

Chemical substances in products commonly used in hotels (and other lodging establishments) and their impacts

Several chemical products that are used as a part of the hotel operation pose potential hazards to human health and the environment, therefore they must be handled, stored and disposed carefully and replaced with less hazardous alternatives where possible.

This guidance document provides information and guidance on the identification of hazards associated with the use of chemical products, and their prevention, for both employers and employees.






Why Care About chemical substances in Your Hotel?

- # Maintain healthier and safer apartments for your clients
- # Protect workers and guests
- # Can cost a lot to fix, but very little to prevent
- # Attract sensitive and conscientious customers

What are chemical substances and where are they found?

Chemicals and mixtures of chemicals are widely used in nearly all aspects of our lives – from household appliances to industrial production. Most of them are harmless but some can pose unwanted effects to our health or the surrounding environment. Many business sectors use various chemical products, in some cases, without even realizing that some of them might be harmful and should be used with caution or even replaced. In hotels, chemical substances are found mainly in products used for cleaning (in housekeeping, kitchen, laundry and maintenance departments), but also are found in other products, such as, paints. Chemical substances are available in solid, liquid, powder, granules, tabs, gel forms or as gas. In the table below you can see some of applications of chemicals that are typical to the hotel industry:

Table 1
Chemical products used in the lodging establishments

	Floor cleaners and sealers		Spray air fresheners
	Laundry cleaners		Dry-cleaning chemicals
	Dishwashing detergents		Surface (e.g., glass, metal) cleaners

	Toilet and bathroom cleaners		Carpet cleaning agents, stain removers
	Degreasers and oven cleaners		Toilet block cleaners
	Descalers and delimers		Swimming pool chemicals
	Petrol, fuel oil and other oil products		Liquefied petroleum gas
	Pesticides, fungicides, and herbicides		Oil based paints and varnishes

Why chemical products can be dangerous?

Some chemical substances are dangerous - they can cause injury, impairment to health or death to living organisms, or which can damage the environment through, for example being toxic, flammable, explosive, corrosive or carcinogenic. A dangerous substance can enter the body when a chemical product comes into contact with skin or eyes, or when the substance is inhaled or swallowed. It is therefore important that employees who work with chemicals are aware of the hazards and adopt safe work practices to avoid chemical exposure.

Health hazards:

1. Effects can range from relatively mild (e.g., eye irritation) to serious diseases (e.g., cancer).
2. Adverse effects can occur because of a single episode of high exposure or from sustained, lower level, long term exposure.
3. Workers can be exposed to dangerous levels for many years with no obvious illness.
4. Hazardous substances may cause immediate or long-term health effects. Exposure could result in: 1) **poisoning**; 2) **irritation**; 3) **chemical burns**; 4) **sensitization**; 4) **cancer**; 5) **birth defects**; 6) **diseases of certain organs such as the skin, lungs, liver, kidneys and nervous system.**

Common ingredients in cleaning products and their impacts

Substance	What it does	Examples	In which products could be found?	Impact on humans	Impact on environment
Abrasive	Insoluble materials that provide a mechanical action to the cleaning function	Natural minerals, such as calcite, feldspar, quartz and silica	Abrasive cleaners for dishwashing or surface cleaning	Non-hazardous	
Acid	Used for the removal of inorganic deposits	Phosphoric acid, oxalic acid citric acid	Rust removers, toilet bowl cleaners descalers and delimers metal cleaners and polishes, tub, tile and sink cleaners	Corrosive or irritant depending on substance	Non-hazardous
Alkalis	Help to break down fats, oils, and other <u>protein</u> -based substances	Sodium hydroxide, sodium carbonate	Drain openers, oven cleaners, disinfectant products, bleach	Corrosive or irritant depending on substance	Non-hazardous
Chlorine	Can be used either as bleaching agent or disinfectant/sanitizer	Sodium hypochlorite	Widely used in cleaning and disinfectant products; swimming pool chemicals	Corrosive and irritant	It is not likely to cause permanent environment-al damage
Enzyme	Are added to cleaners to help break down and remove soils and stains	Protease	Laundry detergents, stain removers, dish detergents, deodorizers	Harmful	Non-hazardous
Perfume, fragrances	Mask unpleasant odors or provide a pleasant smell to the detergent	Natural (lemon, lavender, pine) Artificial (limonene, musks)	Widely used in various products	Varies greatly, many are toxic. Fragrance chemicals are the most frequent allergens (including sides effects - skin sensitivity, dermatitis, asthma attacks and migraine	
Peroxide	Can be used either as bleaching agent or disinfectant/sanitizer	Hydrogen peroxide	Swimming pool chemicals, commonly used in various products	Corrosive, oxidizing	Non-hazardous
Phosphate	Provides a source of moderate alkalinity and supports the cleaning process whilst tying up water hardness minerals	Sodium triphosphate	Laundry detergents, dishwashing detergents, metal polishes, may be used in specialty cleaners, such as concrete cleaners	Non-hazardous	Hazardous – causes eutrophication

Quaternary Ammonium Compound (QAC)	The quaternaries are cationic surfactants with germicidal (disinfectant) properties	Alkyl dimethyl benzyl ammonium chlorides (benzalkonium chlorides)	Dishwashing detergents, window cleaners, “all-purpose” cleaners, floor products, disinfectant sprays, air fresheners and other products with anti-microbial activity	Can be no-harmful, but most likely is harmful, when included in a product used in hotel industry	Varies greatly
Solvent	Used in detergent formulas to complement the cleaning efficiency	Ethanol, isopropanol, glycol ethers, xylene, toluene	Stain removers, dry cleaning agents, paints, lacquer, glue, cleaning products	Varies greatly	Varies greatly
Surfactant	Reduces the surface tension of water so it can quickly wet a surface to enable dirt to be loosened and removed. Provide foaming and emulsification.	Anionic, cationic, non-ionic, amphoteric	Most cleaning products, such as, laundry detergents, surface cleaners and dishwashing detergents	Varies greatly	Varies greatly

Hazard identification. How to recognize danger associated with chemical substances?

- Products, which contain dangerous substances should be supplied with sufficient information to allow the user to identify the hazards associated with the material.
- The information provided on the label of the chemical provides some information on the hazards and precautions to take when using the product. More detailed information is provided in the Material Safety Data Sheet (suppliers of the substances are responsible for providing them). They describe:
 - Properties and uses of a substance.
 - Health hazard information.
 - Precautions for use.
 - Safe handling requirements
- A list of standardized “*hazard statements*”, along with pictograms which represent the hazard statements must be displayed on the packaging. Below are the definitions used for hazardous materials most commonly encountered in hotels, together with their identification symbols.
- If product is transferred from original container the information must follow with it!

	<p>Health hazard/ hazardous to the ozone layer</p> <p>May cause respiratory irritation; May cause drowsiness or dizziness; May cause an allergic skin reaction; Causes serious eye irritation; Causes skin irritation; Harmful if swallowed; in contact with skin; Harmful if inhaled; Harms public health and the environment by destroying ozone in the upper atmosphere.</p>		<p>Serious health hazard</p> <p>May be fatal if swallowed and enters airways; Causes or may cause damage to organs; May damage or suspected of damaging fertility or the unborn child; May cause or suspected of causing cancer; May cause or suspected of causing genetic defects; May cause allergy or asthma symptoms or breathing difficulties if inhaled.</p>
	<p>Flammable</p> <p>Flammable or extremely flammable gas or liquid and vapor; Flammable or extremely flammable; Flammable solid.</p>		<p>Acute toxicity</p> <p>Fatal if swallowed Fatal in contact with skin Fatal if inhaled Toxic: if swallowed Toxic in contact with skin Toxic if inhaled</p>
	<p>Corrosive</p> <p>May be corrosive to metals Causes severe skin burns and eye damage.</p>		<p>Gas under pressure</p> <p>Contains gas under pressure; may explode if heated. Contains refrigerated gas; may cause cryogenic burns or injury.</p>
	<p>Oxidizing</p> <p>May cause or intensify fire or explosion.</p>		<p>Hazardous to the environment</p> <p>Toxic or very toxic to aquatic life with long lasting effects.</p>

Effective management of chemicals. How to minimize risks?

To safeguard the health of employees and guests, and to protect the environment, several responsibilities should be obeyed:

Responsibilities of the employer	Responsibilities of the employee
<ol style="list-style-type: none">1. Develop and implement an effective Safety and Health Program2. Identify all the regulatory requirements, as well as any company standards that are applicable for chemical product storage, handling, use and disposal3. Ensure that all chemical containers are properly labelled and that every product has a Material Safety Data Sheet4. Inform all staff of the workplace hazards and ensure that safety rules, training schedules and safe work procedures are followed5. Provide proper equipment including personal protective appliances and first aid boxes.	<ol style="list-style-type: none">1. Follow all safety rules and instructions concerning the safe use of chemical products2. Ensure that the correct product is used, use the cleaning product in the correct concentration and never mix cleaning products3. Attend safety training4. Use the safety devices and personal protective equipment provided5. Store and handle cleaning products correctly in the original containers; never put cleaning products into food or drink containers, because this may lead to accidental intake by eating or drinking6. Report accidents, incidents, diseases and any workplace hazards to the supervisor or employer7. Suggest ways to improve the safety and health of the work

Chemical risk control - general principles:

Where any unacceptable risk from exposure to hazardous substances cannot be eliminated, it must be controlled. There are a range of controls that are available for controlling chemical risks:

- 1) **Substitution** - this is the preferred way of dealing with dangerous chemicals. Does a substance have to be used at all? For example, can a different cleaning method be used that does not require use of chemicals? Can a non- or less-dangerous substance be substituted for the one currently in use? Examples:
 - a. Use perfume free products, as perfume adds no beneficial properties to the product.
 - b. Use phosphate free products, as other alternatives are available.
 - c. Use Natural control methods for hotel gardens instead of herbicides and pesticides
 - d. Use chlorine free disinfection methods for swimming pools.
- 2) **Isolation** - this is where hazards or risks are located away from everyday activities. Isolation may be by location (carrying out the activity at an isolated area) and/or by time (carrying out the risk activity at a time when few people are around). Do not allow unauthorized access to stored chemicals.

- 3) **Administrative controls** - these are controls that rely on safe systems of work to minimize risk. Examples include safe work procedures and competency training.
- 4) **Personal protective equipment** - skin, eye and respiratory protection where (and if) necessary.

Chemical risk control – some specific examples:

- 1) Identify opportunities for reducing the number of different chemical cleaning products and replacing them with simpler, cheaper and environmentally preferable alternatives, where possible.
- 2) Consider buying eco labeled products - third party certifications (such as, The EU Ecolabel, The Nordic Swan Ecolabel, the Blue Angel) are the best way to determine if a cleaning chemical is “green”.



- 3) If possible, avoid products marked “Corrosive”, “Serious health hazard”, “Warning”, “Acute toxicity” or “Hazardous to the environment” with the following hazard statements:
 - a. EUH029, EUH031, EUH032 (contact with water or acids liberates toxic gases).
 - b. H300, H301, H304, H310, H311, H330, H331, H370, H371, H372, H373 (toxic, fatal or may cause organ damage).
 - a. H340, H341 (mutagenic).
 - b. H350, H350i, H351 (carcinogenic).
 - c. H360D, H360F, H360FD, H360Fd, H360Df, H361f, H361d, H361fd, H362 (toxic for reproduction).
 - a. EUH070 (toxic by eye contact)
 - b. H400, H410, H411, H412 (except for fragrances), H413 (harmful to aquatic organisms)
 - a. EUH059 (hazardous to the ozone layer).
- 4) Reward staff for good ideas, using less or identifying alternatives – make it something you do together

REMEMBER - The safety and health of employees and guests must be managed the employers. This requires the employer to evaluate the dangers, identify and implement solutions, and then check to see that the measures put in place are working!