

Health Hazardous Ingredients in Conventional Cleaning Products

Chemical Name	Health Effects	Purpose of Use in Cleaning Products
Alcohols - Examples: Benzyl alcohol, Isopropyl alcohol, Ethanol (ethyl) alcohol	Isopropyl alcohol: Highly volatile. Irritant to eyes and the upper respiratory tract. Prolonged exposure may cause lung damage. Ethanol and isopropyl alcohol are absorbed through the skin and can irritate the skin, eyes, upper respiratory tract, and throat. Benzyl alcohol has been reported as a contact allergen in cleaning products.	Used as solvents and disinfectants in cleaning products.
Ammonia	Highly irritating. Inhalation of its vapors can irritate the nose, throat, and lungs, causing wheezing and shortness of breath. Prolonged exposure can cause bronchitis.	Used in glass cleaners.
Bleach: 5.25-6.15% solution of sodium hypochlorite [2]. Hydrochloric acid	Breathing a high concentration of chlorine can irritate the lungs. Particularly dangerous for people with heart conditions or chronic respiratory problems such as asthma or emphysema. Concentrated hypochlorite can cause corrosive damage to the skin and nails. Concentration below 5.25% not corrosive unless exposure occurs over a long period. Strong tissue irritant. Concentrated bleach can cause corrosive damage to the eyes and mucous membranes. Chlorine bleach often manufactured using a mercury cell process, leaving contaminant mercury in the product.	Bleach is a commonly used disinfectant in medical, commercial, and household settings.
Ethanolamine	Breathing its vapors can irritate the nose, throat and lungs, causing coughing, wheezing and shortness of breath. It is a skin irritant and can be absorbed through the skin. Can cause skin sensitization. Exposure to ethanolamine has been associated with occupational asthma.	Used as surfactant in cleaning products. Used in floor care products, general purpose, glass, and bathroom cleaners.
Ethylene glycol ethers - Examples: Butoxyethanol, ethylene glycol monobutyl ether, butyl "cellosolve" (2-BE)	Vapors are irritants to eyes and respiratory tract. 2-BE is a skin irritant. Absorbed in the body through skin - an important exposure route. 2-BE is a toxic chemical. Ethylene glycol alkyl ethers target the central nervous system, blood and blood-forming organs, and reproductive system.	Used as solvent in cleaning products to dissolve fatty substances. Mostly used in glass, general purpose cleaners, and floor care products.

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Oxidizers - Example Hydrogen peroxide	Corrosive to the skin over 50% concentrations, irreversible eye damage over 10% concentrations. Ready-to-use dilutions contain less than 2% hydrogen peroxide - which is not irritating to the skin unless other irritating ingredients are present. At high concentrations, irritates the nose, throat, and lungs. Classified as "mutagenic", however, no evidence that exposure to the concentrations found in cleaning products would cause mutagenic damage in humans.	Hydrogen peroxide considered more green due to fewer toxic characteristics than, for example quaternary ammonium or chlorine compounds.
Phenols/chlorinated phenols: Ortho benzyl para chlorophenol (OBPC) Ortho phenyl phenol (OPP)	Irritant to eyes and respiratory tract when inhaled. Even at low concentrations is extremely irritating to the skin. Repeated skin contact can cause dryness, itching and redness. Can penetrate the skin. Skin irritant. Occupational exposures may happen mostly through dermal contact. Sensitivity potential reported from animal studies. OPP is listed as a carcinogen in California .	Phenols are used as disinfectants in cleaning products - many considered effective against tuberculosis.
Quaternary ammonium Compounds (Quats) Examples: Di-decyl di-methyl ammonium chloride, N Alkyl dimethyl benzyl ammonium chloride (benzalkonium chloride)	Because quats are not volatile, inhalation exposures can happen through products' aerosolization. Commonly used solutions can cause nose and throat irritation. Benzalkonium chloride is a severe eye irritant. Limited evidence implicates quats in the development of allergic responses and occupational asthma. Exposures to benzalkonium chloride have been associated with combined respiratory and dermal hypersensitivity. Benzalkonium chloride is a primary skin irritant in solutions of less than 10%. Exposures to quats may cause allergic reactions to skin. Benzalkonium chloride suspected gastrointestinal and liver toxicant, and other quaternary ammonium compounds may have the same attributes.	Used as a low-level disinfectant. High level of disinfection is achieved if different quats and alcohols are mixed. Mostly used in bathroom, floor, and general purpose cleaners.

Information extracted from Appendix A: Examples of Hazardous Ingredients in Conventional Cleaning Products. Cleaning in healthcare facilities: Reducing human health effects and environmental impacts
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