

INFORMATION

BULLETIN

SUBJECT: Chlorine

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Chlorine, also known as bleach or sodium hypochlorite, is a chemical that has received much press as a result of the OSHA Bloodborne Pathogens Standard - 29 CFR 1910.1030.

This standard, along with numerous previous recommendations for its use, has promoted chlorine as an effective method of decontamination of surfaces.

During disease outbreaks such as Legionnaires Disease and the initial discovery of HIV-1 (AIDS Virus), chlorine was the initial product recommended by many government agencies since at the time no other disinfectants, or chlorine for that matter, had been tested against these organisms. It seems that when it is unknown what will effectively kill a bacterial or viral organism, chlorine is the standard product recommended. Although chlorine is an effective disinfectant, its chemistry, and particularly its stability, leave a lot to be desired.

We are all very familiar with chlorine's use in swimming pools and potable water systems. However, it is quite unstable when exposed to light, heat or organic soil. It is for this reason chlorine must be added to swimming pools regularly on hot, sunny days or when they receive excessive use. This increased use causes significant reduction in the pools' chlorine level. As people enter a pool they carry with them soil, body oils, and dirt. This equates to an increase in organic soil levels which quickly reduces chlorine's bacteriocidal efficacy.

The Bloodborne Pathogens Standard calls for disinfection of contaminated surfaces with a "freshly prepared" 1:10 solution of sodium hypochlorite. However, no indication is given of what is considered "freshly prepared"-daily, twice daily or hourly?

Chlorine is also corrosive and/or damaging to numerous surfaces including steel, carpet fiber, clothing, and human skin to name a few. In addition, it is extremely reactive if inadvertently added to other chemicals such as acids.

The following chart lists many properties of chlorine as compared to other chemical disinfectants including phenolics and quaternaries. Please keep in mind that this discussion does not cover the subject of chlorine used in food service sanitation.

This information applies to the use of disinfectants as they relate to the Bloodborne Pathogens Standard. For truly effective decontamination of blood or other body fluid spills, registered tuberculocidal products such as phenolics or some ready-to-use quaternaries are Reckitt Benckiser Professional's recommended products for protection of employees and patients against bloodborne pathogens. We recommend the use of TB effective products due to their disinfection strength vs using products registered against HBV (see IB Sect. V #29). Quats are also OSHA recommended for use in non-critical areas considered unlikely to receive blood or body fluid spills.

Although chlorine is certainly a needed and effective disinfectant for specific uses, it may not provide true decontamination under the requirements of the Bloodborne Pathogens Standard.

CHARACTERISTICS	PHENOLICS*	QUATS*	READY-TO-USE QUATS*	CHLORINE
Dilution Stability	Stable. EPA recommends daily use preparation.	Stable. EPA recommends daily use preparation.	Stable.	Use solutions should be use promptly. High temperatures and light accelerate instability.
Concentrate Stability	Over 2 years.	Over 2 years.	Indefinitely.	Should be stored in a cool dark location in closed containers. i.e., shielded from ultra violet light.
Disinfection Level	Hospital disinfection including TB.	Hospital disinfection	Hospital disinfection	While OSHA recommended, not all are EPA registered disinfectants.
Effective in Presence of Organic Soil	Yes.	Yes.	Yes.	Presence of organic material can effect stability/efficacy.
Wetting Ability	Good.	Good.	Good.	Poor or none.
Odor	Clean/Medicinal.	Pleasant.	Clean.	Harsh.
Cleaning Ability	Good.	Very Good.	Exceptional.	Some color/stain removal.

* Refers to products manufactured by Reckitt Benckiser.