

# Safety Training Course of Construction Workers of Specified Trade Painters and Decorator (AS01)

## Key Points

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# 1. Introduction - Causes of Accidents

## 1.1 Falls of persons

It may happen when the worker tripped or accidentally given a push by workers nearby and lost balance when worker is working at high-altitude floors, scaffolding, building and window edges or unstable platform, etc.; without proper fences or working platforms around and without wearing safety harness. Worker may fall from heights, resulting in injury in mild cases and death in severe cases.

You must always check carefully to see even protective fence / working platform are in place - if they are stable and reliable. The fence and workbench may collapse if it is not safe and workers will fall and cause work-related accidents.

# 1. Introduction - Causes of Accidents

## 1.2 Hit by falling objects

The environment of the construction site can be complex. Buildings are usually tall and multi-storey. Object falling from height is common on site, reasons include: objects are loose and fall; worker working above accidentally drop the tools or the working materials in use accidentally drop. It may also happen when loose materials are scattered from above during hoisting. It may also be due to misconduct by workers who threw debris from above which will cause the objects to fall from height and hit the people underneath.

## 1.3 Fire and explosion

It may be caused by improper storage of materials and tools. Generally, paints and solutions are flammable substances. Therefore only small amount of paint / solutions should be stored in the working place. They should be stored in a designated dangerous goods store if large amount is involved.

# 1. Introduction - Causes of Accidents

## 1.4 Eye and skin irritation

Plastering is a very common process in the paint industry. When doing plastering, the exposed skin may get contacted with gray water from time to time. People with sensitive skin may be injured after touching or rubbing with these substances, which may lead to severe suppuration. Therefore, in order to avoid causing any damage to the skin, e.g. the hands put rubber gloves on beforehand.

In addition to skin, eye protection is also very important. It is inevitable that working under dusty condition, e.g. removal of paint or sandblasting. Fine dust or paint may fall into the eyes. Therefore, it is necessary to wear appropriate eye protection equipment always. In case of an accident, do not rub your eyes. It should immediately rinse the affected area with clean water. You must seek emergency treatment if the situation persist.

## 2. General safe work practices for painting work

### 2.1 Hazards and safety measures of painting and spraying process

#### (A) Flammable liquid spraying process

- i) The main ingredients of paint include solvent (or thinner, thinner), resin and pigment. Apart from water, most solvents used in paints are highly volatile organic compounds;
- ii) Painting refers to the atomization of paint to the state of aerosol or aerosol, and then deposits on the surface of the workplace to form a uniform and smooth film;



Source: <https://m.nbchao.com/k/4757/>

## 2. General safe work practices for painting work

### 2.1 Hazards and safety measures of painting and spraying process

#### (A) Flammable liquid spraying process

iii) The painting process is generally carried out in one of the following methods:



- (a) Airless Spray - Squeeze liquid paint through a small orifice at high pressure to spread it;
- (b) Compressed Air Spray - This is the most common method of spraying paint and uses compressed air to atomize the paint solution through internal or external mixing holes;
- (c) Electrostatic methods - charges of liquid droplets (or solid particles) attach to a grounded conductive workplace. The charge can be applied before the paint is sprayed, or when the atomized droplets pass through the ionization field;
- (d) A combination of the above methods.



Source: <https://m.nbchao.com/k/4757/>

## 2. General safe work practices for painting work

### 2.1 Hazards and safety measures of painting and spraying process

#### (B) Fire and Explosion Hazards

- i) The use of flammable substances in painting and spraying will increase the risk of fire and explosion. During the painting process, the paint spray spreads around and quickly fills the entire space. If the spray comes into contact with potential ignition sources, **such as static electricity, sparks and flames, a fire or an explosion may occur;**
- ii) During the painting process, not all the sprayed liquid will adhere to the desired surface. Some may splash on other surfaces, such as walls, floors and clothing, and become flammable deposits. Once these attachments are ignited, they will cause serious fire;
- iii) Flammable vapors given off as paint dries can also pose a serious fire and explosion hazard. Some finishes (especially varnishes) contain as much as 80% volatile solvents which are released as they dry.

## 2. General safe work practices for painting work

### 2.1 Hazards and safety measures of painting and spraying process

#### (C) Health hazard

- i) Chemicals hazardous to health can enter the human body in three main ways: ingestion; inhalation; and skin absorption.
- ii) The painting process can cause various hazards to human health, mainly because paint contains substances such as solvents, resins and pigments, are harmful to our health. Some paints (such as chrome yellow, chrome red) and primers contain lead or other heavy metals that may be hazardous. In addition, surface preparation procedures such as cleaning, degreasing, paint removal, or rust removal may be required before painting, which may require the use of toxic solvents or corrosive chemicals, which harmful dust is produced.
- iii) Exposure of workers to hazardous substances during the painting process can lead to acute or chronic health problems.



Source:  
[http://www.oshc.org.hk/oshc\\_data/files/bulletins/ibsh/2016/Printing27.pdf](http://www.oshc.org.hk/oshc_data/files/bulletins/ibsh/2016/Printing27.pdf)

## 2. General safe work practices for painting work

### 2.1 Hazards and safety measures of painting and spraying process

#### (D) Safety measures

##### i) Elimination

This is the most effective safe measure. Stop using certain substances or working devices that have been assessed as posing a medium or higher level of risk to health.

##### ii) Substitution

a) Substitution is the use of less hazardous substances, devices or processes to perform the same work.

b) Measures include :

- Replace hazardous substances or hazardous processes with less hazardous substances or processes.
- For example, substituting less flammable or water-soluble paints for flammable liquids, or replacing spraying with rollers, sweeps and dips; or
- Replace hazardous working equipment with less hazardous working equipment.

## 2. General safe work practices for painting work

### ii) Substitution

The first indoor painting robot was put into its project. The robot can be controlled by a tablet and it takes around 15-20 mins for painting tasks (interior wall and ceiling) for a flat of 2-3 persons.



Source: RTHK

## 2. General safe work practices for painting work

### 2.1 Hazards and safety measures of painting and spraying process

#### (D) Safety measures

##### iii) Isolation

- Isolation refers to the separation of workers from hazards by barriers, either in distance or in time. Can be automated or separated to achieve isolation.
- The painting process can be carried out completely in isolation. This is the most effective method of isolation as the painting process is fully controlled and all employees are isolated from the hazard;
- The spraying process using flammable liquids can be carried out in a spraying room. The floor, walls and ceiling of this room should be constructed of materials with a fire resistance period of not less than 1 hour. Windows and doors should be constructed of materials with a fire resistance period of not less than 30 minutes;
- When it is not practicable to provide a spray booth, the spraying process shall be carried out in a spraying location specially designed for the purpose. The spraying process shall be carried out in a fully enclosed hood or cabinet. The hood or cabinet may be provided with openings of appropriate size and shape for working or ventilation.

## 2. General safe work practices for painting work

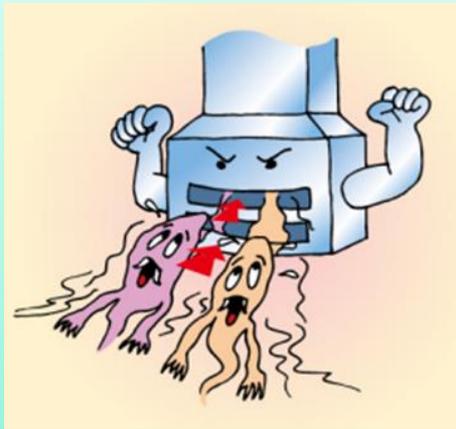
### 2.1 Hazards and safety measures of painting and spraying process

#### (D) Safety measures

##### iv) Engineering Control

Engineering controls include the use of engineering principles and operating modes to reduce risks. Engineering control measures for painting and painting processes include ventilation:

- Dilution ventilation and local exhaust control can reduce, contain or control the release of hazardous substances during painting and spraying. It also limits the scope of contamination in the event of spills and leaks;
- The spray booth or any canopy or cabinet spraying location shall have effective mechanical ventilation to the open air and be able to extract flammable or hazardous vapors from the spraying location.



Source: OSHC

## 2. General safe work practices for painting work

### 2.1 Hazards and safety measures of painting and spraying process

#### (D) Safety measures

##### v) Personal Protective Equipment

- Appropriate selection to suit the workplace and the needs of the job;
- Keep it clean, protective and ready to use;
- Store it in a proper manner and do not leave it in the painting work place;
- Proper use and regular maintenance in accordance with the manufacturer's instructions;
- A personal item and should include the name of the assignee; and
- Provide adequate training before use.

## 2. General safe work practices for painting work

### 2.1 Hazards and safety measures of painting and spraying process

#### (D) Safety measures



## 3. Dangerous Goods classification and storage

### 3.1 Dangerous Goods Ordinance defines the following to be "DANGEROUS GOODS"

- "All explosives, compressed gases, petroleum and other substances giving off inflammable vapours, substances giving off poisonous gas or vapour, corrosive substances, substances which become dangerous by interaction with water or air, substances liable to spontaneous combustion or of a readily combustible nature."
- Under the amended DGO, the total number of DG has increased from about 1,100 to about 2,300 while the types of DG under regulation of FSD have increased from about 400 to over 1,700. Public and trade should take note of the EQ of DG under the new legislation. For the manufacture, storage, conveyance or use of DG, application for a DG licence shall be made according to the requirements stipulated in the new legislation before the end of the transitional period.

# 3. Dangerous Goods classification and storage

## 3.2 Dangerous Goods classification

The Dangerous Goods (General) Regulations classify dangerous goods into the following categories Effective March 31, 2022.

Hazardous goods classification and labeling old and new comparison table.

Class	Properties	Label <sup>[3]</sup>
2.1	Flammable gases	
2.2	Non-flammable, non-toxic gases	
2.3	Toxic gases	
3	Flammable liquids having a flash point not exceeding 60°C (140 °F) in closed cup test	
3A	Diesel, fuel oil and furnace oil having a flash point exceeding 60°C (140 °F) in closed cup test	
4.1	Flammable solids, self-reactive substances, solid desensitized explosives and polymerizing substances	
4.2	Substances liable to spontaneous combustion	
4.3	Substances which, in contact with water, emit flammable gases	
5.1	Oxidizing substances	
5.2	Organic peroxides	
6.1	Toxic substances	
8	Corrosive substances	
9	Miscellaneous dangerous substances and materials	
9A	Combustible goods which are exempt from the operation of sections 6, 8 and 10 of the DGO <small>(s.30 of DG(A&amp;E)R) 2012</small>	Not applicable

# 3. Dangerous Goods classification and storage

## 3.3 Exempt Quantity (EQ)

Class 2 DG	Class 2.1 DG	Class 2.2 DG	Class 2.3 DG
General EQ	75	150	0
Industrial EQ	150	300	0
Class 3 DG	Category 1	Category 2	Category 3
General EQ	25	25	25
Industrial EQ	50	150	150
Class 4-6 DG	Category 1	Category 2	Category 3
General EQ	0	10	25
Industrial EQ	0	20	50
Class 8-9 DG	Category 1	Category 2	Category 3
General EQ	0	25	50
Industrial EQ	0	50	150

Source: OSHC, HKFSD

# 3. Dangerous Goods classification and storage

## 3.3 Exempt Quantity (EQ)

### 一般豁免量(General EQ) / 工業豁免量(Industrial EQ)

#### Special Situation

After balancing safety and the actual needs of the public and the industry, consider granting a larger amount of exemptions.



Paint Materials (Class 3 or 8 DG)

General EQ : 250L  
Industrial EQ: 250L



Acetylene (Class 2.1 DG)

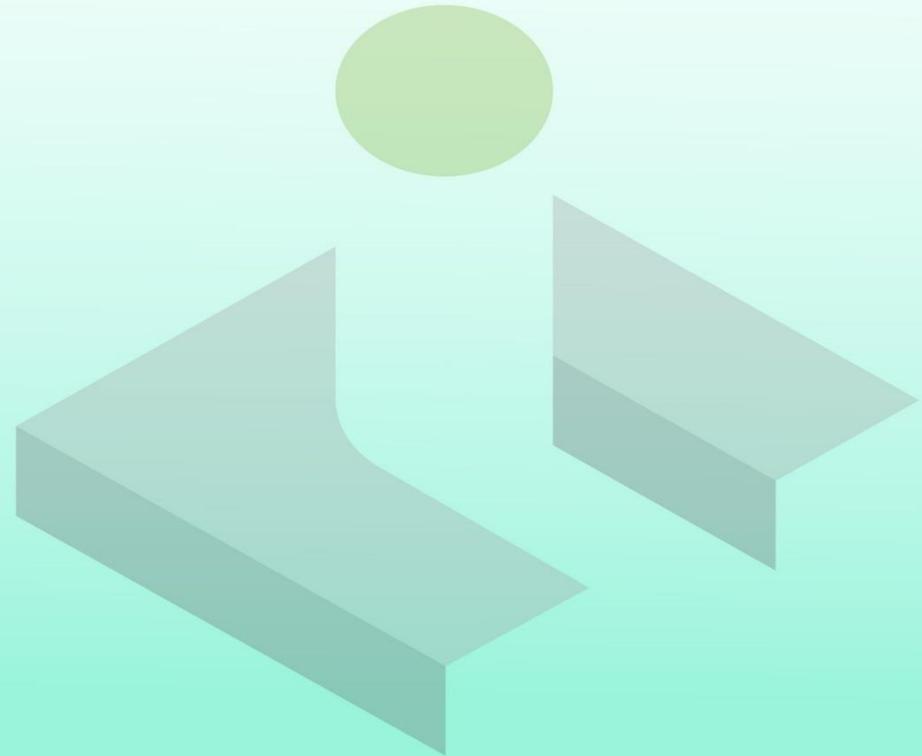
General EQ : 150L  
Industrial EQ: 300L

Source: OSHC, HKFSD

## 3. Dangerous Goods classification and storage

### 3.4 Legal responsibility

In accordance with the Dangerous Goods Ordinance, Cap. 295, Laws of Hong Kong ("DGO"), any person who manufactures Dangerous Goods ("DG") in any quantity, or stores, conveys or uses DG exceeding the Exempt Quantity ("EQ") must obtain a DG licence.



# 3. Dangerous Goods classification and storage

## 3.5 General safety rules

- Dangerous goods should not be stored in excess of the quantity permitted by the license;
- The type of dangerous goods that should not be stored if it is not specified in the dangerous goods store license;
- Dangerous goods should not be stored in unlicensed stores;
- Different types of dangerous goods should not be placed in the same store;
- Dangerous goods and general goods should not be placed together in stores licensed for dangerous goods;
- Dangerous goods should not be stored in unlicensed open areas; and
- Dangerous goods should not be stored in substandard containers.

# 3. Dangerous Goods classification and storage

## 3.6 Chemical Safety Database

Source: OSHC



“Chemical Safety Database” APP have 3 functions - Classification and Labelling of Dangerous Substances Commonly Used in Industry, A Reference Note on Occupational Exposure Limits for Chemical Substances in the Work Environment” and related chemical safety guidance notes.

In response to the government's amendments to the Dangerous Goods Ordinance and its subsidiary legislation, the OSHC's chemical safety database has also been updated accordingly. The relevant legislation has come into effect on March 31, 2022.

The following are the main updates and features:

1. The number of dangerous goods has increased;
2. The classification of dangerous goods has changed from ten categories to nine categories;
3. Changes in the labels of dangerous goods;
4. Changes in Dangerous Goods Exemption Amount;
5. You can use the "UN number" to search for dangerous goods, etc.



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