

International Hazard Datasheets on Occupation



Dry cleaner

What is a Hazard Datasheet on Occupation?

This datasheet is one of the International Datasheets on Occupations. It is intended for those professionally concerned with health and safety at work: occupational physicians and nurses, safety engineers, hygienists, education and Information specialists, inspectors, employers' representatives, workers' representatives, safety officers and other competent persons.

This datasheet lists, in a standard format, different hazards to which dry cleaners may be exposed in the course of their normal work. This datasheet is a source of information rather than advice. With the knowledge of what causes injuries and diseases, it is easier to design and implement suitable measures towards prevention.

This datasheet consists of four pages:

- Page 1: Information on the most relevant hazards related to the occupation.
- Page 2: A more detailed and systematized presentation on the **different hazards** related to the job with indicators for preventive measures (marked as numbered shields and explained on the third page).
- Page 3: Suggestions for **preventive measures** for selected hazards.
- Page 4: **Specialized information**, relevant primarily to occupational safety and health professionals and including information such as a brief job description, a list of tasks, notes and references.






Who is a dry cleaner?

A worker who removes soils or stains from garments and other fabrics, mainly using dry-cleaning machines.

What is dangerous about this job?

- Dry cleaners extensively use cleaning chemical agents that may cause various health problems. Some of these chemicals present a fire hazard.
- Dry cleaners may get injured or burned by cleaning machines, irons, conveyors, and other equipment in their workplaces.
- The dry cleaners' workplaces are usually hot, humid and noisy, which may cause excessive fatigue and ill feeling.
- Dry cleaners may need to handle heavy and bulky loads, do continuous repetitive movements and work in uncomfortable postures. This may cause trauma and, in the course of time, back, arm and hand pain.

Hazards related to this job

Accident hazards 	<ul style="list-style-type: none"> Slips and falls caused by chemicals spilled on floors, by piles of clothing on the floors, or by obstructed vision due to racks of clothing 	1
	<ul style="list-style-type: none"> Fire hazard due to solvent use (particularly Stoddard solvent which is very flammable) 	2
	<ul style="list-style-type: none"> Mechanical injury from presses or from overhead conveyor belts. 	
	<ul style="list-style-type: none"> Burns from steamer or irons 	
	<ul style="list-style-type: none"> Low back injury due to heavy loads and awkward posture 	
	<ul style="list-style-type: none"> Electrical shock from improperly grounded equipment 	3
	<ul style="list-style-type: none"> Acute poisoning (e.g., by phosgene formed by reaction between chlorine and hydrocarbons used for cleaning) 	
Physical hazards 	<ul style="list-style-type: none"> Fatigue and heat exhaustion due to high temperature and humidity 	4
Chemical hazards 	<ul style="list-style-type: none"> Central nervous system depression (lightheaded, dizziness, inebriation, confusion, lack of coordination, vertigo, nausea, somnolence, headache and coma) due to perchloroethylene inhalation [see Note 1] 	4
	<ul style="list-style-type: none"> Skin irritation, erythema, blistering and burns with acute exposure to perchloroethylene or Stoddard solvent. Drying and cracking due to prolonged exposure. Skin irritation from prolonged contact with trichloroethylene. Contact dermatitis due to soaps, detergents and optical brighteners (pyrazoline derivatives) 	5
	<ul style="list-style-type: none"> Irritation of the eyes, nose and throat due to perchloroethylene or Stoddard solvent 	4
	<ul style="list-style-type: none"> Pulmonary edema reported with exposure to high concentrations of perchloroethylene 	4
	<ul style="list-style-type: none"> Asthma caused by immediate hypersensitivity reaction due to proteolytic enzymes found in some detergents (rare since 1970) 	
	<ul style="list-style-type: none"> Severe liver and kidney damage with exposure to carbon tetrachloride. 	
	<ul style="list-style-type: none"> Some reports of liver and kidney damage from exposure to high concentrations of perchloroethylene and trichloroethylene. 	
	<ul style="list-style-type: none"> Cardiac sensitization (arrhythmias) reported with exposure to high concentrations of perchloroethylene and trichloroethylene. 	
	<ul style="list-style-type: none"> Reproductive effects due to perchloroethylene may include an increased risk of spontaneous abortion, decrease in sperm quality and menstrual abnormalities. Perchloroethylene is excreted in breast milk 	
Biological hazards 	<ul style="list-style-type: none"> Risk of contracting contagious diseases from soiled clothes worn by sick people 	
Ergonomic, psychosocial and organizational factors 	<ul style="list-style-type: none"> Size of machines relative to size of operators (machines, tables and presses are usually all of the same size and height, which could be a problem for smaller or larger workers) 	
	<ul style="list-style-type: none"> Cumulative trauma disorders as a result of repetitive motions, awkward posture, and handling of heavy and/or bulky loads 	
	<ul style="list-style-type: none"> Psychological stress due to nuisance noise, boredom, monotony, low salary, unsatisfactory personal relationships with co-workers and/or superiors 	

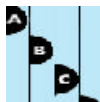
Preventive measures

- 1** Wear safety shoes with non-skid soles
 - 2** Do NOT allow open flames or smoking on the premises
 - 3** Check periodically electrical equipment for safety and call a professional electrician if needed
 - 4** Install effective ventilation and air conditioning to control excessive temperatures or humidity
 - 5** Protect hands with chemical-resistant gloves; if impractical, use a barrier cream
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Specialized information

Synonyms Professional garment cleaner

Definitions and/or description



Removes soils or stains from garments and other fabrics, that cannot be washed in water without loss of fabric integrity, by using nonaqueous solvents. Detergents and a small amount of water may be used for some fabrics. Garments are tagged, sorted (by type of fabric or soil). Prespotting solutions are applied as needed. Garments are then placed in machines where they are tumbled in the dry-cleaning solvent. The solvent is extracted during a spin cycle. With older machines, damp garments are manually transferred to a dryer (wet-to-dry technique). However, most machines used currently (dry-to-dry) do not require transfer - garments are spun dry in same machine. During drying the cleaning solution is vaporized, cooled, condensed and filtered. Solvent is reused after extraction and filtering. The garment is inspected. Touch up spot removal done as needed. Finally the garment goes to the finishing department. It may be steamed, pressed and/or ironed to restore shape and smoothness. Perchloroethylene is the solvent most commonly used. Stoddard solution is still used in some places, trichloroethylene is rarely used and carbon tetrachloride is no longer used. A wide variety of chemicals are used for spot removal. These include bleaching agents, aqueous ammonia, hydrogen peroxide, acetic and oxalic acid, amyl acetate, chlorinated solvents, and formaldehyde. These chemicals are applied by hand and the cloth is then brushed, rubbed, sponged or steamed

Related and specific occupations

Apprentice; machine maintenance worker; spotter and touch-up worker; presser; seamstress; counter personnel; fur, leather, rug, glove, furniture and feather cleaner

Tasks

Accepting, tagging and sorting garments; applying spotting agents for removal of difficult stains; changing filters; hanging clothes; ironing; loading and unloading machines; maintaining machines; operating machines; pressing; returning garments to customers; steaming; transferring from wet to dry machine

Primary equipment used

Dry cleaning machines (wet-to-dry and dry-to-dry types), extractor and filter tank, spotting tables with brushes, sponges, cloths and racks of different solvents, bleach and other cleaners, steamer, garment press, iron, rolling laundry carts, overhead conveyor racks, cash register

Workplaces where the occupation is common

Industrial dry cleaning plants, commercial stores (70%), rare coin-operated machines in self service locations

Notes



1. Perchloroethylene is also known as: perc, tetrachloroethylene, ethylene tetrachloride, carbon bichloride, CAS 127-18-4. Prolonged exposure can result in impaired vision, memory deficits, and peripheral neuropathy. Mild CNS depression seen with Stoddard solvent (white spirits, varnoline, petroleum solvent, naphtha safety solvent - consists of 15 to 20% aromatic hydrocarbons such as benzene and 80 to 85% paraffin and naphthenic hydrocarbons). CNS depression or, occasionally euphoria, seen with trichloroethylene.
 2. IARC classifies perchloroethylene as a "possible" human carcinogen. There is some evidence for an increase in bladder and esophageal cancer incidence with perchloroethylene. No known cancer risk is associated with Stoddard solvent. No immunologic, hematologic or teratogenic effects are known for the mentioned substances.
 3. People (often owners) living above local neighborhood type stores have prolonged exposures. Predominant solvent used is perchloroethylene, however, some areas of the world (Japan) use more petroleum based solvents
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References

Adams, R.M.: Occupational Skin Disease. 2nd Ed., Saunders Co., 1990.



Agency for Toxic Substances and Disease Registry. Toxicological Profile for Tetrachloroethylene. U. S. Government Printing Office. Document # TP92/18, 1993.

Agency for Toxic Substances and Disease Registry. Toxicological Profile for Stoddard Solvent. U. S. Government Printing Office. Document # 638-643, 1995.

Ryan, R.P. and Terry, C.E. (Ed.): Toxicology Desk Reference, 3rd Ed., Taylor & Francis, 1996. p. 1737-1752.

IARC monographs on the evaluation of carcinogenic risks to humans. Vol. 63: Dry cleaning, chlorinated solvents and other industrial chemicals, Lyon, 1995.

This information has been compiled by the Israel Institute for Occupational Safety and Hygiene jointly with the BIA (Germany).
