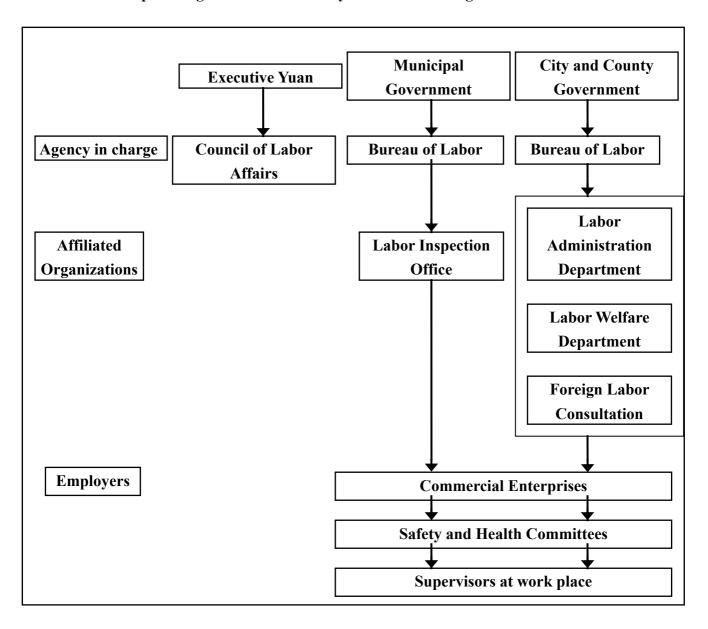
英文版English version

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



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	1. Rolling-up, pinches
(including	2. Cuts
Electronics and	3. Stumbling
Fabricated Metal	4. Improper acts
Products)	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	
2 Contact with about all	
3. Contact with chemicals	
4. Leaking gases	
5. Eye sight and hearing loss	
Fabricated Metal 1. Rolling-up, pinches	
Products 2. Stabbing, cutting and chafing	
3. Stumbling	
Petroleum and Coal 1. Rolling-up, pinches	
Products, Rubber 2. Cuts	
Products and Plastic 3. Stumbling	
Products 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 1. Rolling-up, pinches	
Equipment 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	1. Chemical: inhaling or skin contact with dust, vapor, smoke
hazard factors	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	1. Engineering control: to replace the operation modes, isolate
controlling	hazardous substances, automate operations, adopt wet-type
occupational	operations and provide efficient ventilation.
injuries	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	H.W. Heinrich indicated that unsafe acts or behaviors accounted
and health	for 88% of occupational injuries, unsafe conditions accounted
training	for 10%, while the causes in some cases can be both. Therefore,
necessary?	occupational safety and health education and training are
	provided to prevent unsafe behaviors and improve the working
	environment.
Purposes of	To provide workers with the knowledge and competence of
training	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	According to the Labor Safety and Health Law, the workers, the
follow	occupational safety and health staff and the managers are
	required to take the training.
Targets of safety	1. The safe and health staff
and health	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	There are training schedules and courses for respective training
and contents of	There are training schedules and courses for respective training
the training	subjects.
Principles of	To find out all superficial and underlying causes, to investigate
analysis	the root causes and take appropriate measures.
Prevention of	To prevent occupational accidents from occurring, the
occupational	organization must follow the steps of hazard identification,
accidents	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	According to the Protection for workers Incurring Occupational
measures after	Accidents Act, employers must apply for labor insurance upon
occupational	employment to ensure workers' security. In addition, after
accidents	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 electronic industry

2-1 Characteristics of Electronic Industry

The characteristics of electronic industry are: operating machines or equipments with high power either automatically or semi-automatically, and may contact with corrosive chemicals. The major hazardous sources are chemical, physical, and ergonomic.

- 1. Chemical: inhaling or skin contact with metal, non-metal, hydrocarbon, and toxic gases, dusts, vapor, fume and mist.
- 2. Physical: extreme temperatures, non-ionizing and ionizing radiation, noise, vibration and unusual atmosphere pressure.
- 3. Ergonomic: improper lighting, injuries from conveyer and tools.

 Table 2-1 indicates the relationship between injury types and media.

Table 2-1 The relationship between injury type and media.

Injury types	Media	Injuries and death in all industries	
		Number	Percentage(%)
Caught in running equipment or machinery	Motorized machinery, power transmission apparatus, power carrying machines	407	58.99
Cutting	Motorized machinery, material, manual machines and tools	263	60.74
Struck by object	loading and unloading transporting vehicles, conveyer, materials, power transmission apparatus, Motorized machinery, lifting machines	236	69.62
gas leakage, contact with chemicals	inhaling of chemical substances, direct skin contact	104	86.67
Fall	construction and building equipments, loading and unloading transporting vehicles, the environment, conveyer.	230	47.13

2-2 Case Studies

High power equipments are widely used in electronic industry and the consequences varies with different injury types. In the cases below, the causes of most fatalities are caught in running equipment or machinery. However, there are other types of severe injuries as well. It is hoped that the following cases can help the employers and the workers to understand the importance of occupational safety and

health.

Three layers of cause analysis are proposed,

- 1. Direct causes: Obvious cause of occupational accidents
- 2. Underlying causes: More deeper causes traced from direct causes
- 3. Root cause: The most fundamental cause which results in the accident The identification of unsafe environment or unsafe behavior is noted in the parenthesis after each cause description.
 - i. Unsafe environment: The employers do not provide a safe working environment, a good work shift system, and efficient safety and health training courses, etc.
 - ii. Unsafe behavior: Due to the lack of health and safety rules/procedure, or didn't comply with standard operation procedures so as to create a dangerous situation.

It is just a general classification, and in some situation the cause may include both factors. The viewpoint may be different according to the subject matter.

Finally, there are some suggestions to improve the current situations, working environment, and the efficiency of production.

Case study 1: Caught in running equipment or machinery

The incident: Death resulting from being caught in an overhead crane, which was carrying some chemical to the black oxide tank.

carrying some c	member to the black oxide tank.		
Operator	Female, twenty-five years old, having worked in the company for one and half years		
Responsibility	Adding chemicals into black oxide tank		
Time	5:00 PM in May		
Workplace	Production Line		
Equipment or media causing injury	Overhead crane, track strut		
Scenario	One day, around 4:00 PM to 5:00 PM, in an electric company, a production manager had inspected the black oxide production line to make sure it was operated properly. When he came back at 09: 20 P.M., he saw a worker was caught between the pedestal of the overhead crane and the pillar. The worker was facing to the chemical tank. He removed the overhead crane and took her to the hospital. She died one hour later. The production line was 11 meters long and 2.1 meters wide. It was an automatic facility. The production line contained water-clean tank, acid- clean tank, and black oxide tank. Along both sides of the tank, there were 10x10cm pillars every 2 meters apart. The		

		installed on the pillars 1.8 meters above the ground, and and crane moving on the track. (Illustration 2.1)			
Analyses	layer of cause	Description			
	Surface	 There were no protection and isolation devices (Illustration 2.2). (unsafe environment) The operator worked alone without any assistants or supervisors. No safety and health manager to conduct the inspection.(unsafe environment) The employer did not provide safety and health training, so the employees lacked of relevant knowledge. (unsafe behavior) 			
		5. There were no safety and health work rules for			
		employees to follow.(unsafe behavior)			
		1. The employer did not provide enough protection equipment.(unsafe environment)			
		2. The company was short of labors and could not			
		afford to let two employees work at the same place			
		and at the same time. (unsafe environment)			
	Underlying cause	3. The law does not require small company to have a			
		safety and health manager, therefore there was no			
		supervisor on site.(unsafe environment)			
		4. The corporation ignored the importance of the			
		safety and health training and had not access to the			
		necessary information. (unsafe environment)			
		1. The company did not have detailed human resource planning.(unsafe environment)			
	D (2. The corporate culture lacked of the recognition of			
	Root cause	the importance of occupational safety and health			
		and lack of related training.(unsafe environment			
		and behavior)			
Suggestive strategies	facilities	a safety and health manager to conduct self-inspection on and operations.			
	2. The necessary training should be provided to employees, and this accident should be included in the training material to prevent incident from reoccurring.				
	3. Establish proper safety and health rules, have them reviewed by				
	the authority, and then have them announced and implemented.				
	4. The safety and health manager needs to provide necessary				
	training a	training and supervise the operation.			

- 5. Re-locate human resource.
- 6. Install protection, isolation and/or emergency shut-off device on the hazardous machines, and provide personal protective equipment to the employees.

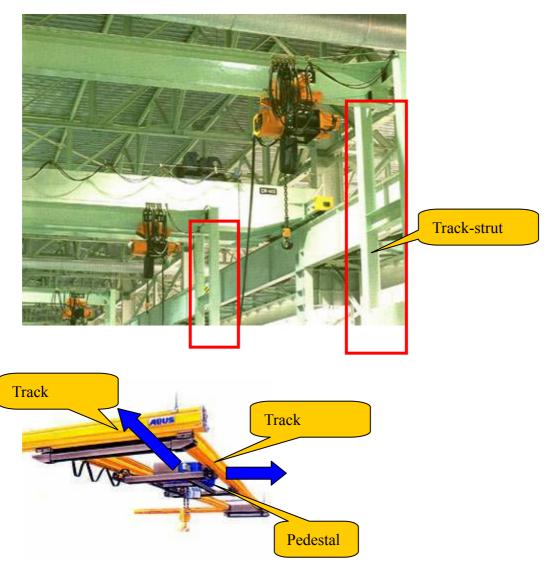


Illustration 2.1 The victim was caught between the pedestal and the track strut



Illustration 2.2 Installation of protection and isolation devices.

Case study 2: Caught in running equipment or machinery

The incident: Death resulting from being compressed by a substrate-sucker of an convey machine

Operator	a vice-supervisor and a technician		
Responsibility	Two people operated convey machine at the same time, using cutters to cut copper clad laminate.		
Time	About 6:40 PM		
Workplace	Production line		
Equipment or media causing injury	Stuck cutter, the sucker of the convey machine		
Scenario	In a technology company, a technician worked in the gluing department. One day, he was assigned to operate a convey machine with an assistant engineer during the night shift. At about 06:40, the vice-supervisor asked the assistant engineer to work in the substrate-inspection area and he himself continued to operate the machine with the technician. After 10 minutes, they had cut more than twenty copper clad laminate at about 7:00 PM. At the time, their cutters were stuck on the copper clad laminate. It could be due to wrong cutting angle or the knives blades were blunted. After cutting more than seventy substrates, the blades should be changed; otherwise the blades would be blunted and get stuck on the substrate. The		

	while the vice-superv start-bottom save time a the substrar platform of familiar widepartment	therefore took out his cutter from the substrate immediately vice-supervisor responded more slowly. Also, the risor inserted the nylon cable ties into the gap of the n to keep the machine operate automatically. He wanted to and put his head below the sucker to draw his cutter out of the unique term of the machine. (Illustration 2.3) The technician was not ith the machine because he was transferred to this just three days ago. When he called for help to remove the risor, the supervisor was dead already.
Analyses	layer of	Description
	Surface	 There were no isolation devices to keep people away from the convey machine. (unsafe environment) The cutter was stuck by the machine and could not be drawn out at once. (unsafe environment) The emergence button was not obvious. The technician could not press it at once to stop the machine.(unsafe environment) The vice-supervisor has no awareness of occupational safety and health. He himself changed the semi-automatic machine to be automatic, and stayed too close to the machine.(unsafe behavior)
	Underlying cause	 The employer did not provide sufficient safety and health equipment. (unsafe environment) The cutters were blunted easily and thus got stuck easily due to blunted blades. However, the corporation didn't ask the equipment supplier to re-design the operation procedures of this machine.(unsafe environment) The supervisor in the automatic production line did not stop the unsafe behavior of the vice-supervisor.(unsafe environment)
	Root cause	 There were no protective isolation devices in the hazardous zone. (unsafe environment) The company did not enforce the employees to follow the standard operating procedures to operate and maintain the machines. (unsafe behavior) The corporate culture lacked of the recognition of the importance of occupational safety and health and related training (unsafe environment and behavior)

Suggestive strategies	1. 2.	Implementing monitoring program to eliminate the factors of the unsafe environment or behavior. The necessary training should be provided to employees, and this accident should be included in the training material to prevent incident from reoccurring.
	3.	Establish proper safety and health rules, have them reviewed by the
		authority, and then have them announced and implemented.
	4.	The safety and health manager needs to provide necessary training
		and supervise the operation.
	5.	Install protection, isolation and/or emergency device on the
		machines, and provide personal protective equipment to the
		employees.
	6.	Establish a reward and penalties system, enforce the employees to
		follow the standard operating procedures.
	7.	Improve the operating procedures to avoid the cutter being stuck.

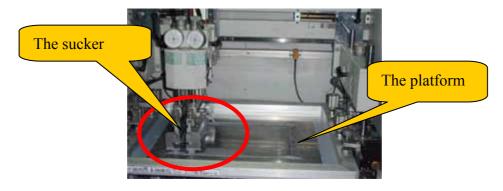


Illustration 2.3 The victim was compressed between the sucker and the platform.

Case study 3: Struck by object

The incident: Death resulting from being struck by the arm of the automatic hanger in the PCB Nickel plating process

Operator	Male, twenty-five years old	
Responsibility	Inspect the production line of BGA PCB Nickel plating process	
Time	8:00 AM in April	
Place	Automatic operation zone of the production line	
Equipment or media causing injury	An automatic hanger (Illustration 2.4)	

Scenario	At about 8:00 AM, the supervisor and a worker were inspecting the production line of BGA PCB Nickel plating. The worker went to the office in front of the unloading area to answer a phone call. About two minutes later, when he went back to the sidewalk of the production line, he found the supervisor lying on the ground near the water-clean tank, facing to the ground with his head bleeding. His feet were lying on the sidewalk and his back was against the protection net cover. He was sent to the hospital at once but ended up dead.			
Analyses	layer of cause	Description		
	Surface cause	The supervisor crossed the protection net and entered the automatic operation area without turn-off the machine first. Obviously, he lacked of the awareness of occupational safety and health.(unsafe behavior) There were no supervisor or monitor to discover this abnormal situation in time.(unsafe environment)		
	Underlying	The employee lacked of the health and safety awareness so as to put himself in danger. (Illustration 2.5) (unsafe behavior) The company did not install the warning/alarm system to keep irrelevant people away from the operation zone.(unsafe environment)		
		The company did not enforce the employees to follow the standard operating procedures.(unsafe behavior) The corporate culture lacked of the recognition of the importance of occupational safety and health and lack of related training.(unsafe environment and behavior)		
Suggestive strategies	1. The necessary training should be provided to employees, and this accident should be included in the training material to prevent incident from reoccurring.			
	_	proper safety and health rules, have them reviewed by the		
		and then have them announced and implemented.		
	_	and health manager needs to provide necessary training and		
	supervise t	he operation.		

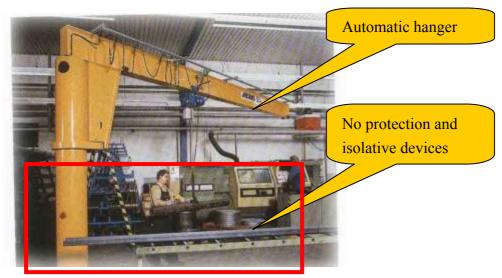


Illustration 2.4 Automatic process without protection and isolation devices



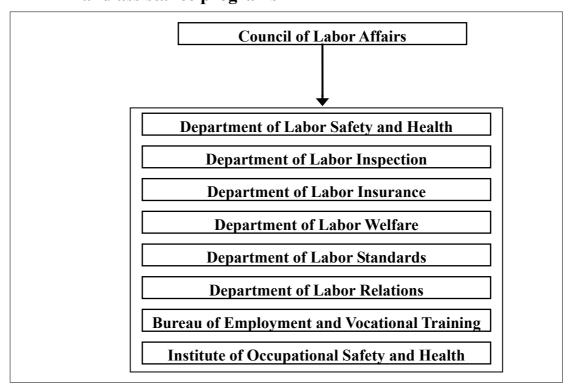
Protection and isolation devices

Illustration 2.5 Install protection and isolation devices to protect workers

2-3 Conclusion

The above occupational injury cases may result from unsafe environment or unsafe behavior. Both the employees and employers have to put efforts on occupational safety and health. The employees should report any potential hazards in the workplace to their employers; the employers should be responsible for providing a good working environment and correct employees' unsafe behaviors. To build up safety and health awareness, employer should provide training and education continuously. A good corporate culture will thus be build up, and working condition can be improved. Therefore, the company will have a good reputation and gain loyalty of employee. This will result in high productivity and achieves the goal of zero occupational accidents.

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 1 st 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 6 th 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 2 nd 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	No. 17, Zihyou Rd., Pingtung City,	Tel: 08-7519938
Consultation Service Center	Pingtung County	Fax: 08-7515390
Penghu County Foreign Workers	No. 160, Dasian St., Makong City, Penghu	Tel: 06-9212680
Consultation Service Center	County	Fax: 06-9217390
Chinmen County Foreign Workers	No. 60, Minsheng Road, Chincheng Tzen,	Tel: 082-373291
Consultation Service Center	Chinmen County	Fax: 082-371514
	No.76, Jieshou Village, Nangan Township, Lienchiang County	Tel: 0836-25022 Ext. 13 Fax: 0836-22209



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