英文版English version

Occupational Safety and Health Information for Foreign Workers in Taiwan- Construction Industry

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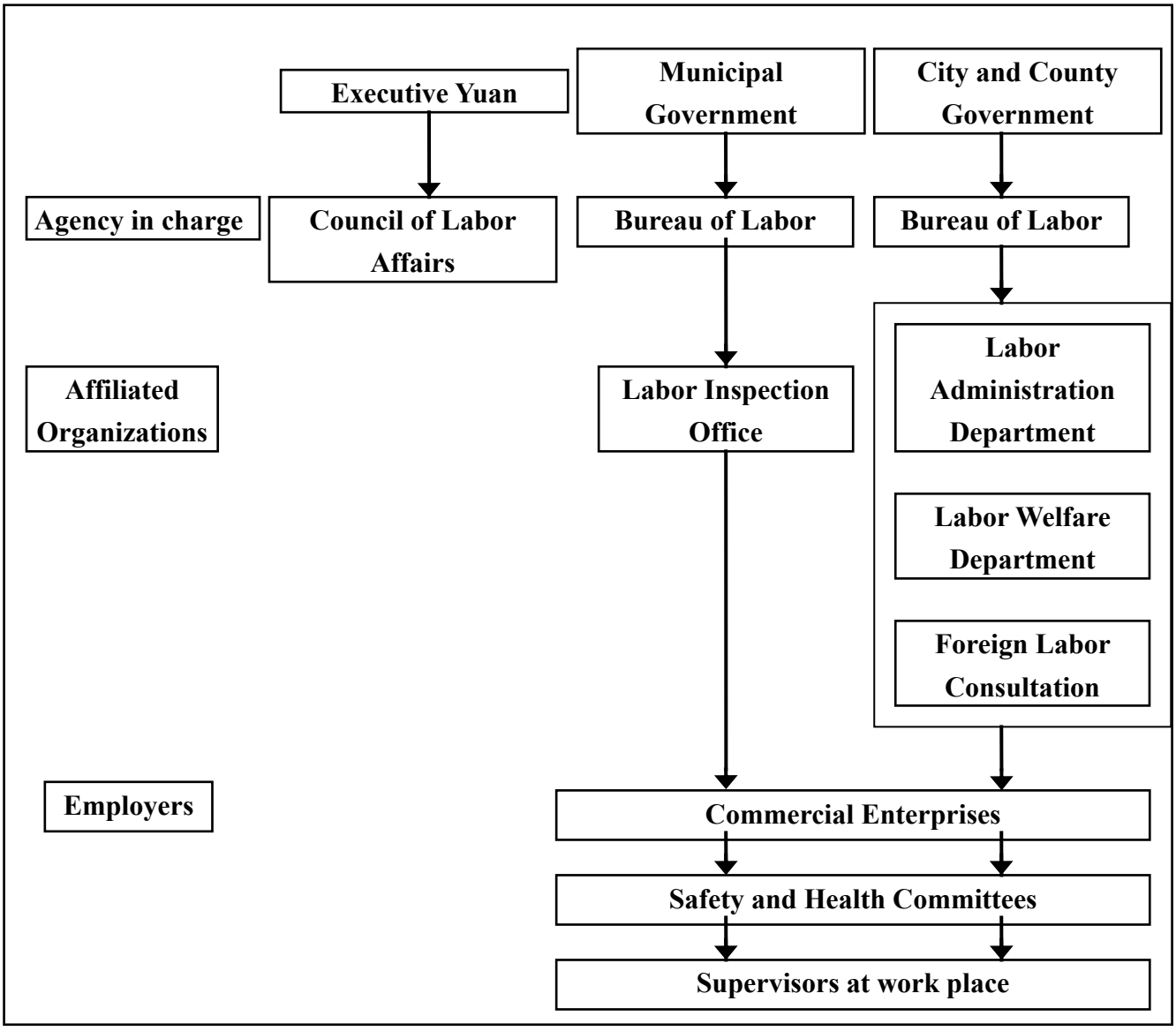
Topic 1: Introduction of the competent labor safety and health agencies in Taiwan, fundamental principles of occupational safety and health management and types of accidents in the respective industries.

1-1 Competent agencies of labor safety and health management



1-2 Prevention is the best policy

The fundamental principles of occupational safety and health management：The two major causes of occupational injuries are "**unsafe acts**" and "**unsafe conditions**". According to the **data from the Bureau of Employment and Vocational Training**, the most recent injury data caused by unsafe acts are as follows：

1. Negligence and recklessness

2. Violating restricted rules
3. Not following the SOPs
4. Not using personal protective equipment
5. Poor physical conditions

However, the percentage of occupational injuries caused by inevitable causes is 3%, by unsafe conditions or equipment is 24%, and by unsafe acts is 73%. To prevent occupational injuries, the effective way is to **avoid the manifestations of unsafe acts or behaviors as listed above**.

1-3 Population distribution of foreign workers in Taiwan by industry

Nationality / Industry	Thailand	The Philippines	Indonesia	Vietnam	Mongolia	Malaysia	Grand total
Manufacturing	80,955	58,753	7,828	22,336	20	11	169,903
Caretaker	2,286	27,940	74,675	46,474	16	0	151,391
Construction	9,608	1,361	45	730	0	1	11,745
Fishing crew	13	833	1,773	703	0	0	3,322
Domestic helper	32	1,167	902	293	0	0	2,394
Grand total	92,894	90,054	85,223	70,536	36	12	338,755

(data from the Bureau of Employment and Vocational Training, Council of Labor Affairs, Executive Yuan in 2006）

1-4 Types of injuries of the respective industries

Manufacturing (including Electronics and Fabricated Metal Products)	1. Rolling-up, pinches 2. Cuts 3. Stumbling 4. Improper acts 5. Hit by object 6. Contact with hazardous substances 7. Falling 8. Hit by falling objects 9. Crashing or bumping 10. Collapsing objects
Electronics	1. Cuts

	2. Crashing or bumping 3. Contact with chemicals 4. Leaking gases 5. Eye sight and hearing loss
Fabricated Metal Products	1. Rolling-up, pinches 2. Stabbing, cutting and chafing 3. Stumbling
Petroleum and Coal Products, Rubber Products and Plastic Products	1. Rolling-up, pinches 2. Cuts 3. Stumbling 4. Improper acts 5. Hit by objects 6. Crashing or dashing
Construction	1. Stumbling 2. Hit by falling objects 3. Treading 4. Hit by collapsing objects 5. Contact with extreme temperatures 6. Falling and rolling 7. Rolling-up, pinches 8. Crashing 9. Improper acts 10. Crashing or dashing
Transportation Equipment	1. Rolling-up, pinches 2. Stabbing, cutting and chafing 3. Explosion

(Yearbook of Labor Statistics of 2005)

1-5 Occupational Safety and Health Training

The primary objective of occupational safety and health training is to prevent accidents. To achieve this goal effectively, employers must take relevant and proper measures on employees' safety awareness and facility safety, and provide workers with adequate understanding and knowledge of occupational safety and health to prevent accidents from occurring.

The goals	To keep workers healthy, to increase work productivity and to avoid occupational accidents and diseases.
Facets in safety	1. To anticipate the existence of hazardous factors and prevent

and health	accidents from happening. 2. To understand the underlying hazards in the workplace. 3. To evaluate the degrees of hazards or risks in the workplace. 4. To prevent hazardous events from occurring or aggravating.
Relevant regulations	The Labor Safety and Health Law and the enforcement rules.
The common hazard factors	1. Chemical: inhaling or skin contact with dust, vapor, smoke and drops of metal, non-metal, hydrocarbon and toxic gases. 2. Physical: working under extremely high or low temperature environment, non-ionizing and ionizing radiation, noise, vibration and unusual air-pressure. 3. Ergonomic: poor lighting, injuries from portage and tools.
Measures in controlling occupational injuries	1. Engineering control: to replace the operation modes, isolate hazardous substances, automate operations, adopt wet-type operations and provide efficient ventilation. 2. Administrative control: to reduce the time of exposure, establish and maintain safety and health procedures, provide protections, put up warning signs, provide safety information, conduct regular emergency response drills. 3. Health surveillance: to conduct employee physical examination.
Why is safety and health training necessary?	H.W. Heinrich indicated that unsafe acts or behaviors accounted for 88% of occupational injuries, unsafe conditions accounted for 10%, while the causes in some cases can be both. Therefore, occupational safety and health education and training are provided to prevent unsafe behaviors and improve the working environment.
Purposes of training	To provide workers with the knowledge and competence of preventing occupational injuries, to develop the awareness and habits of paying attention to safety and health; to understand the underlying hazards in the workplace and to design and implement necessary measures to prevent accidents from occurring.
Regulations to follow	According to the Labor Safety and Health Law, the workers, the occupational safety and health staff and the managers are required to take the training.
Targets of safety and health	1. The safe and health staff 2. Managers in charge of safety and health activities.

training	3. Operators of dangerous machinery and equipment. 4. Staff designated with specific tasks 5. General staff 6. Staff designated with monitoring the working environment 7. Construction safety review personnel 8. Process safety review personnel 9. First-aid personnel 10. New hires or employees with new work assignment
The schedules and contents of the training	There are training schedules and courses for respective training subjects.
Principles of analysis	To find out all superficial and underlying causes, to investigate the root causes and take appropriate measures.
Prevention of occupational accidents	To prevent occupational accidents from occurring, the organization must follow the steps of hazard identification, evaluation and control in the workplace. As for hazard identification, the organization must recognize the presence of all possible hazards and their characteristics. In evaluation, the organization must examine the degree of exposure, the number of employees exposed to a specific hazard and the degree of compliance with relevant regulatory requirements concerning exposure control. As for the control of hazard, the organization must control the hazard at the source, the dispersion route of the hazard, the exposed workers and design precautionary operating procedures.
Emergency measures after occupational accidents	According to the Protection for workers Incurring Occupational Accidents Act, employers must apply for labor insurance upon employment to ensure workers' security. In addition, after occupational accidents, employers shall provide compensation to injured workers. Employers will be fined if they fail to apply for labor insurance on behalf of their employees or fail to provide compensation to injured workers.

Topic 2: The safety and health in Construction industry

2-1 Characteristics of construction industry

Construction industry is a labor-intensive industry and uses a lot of machinery; As a result, the injuries involved are usually physical ones. Some common examples are: falling from high places, dropping of objects, collapses of structures, and colliding with or hitting by objects.

1. Falling from high place occurs most frequently and causes more severe damages. It usually results from overconfidence of the workers when they work at high locations. It can also be caused by workers working without safety equipments and tools for convenience. Therefore, fatal injuries are caused without the protection of safety belt or net once falling occurs. In addition to the workers' lack of the concept of safety, the protections employers provide are often insufficient and incomplete. Take the scaffold as an example, it should be assembled with cross bars, which enhance the stability of the scaffold and provide support for workers on the scaffolds. It can also provide protection when falling occurs and minimize the injury. Employers should not ignore workers' lives for their own profits.
2. The cause of dropping objects is often human carelessness. When operating a crane, a trench digger, or a lift truck, railings should be set up around the radius of the operation to prevent workers from entering. If the entrance is necessary, a supervisor should supervise and direct the operation. In addition, personnel on-site should wear helmets, gloves, and special shoes. Also, when moving heavy materials, machines should be used instead of moving by hands to avoid compression injuries
3. Collapse of structure usually results from the lack of or inappropriate support. Collapse usually happens in a flash and precaution is nearly impossible. The use of railings that surround the area where collapse might occur can reduce the possible damage. Colliding with or hitting by objects often results from human carelessness. The machines and vehicles utilized in construction industry are usually large, and the operators' view can not cover the full range, hitting is thus caused. Some ways to avoid such injuries are reinforcing workers' knowledge about safety and setting up railings around the operation area of dynamic machines to prevent workers from walking in the vicinity. Also, the number of on-site instructors should be increased. They can assist the operators to oversee the work field to reduce the damage of hitting.

Table 2-1 The relationship between injure types and media.

Injury types	Media	Injuries and death in all industrials	
		Number	Percentage(%)
Falling	Ladders, shelvings	4	5.79
Collapse	general power machines, material	11	15.94
Crashing	loading and moving vehicles, power moving machines, materials	3	4.34
Stumbling	construction and building equipments, loading and moving vehicles, the environment, power moving machines	11	15.94
Cutting	general power machines, material, labor-powered machines and tools	6	8.69

2-2 Case Studies

The construction industry uses mostly high-energy machines, and therefore the injuries are usually serious if there are any. Another common injury type is due to falling from high places, causing quite serious injuries. The following are cases from three common injury types which usually cause severe injuries: injury due to hitting accident, crush injury, and injury due to fall from height. Hopefully these examples will enable the employers and workers to clearly realize the importance of the occupational safety and health.

Case study 1: Hitting

The incident: Death of a worker hit by a vehicle

Operator	A worker
Responsibility	Assisting to conduct the concrete-mixing car
Time	At about 12:15 AM in March in some year
Workplace	A Construction site: with the victim behind the concrete-mixing car
Equipment or media causing injury	The concrete-mixing car

<table>
<tr><td>The account of the event</td><td colspan="2">Worker A intended to help conducting the concrete-mixing car in reverse at the construction site. (Illustration 2.1) Although he should have stood at the entrance of the basement lane to conduct and control the vehicles going in and out of the basement, he had gone to the back of the car. The car company had employed another assistant, worker B, to conduct the car. When coming out of the basement, worker B saw that A was hit by the car and tumbled over, with his helmet falling off to the ground. (Illustration 2.2) He found that A was trying to crawl away from the back of the car. Therefore, B immediately went to the left side of the car to ask the driver to stop the car with some gestures. Perhaps the driver did not understand the gestures well, and moved the car backward again. Consequently, the inboard tire of the right rear wheel rolled over worker A’s head, leading to his death on the spot</td></tr>
<tr><td rowspan="4">Analyses</td><td>layer of cause</td><td>Description</td></tr>
<tr><td>Surface cause</td><td>The driver of the car did not comprehend the assistant's gestures, leading the driver to make wrong movements and causing death</td></tr>
<tr><td>Underlying cause</td><td>1. Because the dead angle of the driver’s vision is relatively larger with respect to a large-size vehicle, one should not stand at the direct rear to the vehicle or on the path of a reversing car (Unsafe environments).
2. Worker A's safety helmet was not worn and used correctly. It was not exactly buckled up tightly, so it fell off as soon as the person was bumped into by the vehicle. Thus the protective function failed. (Unsafe behavior).</td></tr>
<tr><td>Root cause</td><td>The car company had already sent an assistant to help. The assistant's job includes conducting the driver and controlling the situation. When somebody was close to the dangerous area, the assistant should expel him as soon as possible.</td></tr>
</table>

Suggested strategies	1. Because the dead angle of driver's vision of such large-size vehicles is large, two assistants should be dispatched in the front and at the back of the car respectively. If the site is too noisy, they should be equipped with electronic devices that will help the directing, because the gesture tends to be confusing sometimes. In addition, the assistants should help the driver to ensure the safety of the nearby area, and expel anyone from the dangerous area. 2. Workers should wear and use the safety helmet correctly. The company should emphasize the importance of using the safety helmet correctly. For example, they can post promotion posters, issuing advertisement of propaganda, and strengthen the concepts of safety to the workers or even to the common people. In case that the workers are conceited and rely so much on the fact that they are experienced that they do not wear and use the safety helmet correctly, the company's safety personnel should reinforce the declaration. For instance, they should inform workers the consequences if one does not wear the safety helmet.

Illustration 2.1 The concrete-mixing car should be isolated with protective railings. There should be assistance when it's moving backwards.

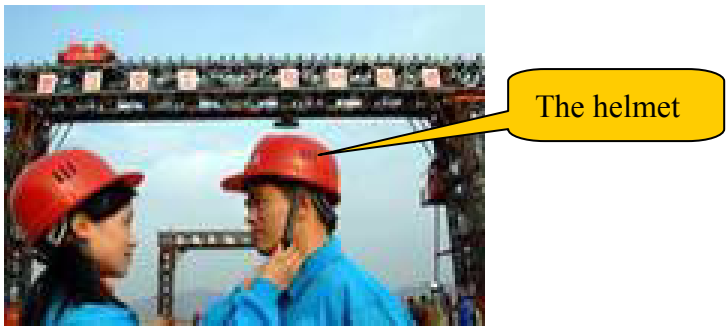


Illustration 2.2 The helmet should be fastened tight

Case study 2: Crush

The incident: Death of a worker crushed by a dropping steel plate from a ditcher

<table>
<tr><td>Operator</td><td>Three workers: a driver of the ditcher and two assisting workers</td></tr>
<tr><td>Responsibility</td><td>Setting up the soil-blocking steel plate</td></tr>
<tr><td>Time</td><td>On April 16 in some year of the Republic of China</td></tr>
<tr><td>Workplace</td><td>Outdoor construction site of setting up the soil-blocking steel plate</td></tr>
<tr><td>Equipment or media causing injury</td><td>A ditcher, a U-shape bolt, and a steel plate (Illustration 2.3)</td></tr>
<tr><td>The account of the event</td><td>Three workers, A, B, and C were setting up the soil-blocking steel plate. Worker A drove the ditcher, worker B connected the U-shape bolt with the ditcher, and worker C was going to direct the steel plate into the excavated ground. Because the U-shape bolt was stuck by gravel, worker B cannot turn the screw of the bolt and thought the bolt has already been fastened and then informed worker A to hoist up the plate. Then the steel plate dangled, causing the bolt to move backward. Consequently, the plate dropped to the ground, crushed worker C who was trying to direct the steel plate. He died at the hospital.</td></tr>
<tr><td>Analyses</td><td><table><tr><td>layer of cause</td><td>Description</td></tr><tr><td>Surface cause</td><td>Worker B did not clean the bolt carefully before turning the screw, causing the steel plate to fall and kill worker C by accident.</td></tr></table></td></tr>
</table>

	Underlying cause	1. A ditcher or a crane was conducting the operation of hoisting heavy objects without safety signs and protective barricades (Illustration 2.4) (unsafe environment). 2. Though worker C's task was to direct the steel plate into the excavated ground, he should not have stayed within the operation area of the ditcher. On the contrary, he should have used other tools or ropes to direct the operation outside the area. The worker was too careless (unsafe behavior).
	Root cause	The construction company did not assign any superviser to supervise the work. Besides, when this kind of dangerous task was in operation, there were no special protective equipments or tools that can protect the workers. Finally, while hoisting up heavy objects, the preparative work was too careless, indicating that the workers were not attentive.
Suggested strategies	1. When vehicles are carrying out machinery construction work, people should be forbidden from entering the operation area or any other adjacent places that are potentially dangerous. And employers should adopt some safety procedures or set up facilities to prevent the hoisted objects from crossing over the workers and to prohibit workers from entering the region under the hung objects. If there are more passers-by in the surroundings, arresting slogans and posters should be posted. For one thing, danger can be avoided by warning in time. Second, it functions as a declaration, strengthening the safety concepts of general people. 2. Confirm that the hoisting devices have been fastened before craning up. Besides, slings with locks should be used instead of simple devices such as a U-shape bolt, because they are more likely to prevent the fall of objects. 3. In the final directing procedure of craning up heavy objects, workers should be protected by usage of tools, because this is the moment when an accident is likely to occur. For instances, if the crane operator communicates badly with the directing worker on the ground, or there is skill deficiency in any aspects, accidents will probably occur. The construction company should provide the directing workers with tools or equipments, allowing them to stay in safety while doing this kind of task.	

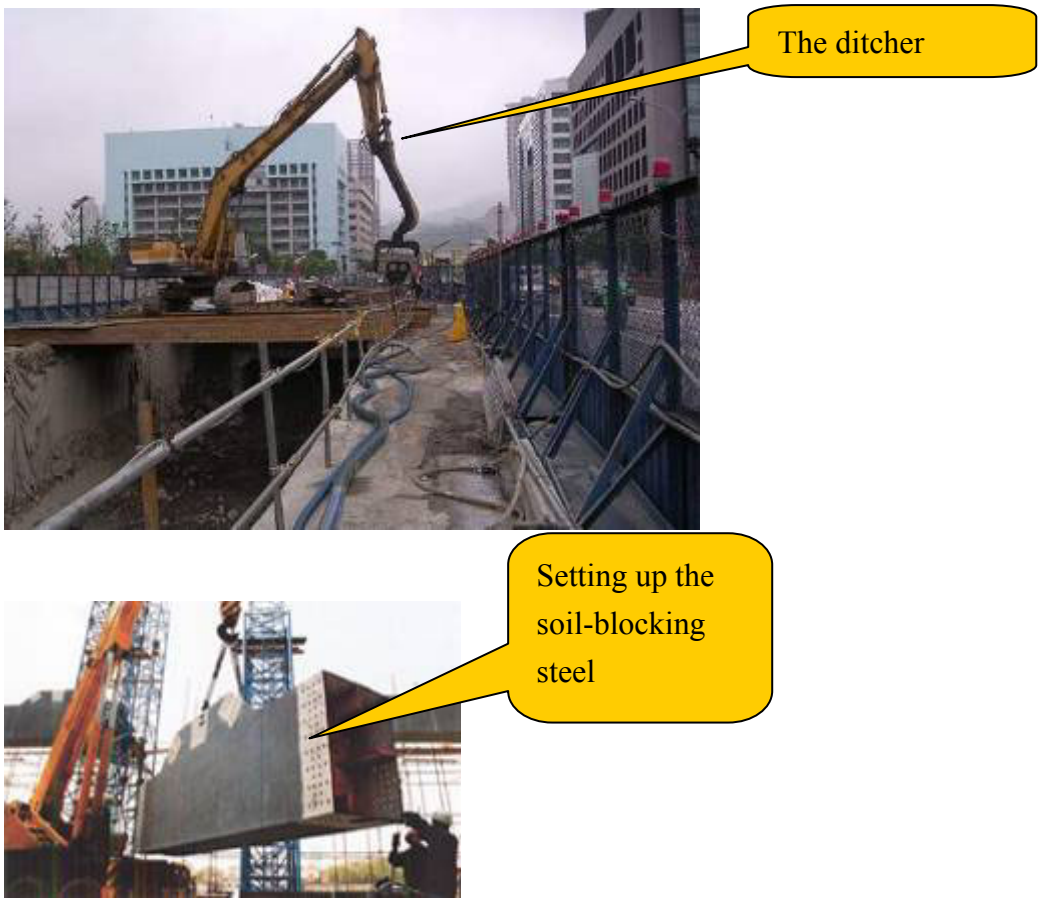


Illustration 2.3 This case was when the ditcher set up the soil-blocking steel, using the U-shape bolt, which should be fastened tightly.

Illustration 2.4 Safety signs and protective barricades.

Case study 3: Crush

The incident: Death of a worker crushed by the collapsed brick wall

Operator	Two workers

<table>
<tr><td>Responsibility</td><td colspan="2">Remove the indoor partitions and the floor</td></tr>
<tr><td>Time</td><td colspan="2">About 11:45 in November in some year</td></tr>
<tr><td>Workplace</td><td colspan="2">The working site</td></tr>
<tr><td>Equipment or media causing injury</td><td colspan="2">The exterior wall that had not yet been removed</td></tr>
<tr><td>The account of the event</td><td colspan="2">Two workers were engaged in removing the brick indoor partitions, floor and the tiles on the wall. At the end of the day, some indoor brick walls had not been completely removed. They returned to the workplace at 8:00 AM the next day. The employer arrived at the work site at 7:30 AM the next day, opened the door to allow worker A to come in, and told him to finish the remaining work. After assigning the work, the employer went away and left the worker alone at the site. At about 10 o’clock the employer returned to the site to inspect the working situation, checked if what had been done followed the regulations. The employer orally reminded A of the safety and left the site again. At 11:45 AM, when he returned to the site again to deliver lunch, he found the outer wall of the gate had already collapsed. (Illustration 2.5) Some neighbors told him that worker A was under the collapsed brick wall, and the breaker used to remove the outer wall was also under the collapsed wall. After being dragged out and sent to the emergency room, worker A still died at 5:00 AM on that day.</td></tr>
<tr><td>Analyses</td><td>layer of cause</td><td>Description</td></tr>
<tr><td></td><td>Surface cause</td><td>Crushed by a collapsed brick wall</td></tr>
<tr><td></td><td>Underlying cause</td><td>1. When tearing down building structure components such as a wall, they did not remove it in order, from the upper parts to the lower parts; and when removing a wall that was not strutted, they did not use any bolsters or ropes to control it, avoiding its collapse. (Unsafe environment).
2. The worker did not wear helmet. Besides, he did not recognize the safety problems and therefore worked close to a building component that was not strutted and might collapse (Unsafe behavior).</td></tr>
</table>

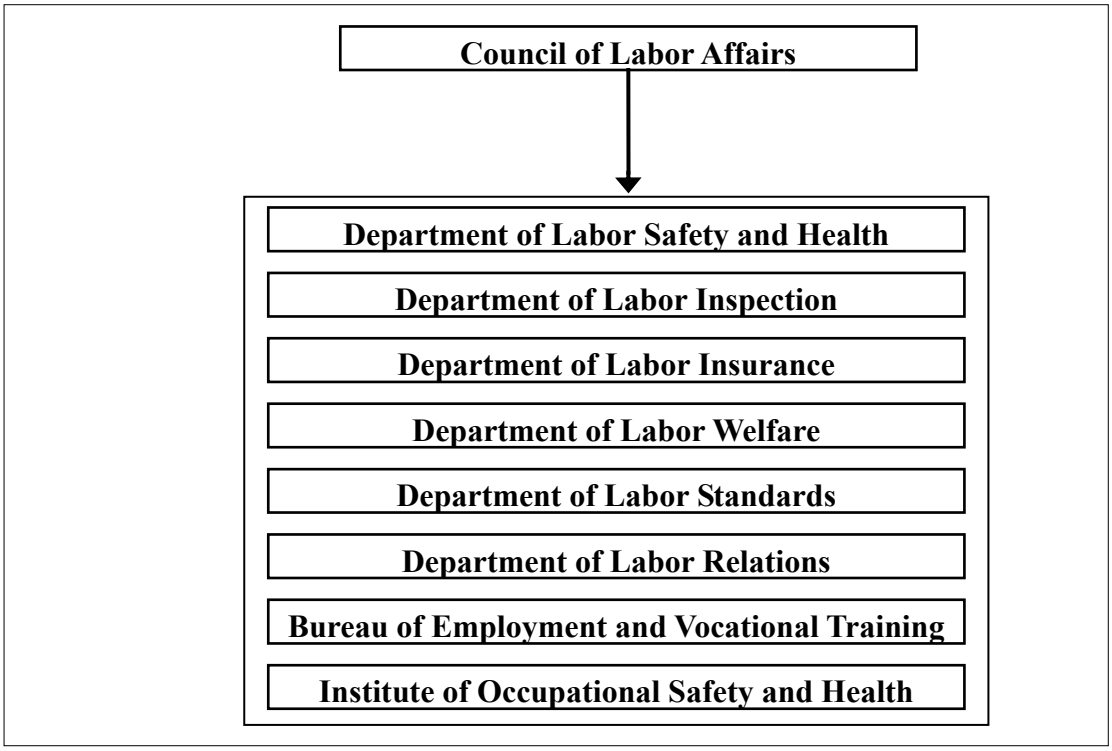
	Root cause	The employer did assign a supervisor to supervise the work, did not thoroughly exam the safety devices for the operation of removing indoor partition brick walls, and did not provide the workers with necessary education and training concerning safety procedures during accidents.
Suggested strategies	1. With respect to the buildings or deposits that are likely to collapse, they should be separated by the safety guardrails, or supportive bolsters should be set up nearby, in order to avoid their collapse on workers. There should be an supervisor that controls and monitors the situation on the spot, preventing workers from getting close to the buildings or deposits that are likely to collapse. 2. The company should emphasize the importance of correctly wearing and using safety equipment, such as helmets. For example, they can post declarative posters, and issue promotional advisement, to strengthen the safety concepts of the workers or even the common people. If in case that the workers rely too much on the fact of being experienced and do not correctly wear the helmet, the company should emphasize the declaration, such as by informing about the consequences of their not wearing helmets. 3. Present similar cases to companies and the public, letting them to have this kind of safety concepts, so they can educate other people (for instance, to a worker's family members and relatives). Employers or construction companies should assign a supervisor to supervise and thoroughly check the safety devices. As for the workers, they should undergo the necessary training and education of occupational health and safety in order to avoid accidents. The government should provide aid to the relevant training, and set up the system of examination and rewards and punishments.	

Illustration 2.5 Collapsed walls, which should be marked with safety signs and protective barricades, as in illustration 2.4.

2-3 Conclusion

In the cases presented above, although the surface cause are not the same, after analyzing them in depth, we found that almost all the accidents resulted from the corporations' (employers' or companies') ignorance or not enforcing health and safety principles on the workers. If we only ask workers to follow the regulations but neglect the responsibilities of the corporations to supervise, the only result will be the constant recurrence of occupational accidents. Only when the workers and the corporations supervise each other, and when the concept of safety and health is carried out in actual work, can the health and safety education be truly meaningful, and the health and safety equipments be effective.

Topic 3：Introduction to protection of the rights of foreign workers and assistance programs



3-1 Labor safety and health

According to the Labor Safety and Health Law, employers must guarantee safety and health in the work place. Additionally, personal protective equipment, occupational safety procedures, possible injury types, safety and health training, and precautionary training must be provided to protect laborers physically and mentally.

3-2 Handling of disputes

During the period of employment in Taiwan, every foreign labor is entitled to seek assistance from any of the labor offices in every city or county in the event of labor disputes.

3-3 Access to related assistance

During the period of employment in Taiwan, if there are disputes about the contract or the rights of both parties, the employees or employers can contact the local consultation service centers, which are listed below: (or the Toll-free Help Line provided by the Council of Labor Affairs: English: 0800-885885; Thai: 0800-885995; Indonesian: 0800-885958; Vietnamese: 0800-017858)

Center	Address	Tel/Fax
Taipei City Foreign Workers Consultation Service Center	8F, No.21, Section 1, Dihua St., Datong District, Taipei City	Tel：02-25502151 Fax：02-25507024
Taipei County Foreign Workers Consultation Service Center	7F, No. 161, Chung Shan Rd. Section 1, Panchiao City, Taipei County	TEL：02-89659091 02-89651044 FAX：02-89651058
Keelung City Foreign Workers Consultation Service Center	No. 1, Yi 1st Rd., Keelung City	TEL：02-24258624 02-24278683 FAX：02-24226215
Taoyuan County Foreign Workers Consultation Service Center	8F, No.1, Hsien Fu Rd., Taoyuan City	TEL：03-3344087 03-3341728 FAX：03-3341689
Hsinchu City Foreign Workers Consultation Service Center	5F, No. 69, Kuo Hwa St., Hsinchiu City	TEL：03-5319978 FAX：03-5319975
Hsinchu County Foreign Workers Consultation Service Center	4F, No.10, Kuang Ming 6th Rd., Hsienchiu County	TEL：03-5520648 FAX：03-5520771
Miaoli County Foreign Workers Consultation Service Center	No. 1121, Guohua Rd., Miaoli City, Miaoli County	Tel：037-357040 Ext. 502 037-364548 Fax：037-363261
Taichung City Foreign Workers Consultation Service Center	2F., No. 53, Sec. 2, Zihyou Rd., Taichung City	Tel：04-22296049 0800-600088 Fax：04-22296048
Taichung County Foreign Workers Consultation Service Center	6F, No. 36, Yang Ming St., Fengyuan City, Taichung County	TEL：04-25240131 FAX：04-25285514
Changhwa County Foreign Workers Consultation Service Center	8F, No. 100, ChungHsing Rd., Changhwa City	TEL：04-7297228 04-7297229 FAX：04-7297230
Nantou County Foreign Workers Consultation Service Center	1F, No. 660, ChungHsing Rd., Nantou City, Nantou County	TEL：049-2238670 FAX：049-2238853
Yunlin County Foreign Workers Consultation Service Center	No. 515, Yunlin Rd, Section 2, Touliu City, Yunlin County	TEL：05-5338087 05-5338086 FAX：05-5331080
Chiayi City Foreign Workers Consultation Service Center	No. 199, Chung Shan Rd., Chiayi City	TEL：05-2231920 FAX：05-2228507
Chiayi County Foreign Workers Consultation Service Center	No. 1, Sianghe 2nd Road East Section, Tapao City, Chiayi County	Tel：05-3621289 Fax：05-3621097
Tainan City Foreign Workers Consultation Service Center	8F, No. 6, Yung Hwa Rd. Section 2, Tainan City	TEL：06-2951052 06-2991111 FAX：06-2951053
Tainan County Foreign Workers Consultation Service Center	7F, No. 36, Ming Chih Rd., Hsinying City, Tainan City	TEL：06-6326546 FAX：06-6373465
Kaohsiung City Foreign Workers Consultation Service Center	6F, No. 6, Chen Chung Rd., Chien Chen District, Kaohsiung City	TEL：07-8117543 FAX：07-8117548
Kaohsiung County Foreign Workers Consultation Service Center	No. 117, Ta Pi Rd., Wusung Town, Kaohsiung County	TEL：07-7338842 FAX：07-7337924
Ilan County Foreign Workers Consultation Service Center	No. 95, Tung Chin St., Ilan City, Ilan County	Tel：03-9324400 Fax：03-9356545 03-9314341
Hualien County Foreign Workers Consultation Service Center	No. 17, Fucian Rd., Hualien City, Hualien County	Tel：03-8239007 Fax：03-8237712
Taitong County Foreign Workers Consultation Service Center	No. 276, Chung Shan Rd., Taitong City	TEL：089-359740 FAX：089-341296

Center	Address	Tel/Fax
Pingtung County Foreign Workers Consultation Service Center	No. 17, Zihyou Rd., Pingtung City, Pingtung County	Tel：08-7519938 Fax：08-7515390
Penghu County Foreign Workers Consultation Service Center	No. 160, Dasian St., Makong City, Penghu County	Tel：06-9212680 Fax：06-9217390
Chinmen County Foreign Workers Consultation Service Center	No. 60, Minsheng Road, Chincheng Tzen, Chinmen County	Tel：082-373291 Fax：082-371514
Lienchiang County Foreign Workers Consultation Service Center	No.76, Jieshou Village, Nangan Township, Lienchiang County	Tel：0836-25022 Ext. 13 Fax：0836-22209

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