

參考資料

「職業衛生標準」

化學品的

工作環境內

OEL

A Reference Note on Occupational Exposure Limits for Chemical Substances in the Work Environment

mg/m^3

ppm



Occupational Safety and Health Branch
Labour Department
Hong Kong

TWA

**A Reference Note on
Occupational Exposure Limits
for
Chemical Substances in the
Work Environment**

This guidebook is prepared by the
Occupational Safety and Health Branch
Labour Department

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This guidebook is issued free of charge and can be obtained from offices of the Occupational Safety and Health Branch. Addresses and telephone numbers of the offices can be found in the booklet "The Labour Department Offers You its Services" or by telephone 2559 2297.

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1. Introduction

Chemicals used in the industry may become airborne in the working environment and cause different kinds of adverse health effects on workers. While it is recognized that exposure to chemical substances should be kept as low as reasonably practicable, guidance in the form of exposure limits may be used by occupational health and safety practitioners, employers and employees or their representatives to assist them in designing devices or to take appropriate measures in order to protect the workers adequately from chemical hazards.

The aim of this publication is to provide a reference in the form of Occupational Exposure Limits (OELs) to assess the adequacy of the control measures taken for the chemical substances which are commonly found in local industry. These Occupational Exposure Limits represent airborne concentrations of individual chemical substance. Exposures of workers to these airborne chemical substances should be kept as low as possible and should not exceed the OELs so that the workers are protected from adverse health effects arising from their repeated exposures day after day. Reference is made to the American Conference of Governmental Industrial Hygienists' list of Threshold Limit Values and the standards of other overseas organizations in establishing the OELs contained in this booklet.

It is important to appreciate the following aspects thoroughly before applying or interpreting the OELs:

- (a) *The OELs are not fine dividing lines between safe and dangerous concentrations.* Rather they are used as guidelines to assess the working environment and to indicate whether additional control measures are required.
- (b) *Exposure to airborne chemicals should always be kept as low as reasonably practicable* even though the current OELs are not exceeded. One of the reasons is due to individual susceptibility; a small proportion of workers may still be affected by some chemical substances at concentrations around or below the OELs. Another reason is because many of the OELs are established on current but limited scientific toxicological knowledge of the substances; a more stringent OEL may be adopted in future in the light of new toxicological knowledge.
- (c) *The evaluation or monitoring of hazards of atmospheric contaminants in workplaces is often a complex task. It involves thorough understanding of the work processes, good knowledge of the toxic effects of the chemical substances, adoption of appropriate sampling strategy, suitable choice of sampling and analytical method, correct use of sampling equipment and many other factors. Therefore, it is essential that those applying or interpreting the OELs in such hazard evaluations should be someone with appropriate training, knowledge and experience in occupational hygiene practice.*

- (d) The OELs only consider absorption of chemicals by inhalation and are *valid only when significant skin absorption does not occur*.
- (e) The OELs are not relative indices of toxicity of the chemical substances.
- (f) The OELs should not be used in the evaluation of non-occupational exposures such as evaluation of community air quality, and in the estimation the toxic potential of continuous or uninterrupted exposures.
- (g) The OELs may not be applicable directly to indoor air pollution problems in non-industrial work environments.
- (h) The OELs may be amended when new toxicological knowledge, medical or scientific evidence supports the necessity for such an amendment.

2. Unlisted Substances

OELs have not been assigned to all chemical substances used in industry. However, it does not imply that those not assigned with OELs are safe or non-hazardous.

In many instances, there is insufficient information to warrant development of an OEL for a chemical substance. In other instances, the use of the chemical substance does not produce a significant airborne level of contaminant and an OEL is not necessary. In addition, there are some chemical substances of considerable toxicity that have been omitted primarily because of their limited uses.

Whenever an OEL has not been assigned to a chemical substance, it will be necessary for employers to establish their own work practices and standards for control so that adequate control of exposure is provided. Furthermore, it is a good hygiene practice to keep exposure to any chemical substances as low as reasonably practicable and handle them with due care.

3. Prohibition of the Use of Substances

There are some chemical substances of which the use or the method of use is prohibited. Details of these chemical substances can be found in the following:

- (a) **Factories and Industrial Undertakings (Blasting by Abrasives) Special Regulations** concerning the prohibition of the use of sand or other material containing free silica as an abrasive in any blasting process.
- (b) **Factories and Industrial Undertakings (Asbestos) Special Regulations** concerning the prohibition of:
 - (i) spraying of asbestos or any material containing asbestos or asbestos dust;
 - (ii) use of crocidolite, amosite or any substance containing either of those minerals in any process.

- (c) Factories and Industrial Undertakings (Carcinogenic Substances) Regulations concerning the prohibition of use of:
- (i) beta-naphthylamine and its salts;
 - (ii) benzidine and its salts;
 - (iii) 4-aminodiphenyl and its salts;
 - (iv) 4-nitrodiphenyl and its salts;
- and any substance containing any of these chemical compounds.

OELs have been assigned to some of these chemical substances because of their existence as a result of past use.

4. Occupational Exposure Limits

In this reference note, there are three categories of Occupational Exposure Limits all referring to the exposure of workers in a working environment. They are defined as follows:

- (a) Occupational Exposure Limit—Time-Weighted Average (OEL-TWA)—it is expressed as the time-weighted average of the airborne concentration of a chemical substance over an eight-hour working day, for a five-day working week unless otherwise stated. Only when the personal exposure of any worker to that chemical substance over an eight-hour working day is kept at or below such concentration, the control of the airborne chemical substance may be considered adequate.

In the eight-hour averaging period of a working day, excursions above the OEL-TWA are permitted provided that these excursions are compensated for by equivalent excursions to maintain exposures below the limit. However, since some chemical substances can produce acute health effects even after brief exposures to high concentrations, excursions above the OEL-TWA should be restricted. The following two types of OEL are introduced to restrict such excursions.

- (b) Occupational Exposure Limit—Short-Term Exposure Limit (OEL-STEL)—it is expressed as a 15-minute time-weighted average of the airborne concentration of a chemical substance unless otherwise stated. It should not be exceeded at any time during a workday even though the 8-hour time-weighted average exposure is within the OEL-TWA. Exposures above the OEL-TWA up to OEL-STEL should not be more than 15 minutes and no more than 4 times a day. A minimum of 60 minutes should be allowed between successive exposures in this range.

The OEL-STEL provides a guideline for the control of the short term exposure. It is an important supplement to the OEL-TWA which is more concerned with the long term exposure to airborne contaminants over long periods of time.

- (c) Occupational Exposure Limit—Ceiling (OEL-C)—it is expressed as the airborne concentration of a chemical substance that should not be exceeded during any part of the working exposure. If instantaneous monitoring of the concentration of the airborne substance is not feasible, the OEL-C can be assessed by sampling over a 15-minute period except for those chemical substances that may cause immediate irritation when exposures are short.

5. Excursion

For most of the listed chemical substances, there is not enough toxicological information available to warrant an OEL-STEEL or OEL-C. However, excursions above the OEL-TWA should still be controlled. It is recommended that as a general guideline excursions should not exceed three times the OEL-TWA for more than a total of 30 minutes during a workday and under no circumstances should they exceed five times the OEL-TWA provided that the OEL-TWA is not exceeded. When an OEL-STEEL or OEL-C is established for the chemical substance, it will supersede this general excursion limit regardless of whether it is more or less stringent.

6. Unusual Work Schedules

The OEL-TWA is expressed as a time-weighted average concentration of that chemical substance over an eight-hour working day and for forty hours a workweek. When workers have a work schedule longer than eight hours a day or 40 hours a week pattern, the OEL-TWA may need to be reduced by a suitable factor to ensure adequate worker protection. Expert advice should be sought in such modification of OELs. As a rough guide, the OEL reduction factor (RF) may be derived by the Brief and Scala model:

for more than 8 hours per day,

$$RF = \frac{8}{h} \times \frac{24 - h}{16}$$

where h = hours worked per day,

for more than 5-day and 40 hours per week,

$$RF = \frac{40}{H} \times \frac{168 - H}{128}$$

where H = hours worked per week.

7. Physical Factors

Physical factors such as high temperature, abnormal pressure, ultraviolet radiation may increase stress on a worker so that the effects of an exposure to an airborne contaminant at the OEL may be changed. These stresses can act adversely to increase the toxic response of the contaminant in many instances. Therefore, an OEL should be applied with caution when there is gross deviation from the normal situation.

8. Skin Absorption

In general, the main route of entry into the body for most chemical substances is by inhalation and the OELs in this booklet solely refer to exposure by this route. However, there are some chemical substances which can penetrate the intact skin and be absorbed significantly into the body. These chemical substances are marked with the notation 'Sk' in the list of OELs. When there is potential exposure of skin to such chemical substances, further control measures against skin absorption are necessary in addition to those against inhalation hazards.

9. Simple Asphyxiants

Some gases and vapours, when present at high concentrations, can reduce the oxygen content in the air to such an extent that life cannot be supported. They act as simple asphyxiants. Many of them are odourless, colourless and not easily detectable. It is important to ensure that the oxygen content of air should never be less than 18% by volume under normal atmospheric pressure when such simple asphyxiant is present. Moreover, many asphyxiants have a fire or an explosion risk at concentrations well below those at which asphyxiation is likely to occur. Extra precautions or control are therefore further required to avoid the presence of concentrations liable to cause a fire or an explosion.

10. Carcinogens

Some of the chemical substances listed in this booklet are confirmed or suspected human carcinogens. They are indicated with the notations @, A1 and A2 in the table of OELs. Exposure to carcinogens should preferably be prevented. If this cannot be achieved, exposure should be kept to the minimal so far as reasonably practicable and always below the OELs.

11. Sensitisers

Some chemical substances may cause sensitisation of the respiratory tract when inhaled. Once after sensitisation, an affected individual may subsequently produce symptoms of ill-health after exposure even to minute concentrations of the sensitiser. Compliance with the OEL may not provide adequate protection for a hypersensitive individual. Exposure to sensitisers should preferably be prevented. If this cannot be achieved, exposure should be kept as low as reasonably practicable. In the table of OELs, those respiratory sensitisers are assigned with the 'Sen' notation.

12. Airborne Particulates

Except for crystalline silica, asbestos and raw cotton dust, the OELs for the airborne particulates included in this publication refer to the 'inspirable dust' unless otherwise stated. The 'inspirable dust' is the airborne dust which may enter the respiratory system during breathing.

The recommended exposure limits of airborne crystalline silica, asbestos and raw cotton dust are also produced in the table of OELs but readers are strongly advised to look into the details of the exposure limits and their applications in their relevant Reference Note, Code of Practice and Protection of Workers' Health Series produced by the Labour Department.

13. Mixed Exposure

The exposure limits listed in this booklet are for single compounds. However, workers are frequently exposed to a mixture of compounds.

The health effect of a mixture is a complex issue and it can be entirely different from those of the individual components. Some components act on different tissues or organs and their effects are 'independent' of each other. In some cases the individual components act on the same organs or by similar toxicological mechanisms and their effects are 'additive'. In other cases the overall effect is much greater than the sum of the individual effects and the effects are 'synergistic'. There are also 'potentiation' cases when one component has an effect but the second component does not but enhance the effect of the former one in mixed exposure.

'Synergism and Potentiation'—When cases of synergism and potentiation are encountered, more strict control is required. Expert advice should be sought when these kinds of interaction are suspected to exist.

'Additive Effects'—When the effects of the components of the mixture are 'additive' and the OELs are based on the same health effects, the mixed exposure should be assessed by the formula:

$$\frac{C_1}{OEL_1} + \frac{C_2}{OEL_2} + \frac{C_3}{OEL_3} + \dots < 1$$

where C_1 , C_2 , etc are the airborne concentrations of the components and OEL_1 , OEL_2 , etc are the corresponding OELs. This formula is only applicable when the chemical substances are inducing similar adverse health effects. When the sum of the fractions does not exceed unity, the mixed exposure is considered not exceeding the Occupational Exposure Limit.

'Independent Effects'—Where no synergistic, potentiation, or additive effects are known or considered likely, the effects of the components can be regarded as independent. In such cases, the limit for the mixed exposure is not exceeded if their individual airborne concentrations are less than the respective OELs.

14. Expression of Exposure Limits

In the table of OELs, the airborne concentrations of all the substances are expressed in milligram of the substance per cubic metre of air (mg/m^3) under

the environmental conditions of 25°C and one atmospheric pressure 101.3 kPa with the exception of asbestos which is normally expressed as fibres per millilitre of air. For gases and vapours, the concentrations are expressed in parts of the substance per million parts of the air (ppm) by volume.

The following formula can be used to convert the concentration in ppm to mg/m³:

$$\text{Concentration in mg/m}^3 = \frac{\text{Molecular Weight} \times \text{Concentration in ppm}}{24.45}$$

15. Further Information

A series of booklets on other topics of workers' health and occupational health hazards are shown in the Appendix 1. They are available free of charge from Occupational Health Division of the Labour Department, at 15/F., Harbour Building, 38 Pier Road, Central, Hong Kong. In case there is still any further problem on occupational health and hygiene aspects, all employees and employers are welcome to make enquiry to the office or through telephone 2852 4041.

List of booklets on Workers' Health

A Reference Note on Control of Asbestos at Work

A Reference Note on Ventilation and Maintenance of Ventilation Systems

Guide to Occupational Diseases Prescribed for Compensation Purposes

Hints on First Aid (For: Notifiable Workplaces, Quarries, Cargo & Container Handling Undertakings, and Construction Sites and other workplaces)

Notes on the Diagnosis of Occupational Diseases prescribed under the Employees' Compensation Ordinance

The Protection of Workers' Health Series

—Control of Toxic Substances in Workplace

—Cyanide Hazard in Industry—Poisoning Prevention and Treatment

—Electroplating—Health Hazards

—Health Guide on the use of Visual Display Unit

—Health Hazards in Demolition Work

—Health Hazards of Diving

—Manganese Dioxide

—Prevention of Back Injury

—Respiratory Protective Equipment

—Silica

—Solvent Hazards in Printing Industry

—Solvents

Code of Practice

—Control of Lead at Work

—Diving

—Protection of Cotton Spinning Workers from Byssinosis

—Protection of Quarry and Construction Workers from Silicosis

—Protection of Tunnel Workers from Silicosis

Health Brochures

—Health Hazards of Asbestos

—Health Hazards of Welding

—Respirator for Silica Dust

—Safe Use of Toluene-di-isocyanate (TDI) and Methylene-di-isocyanate (MDI)

—Skin Diseases in Industry

—Solvent Hazard in Screen Printing

Table of Occupational Exposure Limits

When making reference to the following table, you are strongly advised to read the content of the aforepages carefully in the first instance. Below are the explanatory notes and remarks for the table:

Explanatory Notes:

Nomenclature	—The chemical names used in this booklet are in accordance with the nomenclature rules of the International Union of Pure and Applied Chemical (IUPAC) or the common names. All prefixes, e.g. n-, tert-, o-, are disregarded when listing the substances in the list of OELs in alphabetical order except the prefixes 'iso' and 'cyclo'.
CAS Number	—The Chemical Abstracts Service Registry Number (CAS No.) of the American Chemical Society is a number to identify each individual chemical. Each chemical is uniquely assigned with a single code. This number is also shown, for most substances in the table of OELs for the readers' reference.
ppm	—parts per million in terms of volume by volume
mg/m ³	—milligrams per cubic metre of air
f/mL	—fibres per millilitre of air

Remarks:

A1	Confirmed Human Carcinogen by American Conference of Government Industrial Hygienists (ACGIH).
A2	Suspected Human Carcinogen by ACGIH.
A3	Animal Carcinogen by ACGIH.
A4	Not Classifiable as a Human or Animal Carcinogen by ACGIH.
A5	Not Suspected as a Human Carcinogen by ACGIH.
@	Substance identified by other sources as a suspected or confirmed human carcinogen.
D	The value is for total dust containing no asbestos and <1% crystalline silica.
G	As sampled by method that does not collect vapour.
J	Except castor, cashew nut, or similar irritant oils.
K	Does not include stearates of toxic metals.
N.E.	Chemical included in Factories and Industrial Undertakings (Dangerous Substances) Regulations, which Occupational Exposure Limit has not yet been established.
NOC	Not otherwise classified.
Sen	Capable of causing respiratory sensitisation.
Sk	Can be absorbed significantly through skin.

Occupational Exposure Limits 職業衛生標準

Chemical [CAS#] 化學品	TWA 時量平均值		STEL 短暫暴露限值		Ceiling 最高暴露限值		Remarks 備註
	ppm	mg/m ³	ppm	mg/m ³	ppm	mg/m ³	
Acetaldehyde [75-07-0] 乙醛	—	—	—	—	25	45	@, A3
Acetic acid [64-19-7] 醋酸 (乙酸)	10	25	15	37	—	—	
Acetic anhydride [108-24-7] 醋酐	5	21	—	—	—	—	
Acetone [67-64-1] 丙酮	500	1188	750	1782	—	—	A4
Acetonitrile [75-05-8] 乙腈	40	67	60	101	—	—	A4
Acetyl chloride [75365] 乙醯氯	—	—	—	—	—	—	N.E.
Acetylene [74-86-2] 乙炔	—	—	—	—	—	—	Simple Asphyxiant 非化學性窒息物品
Acrolein [17-02-8] 丙烯醛	—	—	—	—	0.1	0.23	Sk, A4
Acrylic acid [79-10-7] 丙烯酸	2	5.9	—	—	—	—	Sk, A4
Alcohol, denatured 變性醇	—	—	—	—	—	—	N.E.
Allyl alcohol [107-18-6] 丙烯醇	2	4.8	4	9.5	—	—	Sk
4-Aminodiphenyl [92-67-1] and its salts 4-氨基聯苯及其鹽	—	—	—	—	—	—	@, A1, Sk, prohibited 禁用

Chemical [CAS#] 化學品	TWA 時量平均值		STEL 短暫暴露限值		Ceiling 最高暴露限值		Remarks 備註
	ppm	mg/m ³	ppm	mg/m ³	ppm	mg/m ³	
Ammonia [7664-41-7] 氨	25	17	35	24	—	—	
Ammonium dichromate, see Chromium (VI) compound 重鉻酸銨，見鉻(VI)化合物							
Ammonium fluorosilicate, see Fluoride 氟矽酸銨，見氟化物							
Amosite, see Asbestos 鐵石棉，見石棉							
n-Amyl acetate [628-63-7] 正醋酸戊酯	100	532	—	—	—	—	
sec-Amyl acetate [626-38-0] 仲醋酸戊酯	125	665	—	—	—	—	
Amyl alcohol, mixed isomers, with the exception of tert-pentanol 戊醇，異構體混合物，叔戊醇除外	—	—	—	—	—	—	N.E.
Aniline [62-53-3] and homologues 苯胺及其同系物	2	7.6	—	—	—	—	Sk, @, A3
Aniline [62-53-3], salts of 苯胺鹽	—	—	—	—	—	—	N.E.
Antimony [7440-36-0] and compounds, as Sb 銻及其化合物，以其銻量算	—	0.5	—	—	—	—	
Antimony pentachloride, see Antimony 五氯化銻，見銻							
Antimony trichloride, see Antimony 三氯化銻，見銻							
Arsenic, elemental [7440-38-2] and inorganic compounds, (except Arsine), as As 砷，元素及無機化合物[除胂外]，以其砷量算	—	0.01	—	—	—	—	A1

Chemical [CAS#] 化學品	TWA 時量平均值		STEL 短暫暴露限值		Ceiling 最高暴露限值		Remarks 備註
	ppm	mg/m ³	ppm	mg/m ³	ppm	mg/m ³	
Benzoyl chloride [98-88-4] 苯甲醯氯	—	—	—	—	0.05	—	A4
Benzoyl peroxide [94-36-0] 過氧化二苯甲醯	—	5	—	—	—	—	A4
Benzyl alcohol [100516] 苄醇	—	—	—	—	—	—	N.E.
Benzyl benzoate [120514] 苯甲酸苄酯	—	—	—	—	—	—	N.E.
Benzyl chloride [100-44-7] 苄基氯 (氯化苄)	1	5.2	—	—	—	—	@, A3
Benzylidene chloride [98873] 亞苄基二氯	—	—	—	—	—	—	N.E.
Beryllium [7440-41-7] and compounds, as Be 鈹及其化合物，以其鈹量算	—	0.002	—	0.01	—	—	@, A1
Boron trichloride [10294345] 三氯化硼	—	—	—	—	—	—	N.E.
Boron trifluoride [7637-07-2] 三氟化硼	—	—	—	—	1	2.8	
Bromine [7726-95-6] 溴	0.1	0.66	0.2	1.3	—	—	
Bromoacetic acid [79083] 溴醋酸 (溴乙酸)	—	—	—	—	—	—	N.E.
Bromomethane, see methyl bromide 溴化甲烷，見甲基溴							
1, 3-Butadiene [106-99-0] 丁二烯-[1, 3]	2	4.4	—	—	—	—	@, A2
Butane [106-97-8] 丁烷	800	1900	—	—	—	—	

Chemical [CAS#] 化學品	TWA 時量平均值		STEL 短暫暴露限值		Ceiling 最高暴露限值		Remarks 備註
	ppm	mg/m ³	ppm	mg/m ³	ppm	mg/m ³	
1-Butanol, see n-Butyl alcohol 丁醇-[1], 見正丁醇							
2-Butanol, see sec-Butyl alcohol 丁醇-[2], 見仲丁醇							
2-Butanone, see Methyl ethyl ketone (MEK) 丁酮-[2], 見甲基乙基甲酮							
2-Butoxyethanol (EGBE) [111-76-2] 2-丁氧基乙醇	25	121	—	—	—	—	Sk
n-Butyl acetate [123-86-4] 醋酸正丁酯	150	713	200	950	—	—	
n-Butyl alcohol [71-36-3] 正丁醇	—	—	—	—	50	152	Sk
n-Butyl acrylate [141-32-2] 正丁丙烯酸酯	10	—	—	—	—	—	A4
sec-Butyl alcohol [78-92-2] 仲丁醇	100	303	—	—	—	—	
tert-Butyl alcohol [75-65-0] 叔丁醇	100	303	—	—	—	—	A4
Cadmium, elemental [7440-43-9] and compounds, as Cd 鎘, 元素及化合物, 以其鎘量算							
Total dust 全粉塵	—	0.01	—	—	—	—	A2
Respirable dust 可吸入微塵	—	0.002	—	—	—	—	A2
Cadmium oxide [1306-19-0], see Cadmium, elemental and compounds, as Cd 氧化鎘, 參閱鎘, 元素及化合物, 以其鎘 量算							

Chemical [CAS#] 化學品	TWA 時量平均值		STEL 短暫暴露限值		Ceiling 最高暴露限值		Remarks 備註
	ppm	mg/m ³	ppm	mg/m ³	ppm	mg/m ³	
Calcium carbonate [1317-65-3] 碳酸鈣							
Total dust 全粉塵	—	10	—	—	—	—	D
Respirable dust 可吸入微塵	—	3	—	—	—	—	
Calcium carbide [75207] 碳化鈣	—	—	—	—	—	—	N.E.
Calcium hypochlorite, see Chlorine 次氯酸鈣，見氯							
Calcium sulphate [7778-18-9] 硫酸鈣							
Total dust 全粉塵	—	10	—	—	—	—	D
Respirable dust 可吸入微塵	—	3	—	—	—	—	
Calomel, see Mercury inorganic compounds 甘汞，見水銀無機化合物							
Camphor, synthetic [76-22-2] 樟腦，合成	2	12	4	24	—	—	A4
Carbon black [1333-86-4] 炭黑	—	3.5	—	—	—	—	@, A4
Carbon dioxide [124-38-9] 二氧化碳	5 000	9 000	30 000	54 000	—	—	
Carbon disulphide [75-15-0] 二硫化碳	10	31	—	—	—	—	Sk
Carbon monoxide [630-08-0] 一氧化碳	25	29	—	—	—	—	
Carbon tetrachloride [56-23-5] 四氯化碳	5	31	10	63	—	—	@, A2, Sk

Chemical [CAS#] 化學品	TWA 時量平均值		STEL 短暫暴露限值		Ceiling 最高暴露限值		Remarks 備註
	ppm	mg/m ³	ppm	mg/m ³	ppm	mg/m ³	
Carbonyl chloride, see Phosgene 二氯化碳醜, 見光氣							
Caustic potash, see Potassium hydroxide 苛性鉀, 見氫氧化鉀							
Caustic soda, see Sodium hydroxide 苛性鈉, 見氫氧化鈉							
Cellulose nitrate [9004700] 硝酸纖維素	—	—	—	—	—	—	N.E.
Chlorine [7782-50-5] 氯	0.5	1.5	1	3	—	—	A4
Chloroacetic acid [79118] 氯醋酸	—	—	—	—	—	—	N.E.
Chloroacetyl chloride [79-04-9] 氯乙醜氯	0.05	0.23	0.15	0.69	—	—	Sk
Chlorobenzene [108-90-7] 氯苯	10	46	—	—	—	—	A3
Chlorodiphenyl (42% chlorine) [53469-21-9] 氯聯苯(42% 氯)	—	1	—	—	—	—	Sk
Chlorodiphenyl (54% chlorine) [11097-69-1] 氯聯苯(54% 氯)	—	0.5	—	—	—	—	Sk, A3
1-Chloro-2, 3-epoxy propane, see Epichlorohydrin 1-氯代-2, 3-環氧丙烷, 見表氯醇							
Chloroform [67-66-3] 氯仿	10	49	—	—	—	—	@, A3, Sk
Chloromethane, see Methyl chloride 氯甲烷, 見甲基氯							
bis (Chloromethyl) ether [542-88-1] 雙(氯甲基)醚	0.001	0.0047	—	—	—	—	@, A1

Chemical [CAS#] 化學品	TWA 時量平均值		STEL 短暫暴露限值		Ceiling 最高暴露限值		Remarks 備註
	ppm	mg/m ³	ppm	mg/m ³	ppm	mg/m ³	
α -Chlorotoluene, see Benzyl chloride α -氯甲苯, 見苄基氯							
Chromium [7440-47-3] 鉻							
Metal 金屬	—	0.5	—	—	—	—	
Chromium (II) compounds, as Cr 鉻 (II) 化合物, 以其鉻量算	—	0.5	—	—	—	—	
Chromium (III) compounds, as Cr 鉻 (III) 化合物, 以其鉻量算	—	0.5	—	—	—	—	A4
Chromium (VI) compounds, as Cr 鉻 (VI) 化合物, 以其鉻量算							
Water soluble 水溶性	—	0.05	—	—	—	—	@, A1
Certain water insoluble 某種非水溶性	—	0.01	—	—	—	—	@, A1
Chromium trioxide, see Chromium (VI) water soluble compounds 三氧化鉻, 見鉻 (VI) 水溶化合物							
Chrysene [218-01-9] 蒽	—	—	—	—	—	—	@, A3
Chrysotile, see Asbestos 溫石棉, 見石棉							
Coal tar pitch volatiles [65996-93-2], as cyclohexane solubles 煤焦油瀝青揮發物, 以可溶於環己烷量算	—	0.1	—	—	—	—	@, A1
Copper [7440-50-8] 銅							
Fume 煙霧	—	0.2	—	—	—	—	

Chemical [CAS#] 化學品	TWA 時量平均值		STEL 短暫暴露限值		Ceiling 最高暴露限值		Remarks 備註
	ppm	mg/m ³	ppm	mg/m ³	ppm	mg/m ³	
Cyclohexanone peroxide [12262587] 過氧化環己酮	—	—	—	—	—	—	N.E.
DDT (Dichlorodiphenyl-trichloroethane) [50-29-3] 滴滴涕 (二氯聯苯-三氯乙烷)	—	1	—	—	—	—	@, A3
1, 2-Diaminoethane, see Ethylenediamine 1, 2-二胺基乙烷, 見乙二胺							
o-Dianisidine [119904] 鄰聯茴香胺	—	—	—	—	—	—	N.E.
o-Dianisidine salt 鄰聯茴香胺鹽	—	—	—	—	—	—	N.E.
Diatomaceous earth, see Silica—Amorphous 硅藻土, 見矽石——非結晶類							
Diazinon [333-41-5] 二嗪農	—	0.1	—	—	—	—	Sk, A4
Dibenzoyl peroxide, see Benzoyl peroxide 過氧化二苯基乙二酮, 見過氧化二苯甲醯							
1, 2-Dichlorobenzene, see o-Dichlorobenzene 1, 2-二氯苯, 見鄰二氯苯							
1, 4-Dichlorobenzene, see p-Dichlorobenzene 1, 4-二氯苯, 見對二氯苯							
o-Dichlorobenzene [95-50-1] 鄰二氯苯	25	150	50	301	—	—	A4
p-Dichlorobenzene [106-46-7] 對二氯苯	10	60	—	—	—	—	A3
Dichlorodifluoromethane [75-71-8] 二氯二氟甲烷	1 000	4 950	—	—	—	—	A4
1, 1-Dichloroethane [75-34-3] 1, 1-二氯乙烷	100	405	—	—	—	—	A4

Chemical [CAS#] 化學品	TWA 時量平均值		STEL 短暫暴露限值		Ceiling 最高暴露限值		Remarks 備註
	ppm	mg/m ³	ppm	mg/m ³	ppm	mg/m ³	
1, 2-Dichloroethane, see Ethylene dichloride 1, 2-二氯乙烷, 見二氯化乙烯							
Dichloroisocyanuric acid [2782572] 二氯異氰尿酸	—	—	—	—	—	—	N.E.
Dichloromethane, see Methylene chloride 二氯甲烷, 見亞甲基二氯							
α , α -Dichlorotoluene [98873] α , α -二氯甲苯]	—	—	—	—	—	—	N.E.
Dichloro-1, 3, 5-triazinetrione, see Dichloroisocyanuric acid 二氯-1, 3, 5-三嗪三酮, 見二氯異氰尿酸							
Dichloro-1, 3, 5-triazinetrione, potassium salt of, see Potassium salt of Dichloroisocyanuric acid 二氯-1, 3, 5-三嗪三酮之鉀鹽, 見二氯異 氰尿酸之鉀鹽							
Dichloro-1, 3, 5-triazinetrione, sodium salt of, see Sodium salt of Dichloroisocyanuric acid 二氯-1, 3, 5-三嗪三酮之鈉鹽, 見二氯異 氰尿酸之鈉鹽							
Dieldrin [60-57-1] 狄氏劑	—	0.25	—	—	—	—	@, Sk, A4
Diethylamine [109-89-7] 二乙胺	5	15	15	45	—	—	Sk, A4
Diethylene triamine [111-40-0] 二乙撐三胺	1	4.2	—	—	—	—	Sk
Diethyl ether, see Ethyl ether 二乙醚, 見乙醚							

Chemical [CAS#] 化學品	TWA 時量平均值		STEL 短暫暴露限值		Ceiling 最高暴露限值		Remarks 備註
	ppm	mg/m ³	ppm	mg/m ³	ppm	mg/m ³	
Diethyl ketone [96-22-0] 二乙酮	200	705	300	1 057	—	—	
m-Dihydroxybenzene [108-46-3] 間苯二酚	10	45	20	90	—	—	A4
Dilauroyl peroxide [105748] 過氧化二月桂醯	—	—	—	—	—	—	N.E.
3, 3'-Dimethoxybenzidine, see o-Dianisidine 3, 3'-二甲氧基聯苯胺, 見鄰聯茴香胺							
1, 2-Dimethoxyethane [110714] 1, 2-二甲氧基乙烷	—	—	—	—	—	—	N.E.
Dimethylamine [124-40-3] 二甲胺	5	9.2	15	27.6	—	—	A4
Dimethylbenzene, see Xylene 二甲苯, 見 Xylene							
α, α -Dimethylbenzyl hydroperoxide [80159] α, α -二甲苯基過氧化氫	—	—	—	—	—	—	N.E.
Dimethyldichlorosilane [75785] 二甲基二氯硅烷	—	—	—	—	—	—	N.E.
Dimethyl ether [115106] 二甲醚	—	—	—	—	—	—	N.E.
Dimethylformamide [68-12-2] 二甲基甲醯胺	10	30	—	—	—	—	Sk, A4
Dimethyl sulphate [77-78-1] 硫酸二甲酯	0.1	0.52	—	—	—	—	@, A3, Sk
Dinitrobenzene [528-29-0; 99-65-0; 100-25-4] (all isomers) 二硝基苯 (全異構體)	0.15	1	—	—	—	—	Sk
Dinitrotoluene [25321-14-6] 二硝基甲苯	—	0.2	—	—	—	—	Sk, @, A3

Chemical [CAS#] 化學品	TWA 時量平均值		STEL 短暫暴露限值		Ceiling 最高暴露限值		Remarks 備註
	ppm	mg/m ³	ppm	mg/m ³	ppm	mg/m ³	
1, 4-Dioxan, see Dioxane 1, 4-二氧陸圓, 見二噁烷							
Dioxane [123-91-1] 二噁烷	25	90	—	—	—	—	@, Sk, A3
Diphenylmethane diisocyanate, see Methylene bisphenyl isocyanate 二苯甲烷二異氰酸酯, 見二苯甲撐二異氰 酸酯							
Epichlorohydrin [106-89-8] 表氯醇	0.5	1.9	—	—	—	—	@, Sk, A3
Epoxy Resin:—Reaction product of Bisphenol A and Epichlorohydrin (average molecular weight not more than 700) 環氧樹脂: 雙酚 A 及表氯醇之反應產物 (平均分子比重不超過 700)	—	—	—	—	—	—	N.E.
Ethane-1, 2-diol, see Ethylene glycol 乙烷二醇-[1, 2], 見乙二醇							
Ethanthiol, see Ethyl mercaptan 氫硫乙烷, 見乙硫醇							
Ethanol, see Ethyl alcohol 乙醇, 見乙基醇							
2-Ethoxyethanol (EGEE) [110-80-5] 2-乙氧基乙醇	5	18	—	—	—	—	Sk
2-Ethoxyethyl acetate (EGEEA) [111-15-9] 醋酸-2-乙氧基乙酯	5	27	—	—	—	—	Sk
Ethyl acetate [141-78-6] 醋酸乙酯	400	1 440	—	—	—	—	
Ethyl alcohol [64-17-5] 乙基醇	1 000	1 880	—	—	—	—	A4

Chemical [CAS#] 化學品	TWA 時量平均值		STEL 短暫暴露限值		Ceiling 最高暴露限值		Remarks 備註
	ppm	mg/m ³	ppm	mg/m ³	ppm	mg/m ³	
Ethyl benzene [100-41-4] 乙苯	100	434	125	543	—	—	
Ethyl butyl ketone [106-35-4] 乙基丁基甲酮	50	234	75	350	—	—	
Ethylenediamine [107-15-3] 乙二胺	10	25	—	—	—	—	Sk, A4
Ethylene dichloride [107-06-2] 二氯化乙烯	10	40	—	—	—	—	@, A4
Ethylene glycol [107-21-1] 乙二醇							
Vapour and mist 蒸氣及霧	—	—	—	—	—	100	A4
Ethylene glycol dimethyl ether, see 1, 2-Dimethoxyethane 乙二醇二甲基醚，見 1，2-二甲氧基乙烷							
Ethylene glycol monobutyl ether, see 2-Butoxyethanol 乙二醇一丁基醚，見 2-丁氧基乙醇							
Ethylene glycol monoethyl ether acetate, see 2-Ethoxyethyl acetate 乙二醇一乙基醚醋酸酯，見 2-乙氧基醋酸 乙酯							
Ethylene glycol monoethyl ether, see 2-Ethoxyethanol 乙二醇一乙基醚，見 2-乙氧基乙醇							
Ethylene glycol monomethyl ether acetate, see 2-Methoxyethyl acetate 乙二醇一甲基醚醋酸酯，見 2-甲氧基醋酸 乙酯							

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	ppm	mg/m ³	ppm	mg/m ³	ppm	mg/m ³	
Ethylene glycol monomethyl ether, see 2-Methoxyethanol 乙二醇一甲基醚，見 2-甲氧基乙醇							
Ethylene oxide [75-21-8] 乙烯化氧	1	1.8	—	—	—	—	@, A2
Ethyl ether [60-29-7] 乙醚	400	1 210	500	1 520	—	—	
Ethyl glycol acetate, see 2-Ethoxyethyl acetate 乙基乙二醇醋酸酯，見醋酸-2-乙氧基乙酯							
Ethylidene chloride, see 1, 1-Dichloroethane 乙叉二氯，見 1, 1-二氯乙烷							
Ethyl mercaptan [75-08-1] 乙硫醇	0.5	1.3	—	—	—	—	
Ethyl methyl ether [540670] 乙基甲基醚	—	—	—	—	—	—	N.E.
Ethyl methyl ketone, see Methyl ethyl ketone 乙基甲基甲酮，見丁酮							
Ethyl propionate [105373] 丙酸乙酯	—	—	—	—	—	—	N.E.
Fluorides, as F 氟化物，以其氟量算	—	2.5	—	—	—	—	
Fluorine [7782-41-4] 氟	1	1.6	2	3.1	—	—	
Formaldehyde [50-00-0] 甲醛	—	—	—	—	0.3	0.37	@, A2
Formalin, see Formaldehyde 福爾馬林，(甲醛水)，見甲醛							
Formic acid [64-18-6] 蟻酸，(甲酸)	5	9.4	10	19	—	—	

Chemical [CAS#] 化學品	TWA 時量平均值		STEL 短暫暴露限值		Ceiling 最高暴露限值		Remarks 備註
	ppm	mg/m ³	ppm	mg/m ³	ppm	mg/m ³	
2-Furaldehyde, see Furfural 糠醛，見呋喃甲醛							
Furfural [98-01-1] 呋喃甲醛	2	7.9	—	—	—	—	Sk, A3
Furfuryl alcohol [98-00-0] 糠醇，(呋喃甲醇)	10	40	15	60	—	—	Sk
Gasoline [8006-61-9] 汽油	300	890	500	1 480	—	—	A3
Glutaraldehyde [111-30-8] 戊二醛	—	—	—	—	0.05	0.2	Sen
Glycol monoethyl ether, see 2-Ethoxyethanol 乙二醇一乙基醚，見2-乙氧基乙醇							
Gypsum, see Calcium sulphate 石膏，見硫酸鈣							
Heptane [142-82-5] 庚烷							
(n-Heptane) (正庚烷)	400	1 640	500	2 050	—	—	
2-Heptanone, see Methyl n-amyl ketone 庚酮-[2]，見甲基正戊基甲酮							
3-Heptanone, see Ethyl butyl ketone 庚酮-[3]，見乙基丁基甲酮							
Hexamethylene diisocyanate [822-06-0] 六甲撐二異氰酸酯	0.005	0.034	—	—	—	—	Sen
Hexane [110-54-3] 己烷							
n-Hexane 正己烷	20	70	—	—	—	—	
Other isomers 其他異構體	500	1 760	1 000	3 500	—	—	

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	ppm	mg/m ³	ppm	mg/m ³	ppm	mg/m ³	
2-Hexanone, see Methyl n-butyl ketone 己酮-2, 見甲基正丁基甲酮							
Hexone, see Methyl isobutyl ketone 異己酮, 見甲基異丁基甲酮							
Hydrazine [302-01-2] 肼	0.01	0.013	—	—	—	—	@, A3, Sk
Hydrochloric acid, see Hydrogen chloride 鹽酸, 見氯化氫							
Hydrofluoric acid, see Hydrogen fluoride 氫氟酸, 見氟化氫							
Hydrogen [1333-74-0] 氫	—	—	—	—	—	—	Simple Asphyxiant 非化學性窒息物品
Hydrogen chloride [7647-01-0] 氯化氫	—	—	—	—	5	7.5	
Hydrogen cyanide [74-90-8] 氰化氫	—	—	—	—	4.7	5	Sk
Hydrogen cyanide, salts of, see Cyanides 氰化氫鹽, 見氰化物							
Hydrogen fluoride [7664-39-3], as F 氟化氫, 以其氟量算	—	—	—	—	3	2.6	
Hydrogen peroxide [7722-84-1] 過氧化氫	1	1.5	—	—	—	—	
Hydrogen sulphide [7783-06-4] 硫化氫	10	14	15	21	—	—	
Hydroquinone [123-31-91] 氫醌; 對苯二酚	—	2	—	—	—	—	A3
2, 2'-Iminodi (ethylamine), see Diethylene triamine 2, 2'-亞胺基二乙基胺, 見二乙撐三胺							

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	ppm	mg/m ³	ppm	mg/m ³	ppm	mg/m ³	
Iodine [7553-56-2] 碘	—	—	—	—	0.1	1	
Iron oxide fume (Fe ₂ O ₃) [1309-37-1], as Fe 氧化鐵煙霧，以其鐵量算	—	5	—	—	—	—	A4
Isocyanates, all (as-NCO) 異氰酸酯，各種類，以其 (-NCO) 量算	—	0.02	—	0.07	—	—	Sen
Isophorone [78-59-1] 異佛爾酮	—	—	—	—	5	28	A3
Isoprene [78795] 異戊二烯	—	—	—	—	—	—	N.E.
Isopropyl acetate [108-21-4] 醋酸異丙酯	250	1 040	310	1 290	—	—	
Isopropyl alcohol [67-63-0] 異丙醇	400	983	500	1 230	—	—	Sk
Isopropyl benzene, see Cumene 異丙苯，見枯烯							
Isopropyl formate [625558] 甲酸異丙酯	—	—	—	—	—	—	N.E.
Kaolin [1332-58-7] 高嶺土							
Respirable dust 可吸入微塵	—	2	—	—	—	—	A4
Lead [7439-92-1], inorganic dusts & fumes 鉛，無機粉塵及煙霧	—	—	—	—	—	—	Refer to Code of Practice for Control of lead at work 參閱管制使用鉛之工 作守則
Lead alkyls, see Tetraethyl lead & Tetramethyl lead 烷基鉛，見四乙鉛及四甲鉛							

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	ppm	mg/m ³	ppm	mg/m ³	ppm	mg/m ³	
Lead arsenate [7784-40-9], as PbHAsO ₄ 砷酸鉛，以 PbHAsO ₄ 量算	—	0.15	—	—	—	—	
Lead chromate [7758-97-6], 鉻酸鉛							
as Pb 以其鉛量算	—	0.05	—	—	—	—	@, A2
as Cr 以其鉻量算	—	0.012	—	—	—	—	@, A2
Limestone, see Calcium carbonate 石灰岩，見碳酸鈣							
L. P. G. (Liquified petroleum gas) [68476-85-7] 石油氣	1 000	1 800	—	—	—	—	Asphyxiation 過量可引致窒息
Magnesium oxide fume [1309-48-4] 氧化鎂煙霧	—	10	—	—	—	—	
Malathion [121-75-5] 馬拉硫磷	—	10	—	—	—	—	Sk, A4
Maleic acid [110167] 順丁烯二酸，(馬來酸)	—	—	—	—	—	—	N.E.
Maleic anhydride [108-31-6] 順丁烯二酸酐，(馬來酸酐)	0.25	1.0	—	—	—	—	
Manganese [7439-96-5], as Mn 錳，以其錳量算							
Elemental and inorganic compounds 錳及無機化合物	—	—	0.2	—	—	—	—
Manganese dioxide, see Manganese 二氧化錳，見錳							
Marble, see Calcium carbonate 大理石，見碳酸鈣							

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	ppm	mg/m ³	ppm	mg/m ³	ppm	mg/m ³	
Mercurous chloride, see Mercury 氯化亞汞，見水銀							
Mercury [7439-97-6], as Hg 汞（水銀），以其元素量算							
Alkyl compounds 烷基化合物	—	0.01	—	0.03	—	—	SK
Aryl compounds 芳基化合物	—	0.1	—	—	—	—	
Inorganic forms 無機類	—	0.025	—	—	—	—	A4
Methacrylic acid [79-41-4] 甲基丙烯酸	20	70	—	—	—	—	
Methane [74-82-8] 甲烷	—	—	—	—	—	—	Simple Asphyxiant 非化學性窒息物品
Methanethiol, see Methyl mercaptan 甲硫醇，見 Methyl mercaptan							
Methanol, see Methyl alcohol 甲醇，見甲基醇							
2-Methoxyethanol (EGME) [109-86-4] 2-甲氧基乙醇	5	16	—	—	—	—	Sk
2-Methoxyethyl acetate (EGMEA) [110-49-6] 醋酸-2-甲氧基乙酯	5	24	—	—	—	—	Sk
Methyl acetate [79-20-9] 醋酸甲酯	200	606	250	757	—	—	
Methyl acrylate [96-33-3] 丙烯酸甲酯	2	7	—	—	—	—	Sk
Methyl alcohol [67-56-1] 甲基醇	200	262	250	328	—	—	Sk

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	ppm	mg/m ³	ppm	mg/m ³	ppm	mg/m ³	
Methylamine [74-89-5] 甲胺	5	6.4	15	19	—	—	
Methyl n-amyl ketone [110-43-0] 甲基正戊基甲酮	50	233	—	—	—	—	
Methyl bromide [74-83-9] 甲基溴	1	3.9	—	—	—	—	@, Sk
2-Methylbuta-1, 3-diene [78795] 2-甲基-1, 3-丁二烯	—	—	—	—	—	—	N.E.
2-Methylbutan-2-ol [75854] 2-甲基-2-丁醇	—	—	—	—	—	—	N.E.
Methyl n-butyl ketone [591-78-6] 甲基正丁基甲酮	5	20	10	40	—	—	Sk
Methyl chloride [74-87-3] 甲基氯	50	103	100	207	—	—	@, Sk, A4
Methyl chloroform [71-55-6] 甲基氯仿	350	1 910	450	2 460	—	—	A4
Methylene bisphenyl isocyanate (MDI) [101-68-8] 二苯甲撐二異氰酸酯	0.005	0.051	—	—	—	—	Sen
Methylene chloride [75-09-2] 亞甲基二氯	50	174	—	—	—	—	@, A3
Methylene dichloride, see Methylene chloride 亞甲基二氯, 見 Methylene chloride							
Methyl ethyl ketone (MEK) [78-93-3] 丁酮	200	590	300	885	—	—	
Methyl ethyl ketone peroxide (MEKP) [1338-23-4] 過氧化甲基乙基甲酮	—	—	—	—	0.2	1.5	

Chemical [CAS#] 化學品	TWA 時量平均值		STEL 短暫暴露限值		Ceiling 最高暴露限值		Remarks 備註
	ppm	mg/m ³	ppm	mg/m ³	ppm	mg/m ³	
Methyl glycol acetate, see 2-Methoxyethyl acetate 甲基乙二醇醋酸酯，見醋酸-2-甲氧基乙醇							
Methyl isobutyl ketone [108-10-1] 甲基異丁基甲酮	50	205	75	307	—	—	
Methyl mercaptan [74-93-1] 甲硫醇	0.5	1	—	—	—	—	
Methyl methacrylate [80-62-6] 甲基丙烯酸甲酯	100	410	—	—	—	—	A4
Methyl parathion [298-00-0] 甲基對硫磷	—	0.2	—	—	—	—	Sk, A4
2-Methylpropan-2-ol, see tert-Butyl alcohol 2-甲基丙-2-醇，見叔丁醇							
Methyltrichlorosilane [75796] 甲基三氯硅烷	—	—	—	—	—	—	N.E.
Mineral wool fiber 礦棉纖維	—	5	—	—	—	—	A4
1, 5-Naphthylene diisocyanate, see Isocyanates, all 1, 5-萘撐二異氰酸酯，見異氰酸酯，各種類							
β-Naphthol [135193] β-萘酚	—	—	—	—	—	—	N.E.
Naphthalene [91-20-3] 萘	10	52	15	79	—	—	A4
α-Naphthylamine [134327], containing less than 1% β-Naphthylamine α-萘胺，含少於1%β-萘胺	—	—	—	—	—	—	N.E.
β-Naphthylamine [91-59-8] and its salts β-萘胺及其鹽	—	—	—	—	—	—	@, A1, prohibited 禁用

Chemical [CAS#] 化學品	TWA 時量平均值		STEL 短暫暴露限值		Ceiling 最高暴露限值		Remarks 備註
	ppm	mg/m ³	ppm	mg/m ³	ppm	mg/m ³	
Nickel 鎳							
Elemental/metal [7440-02-0] 鎳元素／金屬	—	1.5	—	—	—	—	A5
Soluble compounds, as Ni 可溶性化合物	—	0.1	—	—	—	—	A4
Insoluble compounds, as Ni 不可溶性化合物	—	0.2	—	—	—	—	A1
Nitric acid [7697-37-2] 硝酸	2	5.2	4	10	—	—	
Nitric oxide [10102-43-9] 一氧化氮	25	31	—	—	—	—	
Nitrobenzene [98-95-3] 硝基苯	1	5	—	—	—	—	Sk, A3
Nitrocellulose [9004700] 硝化纖維素	—	—	—	—	—	—	N.E.
4-Nitrodiphenyl [92-93-3] and its salts 4-硝基聯苯及其鹽	—	—	—	—	—	—	@, A2, Sk, prohibited 禁用
Nitrogen dioxide [10102-44-0] 二氧化氮	3	5.6	5	9.4	—	—	A4
Nitrous oxide [10024-97-2] 氧化亞氮	50	90	—	—	—	—	A4
n-Nonane [111-84-2] 壬烷	200	1 050	—	—	—	—	
Octane [111-65-9] 辛烷	300	1 400	375	1 750	—	—	
Oil mist, mineral 礦物油霧	—	5	—	10	—	—	G

Chemical [CAS#] 化學品	TWA 時量平均值		STEL 短暫暴露限值		Ceiling 最高暴露限值		Remarks 備註
	ppm	mg/m ³	ppm	mg/m ³	ppm	mg/m ³	
Oleum, see sulphuric acid 發煙硫酸，見硫酸							
Orthophosphoric acid, see Phosphoric acid 正磷酸，見磷酸							
Oxalic acid [144-62-7] 乙二酸	—	1	—	2	—	—	
Oxalic acid, salts of 乙二酸鹽	—	—	—	—	—	—	N.E.
Ozone [10028-15-6] 臭氧							
Heavy work 高量體力工作	—	—	—	—	0.05	0.1	
Moderate work 中量體力工作	—	—	—	—	0.08	0.16	
Light work 低量體力工作	—	—	—	—	0.1	0.2	
Paraldehyde [123637] 副醛，(三聚乙醛)	—	—	—	—	—	—	N.E.
Paraffin wax fume [8002-74-2] 石蠟煙霧	—	2	—	—	—	—	
Paraquat [4685-14-7] 百草枯							
Total dust 全粉塵	—	0.5	—	—	—	—	
Respirable fraction 可吸入部分	—	0.1	—	—	—	—	
Paraquat dichloride [1910425] 百草枯二氯化物							
Respirable dust 可吸入微塵	—	0.1	—	—	—	—	

Chemical [CAS#] 化學品	TWA 時量平均值		STEL 短暫暴露限值		Ceiling 最高暴露限值		Remarks 備註
	ppm	mg/m ³	ppm	mg/m ³	ppm	mg/m ³	
Particulate polycyclic aromatic hydrocarbons (PPAH), see Coal tar pitch volatiles 多環芳香族烴微粒，見煤焦油瀝青揮發物							
Particulates Not Otherwise Classified (PNOC) 其他未經分類微粒	---	10	---	---	---	---	D
PCBs, see Chlorodiphenyls 多氯聯苯，見氯聯苯							
Pentachlorophenol [87-86-5] 五氯酚	---	0.5	---	---	---	---	@, Sk, A3
Pentane [109-66-0] 戊烷	600	1 770	---	---	---	---	
Pentanol, all isomers with exception of tert-Pentanol 戊醇，所有異構體，叔戊醇除外	---	---	---	---	---	---	N.E.
tert-Pentanol 叔戊醇	---	---	---	---	---	---	N.E.
Pentan-3-one, see Diethyl ketone 戊酮-[3]，見二乙酮							
Pentyl acetate, see n-Amyl acetate 乙酸正戊酯，見正醋酸戊酯							
Peracetic acid [79210] 過乙酸	---	---	---	---	---	---	N.E.
Perchloric acid [7601903] 高氯酸	---	---	---	---	---	---	N.E.
Perchloroethylene [127-18-4] 四氯乙烷，(過氯乙烷)	25	170	100	685	---	---	@, A3

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	ppm	mg/m ³	ppm	mg/m ³	ppm	mg/m ³	
Phosphorus trichloride [7719-12-2] 三氯化磷	0.2	1.1	0.5	2.8	—	—	
Polychlorinated biphenyls (PCB), see Chlorodiphenyls 多氯聯苯，見氯聯苯							
Polychlorobiphenyls, see Chlorodiphenyls 多氯聯苯，見氯聯苯							
Portland cement [65997-15-1] 波特蘭水泥							
Total dust 全粉塵	—	10	—	—	—	—	D
Respirable dust 可吸入微塵	—	3	—	—	—	—	
Potassium chlorate [3811049] 氯酸鉀	—	—	—	—	—	—	N.E.
Potassium chromate, see Chromium (VI) compounds 鉻酸鉀，見鉻(VI)化合物							
Potassium cyanide, see Cyanides 氰化鉀，見氰化物							
Potassium dichromate, see Chromium (VI) compounds 重鉻酸鉀，見鉻(VI)化合物							
Potassium fluoride, see Fluorides 氟化鉀，見氟化物							
Potassium fluorosilicate, see Fluorides 氟硅酸鉀，見氟化物							
Potassium hydroxide [1310-58-3] 氫氧化鉀	—	—	—	—	—	2	

Chemical [CAS#] 化學品	TWA 時量平均值		STEL 短暫暴露限值		Ceiling 最高暴露限值		Remarks 備註
	ppm	mg/m ³	ppm	mg/m ³	ppm	mg/m ³	
Potassium nitrite [7758090] 亞硝酸鉀	—	—	—	—	—	—	N.E.
Potassium perchlorate [778747] 高氯酸鉀	—	—	—	—	—	—	N.E.
Potassium permanganate, see Manganese compounds 高錳酸鉀，見錳化合物							
Potassium salt of Dichloroisocyanuric acid [2244215] 二氯異氰尿酸鉀鹽	—	—	—	—	—	—	N.E.
Precipitated silica, see Silica—Amorphous 沉澱矽石，見矽石——非結晶類							
n-Propanol, see n-Propyl alcohol 正丙醇，見丙基醇							
Propan-1-ol, see n-Propyl alcohol 丙醇-[1]，見丙基醇							
Propan-2-ol, see Isopropyl alcohol 丙醇-[2]，見異丙醇							
2-Propen-1-ol, see Allyl alcohol 2-丙烯醇-[1]，見丙烯醇							
n-Propyl alcohol [71-23-8] 丙基醇	200	492	250	614	—	—	Sk
Propylene glycol monomethyl ether [107-98-2] 丙二醇一甲基醚	100	369	150	553	—	—	
Pyridine [110-86-1] 吡啶	5	16	—	—	—	—	
Quartz, see Silica—Crystalline 石英，見矽石——結晶類							

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	ppm	mg/m ³	ppm	mg/m ³	ppm	mg/m ³	
Resorcinol, see m-Dihydroxybenzene 雷瑣酚，見間苯二酚							
Rubber solvent (Naphtha) [8030-30-6] 橡膠溶劑（石腦油）	400	1 590	—	—	—	—	
Silica—Amorphous 矽石（二氧化矽）——非結晶類							
Total dust 全粉塵	—	10	—	—	—	—	
Respirable dust 可吸入微塵	—	3	—	—	—	—	
Silica—Crystalline 矽石（二氧化矽）——結晶類							
Cristobalite [14464-46-1] 方石英							
total dust 全粉塵	—	—	—	—	—	—	
respirable dust 可吸入微塵	—	0.05	—	—	—	—	
Quartz [14808-60-7] 石英							
total dust 全粉塵	—	—	—	—	—	—	
respirable dust 可吸入微塵	—	0.1	—	—	—	—	
Silica, fused [60676-86-0] 矽石，結合類							
respirable dust 可吸入微塵	—	0.1	—	—	—	—	

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	ppm	mg/m ³	ppm	mg/m ³	ppm	mg/m ³	
Tridymite [15468-32-3] 鱗石英							
total dust 全粉塵	---	---	---	---	---	---	
respirable dust 可吸入微塵	---	0.05	---	---	---	---	
Tripoli [1317-95-9] 硅藻土							
respirable dust 可吸入微塵	---	0.1	---	---	---	---	of contained respirable quartz 指所含有的可吸入石 英
Silicon carbide [409-21-2] 碳化硅							
Total dust 全粉塵	---	10	---	---	---	---	D, A4
Respirable dust 可吸入微塵	---	3	---	---	---	---	
Silver [7440-22-4] 銀							
Metal 金屬	---	0.1	---	---	---	---	
Soluble compounds, as Ag 可溶化合物，以其銀量算	---	0.01	---	---	---	---	
Silver nitrate, see Silver soluble compounds 硝酸銀，見銀可溶化合物							
Sodium chlorate [7775099] 氯酸鈉	---	---	---	---	---	---	N.E.
Sodium cyanide, see Cyanides 氰化鈉，見氰化物							
Sodium dichromate, see Chromium (VI) compounds 重鉻酸鈉，見鉻(VI)化合物							

Chemical [CAS#] 化學品	TWA 時量平均值		STEL 短暫暴露限值		Ceiling 最高暴露限值		Remarks 備註
	ppm	mg/m ³	ppm	mg/m ³	ppm	mg/m ³	
Sodium dithionite [7775146] 連二亞硫酸鈉	—	—	—	—	—	—	N.E.
Sodium fluoride, see Fluoride 氟化鈉，見氟化物							
Sodium fluosilicate, see Fluoride 氟硅酸鈉，見氟化物							
Sodium hydrosulphite, see Sodium dithionite 低亞硫酸鈉，（保險粉），見連二亞硫酸鈉							
Sodium hydroxide [1310-73-2] 氫氧化鈉	—	—	—	—	—	2	
Sodium hypochlorite [7681529] 次氯酸鈉	—	—	—	—	—	—	N.E.
Sodium nitrite [7632000] 亞硝酸鈉	—	—	—	—	—	—	N.E.
Sodium perchlorate [7601890] 高氯酸鈉	—	—	—	—	—	—	N.E.
Sodium peroxide [1313606] 過氧化鈉	—	—	—	—	—	—	N.E.
Sodium salt of dichloroisocyanuric acid [2893789] 二氯異氰尿酸鈉鹽	—	—	—	—	—	—	N.E.
Sodium sulphide [1313822] 硫化鈉	—	—	—	—	—	—	N.E.
Stannic chloride, see Tin inorganic compounds 氯化錫，見錫無機化合物							

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	ppm	mg/m ³	ppm	mg/m ³	ppm	mg/m ³	
Starch [9005-25-8] 澱粉							
Total dust 全粉塵	—	10	—	—	—	—	
Respirable dust 可吸入微塵	—	3	—	—	—	—	
Stearates 硬脂酸鹽	—	10	—	—	—	—	K
Stoddard solvent [8052-41-3] 史圖達溶劑	100	525	—	—	—	—	
Styrene, monomer [100-42-5] 苯乙烯, 單體	20	85	40	170	—	—	@, A4
Succinic anhydride [108305] 琥珀酐	—	—	—	—	—	—	N.E.
Sulphur dioxide [7446-09-5] 二氧化硫	2	5.2	5	13	—	—	A4
Sulphuric acid [7664-93-9] 硫酸	—	1	—	3	—	—	A2
Sulphuryl chloride [7791255] 硫酰氯	—	—	—	—	—	—	N.E.
Synthetic Vitreous Fibers 合成玻璃纖維							
continous filament glass fibre 玻璃纖維		1 f/mL (or 或) 5 mg/m ³					A4
glass wool fibre 玻璃棉纖維		1 f/mL					A3
rock wool fibre 石棉纖維		1 f/mL					A3
slag wool fibre 礦渣棉纖維		1 f/mL					A3

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	ppm	mg/m ³	ppm	mg/m ³	ppm	mg/m ³	
special purpose glass fibre 特種玻璃纖維		1 f/mL					A3
Talc (containing no asbestos fibers) [14807-96-6] 滑石 (不含石棉纖維)							
Respirable dust 可吸入微塵	—	2	—	—	—	—	A4
Talc (containing asbestos fibers), see Asbestos 滑石 (含石棉纖維), 見石棉						2	@, asbestos OEL-TWA 參照石棉時量平均值
TDI, see Toluene-2, 4-diisocyanate TDI, 見甲苯-2, 4-二異氰酸酯							
1, 1, 2, 2-Tetrachloroethane [79-34-5] 1, 1, 2, 2-四氯乙烷	1	6.9	—	—	—	—	@, Sk, A3
Tetrachloroethylene, see Perchloroethylene 四氯乙烷, 見高氯乙烷							
Tetrachloromethane, see Carbon tetrachloride 四氯甲烷, 見四氯化碳							
Tetraethyl lead [78-00-2], as Pb 四乙鉛, 以其鉛量算	—	0.1	—	—	—	—	Sk, A4
Tetrahydrofuran [109-99-9] 四氫呋喃	200	590	250	737	—	—	
Tetramethyl lead [75-74-1], as Pb 四甲鉛, 以其鉛量算	—	0.15	—	—	—	—	Sk
Thionyl chloride [7719-09-7] 亞硫酰氯	—	—	—	—	1	4.9	
Tin [7440-31-5] 錫							

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	ppm	mg/m ³	ppm	mg/m ³	ppm	mg/m ³	
Metal 金屬	—	2	—	—	—	—	
Oxide & inorganic compounds, except SnH ₄ , as Sn 氧化物及無機化合物，除四氫化錫外， 以其錫量算	—	2	—	—	—	—	
Organic compounds, as Sn 有機化合物，以其錫量算	—	0.1	—	0.2	—	—	Sk, A4
Titanium dioxide [13463-67-7] 二氧化鈦							
Total dust 全粉塵	—	10	—	—	—	—	
Respirable dust 可吸入微塵	—	3	—	—	—	—	
Titanium tetrachloride [7550450] 四氯化鈦	—	—	—	—	—	—	N.E.
o-Tolidine [119-93-7] 鄰聯甲苯胺	—	—	—	—	—	—	@, A3, Sk
Toluene [108-88-3] 甲苯	50	188	—	—	—	—	Sk, A4
Toluene-2, 4-diisocyanate (TDI) [584-84-9] 甲苯-2, 4-二異氰酸酯 (TDI) (二異氰酸甲苯酯)	0.005	0.036	0.02	0.14	—	—	@, Sen, A4
o-Toluidine [95-53-4] 鄰甲苯胺	2	8.8	—	—	—	—	@, A3, Sk
Toluol, see Toluene 甲苯，見 Toluene							
1, 1, 1-Trichloroethane, see Methyl chloroform 1, 1, 1-三氯乙烷，見甲基氯仿							

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	ppm	mg/m ³	ppm	mg/m ³	ppm	mg/m ³	
1, 1, 2-Trichloroethane [79-00-5] 1, 1, 2-三氯乙烷	10	55	—	—	—	—	Sk, A4
Trichloroethylene [79-01-6] 三氯乙烷	50	269	100	537	—	—	@, A5
Trichlorofluoromethane [75-69-4] 三氯氟甲烷	—	—	—	—	1 000	5 620	A4
Trichloromethane, see Chloroform 三氯甲烷, 見氯仿							
Trichloro (methyl) silane [75796] 三氯(甲基)甲硅烷	—	—	—	—	—	—	N.E.
Trichlorosilane [10025782] 三氯甲硅烷	—	—	—	—	—	—	N.E.
1, 1, 2-Trichloro-1, 2, 2-trifluoroethane [76-13-1] 1, 1, 2-三氯, 1, 2, 2-三氟乙烷	1 000	7 670	1 250	9 590			A4
Tri- <i>o</i> -cresyl phosphate, see Triorthocresyl phosphate 磷酸三鄰甲苯酯, 見 Triorthocresyl phosphate							
Tridymite, see Silica—Crystalline 鱗石英, 見硅石——結晶類							
Triethylamine [121-44-8] 三乙胺	1	4.1	3	12	—	—	Sk, A4
Trimethylamine [75-50-3] 三甲胺	5	12	15	36	—	—	
Trimethyl benzene [25551-13-7] 三甲基苯	25	123	—	—	—	—	
3, 5, 5-Trimethylcyclohex-2-enone, see Isophorone 3, 5, 5-三甲基環己-2-烯酮, 見異佛爾酮							

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	ppm	mg/m ³	ppm	mg/m ³	ppm	mg/m ³	
2, 4, 6-Trimethyl-1, 3, 5-Trioxan, see paraldehyde							
2, 4, 6-三甲基-1, 3, 5-三噁烷, 見副醛							
Triorthocresyl phosphate [78-30-8] 磷酸三鄰甲苯酯	—	0.1	—	—	—	—	Sk, A4
Tripoli, see Silica—Crystalline 硅藻土, 見矽石——結晶類							
Tri-o-tolyl phosphate, see Triorthocresyl phosphate 三鄰甲苯基磷酸酯, 見 Triorthocresyl phosphate							
Turpentine [8006-64-2] 松節油	100	556	—	—	—	—	
Vanadium Pentoxide, as V ₂ O ₅ [1314-62-1] 五氧化二釩, 以 V ₂ O ₅ 算 Respirable dust & fume 可吸入微塵及煙霧	—	0.05	—	—	—	—	A4
Vegetable oil mists 植物油霧	—	10	—	—	—	—	J
Vinyl chloride [75-01-4] 氯乙烯, (乙 烯 基 氯)	5	13	—	—	—	—	@, A1
Varnish Makers' & Printers' (VM & P) Naphtha [8032-32-4] 清漆製造及印刷用石腦油	300	1 370	—	—	—	—	A3
Welding fumes (NOC) 焊接煙霧 (未 經 分 類)	—	5	—	—	—	—	
White spirit, see Stoddard solvent 石油溶劑, 見史圖達溶劑							

Chemical [CAS#] 化學品	TWA 時量平均值		STEL 短暫暴露限值		Ceiling 最高暴露限值		Remarks 備註
	ppm	mg/m ³	ppm	mg/m ³	ppm	mg/m ³	
Wood dust 木粉塵							
Certain hard woods as beech & oak 某種硬木如山毛櫸及橡樹	—	1	—	—	—	—	Sen, A1
Soft wood 軟木	—	5	—	10	—	—	
Xylene [1330-20-7; 95-47-6; 108-38-3; 106-42-3] (o-, m-, p-isomers) 二甲苯 (所有鄰、間、對異構體)	100	434	150	651	—	—	A4
Xylenol [1300716] 二甲苯酚	—	—	—	—	—	—	N.E.
Zinc, see Zinc oxide 鋅, 見氧化鋅							
Zinc chloride, see Zinc chloride fume 氯化鋅, 見氯化鋅煙霧							
Zinc chloride fume [7646-85-7] 氯化鋅煙霧	—	1	—	2	—	—	
Zinc chromates [13530-65-9; 11103-86-9; 37300-23-5], as Cr 鉻酸鋅, 以其鉻量算	—	0.01	—	—	—	—	@, A1
Zinc oxide [1314-13-2] 氧化鋅							
Dust 粉塵	—	10	—	—	—	—	D
Fume 煙霧	—	5	—	10	—	—	

Useful Information

If you wish to enquire about this guidebook or require advice on occupational safety and health, you can contact the Occupational Safety and Health Branch through:

Telephone : 2559 2297 (auto-recording after office hours)
Fax : 2915 1410
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Information on the services offered by the Labour Department and on major labour legislation can also be found by visiting our Home Page on the Internet. Address of our Home Page is <http://www.info.gov.hk/labour>.