

# Safe And Effective Use Of Bleach For Disinfection In Healthcare

Updated 8/12/25



# Learning Objectives

Explain why bleach is an effective disinfectant

Explain the difference between sanitation and disinfection

Identify contact times when using bleach as a disinfectant

Discuss effective bleach dilution for use in healthcare settings

Identify PPE needed when using bleach





# Bleach



## Sodium Hypochlorite

is the active ingredient that kills bacteria, fungi, and viruses, including COVID-19 and Influenza.



# Bleach-PROS

Strong and effective disinfectant, killing bacteria, bacterial spores, fungi, and viruses



Widely available



Low cost



Recommended surface disinfectant for healthcare facilities



# Bleach-CONS

Bleach expires 1 year from production. Avoid overstocking.

Loses potency if stored incorrectly

- Keep out of direct sunlight and temps > 77 F
- Discard unused mixtures 24 hours after preparation

Potency reduces over several months after opening, even with proper storage, so that standard dilutions are not longer effective.

Emits a toxic gas when exposed to direct sunlight or when mixed with certain chemicals (e.g., vinegar).

Deactivated by organic materials (i.e., surfaces must be cleaned before use to be effective).



# SANITIZATION VS DISINFECTION

## Sanitization

- Use to make something clean and hygienic by using water, detergent, and friction
- Reduces pathogenic agents on surfaces
- Used in areas where food is prepped or eaten

## Disinfection

- Sanitization is done prior to disinfecting
- Use of chemicals that work by killing any remaining germs on surfaces
  - ✓ Use and EPA-registered hospital disinfectant
  - ✓ Follow label instructions for proper use

# Contact Times

Nonporous surfaces  
by wiping : contact  
time of  $\geq$  to 10  
minutes

Disinfection by  
immersion of items:  
contact time of 30  
minutes

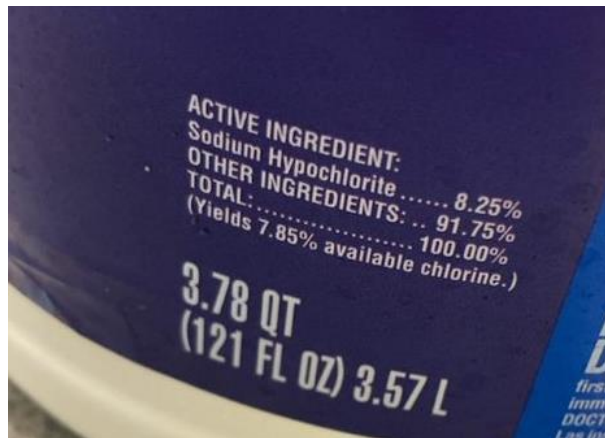
Diluted household  
bleach disinfects  
within 10-60 minutes  
contact time

Contact times vary  
for different uses

All surfaces should be  
wet with disinfectant  
and allowed to air dry



# BLEACH DILUTION CALCULATOR



Bleach concentration	%
Desired chlorine concentration	<a href="#">ppm</a> ▼
Desired chlorine volume	<a href="#">US gal</a> ▼
Required bleach volume	<a href="#">US fl oz</a> ▼



# Bleach: Recommended Dilution

## Nonporous Surfaces

1:100 dilution (500-615 ppm) of 5% sodium hypochlorite is the usual recommendation for disinfection or 500 ppm.

Bleach concentration	8.25 %
Desired chlorine concentration	500 <a href="#">ppm</a> ▼
Desired chlorine volume	1 <a href="#">US gal</a> ▼
Required bleach volume	24.09 <a href="#">ml</a> ▼

Bleach concentration	5 %
Desired chlorine concentration	500 <a href="#">ppm</a> ▼
Desired chlorine volume	1 <a href="#">US gal</a> ▼
Required bleach volume	39.75 <a href="#">ml</a> ▼

[Guideline for Disinfection and Sterilization in Healthcare Facilities, 2008 \(cdc.gov\)](#)



# Is it better to have a higher than recommended concentration?

Potential to injure workers and patients

- Toxic gas when exposed to sunlight
- It is an irritant and can burn tissue!
  - mucous membranes
  - skin
  - airways
- Damaging to surfaces-can erode metals and surfaces



# Bleach: Recommended Dilution

## Blood Spills

Blood Spills: 1:10 dilution (5,000-6,150 ppm)

Bleach concentration	8.25 %
Desired chlorine concentration	5,000 <a href="#">ppm</a> ▼
Desired chlorine volume	1 <a href="#">US gal</a> ▼
Required bleach volume	240.9 <a href="#">ml</a> ▼

Bleach concentration	5 %
Desired chlorine concentration	5000 <a href="#">ppm</a> ▼
Desired chlorine volume	1 <a href="#">US gal</a> ▼
Required bleach volume	397.5 <a href="#">ml</a> ▼



# PPE USE during preparation and use of bleach

Protect your eyes, mouth and nose from splashes



Protect your skin



# Key Take-aways

Do

- Do-Clean the surface prior to disinfection

Do

- Do-Use regular, unscented bleach containing 5%-9% sodium hypochlorite

Do

- Do-Read and follow the directions on the product container

Do

- Do-Wash your hands after removing gloves and cleaning and disinfecting

Do

- Do-Cover bleach solutions to slow degrade



# Key Take-aways



- Do not-Mix bleach with other cleaners, vinegars, ammonia, or acids



- Do not-Touch your eyes



- Do not-Inhale bleach fumes



- Keep bleach solution over 24 hours after mixing



# RESOURCES

## CDC

- [Cleaning and Disinfecting With Bleach | CDC](#)
- [Environmental Cleaning Procedures | HAIs | CDC](#)
- [Chemical Disinfectants: Guideline for Disinfection and Sterilization in Healthcare Facilities, 2008 | updated Nov. 28, 2023](#)
- [Environmental Surface Disinfection in Dialysis Facilities: Notes for Clinical Managers](#)

## NIH-National Library of Medicine

- [Use of disinfectants: alcohol and bleach - Prevention and Control of Epidemic- and Pandemic-Prone Acute Respiratory Infections in Health Care - NCBI Bookshelf \(nih.gov\)](#)

## OMNI Calculator

- [Bleach Dilution Calculator \(omnicalculator.com\)](#)

## WHO (Infographics)

- [bleach-dilution-and-guidance-for-visitors-20200622.pdf \(who.int\)](#)

