

Safetygram

NCI Frederick

ISM161

General

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Hazards of Chlorine Bleach

Common household bleach (e.g. Clorox) contains approximately 5.25% sodium hypochlorite (NaOCl) diluted in water. Hypochlorite's are strong oxidizing agents, making them useful as disinfectants and cleaners. Bleach, when used as a disinfectant, should be used in a 1:10 dilution and made fresh on a weekly basis.

Some frequently used workplace and household chemicals are dangerously incompatible with bleach. Toilet bowl cleaners, for example, are typically strong acids and a pH of around 2. When strong acids are mixed with bleach, a significant volume of highly toxic chlorine gas may be released. Exposure to chlorine gas can cause severe irritation to the skin, eyes, and respiratory tract. Chronic reduced pulmonary function and dental erosion may result from repeated exposure to chlorine.

Ammonia based products (e.g., Windex or other glass cleaners) also react with bleach to form hazardous products. A class of compounds known as chloramines (NH_2Cl , NHCl_2 , NCl_3) are the result. Symptoms of exposure to these compounds include irritation of the eyes and respiratory tract and feelings of nausea.

Areas using the Central Glassware Service are reminded that the tanks outside of the laboratories contain dilute bleach solution. Before placing glassware in the tanks, be sure to remove any potentially hazardous chemical, biological, or radioactive residues. Be certain that no traces of acid or ammonia remain on the glassware.

Both at home and at work, you and your family members should always read the label before using a product; many times the label will warn of hazardous mixtures. Never mix hypochlorite solutions with acids or with solutions containing ammonia. There is a potential hazard to become sensitized to bleach or develop a bleach allergy with repeated and frequent long term exposure.

If you have any further questions or would like more information on incompatible mixtures, please contact EHS at x1451.