

CHLORINE VS. CHLORINE BLEACH



Chlorine and chlorine-based chemicals are often imprecisely described in the media, in incident reports, and even by public health professionals and first-responders. As a result, there may be confusing reporting and faulty statistics associated with these chemicals. This fact sheet clarifies the difference between chlorine and chlorine bleach.

CHLORINE (UN 1017) is a natural chemical element. It is represented by the symbol “Cl” on the periodic table of the elements. Chlorine is naturally extremely reactive, so it is almost never found uncombined in nature.

When manufactured from “salts of the earth,” such as sodium chloride (NaCl), chlorine is produced as “Cl₂,” meaning it is a molecule composed of two atoms of chlorine. Cl₂, sometimes referred to as “elemental chlorine,” is a yellow-green gas at normal temperatures and pressures; it can be liquefied and compressed at low temperatures for transportation and storage.

CHLORINE BLEACH (UN 1791) is a water solution of a chlorine-containing compound known as sodium hypochlorite. Sodium hypochlorite is composed of sodium, oxygen, and chlorine, and has the chemical formula NaOCl. Chlorine bleach is a versatile disinfectant used to destroy germs in drinking water, swimming pools, laundry, and on surfaces in healthcare or food preparation environments. In some venues, such as swimming pools, chlorine bleach is commonly called “liquid chlorine” or “pool chlorine,” which may be confusing because elemental chlorine is transported and stored as a liquid, but is very different from sodium hypochlorite bleach. Chlorine bleach is a liquid at normal temperatures and pressures, and is produced at various useful strengths. Chlorine bleach sold for use by consumers is typically in the range of 5-8% strength, and available in some products (e.g., swimming pool disinfectant) up to about 12% strength.

HAZARD RESPONSES

Responses to a chlorine release and a bleach spill are very different. A chlorine release is generally a much

more serious incident than a bleach spill, with greater potential risk to human health. Accurately reporting the specific type of release is critical and dictates the hazmat response team’s protocols and the protective measures taken by surrounding communities.

When there is a chlorine release, pressurized liquid vaporizes into a gas and enters the ambient environment. Most human exposure to chlorine gas occurs by inhalation. According to the U.S. Centers for Disease Control and Prevention, exposure to chlorine gas at low levels can result in nose, throat, and eye irritation. Exposure to higher levels may result in changes in breathing rates and coughing, damage to the lungs, or more severe effects. A chlorine gas release typically results in evacuating the surrounding area and implementing emergency response procedures.

CHLORINE



The transportation placard for chlorine depicts its status as acutely toxic. Chlorine is a hazard of Class 2 (Gas). The 4-digit number is chlorine’s UN number.

CHLORINE BLEACH



The transportation placard for chlorine bleach depicts its status as a Class 8 Corrosive (corrosive to metal and skin). The 4-digit number is chlorine bleach’s UN number.