

A Guide to the
Factories and Industrial Undertakings Ordinance
(Sections 6A & 6B)

Know Your General Duties



This guide is prepared by the
Occupational Safety and Health Branch
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**A GUIDE TO THE
FACTORIES AND INDUSTRIAL UNDERTAKINGS
ORDINANCE (SECTIONS 6A & 6B)**

KNOW YOUR GENERAL DUTIES

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1. Introduction

1.1 Securing the health and safety at work requires the full co-operation of proprietors and persons employed. It also requires them to understand and assume individual responsibilities and roles. Sections 6A and 6B of the “Factories and Industrial Undertakings Ordinance”, Chapter 59, impose general duties on proprietors and persons employed with regard to the health and safety at work in industrial undertakings. This guidebook is prepared to explain the legal obligations under the general duties provisions and to assist proprietors and persons employed to comply with the legislation.

1.2 Unlike other health and safety legislation which stipulates health and safety requirements in technical details, the general duties provisions express duties of proprietors and persons employed in general terms. Such duties are applicable to all types of work activities and situations, some of which may not be covered by other specific health and safety legislation. The general duties provisions are designed to encourage proprietors and persons employed to take a wider view of their roles and responsibilities with respect to the health and safety at work.

1.3 The general duties provisions are additional to other health and safety legislation. Proprietors and persons employed must ensure that they fulfill their general duties as well as the specific responsibilities laid down in other provisions of the “Factories and Industrial Undertakings Ordinance” and its subsidiary regulations. Failure to do so is an offence under the law.

2. General Duties of Proprietors and Persons Employed

2.1 General Duties of Proprietors

2.1.1 The general duties imposed on the proprietor of an industrial undertaking are to ensure, so far as is reasonably practicable, the health and safety at work of all persons employed by him. *Section 6A(1)*

2.1.2 The general duties extend to include five specific areas which will be explained in the following paragraphs. These five areas are the most important though by no means the only areas with which the proprietor must be concerned. *Section 6A(2)*

Provision and maintenance of plant and systems of work

2.1.3 The proprietor must provide machinery, equipment, appliances

and other plant that are, so far as is reasonably practicable, safe and without risks to health and must maintain them in that condition. He must also ensure that the systems of work are safe and without risks to health. The phrase “systems of work” means the way in which the work is organized and includes, for example, the layout of the workplace, the working procedures of jobs, or the necessary precautions to be taken before carrying out certain hazardous tasks. In this context, this duty means, for example, that both a plant itself and the way it is operated must be safe and without risks to health. *Section 6A(2)(a)*

Use, handling, storage and transport of articles and substances

2.1.4 Certain articles and substances used in the industrial undertaking, for example, machinery and chemicals, may affect the health and safety of the persons employed. The proprietor must therefore make adequate arrangements for ensuring that, so far as is reasonably practicable, the ways in which the articles and substances are used, handled, stored and transported are safe and without risks to health. He must also pay particular attention to any information given by the manufacturer or supplier about the safe use, handling, storage and transport of articles and substances. *Section 6A(2)(b)*

Information, instruction, training and supervision

2.1.5 The proprietor must provide all the necessary information, instruction, training and supervision for all persons employed by him to ensure, so far as is reasonably practicable, their health and safety at work. The information to be provided must include information about the hazards in the workplace and the necessary precautions to be adopted. It might also include materials such as safety data sheets, publications on health and safety legislation, relevant codes of practice or health and safety booklets issued by the Labour Department.

2.1.6 Health and safety training should include such things as safe use and maintenance of plant and machinery; instruction in safety and emergency procedures; use of safety equipment; fire drills; special training for work involving a high degree of risk; and retraining when the work changes or new safety methods are introduced. The in-house training should be supplemented where necessary by sponsoring and encouraging persons employed to attend training courses, seminars, or symposiums on health and safety at work organized by the Occupational Safety and Health Branch or other organizations. The proprietor has to ensure that all persons

employed by him are adequately trained and competent to carry out their jobs in a safe manner, that is, with minimum risk to themselves or others. He must also ensure that the managers and supervisors understand their responsibilities and have thorough knowledge in discharging them. Training should therefore be extended not only to operatives but also to supervisors and managers at all levels. Good supervision and adequate instruction are also vital in health and safety terms for spotting potential hazards and ensuring that safety rules are followed. *Section 6A(2)(c)*

Maintenance of industrial undertakings in safe condition and provision and maintenance of safe means of access and egress

2.1.7 The proprietor must ensure that, so far as is reasonably practicable, any place of work under his control is kept safe and without risks to health. This requirement covers not only buildings, but also includes, for example, open sites and temporary structures such as scaffolds. The proprietor must also ensure that, so far as is reasonably practicable, every access to and egress from the workplace are safe and without risks to health. This duty includes ensuring, for example, that walls and floors are not going to collapse; that lifts are properly maintained; that staircases are well lit; and that passages, exits and roadways are kept free from obstacles. *Section 6A(2)(d)*

Working environment

2.1.8 The proprietor must provide and maintain for all persons employed by him a working environment that is, so far as is reasonably practicable, safe and without risks to health. This requirement covers, for example, lighting, ventilation, and noise in the workplaces. *Section 6A(2)(e)*

2.2 General Duties of Persons Employed

2.2.1 Every person employed at an industrial undertaking must take reasonable care for the health and safety of himself and of others who may be affected by his acts or omissions at work. He should not only avoid silly or reckless behaviour but should also take positive steps to understand the hazards in his workplace, to follow necessary safety rules and procedures, and to ensure that his acts or omissions at work will not put the health and safety of himself or others at risk. *Section 6B(1)(a)*

2.2.2 Where duties or requirements are imposed on his proprietor or

any other person under the “Factories and Industrial Undertakings Ordinance” or its subsidiary regulations for securing the health and safety at work at the industrial undertaking, the person employed must co-operate with the proprietor or any other person so far as is necessary to enable them to perform or comply with those duties or requirements. For example, there is a duty on the proprietor to ensure that articles and substances are used and handled safely. To discharge this duty, the proprietor might introduce safety procedures for using and handling certain hazardous substances. Providing those procedures are indeed appropriate, the person employed must co-operate by following them. *Section 6B(1)(b)*

2.3 Checklist on General Duties of Proprietors

2.3.1 The general duties provisions are comprehensive and have wide application. It is therefore impossible to specify in detail here all the steps necessary to comply with the legislation by any particular concern. The proprietor should therefore consider within the context of his organization what action is necessary on his part to carry out his duties. The checklist given below is intended to assist the proprietor in making this assessment. It should be pointed out that this checklist is by no means exhaustive and cannot cover every situation. It is not an authoritative interpretation of the legal requirements and should not be regarded as such.

2.3.2 Provision and maintenance of plant and systems of work—Section 6A(2)(a)

- (1) Is the plant up to the necessary standards with respect to safety and risk to health?
- (2) When new plant is installed, are latest good practices taken into account?
- (3) Is there provision by regular inspections, examinations and, where necessary, testings to ensure that the plant and its safety devices have not deteriorated?
- (4) In such cases would the examinations, etc. be more suitably assigned to specialists?
- (5) Do all the systems of work provide adequately for safety and health?
- (6) Are such systems of work properly enforced?
- (7) Has a thorough examination been made of all operations

- undertaken in the workplace (especially those carried out only infrequently) to minimize danger of injury or risk to health?
- (8) What attention has been paid to the safety of cleaning, repair and maintenance operations?
 - (9) Should a special safety system such as the “permit-to-work” system be considered?
 - (10) Is the work environment regularly monitored to ensure that, where known toxic contaminants are present, the protection conforms to current hygiene standards?
 - (11) Is monitoring also carried out to check the adequacy and effectiveness of the control measures?
 - (12) Have arrangements been made for regular inspection of all equipment and appliances used for ensuring safety and health (for example, dust and fume extraction equipment, guards, safe arrangements for access and monitoring and testing appliances)?
 - (13) What personal protective equipment is required (e.g. protective boots, helmets, goggles, respirators, ear protectors)? Has it been issued? Are adequate arrangements made for its storage, maintenance, cleaning and renewal? Have those who need it been trained in its use?
 - (14) Have arrangements been made for regular maintenance and testing of electrical installations and equipment?
 - (15) Have emergency procedures and contingency plans been formulated to cover, for example, escapes or spillages of toxic or dangerous materials, fire, escapes of gases etc., and also emergencies due to hazards arising in adjacent premises?

2.3.3 *Use, handling, storage and transport of articles and substances – Section 6A(2)(b)*

- (1) Have the methods of manufacture been examined carefully of every substance likely to give rise to risk to ensure that every necessary precaution has been taken?
- (2) Has an audit been carried out to list every substance used at work to identify the specific health and safety risks to which any substance may give rise?

- (3) Are the containers of all substances correctly labelled?
- (4) Are all containers and handling devices suitable or should expert advice be sought?
- (5) Has particular attention been given to the manipulation of molten metal?
- (6) Can storage and transport arrangements be improved to make them safer and reduce health risks?
- (7) If there is mechanical transport used on the premises, have the operating procedures been critically appraised? Are the transport rules adequate and are they properly enforced?
- (8) Are structural modifications to plant, buildings or operating areas necessary to achieve safety in the use of transport?
- (9) Have proper procedures been established for assessing new proposals for handling materials or using transport?
- (10) Could safety be enhanced or working conditions improved by substitution of less toxic or less dangerous substances, by improvements in enclosure or by institution of remote handling methods?
- (11) Has particular attention been given to the safety of systems of work and of the handling of substances undertaken outside the normal production processes?
- (12) Has special attention been given to the precautions in the carriage and transport of dangerous materials, such as those of high toxicity, or with explosive properties or radiation emitters?
- (13) Should the existing safety system of handling of articles be reviewed?
- (14) Is further training in the use of hand tools, machines and mobile plant necessary?
- (15) Is all equipment safely stored?
- (16) Are any processes being undertaken using unsuitable machines or equipment?

2.3.4 *Information, instruction, training and supervision—Section 6A(2)(c)*

- (1) What can be done to secure the co-operation of persons employed

in planning work involving their health and safety at work?

- (2) Are adequate information and guidance given to all persons employed on the hazards of work activities and the methods for avoiding them and on other matters affecting health or safety?
- (3) Has every worker exposed to a health hazard been informed of the risks and the precautions? Have arrangements been made for him to be told of the results of any relevant monitoring carried out?
- (4) Is further information necessary with respect to special equipment, substances or processes?
- (5) Are there arrangements for a proper flow of information to persons employed and also for rapid and unhindered communication on safety and health matters from persons employed to management?
- (6) Has information been provided to persons employed on legal requirements?
- (7) Has adequate technical information been provided at suitable levels?
- (8) Have arrangements been made such that advisory literature (including any new publications) on health and safety is available for all persons concerned?
- (9) Have adequate arrangements been made for training in safe practices, in procedures for avoiding risks to health and in the use of equipment for safety? Does such training take into account the levels at which it must be approached and the capabilities of the recipients? Is there proper training for supervisory staff? Is the effectiveness of the training and its retention by the trainees monitored regularly? Are there arrangements for retraining of those in post as well as for training new persons employed?
- (10) Has action been taken to foster a high standard of safety awareness among persons employed?
- (11) Has a high standard of skill been achieved by all supervisors in their role in the management of safe procedures and systems of work?
- (12) Has a system been instituted for identifying the particular training needs within the organization and any special needs of individual

persons employed?

- (13) Are there processes with special hazards which have particular training needs?
- (14) Are safe methods of working receiving full emphasis in all training given?
- (15) Has full use been made of the training facilities available from the Occupational Safety and Health Training Centre of the Labour Department or other organizations?

2.3.5 Maintenance of industrial undertakings in safe condition and provision and maintenance of means of access and egress—Section 6A(2)(d)

- (1) Has consideration been given to the safety of all places of work and the means of access to and egress from them?
- (2) Do all buildings comply adequately with safety standards? Are they so maintained? Are professional surveys required for any buildings?
- (3) Has adequate consideration been given to special safety requirements of all buildings, such as fire escapes, fixture points for window cleaners' harnesses, and preplanned arrangements for building maintenance?
- (4) Are there specially awkward places within the buildings which must be reached at particular times, for example, for observation or for control of processes or plant? If so, can the means of access be improved?
- (5) Do persons have to enter plant for maintenance or cleaning where there may be special hazards and, if so, have proper procedures and precautions been taken?
- (6) Do good housekeeping and cleanliness receive the attention due to them?
- (7) Are fire exits identified and are they checked to ensure that they are maintained free from obstruction?
- (8) Is fire-fighting equipment provided and is it properly maintained? Are persons adequately trained in its use?
- (9) Has the fire alarm been tested? Are fire drills held?

2.3.6 *Working environment - Section 6A(2)(e)*

- (1) Are there any problems in the premises in connection with lighting, ventilation or noise?
- (2) Are the first aid arrangements satisfactory?
- (3) Are there any problems arising from dangerous waste?

2.4 Checklist on General Duties of Persons Employed

The checklist given below is intended to assist persons employed in discharging their general duties. However, it should be pointed out that the checklist is by no means exhaustive and cannot cover every situation. It should only be used as a guidance and must not be regarded as an authoritative interpretation of the legal requirements.

- (1) Have you taken reasonable care for the health and safety of yourself and of other persons who may be affected by your acts or omissions at work?
- (2) Where personal protective equipment is required, do you understand why it is required, how to use it, its limitations, and how to have it maintained?
- (3) Have you tried to avoid silly or reckless behaviour?
- (4) Have you dressed properly while at work?
- (5) Have you ever tampered with safety guards or devices?
- (6) Have you adopted “short-cut” methods in performing your job? Do you know the proper job method?
- (7) Have you used improvised tools and equipment which entail unnecessary risk?
- (8) Do you have adequate training on safe work practices?
- (9) Have you taken positive steps to understand the hazards in the workplace?
- (10) Have you received adequate safety information? Do you know where to obtain such information in your company?
- (11) As a supervisor, do you understand the hazards associated with a job, their effects on persons employed, and your role, through training and enforcement, in ensuring that persons employed follow

the rules, procedures and work practices for controlling exposure to the hazards?

- (12) Have you followed the safety rules and procedures of your company?
- (13) Do you recognize the policy, organization and arrangements for securing the health and safety at work in your company?
- (14) Have steps been taken to ensure the safety of cleaning, repair and maintenance operations?
- (15) Have you followed the safe systems of work provided by your proprietor?
- (16) Have you effectively discharged your safety responsibilities?
- (17) Have you co-operated with your proprietor or other persons to enable them to discharge their duties under the health and safety legislation?
- (18) Do you understand the information and follow the guidance given by your proprietor on the hazards of work activities and the methods for avoiding them and on any other matters affecting health and safety?
- (19) Have you reported any unsafe conditions to your supervisor or management? Do you know the reporting procedure?
- (20) Have you suggested ways of eliminating hazardous situations?
- (21) Have you participated in in-plant safety promotional activities?
- (22) Have you tried to encourage co-workers to follow safe work practices?
- (23) Have you acted as a good example to new workers?

2.5 Meaning of “So Far as is Reasonably Practicable”

2.5.1 The general duties of the proprietor specified under the “Factories and Industrial Undertakings Ordinance” are governed by the phrase “so far as is reasonably practicable”. This phrase is not defined in the Ordinance, but it has acquired a quite clear meaning from decided cases in courts.

2.5.2 When a proprietor is required to do something “so far as is reasonably practicable”, he must weigh on the one hand the risks of a

particular work activity or situation, and, on the other hand, the cost in terms of physical difficulties, time and expenses which would be incurred in taking steps to avoid the risks. A requirement can only be regarded as not “reasonably practicable” when there is a gross disproportion of cost against the risk. For example, if the risks to health and safety of a particular work activity are very low, and the cost of taking precautions to avoid those risks is very high, it might not be reasonably practicable to take those precautions. However, if the risks are very high, then less weight can be given to the costs of steps necessary to avoid those risks.

2.5.3 Under section 18 of the “Factories and Industrial Undertakings Ordinance”, when a person is prosecuted for failing to discharge or comply with a duty or requirement to do something so far as is reasonably practicable, it is up to the accused to prove that it was not reasonably practicable for him to do more than he had in fact done to discharge or comply with the duty or requirement.

2.6 How to Carry Out the General Duties (Cases)

2.6.1 The following cases illustrate how proprietors of and persons employed at the industrial undertakings should have carried out their general duties as respectively laid down under sections 6A and 6B of the Ordinance so as to ensure that workplaces are safe and without risks to health, thereby preventing accidents.

2.6.2 These cases are either the experience in the local industries or those of overseas countries which have long histories of requiring the industries to observe the general duties of rendering the workplaces safe and without risks to health.

CASE 1

Circumstances

Petroleum spirit which is highly flammable was used in large quantities in a fur dressing factory. The petroleum spirit was kept in plastic containers of 18 litre capacity with screw-on covers, and the containers were stored in an approved Dangerous Goods store in the factory. There were no labels on the containers to indicate the nature of the liquid in them, the associated risks and the necessary safety precautions.

A worker who was on his first day in the factory was told to carry 12 containers of liquid from the Dangerous Goods store to the tumble-clean section which was about 30 m away. He did not know that the liquid was petroleum spirit.

The worker put all the 12 containers on a hand-cart to two-container high. He did not notice that the screw-on covers of some of the containers were not closed tightly. When he was half way to the tumble-clean section, two containers on the upper tier fell onto the floor with the screw-on cover of one of them dislodged. About one third of the petroleum spirit in the “open” container flowed out. The worker put back the two fallen containers onto the cart and continued his way to the tumble-clean section, without doing anything to the petroleum spirit spilled on the floor.

About 15 minutes later, a smoking worker passed by the passageway at which there was still some petroleum spirit. A flash fire occurred. The smoking worker and five others nearby suffered from serious burn injuries.

General Duties of Proprietor

The tragedy was resulted from the poor management of the factory by the proprietor. He failed to carry out his general duties as required by section 6A(2)(b) and (c). He should have laid down the proper procedures and provided the necessary equipment for the handling and transportation of the petroleum spirit, instructed the worker of the associated risks and the safety precautions, and arranged for the remedies in case of emergency like the spillage in this case. Also, there should have effective supervision to ensure that the hand-cart was not carrying excessive number of containers of petroleum spirit, and spillage was immediately reported and treated.

The proprietor also failed to properly label the containers of petroleum spirit and ensure that the screw-on covers were tightly closed as required by the “Factories and Industrial Undertakings (Dangerous Substances) Regulations”. He also failed to ensure that the prohibition of smoking under the “Factories and Industrial Undertakings (Fire Precautions in Notifiable Workplaces) Regulations” was complied with.

General Duties of Person Employed

The worker should have followed the procedure and properly used the equipment for the transportation of the petroleum spirit, reported the spillage and remedied the situation as instructed by the proprietor. These

were his general duties under section 6B(1)(a) of the Ordinance. The smoking worker also failed to observe the requirement on the prohibition of smoking.

CASE 2

Circumstances

A worker got his pelvis broken when he fell from the raised fork of a fork lift truck.

The accident occurred in the storage yard of a metal factory. The truck driver was asked by a fellow worker to lift another worker up on the fork so as to reach a height of 2.5 m. The worker lost his balance and fell from the raised fork.

General Duties of Proprietor

The proprietor should have prohibited the malpractice of lifting up workers on fork lift trucks, instructed the workers of the safety rules and exercised supervision to ensure that the safe system of work was adopted. These were his general duties under section 6A(2)(a) and (c) of the Ordinance.

General Duties of Person Employed

The truck driver failed to observe his general duties under section 6B(1)(a) of the Ordinance. He should not raise the injured worker as he was told, knowing that it was an unsafe practice.

CASE 3

Circumstances

Two workers returned to work on a civil engineering site which covered a large area. When they passed by the maintenance workshop which was about 500 m away from their place of work, they found a loader left unattended there with the ignition key in the keyhole. They jumped onto the loader and successfully started the engine running. So they drove the loader to their place of work.

When they were driving down a temporary access road, with one of them sitting on the bucket, a lorry was coming up from the opposite direction

of the road which was not wide enough to allow two-lane traffic. The driver of the loader was stricken with fear and he tried to steer the loader to the side of the temporary road which open edge abutted a downhill slope. However, the loader ran out of control. It ran over the edge of the temporary road and tumbled down the slope. Both workers were thrown out from the driver's seat and the bucket; the driver was seriously injured and the passenger was killed.

Investigation revealed that both workers had never been trained to operate a loader and the malpractice of operating loaders and other mechanical equipment by unauthorized persons was quite common and had never been prohibited by the contractor.

General Duties of Contractor

The contractor blatantly disregarded his general duties under section 6A(2)(a), (c) and (d) of the Ordinance. He should have laid down control system for the maintenance and repair of the mechanical equipment, established safe traffic rules on the site, rendered the temporary access roads as safe as practicable, properly trained and supervised the operators of mechanical equipment, and prohibited the unauthorized use of such equipment.

The contractor also failed to ensure that the operator of the loader has attended a relevant training course and held a valid certificate.

General Duties of Persons Employed

It was the duty of both workers under section 6B(1) of the Ordinance to refrain from operating the loader without authorization. The worker who drove the loader also owed a duty to his passenger for taking him in the bucket of the loader.

CASE 4

Circumstances

A worker removed the guardrail at the floor edge of a building under construction for the purpose of unloading timbers to the ground level. When he replaced the guardrail in position after the unloading work, he found that the support was unable to hold the guardrail firmly in position. He just left the guardrail loosely on the support and did not report the defect to the management.

Another worker later worked near the floor edge. He accidentally slipped and fell against the guardrail which gave way. The worker fell from the building together with the guardrail for a distance of eight floors to his death.

General Duties of Contractor

There should have proper systems for reporting of defects and for remedies of such defects, and the contractor should have well instructed the workers of such systems as required by section 6A(2)(a) and (c) of the Ordinance. He also failed to observe the statutory requirement of fencing dangerous floor edges.

General Duties of Person Employed

The first worker should have reported the failure of support for the guardrail to the management for immediate remedy. He would not only have carried out his duties as required by section 6B(1) but also saved the life of his workmate.

CASE 5

Circumstances

The driving chain at a hidden corner of an automatic dyeing plant was broken and had to be replaced. The replacement work was carried out by a mechanic alone.

During the lunch hour, the mechanic turned off the power supply to the plant and started to replace the broken chain. He did not notify the attendant of the dyeing plant beforehand that he was going to carry out the replacement work, nor post a warning notice to the effect that such work was underway.

The attendant returned to work after lunch. When he found that the dyeing plant was not running and that the power supply was off, he simply turned on the power supply again. At that time, the mechanic had just replaced a new driving chain in position. The chain started running and dragged the left hand of the mechanic in between the sprocket wheel and the chain.

The mechanic had half of his left palm amputated.

General Duties of Proprietor

The proprietor should have adopted a permit-to-work system for the repairing and maintenance work to the dyeing plant such that the power supply was locked in the off position so long as the repairing and maintenance work was in progress. He should have caused the posting of warning notice to the effect that such work was underway, well instructed the workers of the dangers, trained them in the safety procedures and exercised supervision over them. All these were his general duties under section 6A(2)(a) and (c) of the Ordinance.

CASE 6

Circumstances

In the single storey structure of a timber factory, the workers used the passageway to store wooden boards of dimension 1.2 m by 2.4 m by 18 mm (thickness). The passageway was lengthwise by the side of the wall of the structure which was made of corrugated metal sheets. The wooden boards which were 50 number in total were placed to lean against the wall with their shorter sides standing on the ground. They were placed one against the other and were such that they were standing nearly vertically.

When a worker later intended to remove the outermost one of the wooden boards to another position for cutting, the whole lot of boards fell onto him and pressed him to the ground to his death. Another worker passed by got his legs deeply lacerated by the falling boards. The boards also pushed down the metal-sheet wall when they fell. There were other workers working on the other side of the collapsed wall. Luckily, they were at a distance from the wall which was just far enough to give them a narrow escape.

General Duties of Proprietor

The proprietor should have designated the storage area away from the passageway, laid down the proper stacking method, well instructed the workers, supervised their work, and properly maintained the structure. Such duties are laid down under section 6A(2)(b), (c) and (d) of the Ordinance.

CASE 7

Circumstances

A worker was dismantling a truck inside a scrap yard. He used an oxy-acetylene set to cut away the parts in the areas of the exhaust, brake cable, rear axle and petrol tank. While doing so, the petrol tank exploded. The worker sustained burn injuries and subsequently died. The tank still contained residue of petrol and had not been adequately purged prior to cutting.

Flammable vapour inside the tank was ignited by the cutting flame and caused the explosion.

General Duties of Proprietor

As required by section 6A(2)(a) and (c) of the Ordinance, the proprietor had duties to provide a safe system of work, which in this case should have included adequate purging of the petrol tank before any cutting work was carried out, and to provide sufficient information, instruction, training and supervision to the workers engaged in the dismantling work.

CASE 8

Circumstances

Hydrogen peroxide and hydrochloric acid were used in the etching process of printed circuit boards in an electronic factory. The two chemicals were contained in two separate feeding tanks of the etching plant such that the flow rate of each chemical to the etching chamber was controlled in a correct ratio. The two feeding tanks each of 200 litres capacity were not labelled as to what were contained in them.

A worker who was new to the etching section was told to refill the half-full feeding tanks. He took out four containers of each chemical from the Dangerous Goods store, and poured the chemical in a container labelled as hydrogen peroxide into one of the feeding tanks. When he started pouring the second container of hydrogen peroxide, he felt unwell. He was sent to hospital and was diagnosed to be suffering from chlorine poisoning.

Subsequent investigation revealed that he had poured hydrogen peroxide into the feeding tank of hydrochloric acid, thereby generating large volume of chlorine.

General Duties of Proprietor

The proprietor should have labeled the feeding tanks the names of the chemicals in them, the associated risks and the safety precautions for their handling and use. The general duties as laid down under section 6A(2)(b) and (c) of the Ordinance also require the proprietor to instruct the worker of the risks and train him on the safety measures.

CASE 9

Circumstances

The section of rail track between locations A and B had to be repaired. Before the repairing work commenced, the section had to be isolated by placing flashing lights at the two ends of the section to warn people of the prohibition of traffic thereto. A locomotive was used to place the flashing lights.

A gang of three workers started the repairing work at the middle of the section of rail track shortly after the locomotive had moved away from them towards location A to place the flashing lights there. The locomotive was then reversed on the same rail track towards location B again for the purpose of placing the flashing lights. The driver of the reversing locomotive did not have a clear view of the rail track and therefore did not know that there were workers at the middle of the section. One of the workers was knocked down and killed.

General Duties of Proprietor

The proprietor should have laid down the proper procedures for the repairing work which should include, among other things, the prohibition of work on or near the rail track until and unless all traffic on the track had been completely stopped, well instructed the workers as to the risks and the work procedures, and supervised for the strict observance of the procedures and safety rules by the workers. The general duties of the proprietor, as provided under section 6A(2)(a) and (c) of the Ordinance also required the employment of a signaller.

CASE 10

Circumstances

A worker was repairing a car parked at the ramp of a garage with its front end facing down-ramp. When he repaired the engine at the front end of the car, the car started sliding down the ramp. It moved a distance of 8 m and pressed the worker against a wall to his death.

Subsequent investigation revealed that the braking system of the car was defective and the ramp was slippery.

General Duties of Proprietor

A safe system of work required the repairing work be carried out on level ground but not at the ramp. The ramp should be kept in a clean and non-slippery condition; cars parked at the ramp should be securely wedged at their wheels; and the workers should be fully instructed of the safe code of practice, and supervised to ensure the observance of the safety rules. These were the general duties of the proprietor under section 6A(2)(a), (c) and (d) of the Ordinance.

CASE 11

Circumstances

A mobile crane was used to lower a container from the top of a five-high stack in a small container yard. The crane stood on an uneven soil ground and its rear wheels were near the edge of a slope leading down to a lower level.

When the container was lifted, the soil under the rear wheels of the crane subsided. The crane tilted and toppled over. The container fell onto two workers nearby and crushed them to death.

General Duties of Proprietor

The proprietor should have prepared the ground of his container yard in a solid, even and level condition. His general duties under section 6A(2)(a) of the Ordinance also require him to ensure that the devices for anchoring and ballasting of the crane were properly used so as to ensure the stability of the crane.

CASE 12

Circumstances

A boiler structure in a factory was under demolition. In the course of demolition, one section of the boiler structure toppled over and crushed a worker to death. The toppled section weighed about a tonne and fell because the supporting members had been removed.

General Duties of Contractor

The contractor should have provided a safe system of work with regard to the demolition of the boiler structure. This must include in particular the preparation of a method statement stating clearly the sequence of the work, the need for temporary support and how the sections are to be handled. He should also have provided the workers with adequate information and instruction as to the system of work. The work must be supervised by a competent person. The contractor's duties in these aspects are covered by section 6A(2)(a) and (c) of the Ordinance.

CASE 13

Circumstances

Caisson construction work was in progress on a construction site. Workers were digging inside the caissons, and diesel-fired machinery placed on the ground level operating. The site was small and in a built-up area such that the exhaust air from the diesel-fired machinery could not be brought away by wind but diffused to places around the machinery.

One of the caissons in which a worker was digging at a level of about 10 m below the ground was located in between two diesel-fired machines. The two machines had been kept running since the early morning. Shortly after the worker had entered the caisson for his digging work after lunch, he fell unconscious and was certified dead later in hospital.

Subsequent investigation revealed that the oxygen content in the caisson was substantially reduced and trace of carbon monoxide was detected. The intake of the air mover for the purpose of supply fresh air to the worker down in the caisson was near the exhaust ends of the diesel-fired machinery. Such arrangement gave the workers irrespirable air and killed him.

General Duties of Contractor

Under section 6A(2)(a) and (e) of the Ordinance, the contractor was obliged to provide a safe system of work and to maintain the construction site in a safe condition. He should have placed the diesel-fired machinery in positions which allowed the exhaust air to be discharged to open air, ensured that the air movers for the purpose of supplying respirable air were intaking fresh air, implemented air monitoring program to test the air contents in the caissons and ensured that workers did not enter the caissons unless the air monitoring results indicated that the caissons were safe for entry.

CASE 14

Circumstances

There were a number of excavations to 1.5 m deep on a civil engineering site which was generally of uneven soil ground. The excavations and their nearby areas were flooded after a heavy rain.

After the rain, a worker returned to his place of work which was near the excavation area. As he moved across the site covered with inches of muddy water, he stepped into one of the excavations. He was drowned before he was discovered by other workers.

General Duties of Contractor

The contractor should have displayed warning notices at the excavations when the bad weather was anticipated, and also arranged for the remedies which should include the draining off the flooding water before the recommencement of normal construction work. These were his general duties as a contractor under section 6A(2)(d) of the Ordinance.

CASE 15

Circumstances

A crawler-mounted pneumatic breaker was used to demolish a 15-storey building.

An opening of 10 m by 10 m was made in each floor slab to allow the falling of the debris and broken concrete to the ground level where they were removed for dumping.

When the demolition was down to first floor level, excessive volume of debris and broken concrete were left on the floor slab of the first floor and allowed to heap up to about 1.2 m high. The breaker was stationed on the heap to continue the demolition work. Suddenly, the floor slab collapsed. The whole mass together with the crawler-mounted pneumatic breaker fell down to ground level. The operator of the breaker was buried and killed.

The collapse was caused by the overloading of the floor slab on which excessive volume of debris and broken concrete were allowed to heap up.

General Duties of Contractor

The contractor should have clearly laid down the work method of the demolition which included the way in which the debris and broken concrete should be handled and removed. The workers should have been instructed of the work method and adequately supervised. These were the contractor's general duties under section 6A(2)(a) and (c) of the Ordinance.

CASE 16

Circumstances

Argon in disposable gas cylinder was used in gas welding process. When a welder found his gas cylinder was empty, he attempted to refill it from an industrial gas bottle containing the gas argon.

The industrial gas bottle was pressurized at 2,500 lbs per square inch (psi) but the safe working pressure of the disposable gas cylinder was only 875 psi. It was also prominently marked on the disposable cylinder that it should not be refilled.

During the attempt to refill, the disposable cylinder exploded and a flying fragment of it hit a nearby worker in his leg.

General Duties of Person Employed

The welder who attempted to refill the disposable gas cylinder should have observed his general duties under section 6B(1)(a) of the Ordinance by following the instruction of not refilling.

CASE 17

Circumstances

A pedestal drilling machine was used to make holes in rectangular pieces of metal. The worker who was assigned to do the job did not use the clamp which was provided at the bolster to hold the workpiece. Instead, he held the workpiece on the bolster with his bare hand.

When he was drilling the fourth piece of metal, he was unable to hold his left hand firmly on the workpiece which had been turned hot by the drilling operation. The workpiece flew out from his hand and rotated with the drill bit. The worker's fingers were nearly cut off by the sharp edges of the rotating workpiece.

Before the accident, the injured worker had been, now and then, instructed and urged by the foreman to use a clamp to hold the workpiece but he always turned a deaf ear to the foreman.

General Duties of Person Employed

In order to fulfil his obligation under section 6B(1)(a) of the Ordinance, the worker should use the clamp to hold the workpiece on the bolster of the drilling machine.

2.7 Offences and Penalties

2.7.1 *Proprietor*

- (a) A proprietor of an industrial undertaking who fails to comply with the general duties provisions commits an offence and is liable to a fine of \$500,000. (*Section 6A(3)*)
- (b) A proprietor of an industrial undertaking who fails to comply with the general duties provisions wilfully and without reasonable excuse commits an offence and is liable to a fine of \$500,000 and to imprisonment for 6 months. (*Section 6A(4)*)

2.7.2 *Person Employed*

- (a) A person employed at an industrial undertaking who fails to comply with the general duties provisions commits an offence and is liable to a fine a level 4. (*Section 6B(2)*)
- (b) A person employed at an industrial undertaking who wilfully and without reasonable excuse does anything while at work likely to endanger himself or other persons commits an offence and is liable to a fine of \$50,000 and to imprisonment for 6 months. (*Section 6B(3)*).

3. Enquiries

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

E-mail : enquiry@labour.gov.hk

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.labour.gov.hk>.

4. Complaints

If you have any complaints about unsafe workplaces and practices, please call the Labour Department's occupational safety and health complaint hotline on 2542 2172. All complaints will be treated in the strictest confidence.

