Code of Practice on Control of Air Impurities (Chemical Substances) in the Workplace

空氣雜質（化學品）的工作守則

控制工作地點

勞工處職業安全及健康部
Occupational Safety and Health Branch
Labour Department

政府印務局印
（採用環保油墨及取材自可再生林木的紙張印製）

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Labour Department

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序言

勞工處於一九九二年印製了《工作環境內化學品的「職業衛生標準」參考資料》，協助東主評估工人暴露於工作地點常見化學品中的健康風險。該指引自出版以來，廣為工業界和職安健專業人員採用，作為評估工人健康風險的參考資料。

「職業衛生標準」所列項目現已修訂，並納入本工作守則內，為東主提供實務指引，以採取足夠的措施來保障工人免因使用、處理、貯存和運載化學物質而散發至空氣的雜質所傷害。在工作地點，維持空氣雜質水平低於本實務守則所列明的化學品的「職業衛生標準」，即可作為履行了《工廠及工業經營條例》(第59章)第6A條一般責任的表現，並遵守了《工廠及工業經營條例》各附屬規例的有關要求。

本工作守則是勞工處處長根據《工廠及工業經營條例》第7A(1)條發出的，具有特殊的法律地位。雖然不遵守本工作守則的規定並非違法行為，但在法院進行刑事程序時，可以此作為裁定某人是否觸犯上述法例相關安全與健康條文的因素。

Preface

The Labour Department has published "A Reference Note on Occupational Exposure Limits for Chemical Substances in the Work Environment" to provide guidance to proprietors in the assessment of health risks due to the exposures of the workers to the chemical substances commonly found in the workplace. Since its publication in 1992, it has been widely used by the industry and safety and health professionals as a reference material in assessing the risks to the health of the workers.

The listing of the Occupational Exposure Limits has now been revised and incorporated into this Code of Practice to provide practical guidance for proprietors to take adequate measures for the safeguard of the workers against air impurities, that is, the airborne chemical substances that are released from the use, handling, storage and transport of the substances. The maintenance of air impurities in the workplace below the exposure limits of the chemicals as listed in the Code of Practice shall demonstrate the discharge of the general duties under Section 6A of the Factories and Industrial Undertakings Ordinance (Chapter 59) ("FIUO") and compliance with the relevant requirements of the subsidary regulations under the FIUO.

The Code of Practice is issued by the Commissioner for Labour under Section 7A(1) of the FIUO and has a special legal status. Although failure to observe any provisions of the Code of Practice is not itself an offence, that failure may be taken by a court in criminal proceedings as a factor in determining whether or not a person has breached the relevant safety and health provisions under the legislation.

1. 引言

在工廠及工業經營處所內，任何使用、搬運、貯存和運載化學品都可能產生空氣雜質。暴露於空氣雜質中可能令工人受傷害或染病。所以工作地點內的空氣雜質應有充分的控制，以排除或減低工人面對的健康風險。

1.1 工作守則的目的

(a) 為東主提供實務指引，協助他們在合理切實可行範圍內，保持工作地點的空氣沒有有害雜質，並確保工人得到保護，以免吸入這些雜質；

(b) 擬備有關工作地點常見的化學品一覽表，並載列相應的職業衛生標準，以便東主評估工人在工作地點暴露於空氣雜質中所承受的健康風險；

(c) 釐定工人暴露於空氣雜質中的限度，以預防或減少工人因暴露於工作地點空氣雜質中而發病或受傷的事故；以及

(d) 就採取適當的預防和控制措施，包括在必要時使用個人防護裝備的事宜，提供指引。

1.2 釋義

在本工作守則內：

「 空氣雜質 」指因進行工作而在工作環境中釋出的空氣懸浮化學品，包括塵埃、煙霧或氣體。

「 評估 」指有系統地衡量各項使人暴露於健康危害的因素、釐定相應的風險，以及有系統地考慮有關消除或減輕這些風險所需的措施。

1. Introduction

In a factory or other industrial undertakings, any use, handling, storage and transport of chemical substances may generate air impurities in the workplace. Exposures to the impurities may cause harm or illness to the workers. The workplace air impurities should therefore be adequately controlled to eliminate or minimise the health risks to the workers.

1.1 Objectives of the Code

(a) To give practical guidance for proprietors to maintain the workplace atmosphere, as far as reasonably practicable, free from hazardous air impurities and to ensure the workers are protected from inhaling such substances in the workplace;

(b) To provide a list of chemical agents commonly found in the workplace with occupational exposure limits to facilitate proprietors in assessing the risks to health of the workers on exposure to impurities in the workplace;

(c) To set the limit of exposures of workers to air impurities for the purposes of preventing or reducing the incidence of illnesses and injuries caused from exposure to the impurities in the workplace; and

(d) To provide guidance on appropriate preventive and control measures including personal protective equipment as necessary.

1.2 Interpretation

In this Code of Practice:

"Air Impurities" refers to the airborne chemical substances in forms of dust, fumes or gases that are emitted into the workplace environment as a result of work activities.

"Assessment" refers to the systematic consideration of the factors producing exposure of a person to a health hazard, the determination of the corresponding risk, and the systematic consideration of the measures needed to eliminate or reduce that risk.

「 暴露 」指工人從呼吸途徑接觸到化學品。

「 危險的 」指健康可能受到危害。

「 職業衛生標準 」(OEL)指空氣中個別化學品的濃度。這個濃度是被認為從呼吸途徑暴露於這水平的化學品，絕大部分工人的健康都不致受損害。

「 職業衛生標準 — 時間加權平均值 」(OEL-TWA)指在每周工作五天、每天工作八小時的情況下，化學品的時間加權平均濃度。在這濃度下，差不多所有工人即使每天暴露於有關化學品之中，健康都不會受損。以平均每天工作八小時計算，化學品濃度可偶爾高於「時間加權平均值」，但差距須以相等的向下偏移幅度抵銷，使暴露量保持低於限值。對於那些在高濃度下即使工人只是短暫暴露其中亦會對健康造成嚴重影響的化學品，如有相應的短暫暴露準則，應以該準則作為偏移幅度的上限。(請參閱附件I有關「偏移」一節)

「 職業衛生標準 — 短暫暴露限值 」(OEL-STEL)指個別化學品於 15 分鐘內在空氣中的時間加權平均濃度。如化學品濃度超過「職業衛生標準 — 時間加權平均值」，但仍低於「短暫暴露限值」，暴露時間不應超過 15 分鐘，而且每日不應超過四次。如須多次暴露在這濃度中，每次須相隔至少 60 分鐘。這準則為控制短暫暴露情況提供指引，並可作為「時間加權平均值」的補充指引。

「 職業衛生標準 — 上限值 」(OEL-C)指在工作天的任何時間內都不可超越化學品在空氣中的濃度。設有「上限值」的化學品均沒有以八小時計算的「時間加權平均值」或「短暫暴露限值」。

「工人」指《工廠及工業經營條例》所指的「受僱人士」。

"Exposure" refers to the exposure of a worker to chemical substances by the route of inhalation.

"Hazardous" refers to the potency of causing harm to health.

"Occupational Exposure Limit (OEL)" refers to the airborne concentration(s) of individual chemical agents that represent levels that are regarded to impose no adverse health effects to nearly all workers on exposures by the route of inhalation.

"Occupational Exposure Limit - Time-Weighted Average (OEL-TWA)" refers to the time-weighted average concentration of a chemical substance over an eight-hour working day for a five-day workweek, to which nearly all workers can be exposed day after day without adverse health effects. In the eight-hour averaging period of a working day, excursions above the TWA are permitted provided that these excursions are compensated for by equivalent excursions to maintain the exposures below the limit. For some chemical substances that can produce acute health effects even after brief exposures to high concentrations, excursions above the OEL-TWA should be limited by the short-term exposure criteria where applicable. (see also Section on Excursion in the Annex I)

"Occupational Exposure Limit - Short-Term Exposure Limit (OEL-STEL)" refers to the 15-minute time-weighted average of the airborne concentration of a chemical substance. Exposures above the OEL-TWA up to the STEL levels should not be longer than 15 minutes and should not be more than four times in a day. A minimum of 60 minutes should be allowed between successive exposures in this range. It provides a guideline for the control of the short-term exposure and is a supplement to the OEL-TWA.

"Occupational Exposure Limit - Ceiling (OEL-C)" refers to the airborne concentrations of a chemical substance that should not be exceeded during any part of a working day. Chemicals having OEL-C do not have any 8-hour OEL-TWA or OEL-STEL.

"Worker" refers to the ‘person employed’ within the meaning of the FIUO.

2. 責任

2.1 東主的責任

2.1.1 根據 《工廠及工業經營條例》 第 6A 條的規定，其中包括處理、使用、貯存和運載物品及物質，與及提供和保持不會危害健康的工作環境等事項，東主必須採取各種措施，在合理切實可行範圍內，盡量確保其僱用的所有人安全和工作時，不會有危害健康的風險。

2.1.2 東主應在工作地點提供適當的措施以防止空氣雜質進入及積聚於工作間，並要採取步驟保護受僱的人，免其吸入可能損害健康的空氣雜質。

2.1.3 如在工作地點內，工人可能暴露於危險的空氣雜質中，東主應進行健康風險評估，並在有需要時，量度暴露量，以示符合 《工廠及工業經營條例》及其附屬規例的有關規定。

2.2 工人的責任

2.2.1 按《工廠及工業經營條例》第 6B 條，有關一般責任的條款，工人應採取合理謹慎措施，照顧自己及其他人的安全及健康。

2.2.2 工人應與東主合作，採納所需的防護措施，以避免或減少暴露於空氣雜質中。

2.2.3 在必須使用個人防護裝備和衣物的情況下，工人應正確使用和妥善打理獲分配的防護裝備和衣物。

2. Responsibilities

2.1 Responsibilities of Proprietors

2.1.1 Under Section 6A of the FIUO, the proprietor is required to take measures inter alia, for the safe handling, use, storage and transport of articles and substance and for the provisions and maintenance of working environment to ensure, as far as reasonably practicable, the safety of all persons employed by him and without risks to health at work.

2.1.2 The proprietor should provide appropriate measures for preventing the entry and accumulation of impurities in the workplace and to take steps to protect the workers against inhaling impurities that may be injurious to health.

2.1.3 In an undertaking where there is a likelihood of exposure to hazardous air impurities, the proprietor should conduct an assessment of risks to health, and measure the exposure if necessary, for demonstrating compliance with the requirements under the provisions of the FIUO and its subsidary regulations.

2.2 Responsibilities of Workers

2.2.1 The worker is obliged under Section 6B, the general duties provisions of the FIUO to take reasonable care for the health and safety of himself and other persons in the workplace.

2.2.2 The worker should co-operate with the proprietors by adopting the required preventive and protective measures for eliminating or reducing his exposures to air impurities.

2.2.3 Where necessary, the worker should make proper use of and take good care of the personal protective equipment and clothing provided for his use.

3. 預防和控制暴露情況

3.1 評估健康風險

3.1.1 評估健康風險的目的，是找出所有導致工人暴露於空氣雜質中的因素，以及衡量這些因素對健康可能造成的影響，從而準確評估控制措施是否足夠。

3.1.2 評估工作應包括下列各要素：

(a) 考慮化學品的性質和特性、可能對健康造成的影響、暴露於化學品中的可能性，以及暴露量過高的後果；

(b) 考慮導致工人暴露於化學品中的因素，例如工序、工作時間，以及控制有潛在暴露情況的工程控制措施及系統；

(c) 測定暴露程度和潛在暴露情況；

(d) 如果有關的化學品有訂定的「職業衛生標準」，應與這些標準作比較；以及

(e) 就健康風險、現行控制措施是否足夠及所需的補救措施作出結論。

3.1.3 工人暴露於附表化學品中的程度，應低於該等化學品的 「職業衛生標準」(見附件 I 化學品的「職業衛生標準」)，令工人可在無須使用呼吸防護裝備的情況下工作。

3.1.4 對於沒有訂定「職業衛生標準」的化學品，東主應採取措施，以控制員工的暴露量，並以差不多所有工人即使多次暴露在這些化學品中，健康也不會受損為準則。制訂暴露準則時，應從可靠來源蒐集資料，例如化學品生產商、職安健機構，以及聲譽良好的專業團體出版的刊物。

3.1.5 在評估暴露量時，應緊記化學品可循呼吸、皮膚吸收或進食等途徑進入人體，因此，在評估暴露量及整體健康危害時，應考慮化學品循這些途徑進入人體的可能性。

3. Prevention and Control of Exposures

3.1 Assessment of Risks to Health

3.1.1 The purpose of risk assessment is to identify and evaluate all the factors contributing to the exposures of workers to impurities and their possible health effects, whereby the adequacy of the control measures can be assessed accurately.

3.1.2 The assessment should include the following elements:

(a) consideration of the nature and properties of the substances, the possible health effects, the likelihood of exposure and the consequence of excessive exposures;

(b) consideration of the factors contributing to the exposures such as work processes, duration and engineering controls and systems for controlling potential exposures;

(c) determination of the extent and potential exposures;

(d) comparison to the OELs of the substances where available; and

(e) conclusion on the health risks, the adequacy of existing control measures and the necessary remedial measures.

3.1.3 Exposures of workers to the listed chemical agents (see Occupational Exposure Limits for Chemical Substances in the Annex I) should be limited to the levels below their respective OELs for performing the work without the requirement of using suitable respiratory protection.

3.1.4 For substances that do not have an OEL value, the proprietors should take measures to control the exposure to a level to which nearly all workers may be exposed repeatedly without adverse health effects. Information for establishing the exposure criteria should be obtained from reliable sources such as the manufacturers, occupational health and safety agencies and publications of reputable professional bodies.

3.1.5 In making exposure assessments, it should bear in mind that substances may enter the body through the routes of inhalation, skin absorption or ingestion. The likelihood of entry of chemicals by these routes should be considered when assessing the magnitude of exposures and the overall health effects.

3.1.6 如擬引進新的危險物質，應在工人可能暴露於該物質之前，先作評估。

3.1.7 當曾評估的工作出現任何重大改變，或有理由懷疑早前的評估失效，則須對該評估作出檢討。

3.1.8 評估工作應由東主或代表東主的人士進行。進行評估的人士必須具備應有的技術知識和經驗，確保可就健康風險和控制措施作出正確的結論。

3.1.9 評估結果應記錄在案，供勞工處職業安全主任查閱。

3.2 監測工作地點的暴露水平

3.2.1 監測工作地點的暴露水平，是評估健康風險的重要一環。東主應監測工人的暴露量，確保暴露水平低於工作地點空氣雜質的「職業衛生標準」。

3.2.2 在釐定工人暴露於空氣雜質的水平時，應盡量在呼吸範圍內，以個人抽樣儀器進行定期或連續的抽樣檢查。

3.2.3 量度暴露水平時，應使用適當的抽樣策略、方法、儀器和程序，以便取得準確的結果。

3.2.4 在評估有訂定「職業衛生標準 — 上限值」的化學品可造成的健康風險時，宜量度空氣中有關化學品的即時濃度；如不可行，可抽取短時間（如 15 分鐘）的樣本，以評估暴露水平。

3.1.6 If a new source of hazard is introduced, the assessment should be made before any exposure of the worker to the hazard.

3.1.7 The assessment should be reviewed whenever there has been a significant change in the work to which the assessment relates or there is a reason to suspect that the previous assessment is no longer valid.

3.1.8 The assessment should be carried out by proprietors or by persons acting on their behalf who have the technical knowledge and experience to ensure the correct conclusions about the risks and control measures.

3.1.9 The results of the assessment should be recorded and made available for inspection by the Occupational Safety Officers of the Labour Department.

3.2 Monitoring Exposures at the Workplace

3.2.1 Monitoring exposures at the workplace is an important part of the assessment of risks to health. Proprietors should monitor the exposure of workers to ensure that the exposure level(s) is below the OELs of the air impurities at the workplace.

3.2.2 In determining the worker's exposures to airborne impurities, measurements involving periodic or continuous sampling of the atmosphere should be made, wherever applicable and as far as possible, in the breathing zone by means of personal sampling equipment.

3.2.3 Exposures should be measured by using suitable sampling strategies, methodologies, equipment and procedures for obtaining correct and accurate results.

3.2.4 In the assessment of risk to substances with OEL-C values, measurements of the instantaneous concentration of the airborne substances are recommended. However, if it is not feasible, the exposure can be assessed by sampling over a short period, such as 15 minutes.

3.3 控制空氣雜質

3.3.1 如果評估或量度結果顯示，暴露在空氣雜質中會危害健康，東主應在工作地點採取下列適當措施，以預防和控制空氣雜質：

(a) 取代危險的工序、化學品和設備；

(b) 採取適當的工程控制措施，例如以局部或全部圍封的方法、提供一般通風或局部抽氣，以防止或減少工人暴露於空氣雜質的可能性；

(c) 實施預防性保養計劃，確保控制系統有效運作；

(d) 編排工作時間表，例如輪流工作，利用工作時間分隔或距離分隔以減少或降低暴露水平；以及

(e) 為工人提供資料、訓練和衛生設施，並採用減少風險的工作模式。

3.3.2 如果無法完全消除暴露於空氣雜質中的可能性，或採用工程控制措施並不合理地切實可行，而且暴露水平有可能超逾「職業衛生標準」，東主便應該為工人提供個人防護裝備，以免他們暴露於空氣雜質中。

3.4 個人防護裝備

3.4.1 以個人防護裝備來防止工人暴露於化學品的做法，只應作為 「最後手段」或工程控制措施的輔助方法。一般而言，只有在下列情況下，才應考慮使用個人防護裝備：

(a) 還沒有這些科技或設備，或無法取得；

3.3 Control of Air Impurities

3.3.1 When the assessment or the exposure measurement indicates that there is a risk to health resulting from exposures to air impurities, proprietors should take appropriate measures to prevent and control air impurities in the workplace by the following means:

(a) substituting hazardous processes, substances and equipment;

(b) installing suitable engineering controls which may include partial or total enclosures, general ventilation and local exhausts to prevent or reduce the exposures to the air impurities;

(c) implementing preventive maintenance program to ensure the effective operation of the control systems in place;

(d) organizing work schedule, such as job rotation and segregation by distance or time to minimize or reduce exposures;

(e) providing workers with information, training, hygiene facilities and practices for reducing the risks.

3.3.2 Where total elimination or engineering controls are not feasible or not reasonably practicable, and that there is likelihood for exposures to exceed the OELs, proprietors should provide personal protective equipment to protect their workers from exposures to the air impurities.

3.4 Personal Protective Equipment

3.4.1 The protection of workers from chemical exposures by personal protective equipment should only be the "last resort" or as adjunct measure to the engineering controls. The use of personal protective equipment should normally be considered under the circumstances of:

(a) technologies or equipment are not in existence or are not obtainable;

(b) 由於暴露時間或頻密程度關係，或因工序、操作或工作性質等原因，以致採用、配置或提供其他方法或控制系統並不適當或並不可行；

(c) 控制系統或設備因發生短暫故障而失效；

(d) 情況特殊（例如緊急的情況），以致不能預測風險，或無法配置控制系統或設備。

3.4.2 如評估結果顯示消除或減少空氣雜質均不可行，而且有需要使用呼吸防護裝備以防止工人過度暴露於空氣雜質中，則所使用的裝備必須合適，並足以在該等情況下，保護工人免受危害。

3.4.3 如有需要，應為工人提供其他防護裝備，例如手套、鞋靴、頭罩、面罩和連身工作服等，以防止工人直接與化學品接觸。

3.4.4 東主必須為工人提供資料、訓練和進行監督，確保他們正確使用和小心打理防護裝備。

4. 執行評估和空氣監測的人士

在評估工人在工作地點暴露於化學品中的風險時，須考慮多項因素，包括足以影響暴露量及工人健康的因素，所以，有關的評估工作往往相當複雜。因此，負責評估健康風險、監測空氣雜質和設計控制措施的人士，必須在鑑定、評估和控制工作地點的健康危害方面受過充分訓練，並具備足夠的知識和經驗。

(b) methodologies or control systems are not reasonable or not practical to be adopted, installed, or provided because of the duration or frequency of the exposures or because of the nature of the process, operation or work;

(c) systems or equipment are rendered ineffective because of a temporary breakdown of such controls;

(d) the risks cannot be foreseen or the controls cannot be installed in situations such as an emergency.

3.4.2 Where the assessment shows that the elimination or reduction of the levels of air impurities are both impracticable, and that there is a need to protect the workers from excessive exposures by respiratory protective equipment, the equipment to be used must be appropriate and adequate to protect the workers against the hazards under the circumstances.

3.4.3 Where necessary, other protective equipment such as gloves, footwear, head and face cover and coveralls should be provided and used by workers to avoid direct contact with the chemicals.

3.4.4 Proprietors must provide information, training and supervision to ensure the proper use and care of the protective equipment.

4. Persons Carrying Out Assessment and Air Monitoring

Workplace risk assessment on exposure to chemicals is often a complex task involving the consideration of a number of parameters that determine the magnitude of exposures and their impact on health. The tasks of assessing health risks, monitoring air impurities and designing control measures should be therefore, carried out by persons with adequate education, training and experience in recognition, evaluation and control of workplace health hazards.

附件 I

化學品的「職業衛生標準」

1. 應用

2. 混合暴露情況

3. 皮膚吸收

4. 偏移

5. 非常規工作時間表

6. 暴露限值單位

7. 職業衛生標準

ANNEX I

Occupational Exposure Limits for Chemical Substances

1. Application

2. Exposures to a Mixture

3. Skin Absorption

4. Excursions

5. Unusual Work Schedules

6. Units for Exposure Limits

7. Occupational Exposure Limits

1. 應用

本附表的職業衛生標準 (OELs) 指個別化學品在空氣中的濃度。有關的化學品可能已訂有「時間加權平均值」(TWA) 、「短暫暴露限值」(STEL) 或「上限值」(C)。

「時間加權平均值」指以每周工作 40 小時和每天工作 8 小時計算，化學品的時間加權平均濃度。在這個濃度下，差不多所有工人即使重覆地暴露於有關的化學品之中，健康都不會受損。「短暫暴露限值」是「時間加權平均值」的補充指引，用作限制在一個工作天內短暫暴露於高濃度化學品中的情況。「上限值」一般適用於會引起嚴重或急性反應的化學品。

制訂的職業衛生標準是用以保護絕大多數在職人士的健康。至於個別對某種化學品特別敏感的人士，這些標準提供的保護可能並不足夠。

2. 混合暴露情況

如果工人暴露於兩種或以上化學品的混合物之中，在採用職業衛生標準時，應考慮這種情況對工人的健康影響，例如化學品的累加效應或獨立效應。

以下方程式可用作評估暴露在多種化學品中的情況：

(a) 累加效應

$$\frac{C_1}{OEL_1} + \frac{C_2}{OEL_2} + \frac{C_3}{OEL_3} + \ldots \leq 1$$

（各分數的總和不可大於 1）

(b) 獨立效應

$$\frac{C_1}{OEL_1} \leq 1 \; ; \; \frac{C_2}{OEL_2} \leq 1 \; ; \; \frac{C_3}{OEL_3} \leq 1 \; ; \; \ldots$$

1. Application

The Occupational Exposure Limits (OELs) in this listing represent airborne concentrations of individual chemical substances. The substances may have value (s) of TWA (time-weighted average), STEL (short-term exposure limit) or C (ceiling).

The TWA is the time-weighted average concentration over an 8-hour workday and a 40-hr workweek, to which nearly all workers may be repeatedly exposed without adverse effects. The STEL is supplementary to the TWA for limiting excursions for a short period of time during a work day. The ceiling values apply normally to those substances that may cause effects that are acute or fast acting.

The OELs are established to protect most of the persons at work. They may not be adequate to protect individuals who are hypersensitive to the chemical exposed.

2. Exposures to a Mixture

For exposures to a mixture of two or more substances, the relevant health effects such as their additive or independent effects should be taken into consideration in the application of the OELs.

The following formulae may be used for evaluating exposures to a mixture of chemicals:

(a) Additive effects

$$\frac{C_1}{OEL_1} + \frac{C_2}{OEL_2} + \frac{C_3}{OEL_3} + \ldots \leq 1$$

(i.e. sum of exposure fraction must not exceed unity)

(b) Independent effects

$$\frac{C_1}{OEL_1} \leq 1 \;;\; \frac{C_2}{OEL_2} \leq 1 \;;\; \frac{C_3}{OEL_3} \leq 1 \;;\; \ldots$$

C_1、C_2．．．是空氣中懸浮化學品的濃度，OEL_1、OEL_2．．．是相應的職業衛生標準。

3. 皮膚吸收

有些化學品可能會滲透皮膚，但職業衛生標準只考慮化學品經呼吸系統進入身體的情況，因此，這標準只在沒有明顯的皮膚吸收時才適用。

4. 偏移

對於沒有訂定「職業衛生標準 — 短暫暴露限值」或「職業衛生標準 — 上限值」的化學品，短暫偏移超過「職業衛生標準 — 時間加權平均值」的情況是可以接受的，但在同一工作天內，必須以較少的暴露量抵銷，使全日的暴露量不超過「職業衛生標準 — 時間加權平均值」。

在一個工作天內，偏移不應超過「職業衛生標準 — 時間加權平均值」的三倍，總時間不應多於 30 分鐘；無論如何，偏移幅度不能超過「職業衛生標準 — 時間加權平均值」的五倍。

5. 非常規工作時間表

如果工人每天工作超過 8 小時或每星期超過 40 小時，「職業衛生標準 — 時間加權平均值」可能須作調整。調低職業衛生標準的因子 (RF) 可用「比利夫史加拿」模式 (Brief and Scala Model) 計算：

如每天工作超過 8 小時：

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

其中 h = 每天工作時數。

如每星期工作超過 5 天和超過 40 小時：

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

其中 H = 每星期工作時數。

Where C_1, C_2 ...are the airborne concentrations of the components, and OEL_1, OEL_2....are the corresponding OELs.

3. Skin Absorption

There are chemicals which may penetrate through the skin. The OELs only consider the entry route of the chemicals by inhalation and are valid when significant skin absorption does not occur.

4. Excursions

For the substances without an OEL-STEL or OEL-C, short term excursions above the OEL-TWA may be allowed provided that they are compensated by lower exposures during the work-day and the overall OEL-TWA is not exceeded.

The excursions should not be permitted to exceed three times the TWA for more than a total period of 30 minutes during a work-day, and under no circumstances should be allowed to exceed five times the TWA.

5. Unusual Work Schedules

When the work schedule is longer than 8 hours a day or 40 hours a week, the OEL-TWA may require adjustment. The reduction factor (RF) may be derived by the Brief and Scala Model as shown in the following : -

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 days and 40 hours per week,

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

where H = hours worked per week.

如果工人每天工作少於8小時及每星期少於40小時，通常不應調整「職業衛生標準 — 時間加權平均值」。

6. 暴露限值單位

空氣中懸浮化學品的濃度，通常是在正常溫度及壓力(攝氏25度及101.3千帕斯卡)下，以每一立方米空氣中化學品的重量(毫克)(mg/m^3)計算，或以空氣中化學品的百萬分率(ppm)計算。將氣體和蒸氣的濃度由百萬分率(ppm)單位轉為毫克單位(mg/m^3)，可採用下列程式：

$$\text{以 } mg/m^3 \text{ 計算的濃度} = \frac{\text{分子量} \times \text{以 ppm 計算的濃度}}{24.45}$$

No allowance should normally be given to the OEL-TWA values when the exposures or work shifts are less than 8 hours a day and 40 hours a workweek.

6. Units for Exposure Limits

The airborne concentrations of the chemicals are normally expressed in milligrams per cubic metre (mg/m^3) or parts per million parts of air by volume (ppm) at normal temperature and pressure (25 °C and 101.3 kpa). The following formula may be used to convert concentrations of gases and vapours in units of ppm to mg/m^3.

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

7. 職業衛生標準
Occupational Exposure Limits (OELs)

Chemical *化學品*	*CAS No.* *CAS 號碼*	*TWA* *時間加權平均值*		*STEL* *短暫暴露限值*		*Ceiling* *上限值*		*Remarks* *備註*
		ppm	*mg/m³*	*ppm*	*mg/m³*	*ppm*	*mg/m³*	
Acetaldehyde 乙醛	75-07-0	-	-	-	-	25	45	
Acetic acid 醋酸 (乙酸)	64-19-7	10	25	15	37	-	-	
Acetic anhydride 醋酮	108-24-7	5	21	-	-	-	-	
Acetone 丙酮	67-64-1	500	1187	750	1781	-	-	
Acetonitrile 乙腈	75-05-8	40	67	60	101	-	-	
Acetylene tetrabromide 乙炔化四溴	79-27-6	1	14	-	-	-	-	
Acrolein 丙烯醛	107-02-8	-	-	-	-	0.1	0.23	
Allyl alcohol (2-Propen-1-ol) 丙烯醇 (2- 丙烯 -1- 醇)	107-18-6	0.5	1.2	-	-	-	-	
Aluminium 鋁	7429-90-5							
Metal dust 金屬塵		-	10	-	-	-	-	
Welding fumes, as Al 燒焊煙霧，以其鋁量算		-	5	-	-	-	-	
Soluble salts, as Al 可溶性鹽，以其鋁量算		-	2	-	-	-	-	
Aluminum oxide 氧化鋁	1344-28-1	-	10	-	-	-	-	D
Ammonia 氨	7664-41-7	25	17	35	24	-	-	
Ammonium dichromate, as Chromium (VI) 重鉻酸銨，以其鉻 (VI) 量算	7789-09-5	-	0.05	-	-	-	-	
Aniline 苯胺	62-53-3	2	7.6	-	-	-	-	
Antimony and compounds, as Sb 銻及其化合物，以其銻量算	7440-36-0	-	0.5	-	-	-	-	
Arsenic, elemental and inorganic compounds, (except Arsine), as As 砷，元素及無機化合物[除胂外]， 以其砷量算	7440-38-2	-	0.01	-	-	-	-	

Chemical *化學品*	*CAS No.* *CAS 號碼*	*TWA* *時間加權平均值*		*STEL* *短暫暴露限值*		*Ceiling* *上限值*		*Remarks* *備註*
		ppm	*mg/m³*	*ppm*	*mg/m³*	*ppm*	*mg/m³*	
Arsine 胂 (砷化氫)	7784-42-1	0.05	0.16	-	-	-	-	
Asphalt (Bitumen) fumes as benzene-soluble aerosol 瀝青 (柏油) 煙霧 以其溶於苯的氣溶胶量算	8052-42-4	-	0.5	-	-	-	-	
Barium and soluble compound, as Ba 鋇及可溶化合物，以其鋇量算	7440-39-3	-	0.5	-	-	-	-	
Benzene 苯	71-43-2	0.5	1.6	2.5	8	-	-	
Benzoyl chloride 苯甲醯氯	98-88-4	-	-	-	-	0.5	-	
Benzoyl peroxide (Dibenzoyl peroxide) 過氧化二苯甲醯 (過氧化二苯基乙二酮)	94-36-0	-	5	-	-	-	-	
Benzyl chloride (α -Chlorotoluene) 苄基氯 (α - 氯甲苯) 或 (氯化苄)	100-44-7	1	5.2	-	-	-	-	
Beryllium and compounds, as Be 鈹及其化合物，以其鈹量算	7440-41-7	-	0.002	-	0.01	-	-	
Boron tribromide 三溴化硼	10294-33-4	-	-	-	-	1	10	
Boron trifluoride 三氟化硼	7637-07-2	-	-	-	-	1	2.8	
Bromine 溴	7726-95-6	0.1	0.66	0.2	1.3	-	-	
1, 3-Butadiene 1,3- 丁二烯	106-99-0	2	4.4	-	-	-	-	
Butane 丁烷	106-97-8	800	1 900	-	-	-	-	
n-Butanol (n-Butyl alcohol) 正丁醇	71-36-3	-	-	-	-	50	152	
sec-Butanol (sec-Butyl alcohol) 仲丁醇	78-92-2	100	303	-	-	-	-	
tert-Butanol (tert-Butyl alcohol) (2-Methylpropan-2-ol) 叔丁醇 (2- 甲基丙 -2- 醇)	75-65-0	100	303	-	-	-	-	
2-Butoxyethanol (EGBE) (Ethylene glycol monobutyl ether) 2- 丁氧基乙醇 (乙二醇一丁基醚)	111-76-2	20	97	-	-	-	-	
n-Butyl acetate 醋酸正丁酯	123-86-4	150	713	200	950	-	-	

Chemical *化學品*	*CAS No.* *CAS 號碼*	*TWA* *時間加權平均值* *ppm*	 *mg/m³*	*STEL* *短暫暴露限值* *ppm*	 *mg/m³*	*Ceiling* *上限值* *ppm*	 *mg/m³*	*Remarks* *備註*
n-Butyl acrylate 正丁丙烯酸酯	141-32-2	2	10	-	-	-	-	
n-Butyl lactate 正丁乳酸酯	138-22-7	5	30	-	-	-	-	
n-Butyl mercaptan 正丁硫醇	109-79-5	0.5	1.8	-	-	-	-	
Cadmium, elemental and compounds, as Cd 鎘，元素及化合物，以其鎘量算	7440-43-9							
Inhalable dust 全粉塵		-	0.01	-	-	-	-	
Respirable dust 可吸入微塵		-	0.002	-	-	-	-	
Calcium carbonate (Limestone, Marble) 碳酸鈣 (石灰岩, 大理石)	1317-65-3							
Inhalable dust 全粉塵		-	10	-	-	-	-	D
Respirable dust 可吸入微塵		-	4	-	-	-	-	D
Calcium chromate, as Cr 鉻酸鈣，以其鉻量算	13765-19-0	-	0.001	-	-	-	-	
Calcium cyanide, as CN 氰化鈣，以其氰量算	592-01-8	-	-	-	-	-	5	
Calcium hydroxide 氫氧化鈣	1305-62-0	-	5	-	-	-	-	
Calcium oxide 氧化鈣	1305-78-8	-	2	-	-	-	-	
Calcium sulphate (Gypsum, Plaster of Paris) 硫酸鈣 (石膏，熟石膏)	7778-18-9							
Inhalable dust 全粉塵		-	10	-	-	-	-	D
Calomel, as Hg 甘汞，以其水銀量算	10112-91-1	-	0.025	-	-	-	-	
Camphor, synthetic 樟腦，合成	76-22-2	2	12	4	25	-	-	
Carbaryl 西維因	63-25-22	-	5	-	-	-	-	
Carbofuran 卡巴呋喃	1563-66-2	-	0.1	-	-	-	-	
Carbon black 炭黑	1333-86-4	-	3.5	-	-	-	-	
Carbon dioxide 二氧化碳	124-38-9	5 000	9 000	30 000	54 000	-	-	

Chemical *化學品*	*CAS No.* *CAS 號碼*	*TWA* *時間加權平均值*		*STEL* *短暫暴露限值*		*Ceiling* *上限值*		*Remarks* *備註*
		ppm	*mg/m³*	*ppm*	*mg/m³*	*ppm*	*mg/m³*	
Carbon disulphide 二硫化碳	75-15-0	10	31	-	-	-	-	
Carbon monoxide 一氧化碳	630-08-0	25	29	-	-	-	-	
Carbon tetrachloride (Tetrachloromethane) 四氯化碳 (四氯甲烷)	56-23-5	5	31	10	63	-	-	
Catechol 鄰苯二酚 (儿茶酚)	120-80-9	5	23	-	-	-	-	
Cellulose 纖維素	9004-34-6	-	10	-	-	-	-	
Chlorine 氯	7782-50-5	0.5	1.5	1	2.9	-	-	
Chloroacetyl chloride 氯乙醯氯	79-04-9	0.05	0.23	0.15	0.69	-	-	
Chlorobenzene 氯苯	108-90-7	10	46	-	-	-	-	
Chlorodiphenyl (42% chlorine) (PCBs) (Polychlorinated biphenyls (42% chlorine)) 氯聯苯(42% 氯) (多氯聯苯(42% 氯))	53469-21-9	-	1	-	-	-	-	
Chlorodiphenyl (54% chlorine) (PCBs) (Polychlorinated biphenyls (54% chlorine)) 氯聯苯(54% 氯) (多氯聯苯(54% 氯))	11097-69-1	-	0.5	-	-	-	-	
Chloroform (Trichloromethane) 氯仿 (三氯甲烷)	67-66-3	10	49	-	-	-	-	
bis (Chloromethyl) ether 雙 (氯甲基) 醚	542-88-1	0.001	0.0047	-	-	-	-	
Chloropicrin 氯化苦	76-06-2	0.1	0.67	-	-	-	-	
Chlorpyrifos 毒死蜱	2921-88-2	-	0.2	-	-	-	-	
Chromium, metal and inorganic compounds, as Cr 鉻，金屬及無機化合物，以其鉻量算	7440-47-3							
Metal and Cr III compounds 金屬及鉻 III 化合物		-	0.5	-	-	-	-	
Water-soluble Cr VI compounds 水溶性鉻 VI 化合物		-	0.05	-	-	-	-	
Insoluble Cr VI compounds 非水容性鉻 VI 化合物		-	0.01	-	-	-	-	

Chemical *化學品*	*CAS No.* *CAS 號碼*	*TWA* *時間加權平均值* *ppm*	 *mg/m³*	*STEL* *短暫暴露限值* *ppm*	 *mg/m³*	*Ceiling* *上限值* *ppm*	 *mg/m³*	*Remarks* *備註*
Coal tar pitch volatiles, as benzene soluble aerosol 煤焦油瀝青揮發物，以可溶於苯量算	65996-93-2	-	0.2	-	-	-	-	
Cobalt, elemental, and inorganic compounds, as Co 鈷，元素及無機化合物，以其鈷量算	7440-48-4	-	0.02	-	-	-	-	
Copper 銅	7440-50-8							
Fume 煙霧		-	0.2	-	-	-	-	
Dusts & mists, as Cu 粉塵和霧，以其銅量算		-	1	-	-	-	-	
Cotton dust, raw 原棉塵		-	2.5	-	-	-	-	Q
Cresol, all isomers 甲酚，所有異構體	1319-77-3; 95-48-7; 108-39-4; 106-44-5	5	22	-	-	-	-	
Cumene (Isopropyl benzene) 枯烯 (異丙苯)	98-82-8	50	246	-	-	-	-	
Cyanides, as CN 氰化物，以 CN 量算		-	-	-	-	-	5	
Cyclohexane 環己烷	110-82-7	300	1 030	-	-	-	-	
Cyclohexanol 環己醇	108-93-0	50	206	-	-	-	-	
Cyclohexanone 環己酮	108-94-1	25	100	-	-	-	-	
DDT (Dichlorodiphenyl-trichloroethane) 滴滴涕 (二氯聯苯 - 三氯乙烷)	50-29-3	-	1	-	-	-	-	
Demeton 內吸磷	8065-48-3	0.01	0.11	-	-	-	-	
Diazinon 二嗪農 （地亞農）	333-41-5	-	0.1	-	-	-	-	
Diborane 乙硼烷	19287-45-7	0.1	0.11	-	-	-	-	
o-Dichlorobenzene (1, 2-Dichlorobenzene) 鄰二氯苯 (1 ， 2- 二氯苯)	95-50-1	25	150	50	301	-	-	
p-Dichlorobenzene (1, 4-Dichlorobenzene) 對二氯苯 (1 ， 4- 二氯苯)	106-46-7	10	60	-	-	-	-	
Dichlorodifluoromethane 二氯二氟甲烷	75-71-8	1 000	4 950	-	-	-	-	

Chemical *化學品*	*CAS No.* *CAS 號碼*	*TWA* *時間加權平均值*		*STEL* *短暫暴露限值*		*Ceiling* *上限值*		*Remarks* *備註*
		ppm	*mg/m³*	*ppm*	*mg/m³*	*ppm*	*mg/m³*	
1, 1-Dichloroethane (Ethylidene chloride) 1，1-二氯乙烷 (乙叉二氯)	75-34-3	100	405	-	-	-	-	
1, 2-Dichloroethane (Ethylene dichloride) 1，2-二氯乙烷 (二氯化乙烯)	107-06-2	10	40	-	-	-	-	
Dichloroethyl ether 二氯乙醚	111-44-4	5	29	10	58	-	-	
Dichloromethane (Methylene chloride) (Methylene dichloride) 二氯甲烷 (亞甲基二氯)	75-09-2	50	174	-	-	-	-	
Dichlorvos 敵敵畏	62-73-7	0.1	0.9	-	-	-	-	
Dicrotophos 百治磷	141-66-2	-	0.25	-	-	-	-	
Dieldrin 狄氏劑	60-57-1	-	0.25	-	-	-	-	
Diethylamine 二乙胺	109-89-7	5	15	15	45	-	-	
Diethylene triamine (2, 2'-Iminodi (ethylamine)) 二乙撐三胺 (2，2'-亞胺基二乙基胺)	111-40-0	1	4.2	-	-	-	-	
Diethyl ketone (Pentan-3-one) 二乙酮 (3-戊酮)	96-22-0	200	705	300	1 057	-	-	
Dimethylamine 二甲胺	124-40-3	5	9.2	15	27.6	-	-	
Dimethylethoxysilane 二甲乙氧基硅烷	14857-34-2	0.5	2.1	1.5	6.4	-	-	
Dimethylformamide 二甲基甲醯胺	68-12-2	10	30	-	-	-	-	
Dimethylphthalate 酸二甲酯	131-11-3	-	5	-	-	-	-	
Dimethyl sulphate 硫酸二甲酯	77-78-1	0.1	0.52	-	-	-	-	
Dinitrobenzene (all isomers) 二硝基苯 (全異構體)	528-29-0; 99-65-0; 100-25-4	0.15	1	-	-	-	-	
Dinitrotoluene 二硝基甲苯	25321-14-6	-	0.2	-	-	-	-	
Dioxane (1, 4-Dioxane) 二噁烷 (1，4-二氧陸圜)	123-91-1	20	72	-	-	-	-	

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Dioxathion 二噁磷	78-34-2	-	0.2	-	-	-	-	
Disulfoton 乙拌磷	298-04-4	-	0.1	-	-	-	-	
Endrin 內氯甲橋萘 (異狄氏劑)	72-20-8	-	0.1	-	-	-	-	
Epichlorohydrin (1-Chloro-2, 3-epoxy propane) 表氯醇 (1- 氯代 -2 ， 3- 環氧丙烷)	106-89-8	0.5	1.9	-	-	-	-	
EPN (O-Ethyl-O-(4-nitrophenyl) phenylthiophosphonoate) EPN	2104-64-5	-	0.1	-	-	-	-	
Epoxy Resin : — Reaction product of Bisphenol A and Epichlorohydrin, refer to Epichlorohydrin 環氧樹脂：雙酚 A 及表氯醇之反應產物 參閱表氯醇		-	-	-	-	-	-	
Ethanol (Ethyl alcohol) 乙醇 (乙基醇)	64-17-5	1000	1880	-	-	-	-	
2-Ethoxyethanol (EGEE) (Ethylene glycol monoethyl ether) (Glycol monoethyl ether) (Cellosolve) 2- 乙氧基乙醇 (乙二醇一乙基醚) (溶纖劑)	110-80-5	5	18	-	-	-	-	
2-Ethoxyethyl acetate (EGEEA) (Ethylene glycol monoethyl ether acetate) 醋酸 -2- 乙氧基乙酯 (乙二醇一乙基醚醋酸酯)	111-15-9	5	27	-	-	-	-	
Ethyl acetate 醋酸乙酯	141-78-6	400	1 440	-	-	-	-	
Ethyl benzene 乙苯	100-41-4	100	434	125	543	-	-	
Ethyl butyl ketone (3-Heptanone) 乙基丁基甲酮 (3- 庚酮)	106-35-4	50	234	75	350	-	-	
Ethyl cyanoacrylate 氰基丙烯酸乙酯	7085-85-0	0.2	1	-	-	-	-	
Ethylenediamine (1, 2-Diaminoethane) 乙二胺 (1 ， 2- 二胺基乙烷)	107-15-3	10	25	-	-	-	-	
Ethylene glycol, aerosol (Ethane-1, 2-diol) 乙二醇，氣溶胶 (1 ， 2- 乙烷二醇)	107-21-1	-	-	-	-	-	100	

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Ethylene oxide 乙烯化氧	75-21-8	1	1.8	-	-	-	-	
Ethyl ether (Diethyl ether) 乙醚 (二乙醚)	60-29-7	400	1 210	500	1 520	-	-	
Ethyl mercaptan (Ethanethiol) 乙硫醇 (氫硫乙烷)	75-08-1	0.5	1.3	-	-	-	-	
Fensulfothion 豐索磷	115-90-2	-	0.1	-	-	-	-	
Flour dust 麵粉塵		-	0.5	-	-	-	-	
Fluorides, as F 氟化物，以其氟量算		-	2.5	-	-	-	-	
Fluorine 氟	7782-41-4	1	1.6	2	3.1	-	-	
Formaldehyde (Formalin) 甲醛 (甲醛水)	50-00-0	-	-	-	-	0.3	0.37	
Formic acid 蟻酸 (甲酸)	64-18-6	5	9.4	10	19	-	-	
Furfural (2-Furaldehyde) 呋喃甲醛 (糠醛)	98-01-1	2	7.9	-	-	-	-	
Gasoline 汽油	8006-61-9	300	800	500	1 480	-	-	
Germanium tetrahydride (Germane) 氫化鍺 (鍺烷)	7782-65-2	0.2	0.63	-	-	-	-	
Glutaraldyde activated and inactivated 戊二醛，活化及非活化	111-30-8	-	-	-	-	0.05	0.2	
Grain dust (oat, wheat, barley) 穀物塵 （燕麥、小麥、大麥）		-	4	-	-	-	-	
Halothane 氟烷	151-67-7	50	404	-	-	-	-	
Heptane (n-Heptane) 庚烷 (正庚烷)	142-82-5	400	1 640	500	2 050	-	-	
Hexamethylene diisocyanate 六甲撐二異氰酸酯	822-06-0	0.005	0.034	-	-	-	-	

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		ppm	*mg/m³*	*ppm*	*mg/m³*	*ppm*	*mg/m³*	
Hexane 己烷								
n-Hexane 正己烷	110-54-3	20	70	-	-	-	-	
Other isomers 其他異構體		500	1 760	1 000	3 500	-	-	
Hydrazine 肼	302-01-2	0.01	0.013	-	-	-	-	
Hydrogen bromide 溴化氫	10035-10-6	-	-	-	-	3	9.9	
Hydrogen chloride (Hydrochloric acid) 氯化氫 (鹽酸)	7647-01-0	-	-	-	-	5	7.5	
Hydrogen cyanide, as CN 氰化氫，以其氰量算	74-90-8	-	-	-	-	4.7	5	
Hydrogen fluoride, as F (Hydrofluoric acid) 氟化氫，以其氟量算 (氫氟酸)	7664-39-3	-	-	-	-	3	2.5	
Hydrogen peroxide 過氧化氫	7722-84-1	1	1.4	-	-	-	-	
Hydrogen selenide 硒化氫	7783-07-5	0.05	0.16	-	-	-	-	
Hydrogen sulphide 硫化氫	7783-06-4	10	14	15	21	-	-	
Hydroquinone 氫醌；對苯二酚	123-31-9	-	2	-	-	-	-	
Iodine 碘	7553-56-2	-	-	-	-	0.1	1	
Iron oxide dust & fume (Fe_2O_3), as Fe 氧化鐵塵及煙霧，以其鐵量算	1309-37-1	-	5	-	-	-	-	
Isobutyl acetate 醋酸異丁酯	110-19-0	150	713	-	-	-	-	
Isobutyl alcohol 異丁醇	78-83-1	50	152	-	-	-	-	
Isophorone (3, 5, 5-Trimethylcyclohex-2-enone) 異佛爾酮 (3，5，5-三甲基環己 -2- 烯酮)	78-59-1	-	-	-	-	5	28	
Isopropyl acetate 醋酸異丙酯	108-21-4	250	1 040	310	1 290	-	-	
Isopropyl alcohol (Propan-2-ol) 異丙醇 (2- 丙醇)	67-63-0	400	983	500	1 230	-	-	
Isopropyl ether 異丙醚	108-20-3	250	1040	310	1300	-	-	

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Kaolin 高嶺土	1332-58-7							
Respirable dust 可吸入微塵		-	2	-	-	-	-	D
Lead and inorganic compounds, as Pb 鉛，無機粉塵及煙霧	7439-92-1	-	0.05	-	-	-	-	
Lead arsenate, as $Pb_3(AsO_4)_2$ 砷酸鉛，以 $Pb_3(AsO_4)_2$ 量算	3687-31-8	-	0.15	-	-	-	-	
Lead chromate, 鉻酸鉛	7758-97-6							
as Pb 以其鉛量算		-	0.05	-	-	-	-	
as Cr 以其鉻量算		-	0.012	-	-	-	-	
L. P. G. (Liquified petroleum gas) 石油氣	68476-85-7	1 000	1 800	-	-	-	-	
Magnesium oxide fume 氧化鎂煙霧	1309-48-4	-	10	-	-	-	-	
Malathion 馬拉硫磷	121-75-5	-	10	-	-	-	-	
Maleic anhydride 順丁烯二酸酐 (馬來酸酐)	108-31-6	0.1	0.4	-	-	-	-	
Manganese, as Mn 錳，以其錳量算	7439-96-5							
Elemental and inorganic compounds 錳及無機化合物		-	0.2	-	-	-	-	
Mercury, as Hg 汞 (水銀)，以其汞量算	7439-97-6							
Alkyl compounds 烷基化合物		-	0.01	-	0.03	-	-	
Aryl compounds 芳基化合物		-	0.1	-	-	-	-	
Inorganic forms, including metallic mercury 無機類		-	0.025	-	-	-	-	
Methacrylic acid 甲基丙烯酸	79-41-4	20	70	-	-	-	-	
Methanol (Methyl alcohol) 甲醇 (甲基醇)	67-56-1	200	262	250	328	-	-	
Methomyl 甲氨叉威	16752-77-5	-	2.5	-	-	-	-	
Methoxychlor 甲氧氯	72-43-5	-	10	-	-	-	-	

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2-Methoxyethanol (EGME) (Ethylene glycol monomethyl ether) 2- 甲氧基乙醇 (乙二醇一甲基醚)	109-86-4	5	16	-	-	-	-	
2-Methoxyethyl acetate (EGMEA) (Ethylene glycol monomethyl ether acetate) (Methyl cellosolve acetate) 醋酸 -2- 甲氧基乙醋 (乙二醇一甲基醚醋酸酯) (甲基乙二醇醋酸酯)	110-49-6	5	24	-	-	-	-	
Methyl acetate 醋酸甲酯	79-20-9	200	606	250	757	-	-	
Methyl acrylate 丙烯酸甲酯	96-33-3	2	7	-	-	-	-	
Methylamine 甲胺	74-89-5	5	6.4	15	19	-	-	
Methyl n-amyl ketone (2-Heptanone) 甲基正戊基甲酮 (2- 庚酮)	110-43-0	50	233	-	-	-	-	
Methyl bromide (Bromomethane) 甲基溴 (溴化甲烷)	74-83-9	1	3.9	-	-	-	-	
Methyl tert-butyl ether (MTBE) 甲基叔丁基醚	1634-04-4	40	144	-	-	-	-	
Methyl n-butyl ketone (2-Hexanone) 甲基正丁基甲酮 (2- 己酮)	591-78-6	5	20	10	41	-	-	
Methyl chloride (Chloromethane) 甲基氯 (氯甲烷)	74-87-3	50	103	100	207	-	-	
Methyl chloroform (1, 1, 1-Trichloroethane) 甲基氯仿 (1，1，1- 三氯乙烷)	71-55-6	350	1 910	450	2 460	-	-	
Methyl 2-cyanoacrylate 甲基 2- 氰基丙烯酸酯	137-05-3	0.2	0.9	-	-	-	-	
Methyl demeton 甲基內吸磷	8022-00-2	-	0.5	-	-	-	-	
Methylene bisphenyl isocyanate (MDI) (Diphenylmethane diisocyanate) 二苯甲撐二異氰酸酯 (二苯甲烷二異氰酸酯)	101-68-8	0.005	0.051	-	-	-	-	
4,4'-Methylene bis (2-chloroaniline) [MBOCA; MOCA®] 4, 4'—亞甲基二（2—氯苯胺）	101-14-4	0.01	0.11	-	-	-	-	

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		ppm	*mg/m³*	*ppm*	*mg/m³*	*ppm*	*mg/m³*	
Methyl ethyl ketone (MEK) (2-Butanone) (Ethyl methyl ketone) 甲基乙基甲酮 (2- 丁酮) (乙基甲基甲酮)	78-93-3	200	590	300	885	-	-	
Methyl ethyl ketone peroxide (MEKP) 過氧化甲基乙基甲酮	1338-23-4	-	-	-	-	0.2	1.5	
Methyl isobutyl ketone (Hexone) 甲基異丁基甲酮 (異己酮)	108-10-1	50	205	75	307	-	-	
Methyl mercaptan (Methanethiol) 甲硫醇	74-93-1	0.5	1	-	-	-	-	
Methyl methacrylate 甲基丙烯酸甲酯	80-62-6	50	205	100	410	-	-	
Methyl parathion 甲基對硫磷	298-00-0	-	0.2	-	-	-	-	
Mica 雲母	12001-26-2							
Respirable fraction 可吸入部分		-	3	-	-	-	-	D
Morpholine 嗎啉 (對氧氮乙環)	110-91-8	20	71	-	-	-	-	
Naled 二溴磷 (冰堆)	300-76-5	-	3	-	-	-	-	
Naphthalene 萘	91-20-3	10	52	15	79	-	-	
Nickel 鎳								
Elemental/metal 鎳元素 / 金屬	7440-02-0	-	1.5	-	-	-	-	
Soluble compounds, as Ni 可溶性化合物		-	0.1	-	-	-	-	
Insoluble compounds, as Ni 不可溶性化合物		-	0.2	-	-	-	-	
Nicotine 尼古丁	54-11-5	-	0.5	-	-	-	-	
Nitric acid 硝酸	7697-37-2	2	5.2	4	10	-	-	
Nitric oxide 一氧化氮	10102-43-9	25	31	-	-	-	-	
Nitrobenzene 硝基苯	98-95-3	1	5	-	-	-	-	

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		ppm	*mg/m³*	*ppm*	*mg/m³*	*ppm*	*mg/m³*	
Nitrogen dioxide 二氧化氮	10102-44-0	3	5.6	5	9.4	-	-	
Nitrous oxide 氧化亞氮	10024-97-2	50	90	-	-	-	-	
Nonane, all isomers 壬烷，所有異構體	111-84-2	200	1 050	-	-	-	-	
Octane (all isomers) 辛烷	111-65-9	300	1 400	375	1 750	-	-	
Oil mist, mineral 礦物油霧		-	5	-	10	-	-	G
Oxalic acid 乙二酸	144-62-7	-	1	-	2	-	-	
Ozone 臭氧	10028-15-6							
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	-	-	-	-	
Heavy, moderate, or light workloads (≤ 2 hours) 高、中、低量體力工作（少於 2 小時）		0.2	0.4	-	-	-	-	
Paraffin wax fume 石蠟煙霧	8002-74-2	-	2	-	-	-	-	
Paraquat 百草枯	4685-14-7							
Inhalable dust 全粉塵		-	0.5	-	-	-	-	
Respirable dust 可吸入部分		-	0.1	-	-	-	-	
Paraquat dichloride 百草枯二氯化物	1910-42-5							
Respirable dust 可吸入微塵		-	0.08	-	-	-	-	
Parathion 硝苯硫磷酯	56-38-2	-	0.1	-	-	-	-	
Particulate polycyclic aromatic hydrocarbons (PPAH) as benzene soluble aerosol 多環芳香族煙微粒，以可溶於苯量算		-	0.2	-	-	-	-	

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Particulates (Insoluble) Not Otherwise Classified (PNOC) (Nuisance Particulates) 其他未經分類微粒（非水溶性）(厭惡性微粒)								
Inhalable dust 全粉塵		-	10	-	-	-	-	D
Respirable fraction 可吸入部分		-	3	-	-	-	-	D
Pentachlorophenol 五氯酚	87-86-5	-	0.5	-	-	-	-	
Pentane, all isomers 戊烷	78-78-4; 109-66-0; 463-82-1	600	1 770	-	-	-	-	
Pentyl acetate (all isomers) (Amyl acetate) 乙酸戊酯（所有異構體）(醋酸戊酯)	628-63-7; 626-38-0; 123-92-2; 625-16-1; 624-41-9; 620-11-1	50	266	100	532	-	-	
Perchloroethylene (Tetrachloroethylene) 四氯乙烯 (過氯乙烯)	127-18-4	25	170	100	685	-	-	
Phenol 酚	108-95-2	5	19	-	-	-	-	
0-Phenylenediamine 鄰苯二胺	95-54-5	-	0.1	-	-	-	-	
m-Phenylenediamine 間苯二胺	108-45-2	-	0.1	-	-	-	-	
p-Phenylenediamine 對苯二胺	106-50-3	-	0.1	-	-	-	-	
Phosgene (Carbonyl chloride) 光氣 (二氯化碳醯)	75-44-5	0.1	0.40	-	-	-	-	
Phosphine 磷化氫	7803-51-2	0.3	0.42	1	1.4	-	-	
Phosphoric acid 磷酸	7664-38-2	-	1	-	3	-	-	
Phosphorus (yellow) 黃磷	7723-14-0	0.02	0.1	-	-	-	-	
Phosphorus pentachloride 五氯化磷	10026-13-8	0.1	0.85	-	-	-	-	
Phosphorus trichloride 三氯化磷	7719-12-2	0.2	1.1	0.5	2.8	-	-	
Picric acid (2,4,6-Trinitrophenol) 苦味酸 (2,4,6—三硝基苯酚)	88-89-1	-	0.1	-	-	-	-	

Chemical *化學品*	*CAS No.* *CAS 號碼*	*TWA* *時間加權平均值*		*STEL* *短暫暴露限值*		*Ceiling* *上限值*		*Remarks* *備註*
		ppm	*mg/m³*	*ppm*	*mg/m³*	*ppm*	*mg/m³*	
Platinum 鉑	7440-06-4							
Metal 金屬		-	1	-	-	-	-	
Soluble salts, as Pt 可溶性鹽，以其鉑量算		-	0.002	-	-	-	-	
Portland cement 波特蘭水泥	65997-15-1							
Inhalable dust 全粉塵		-	10	-	-	-	-	D
Respirable dust 可吸入微塵		-	4	-	-	-	-	D
Potassium chromate, as Cr 鉻酸鉀，以其鉻量算	7789-00-6	-	0.05	-	-	-	-	
Potassium cyanide, as CN 氰化鉀，以其氰量算	151-50-8	-	-	-	-	-	5	
Potassium dichromate, as Cr 重鉻酸鉀，以其鉻量算	7778-50-9	-	0.05	-	-	-	-	
Potassium fluoride, as F 氟化鉀，以其氟量算	7789-23-3	-	2.5	-	-	-	-	
Potassium hydroxide (Caustic potash) 氫氧化鉀 (苛性鉀)	1310-58-3	-	-	-	-	-	2	
Potassium permanganate, as Mn 高錳酸鉀，以其錳量算	7722-64-7	-	0.2	-	-	-	-	
Propane 丙烷	74-98-6	2500	4508	-	-	-	-	
Propoxur 殘殺威	114-26-1	-	0.5	-	-	-	-	
n-Propyl alcohol (n-Propanol) (Propan-1-ol) 丙基醇 (正丙醇) (1- 丙醇)	71-23-8	200	492	250	614	-	-	
Propylene glycol monomethyl ether (1-Methoxy-2-propanol) 丙二醇一甲基醚 1- 甲氧基 -2- 丙醇	107-98-2	100	369	150	553	-	-	
Pyrethrum 除蟲菊	8003-34-7	-	5	-	-	-	-	
Pyridine 吡啶	110-86-1	5	16	-	-	-	-	
Resorcinol (m-Dihydroxybenzene) (1,3-Benzenediol) 雷瑣酚 (間苯二酚)	108-46-3	10	45	20	90	-	-	

Chemical *化學品*	*CAS No.* *CAS 號碼*	*TWA* *時間加權平均值*		*STEL* *短暫暴露限值*		*Ceiling* *上限值*		*Remarks* *備註*
		ppm	*mg/m³*	*ppm*	*mg/m³*	*ppm*	*mg/m³*	
Rubber solvent (Naphtha) 橡膠溶劑 (石腦油)	8030-30-6	400	1 590	-	-	-	-	
Selenium and compounds, as Se 硒及其化合物，以其硒量算	7782-49-2	-	0.2	-	-	-	-	
Selenium hexafluoride, as Se 六氟化硒	7783-79-1	0.05	0.16	-	-	-	-	
Silica - Amorphous 硅石 (二氧化硅) - 非結晶類								
Diatomaceous earth (uncalcined) 硅藻土（未經煅燒）	61790-53-2							
Inhalable dust 全粉塵		-	10	-	-	-	-	D
Respirable dust 可吸入微塵		-	3	-	-	-	-	D
Silica fume 硅石煙霧	69012-64-2							
Respirable dust 可吸入微塵		-	2	-	-	-	-	
Silica, fused 硅石，結合類	60676-86-0							
Respirable dust 可吸入微塵		-	0.1	-	-	-	-	
Silica - Crystalline 硅石 (二氧化硅) - 結晶類								
Cristobalite 方石英	14464-46-1							
Respirable dust 可吸入微塵		-	0.05	-	-	-	-	
Quartz 石英	14808-60-7							
Respirable dust 可吸入微塵		-	0.1	-	-	-	-	
Tridymite 鱗石英	15468-32-3							
Respirable dust 可吸入微塵		-	0.05	-	-	-	-	
Tripoli, as quartz 硅藻土，以其石英量算	1317-95-9							
Respirable dust 可吸入微塵		-	0.1	-	-	-	-	

Chemical *化學品*	*CAS No.* *CAS 號碼*	*TWA* *時間加權平均值* *ppm*	 *mg/m³*	*STEL* *短暫暴露限值* *ppm*	 *mg/m³*	*Ceiling* *上限值* *ppm*	 *mg/m³*	*Remarks* *備註*
Silicon carbide 碳化硅	409-21-2							
Inhalable dust 全粉塵		-	10	-	-	-	-	D
Respirable dust 可吸入微塵		-	4	-	-	-	-	D
Silicon tetrahydride 四氫化硅	7803-62-5	5	6.6	-	-	-	-	
Silver 銀	7440-22-4							
Metal 金屬		-	0.1	-	-	-	-	
Soluble compounds, as Ag 可溶化合物，以其銀量算		-	0.01	-	-	-	-	
Sodium bisulphite 亞硫酸氫鈉	7631-90-5	-	5	-	-	-	-	
Sodium cyanide, as CN 氰化鈉，以其氰量算	143-33-9	-	-	-	-	-	5	
Sodium dichromate, as Cr 重鉻酸納，以其鉻量算	10588-01-9	-	0.05	-	-	-	-	
Sodium fluoride, as F 氟化鈉，以其氟量算	7681-49-4	-	2.5	-	-	-	-	
Sodium hydroxide (Caustic soda) 氫氧化鈉 (苛性鈉)	1310-73-2	-	-	-	-	-	2	
Starch 澱粉	9005-25-8							
Inhalable dust 全粉塵		-	10	-	-	-	-	
Respirable dust 可吸入微塵		-	4	-	-	-	-	
Stearates 硬脂酸鹽		-	10	-	-	-	-	K
Stibine (Antimony hydride) 䂳 (三氫化銻)	7803-52-3	0.1	0.51	-	-	-	-	
Stoddard solvent (White spirit) 史圖達溶劑 (石油溶劑)	8052-41-3	100	525	-	-	-	-	
Styrene, monomer (Phenylethylene) (Vinyl benzene) 苯乙烯，單體	100-42-5	20	85	40	170	-	-	
Sucrose 蔗糖	57-50-1	-	10	-	-	-	-	

Chemical *化學品*	*CAS No.* *CAS 號碼*	*TWA* *時間加權平均值* *ppm*	 *mg/m³*	*STEL* *短暫暴露限值* *ppm*	 *mg/m³*	*Ceiling* *上限值* *ppm*	 *mg/m³*	*Remarks* *備註*
Sulfotep 硫特普 (治螟磷)	3689-24-5	-	0.2	-	-	-	-	
Sulphur dioxide 二氧化硫	7446-09-5	2	5.2	5	13	-	-	
Sulphuric acid 硫酸	7664-93-9	-	1	-	3	-	-	
Synthetic Vitreous Fibres (Mineral wool fibres) 合成玻璃纖維 (礦棉纖維)								
Continuous filament glass fibres 玻璃纖維		-	1 f/ml (or 或) 5 mg/m³	-	-	-	-	
Glass wool fibres 玻璃棉纖維		-	1 f/ml	-	-	-	-	
Rock wool fibres 石棉纖維（合成）		-	1 f/ml	-	-	-	-	
Slag wool fibres 礦渣棉纖維		-	1 f/ml	-	-	-	-	
Special purpose glass fibres 特種玻璃纖維		-	1 f/ml	-	-	-	-	
Refractory ceramic fibres 耐火陶瓷纖維		-	0.2 f/ml	-	-	-	-	
Talc (containing no asbestos fibres) 滑石 (不含石棉纖維)	14807-96-6							
Respirable dust 可吸入微塵		-	2	-	-	-	-	D
TEPP 特普 (焦磷酸四乙酯)	107-49-3	-	0.05	-	-	-	-	
1, 1, 2, 2-Tetrachloroethane 1, 1, 2, 2- 四氯乙烷	79-34-5	1	6.9	-	-	-	-	
Tetraethyl lead, as Pb 四乙鉛，以其鉛量算	78-00-2	-	0.1	-	-	-	-	
Tetrahydrofuran 四氫呋喃	109-99-9	200	590	250	737	-	-	
Tetramethyl lead, as Pb 四甲鉛，以其鉛量算	75-74-1	-	0.15	-	-	-	-	
Thionyl chloride 亞硫醯氯	7719-09-7	-	-	-	-	1	4.9	

Chemical *化學品*	*CAS No.* *CAS 號碼*	*TWA* *時間加權平均值*		*STEL* *短暫暴露限值*		*Ceiling* *上限值*		*Remarks* *備註*
		ppm	*mg/m³*	*ppm*	*mg/m³*	*ppm*	*mg/m³*	
Tin 錫	7440-31-5							
Metal 金屬		-	2	-	-	-	-	
Oxide & inorganic compounds, except SnH4, 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	-	-	
Titanium dioxide 二氧化鈦	13463-67-7							
Inhalable dust 全粉塵		-	10	-	-	-	-	
Respirable dust 可吸入微塵		-	4	-	-	-	-	
Toluene (Toluol) 甲苯	108-88-3	50	188	-	-	-	-	
Toluene-2, 4-diisocyanate (TDI) 甲苯 -2, 4- 二異氰酸酯 (二異氰酸甲苯酯)	584-84-9	0.005	0.036	0.02	0.14	-	-	
o-Toluidine 鄰甲苯胺	95-53-4	2	8.8	-	-	-	-	
1, 1, 2-Trichloroethane 1, 1, 2- 三氯乙烷	79-00-5	10	55	-	-	-	-	
Trichloroethylene 三氯乙烯	79-01-6	50	269	100	537	-	-	
Trichlorofluoromethane 三氯氟甲烷	75-69-4	-	-	-	-	1 000	5 620	
1, 1, 2-Trichloro-1, 2, 2-trifluoroethane 1, 1, 2- 三氯 -1, 2, 2- 三氟乙烷	76-13-1	1 000	7 670	1 250	9 590			
Triethylamine 三乙胺	121-44-8	1	4.1	3	12	-	-	
Trimethylamine 三甲胺	75-50-3	5	12	15	36	-	-	
Trimethyl benzene 三甲基苯	25551-13-7	25	123	-	-	-	-	
Triorthocresyl phosphate (Tri-o-tolyl phosphate) 磷酸三鄰甲苯酯 (三鄰甲苯基磷酸酯)	78-30-8	-	0.1	-	-	-	-	
Turpentine 松節油	8006-64-2	100	556	-	-	-	-	

Chemical *化學品*	*CAS No.* *CAS 號碼*	*TWA* *時間加權平均值*		*STEL* *短暫暴露限值*		*Ceiling* *上限值*		*Remarks* *備註*
		ppm	*mg/m³*	*ppm*	*mg/m³*	*ppm*	*mg/m³*	
Vanadium Pentoxide, as V_2O_5 五氧化二釩，以 V_2O_5 算	1314-62-1							
Respirable dust & fume 可吸入微塵及煙霧		-	0.05	-	-	-	-	
Vegetable oil mists 植物油霧		-	10	-	-	-	-	J
Vinyl chloride 氯乙烯 (乙烯基氯)	75-01-4	1	2.6	-	-	-	-	
VM & P (Varnish Makers' & Printers') Naphtha 清漆製造及印刷用石腦油	8032-32-4	300	1 370	-	-	-	-	
Welding fumes (NOC) 焊接煙霧 (未經分類)		-	5	-	-	-		
Wood dust 木粉塵								
Certain hard woods as beech & oak 某種硬木如山毛櫸及橡樹		-	1	-	-	-	-	
Soft wood 軟木		-	5	-	10	-	-	
Xylene (o-, m-, p-isomers) (Dimethylbenzene) 二甲苯 (所有鄰、間、對異構體)	1330-20-7	100	434	150	651	-	-	
zinc chloride fume 氯化鋅煙霧	7646-85-7	-	1	-	2	-	-	
Zinc chromates as Cr 鉻酸鋅，以其鉻量算	13530-65-9; 11103-86-9; 37300-23-5	-	0.01	-	-	-	-	
Zinc oxide 鋅及氧化鋅	1314-13-2							
Dust 粉塵		-	10	-	-	-	-	
Fume 煙霧		-	5	-	10	-	-	

Explanatory Notes 註釋:

ppm	-	Parts per million in terms of volume by volume 百萬分比，以空氣容量單位比例計算。
mg/m^3	-	milligrams per cubic metre of air 污染物的濃度以毫克單位在一立方米的空氣計算
f/ml	-	fibres per millitre of air 纖維物體的濃度以纖維數量(條)在一毫升的空氣計算

Remarks 備註:

D	The value is for dust containing no asbestos and < 1% crystalline silica 數值適用於不含石棉和少於百分之一的結晶硅石的塵埃
G	As sampled by method that does not collect vapour 採用不會收集蒸氣的方法所取得的樣本
J	Except castor, cashew nut, or similar irritant oils 除草蓖麻油、腰果油及類似的刺激性油類外
K	Does not include stearates of toxic metals 不包括有毒金屬的硬脂酸鹽
NOC	Not otherwise classified 未經分類
Q	Measured by IOM Inhalable dust sampler or any other sampler giving equivalent results 採用 IOM 全粉塵採樣器或同等儀器測試

附件 II　　參考資料

Annex II　Reference Materials

1. American Conference of Governmental Industrial Hygienist, *Threshold Limit Values for Chemical Substances and Physical Agents & Biological Exposure Indices*, ACGIH, Cincinnati, OH (2001), USA.

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Labour Department, Code of Practice: Safety and Health at Work with Asbestos, Hong Kong (1998).

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6. Health and Safety Executive, *Methods for the Determination of Hazardous Substances*, Sudbury, UK.

7. National Occupational Safety & Health Commission, *Guidance Note for the Assessment of Health Risks Arising from the Use of Hazardous Substances in the Workplace*, NOHSC:3017(1994), Australia.

8. British Standards Institution, *Workplace atmospheres - Guidance for the assessment of exposure by inhalation to chemical agents for comparison with limit values and measurement strategy*, BS EN 689:1996, BS 6069-3.7:1996, UK.

9. Health and Safety Executive, *EH40/2000 Occupational Exposure Limits 2000*, London; Sheffield: HSE, 2/2000, UK.

10. Health and Safety Executive, *EH64 Summary criteria for Occupational Exposure Limits*, London; Sheffield: HSE, 5/98, UK.

11. Ministry of Labour, *The Factories (Permissible Exposure Levels of Toxic Substances) Order 1996*, Singapore.

12. Occupational Health Dept., Ministry of Manpower, *Air Sampling and Analysis Guide*, Singapore (1996).

查詢

如你對本工作守則有任何疑問或想查詢其他職業健康及衛生事宜，你可與職業安全及健康部聯絡：

電　　話：2852 4040
傳　　真：2581 2049
電子郵件：enquiry@labour.gov.hk

你亦可以透過互聯網，找到勞工處提供的各項服務及主要勞工法例的資料。本處的網址是 http://www.labour.gov.hk 。

Further Information

If you wish to enquire about this code of practice or require advice on occupational health and hygiene, please contact the Occupational Safety and Health Branch of the Labour Department through:

Telephone : 2852 4040
Fax : 2581 2049
E-mail : enquiry@labour.gov.hk

Information on the services offered by the Labour Department and on major legislation can also be found by visiting our Home Page in the Internet. Address of our Home Page is http://www.labour.gov.hk.