

Cleaning with bleach and ethanol

Background:

Knowing whether and how to use bleach in the lab represents an important part of your training as it bears on the efficiency and efficacy of your work.

One of the **most important things to know** about our use of bleach is that sometimes we use it as a tool in our biosafety protocol to prevent spread of pathogens, and sometimes we use it simply as an effective cleaning agent. It can be critically important that you know which is which. If in doubt, ask the PI.

Bleach solution destroys both living cells and free nucleotides (DNA). Denatured ethanol will also destroy living cells, but is less effective at degrading stray fragments of DNA. Therefore, we use bleach both as an effective means of cleaning and decontaminating. The ethanol solution is useful for rinsing bleach from surfaces and also evaporates quickly, which is important because we don't want bleach carrying over onto your samples or clothes and we don't want it to linger on equipment as it is corrosive (e.g., causes rust on stainless steel surfaces, like inside our biosafety cabinet).

Per the biosafety manual, decontamination requires a minimum of 10% bleach solution with a minimum of 15 minutes contact time. This needs to be done to clean relevant workspaces in order for your work to be complete. Most of the time we will work with 10% bleach solution in squirt bottles.

Ethanol is used to wipe away the bleach so that the equipment and surfaces we use don't erode.

The 70% ethanol and 10% bleach solutions must be disposed of in [properly](#) labeled liquid waste containers.

Making solutions

- 10% Bleach: Make a fresh solution daily by combining bleach and tap water. An estimation is ok as long as the solution is >10% bleach. Label the bottle with the date it was created. Dispose of the bleach solution at the end of day so that you have a visual cue to make a fresh batch the next day you need to use bleach.
- 70% Ethanol: Use only denatured (cheap) ethanol for cleaning. Use a graduated cylinder to measure volumes of ethanol and tap water. This solution does not need to be made fresh daily, but alcohol evaporates and should be replenished every couple weeks.

Prepping a hood for an experiment

- When you are setting up a bench to work, there is no need to decontaminate it of pathogens from a biosafety perspective. Your goal at this stage is simply to clean away potentially contaminating DNA.
- Wipe down all surfaces and equipment using paper towels with 10% bleach, then 70% ethanol. The 15 mins of contact time is not required here
- Run the UV light for 15-30 mins to ensure everything is sterilized

Decontaminating a hood after an experiment

- The 15 min contact time is required here!
- Wipe all surfaces and equipment with 10% bleach and wait for 15 mins before proceeding with the 70% ethanol and UV light exposure (15-30 mins).