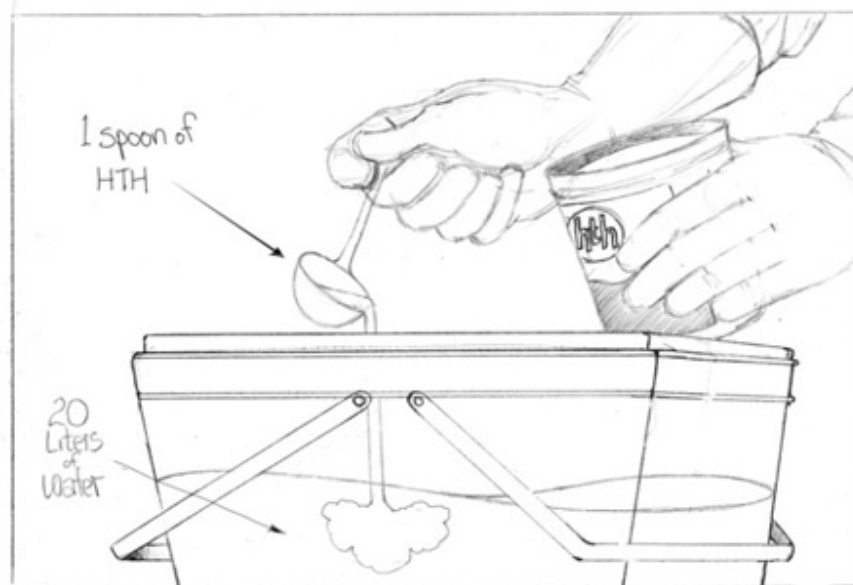


What you need to know:

- Chlorine solutions, depending on their use, should be transferred into bottles that have sprayers or dispensers that have spigots.
- Chlorine solutions need to be labeled with their correct strength – make sure you label strong with (0.5%)

and mild as (0.05%).

- Chlorine solutions do not work as well on highly soiled surfaces. **Clean first, then disinfect.**
- Keep the chlorine solution away from direct sunlight.
- **Chlorine solutions lose strength over time, so make a fresh batch every day.**



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National Center for Emerging and Zoonotic Infectious Diseases (NCEZID) (</ncezid/index.html>)

Division of High-Consequence Pathogens and Pathology (DHCPP) (</ncezid/dhcpp/index.html>)

Viral Special Pathogens Branch (VSPB) (</ncezid/dhcpp/vspb/index.html>)