

#### Foreword

This year will see Japan's 79th National Safety Week, which in fiscal 2006 will be held from July 1 to July 7 with a preparation period from June 1 to June 30.

As a result of cooperation from a great many people, the number of industrial accidents in Japan is on a downward trend. However, approximately 1,500 precious lives are still being lost each year. In particular, there is a need to put corporate safety management structures on an even firmer footing, with a series of problems last year, which included railroad accidents that caused many casualties, and threats to air safety.

In these circumstances, with some exceptions, the amended Industrial Safety and Health Act and related acts and ordinances were enforced in April this year with the objective of establishing the environment for the promotion of voluntary safety and health management activities in the workplace.

This document has been prepared as a handbook to collate the latest information including an outline of the implementation procedure for National Safety Week as well as the current status of industrial accidents, basic accident prevention strategies, examples of accidents and countermeasures and accident statistics for those involved in safety management. In particular, this year we have published an outline of the amendments to Industrial Safety and Health Act.

We hope that National Safety Week will be the occasion for a further improvement in the level of safety management in the workplace through the implementation of systematic and consistent safety and health management as top management leads by example with the aim of establishing a "safety culture" that puts safety first in every workplace. We will be gratified if this guidebook helps to achieve this goal.

Japan Industrial Safety and Health Association May 2006

#### ${\it Table\ of\ Contents}$

Ch	apter 1	Implementation Procedure for National Safety Week Fiscal 2006		•		Accident Case Studies Lower Level	.67
	Implemen	ntation Procedure	2			s and Fires	
	for Nation	nal Safety Week Fiscal 20063	3				
			4			of the Serious Occupational Accidents in 2004	.00
Ch	apter 2	Current Status of Industrial Accidents	7			hrough December)	.71
1		the Number of Deaths and Injuries ustries11			•	,	
2		Accident Frequency Rate, Accident Severity Rate h and Injury Rate Per Thousand Workers12	Cł	napter 6	j	Major Notifications on Safety	
3		of Deaths and Injuries by Industry12	1			s on Occupational Safety	
		of Deaths by Industry12		and Hea	alth	h Management Systems	.79
		Death and Injury Rate	2			s for Risk Assessment	
Ü		sand Workers by Industry13	3	Guidelir	nes	s for Risk Assessment on Chemicals	.88
	Incidence	of Deaths and Injuries by Size of Workplace13	4			s for Comprehensive Safety s of Machinery	.94
		Thousand Workers by Size of Workplace13	5			s for Industrial Traffic Accident Prevention	
8		of Industrial Accidents in Major Industries of Accident14	6			ensive Measures for the Prevention nts Involving Woodworking Machines	105
9		of Industrial Accidents in Major Industries of Accident15	7			ensive Measures	03
10	•	Industrial Accidents Caused		for Pres	ss N	Machine Accident Prevention1	10
10		nery and Equipment16	8			s on the Installation	
11	Trends in	Deaths and Injuries by Age16	_			tary Shoring Systems1	
		Incidence of Industrial Accidents				s for Sling Work Safety1	24
	in Tertiary	Industry17	10			ifications Issued by the Director-General our Standards Bureau in Fiscal 2005	130
13		Incidence of Serious Industrial Accidents ry17		Of the L	.au	odi Standards Bureau III i Iscar 2003	50
14		of Serious Accidents by Cause18	Cł	•		Reference Materials	
			1			on Occupational Accidents1	
Ch	apter 3	Outline of Amendments to Industrial Safety	2			ustrial Accident Prevention Plan (Excerpt)1	40
	•	and Health Act	3	•		ucation Program List Based	
		Amendments to Industrial Safety				ational Safety and Health Education System cly Released Operating Procedures1	147
	and Healt	th Act21	4			ed Testing Institutions and Occupational Safety	7,
Ch	apter 4	Basic Measures for Prevention		and Hea	alth	h Education Centers1	56
	•	of Occupational Accidents	5			of Support Project for Group Safety h Activities in Small Enterprises	57
1		ment of Safety Management Systems zation of Safety Management Activities33	6			alifications Specified in Industrial Safety h Act (Qualifications Related to Safety)1	159
2	Risk Asse	essment and Measures Based on the Results36	7			on System of Safety Programs1	
3		the Introduction of an Occupational Safety th Management System (OSHMS)38	8			jor Safety Organizations	
4	Upkeep o	of Safety in Planning and Designing Phases40					
5	Safe Mac	hinery and Equipment42					
6	Establishr	ment of Appropriate Working Methods44					
7		nt of Safety Education in Each Phase ational Life46					
8	Enhancer	nent of Voluntary Safety Activities and Management48					
a	•	easures for Elderly Workers51					
		n of Safety Activities in Tertiary Industry53					
		n of Safety and Health Activities in Small					
1 1		um-Sized Enterprises56					
12		ated Traffic Accident Prevention Measures58					

13 Ensuring Safety for Dispatched Workers......60

# Chapter Implementation Procedure for National Safety Week Fiscal 2006

### Implementation Procedure for National Safety Week Fiscal 2006

#### 1. Objective

National Safety Week has been observed continuously without a single break ever since being implemented for the first time in 1928, and 2006 will mark its 79th year. The objective is to "promote voluntary activities for the prevention of occupational accidents in industry at the same time as working to raise general awareness of safety and the firm establishment of safety activities" based on the lofty basic principle of "respect for human life."

The number of victims of industrial accidents in Japan is on a downward trend over the long term, and the number of fatalities in 2005 fell further to record an all time low.

Nevertheless, the situation regarding safety is unpredictable as the number of new recipients of workers' accident compensation insurance benefits stands at about 550,000 a year, and the number of serious accidents in which a number of workers are involved in a single accident remains at a high level.

In response to this, the amended Industrial Safety and Health Act was enforced in April 2006 in order to further promote countermeasures to industrial accidents. The content of the amendments includes the creation of an obligation to make efforts to implement risk assessment, the establishment of an exemption system relating to the notification of plans for workplaces that implement an Occupational Safety and Health Management System (OSHMS) where the level of safety and health is deemed to be high, and the implementation of work liaison and coordination by master employers in manufacturing industry.

In these circumstances, workers and employers must come together to implement the risk assessment included in the amended Act and to alleviate risk based on the results in order to further reduce industrial accidents in every workplace. In addition, it is also important to establish a "Safety Culture" which is a "corporate culture that puts the safety and health of workers first."

From such a perspective, it was decided to develop the fiscal 2006 National Safety Week under the slogan of "Involving everyone in workplace risk reduction initiatives for the creation of a safety culture."

National Safety Week is the occasion for each workplace to deepen understanding about the importance of preventing industrial accidents and to steadily implement safety activities.

#### 2. Slogan

"Involving everyone in workplace risk reduction initiatives for the creation of a safety culture"

#### 3. Period

National Safety Week runs from July 1 to July 7. In order to increase the effectiveness of the week, the period from June 1 to June 30 is set aside for preparations.

#### 4. Promoters

Ministry of Health, Labour and Welfare (MHLW), Japan Industrial Safety and Health Association (JISHA)

#### 5. Supporters

Japan Construction Safety and Health Association, Japan Land Transportation Industry Safety and Health Association, Japan Port Transport Industry Safety and Health Association, Japan Forestry and Timber Manufacturing Labour Accident Prevention Association, Japan Mining Safety and Health Association

#### 6. Collaborators

Related government and administrative agencies, local governments, safety-related organizations,

National Safety Council, local safety councils, labor unions, employers' organizations

#### 7. Implementing Agencies

Workplaces

#### 8. Matters to Be Implemented by Promoters and Supporters

- (1) Public relations materials on safety, etc., will be prepared and distributed.
- (2) Public-relations activities will be conducted through media such as newspapers.
- (3) Local conventions for National Safety Week, safety training and education, etc., will be held.
- (4) Compositions, photos, posters, mottoes, etc., about safety will be invited.
- (5) Cooperation will be rendered in the events for National Safety Day (July 1).
- (6) Guidance and assistance will be provided with respect to the matters which are to be implemented in workplaces.
- (7) Other appropriate events for National Safety Week will be held.

#### 9. Requests to Collaborators

Promoters will request collaborators to assist and cooperate with the implementation of the matters in item 8 above.

#### 10. Matters to Be Implemented by Implementing Agencies

Each workplace will implement the following matters with a view to further elevating safety standards and firmly establishing a systematic and consistent safety and health management system.

- (1) Matters to be implemented during National Safety Week
  - a. Top management will clearly express their conviction about safety as well as conducting safety patrols in the workplace themselves and making appeals on safety to employees.

- b. Workplaces will hold meetings, etc., on how to promote safety in the future to harmonize the motivations of related workers and to raise their consciousness about safety.
- c. Safety banners will be put up, posters and mottos, etc., will be posted, and materials on safety will be distributed, etc.
- d. Safety commendations will be made.
- e. Proposals on safety improvements will be invited and made public.
- f. Compositions, photographs, posters, mottos, etc., on safety will be invited and made public.
- g. Videos, motion pictures, slides, etc., will be shown at meetings, and lecture meetings, etc., will be held.
- h. The families of workers will be sent documents about safety by mail and visit the workplace in a request for their cooperation.
- i. Necessary training will be conducted on emergency measures.
- j. Other appropriate events for National Safety Week will be held.

#### (2) Matters to be implemented during the preparatory period

Comprehensive inspections of everyday safety activities will be made with respect to the following matters to firmly establish safety activities and further raise safety standards.

- a. Establishment of safety management systems and activation of safety management activities
  - Risk assessments and safety measures based on the results will be implemented on the basis of the Guidelines for Risk Assessment, Guidelines for Risk Assessment on Chemicals and Guidelines for Comprehensive Safety Standards of Machinery.
    - An implementation system based on worker participation through the use of safety committees with overall control by top management will be established.
    - Risk estimates that take into account the designation of hazards and toxicity, etc., and the severity and frequency of injuries will also be implemented.

- Risk reduction measures will be examined and implemented.
- (ii) Promotion of voluntary safety management activities, including the establishment of an Occupational Safety and Health System (OSHMS)
  - Top management will clearly express basic policy on safety and set targets based on it.
  - Risk assessment and safety measures based on the results will be implemented on the basis of the Guidelines for Risk Assessment, and other guidelines.
  - A safety management plan that is integrated with business activities will be prepared, implemented, evaluated and improved.
  - Effective rules for safety management that clarify the duties of divisions that are in charge of safety management and the responsibility and authority of managers and supervisors regarding safety will be established and operated.
  - System audits will be implemented and system reviews conducted based on them.
- (iii) Steady succession of expertise on safety and know how regarding the prevention of industrial accidents
- (iv) Establishment and activation of a safety management system, including the appointment of a general safety and health manager, a safety supervisor or a safety and health promoter, and a safety committee
- (v) Implementation of safety diagnoses utilizing outside experts, such as occupational safety consultants, etc.
- (vi) Firm establishment of safety management activities in the construction industry
  - Master employers and related subcontractors will work together

- to establish systems that promote safety management.
- An onsite system of guidance and support will be established using site safety and health supervisors, etc.
- Exhaustive measures will be taken to prevent falls through the use of advance erection of scaffolding and handrails, etc.
- Exhaustive measures will be taken to prevent landslides through the use of proprietary shoring systems.
- Liaison with the leasers of construction machinery will be promoted.
- The holding of safety and health review training including education, etc., for workers engaged in construction work will be promoted.
- The holding of hazard awareness training will be promoted.
- The implementation of safety execution cycle activities will be promoted.
- (vii) Firm establishment of safety management activities in manufacturing industry
  - Safety management to prevent industrial accidents due to mixed work will be promoted, including liaison with and coordination of subcontractors' offices on site.
  - Risk assessments and safety measures based on the results will be implemented on the basis of the Guidelines for Comprehensive Safety Standards of Machinery (as included above).
  - Regular (designated) voluntary inspections and systematic inspections in line with the life cycle of machinery and equipment will be implemented.
  - Hazard data will be communicated and provided at the time of ordering hazardous work.
  - Guidance and support will be provided for stepping up safety activities at offsite affiliated workplaces.

- b. Preparation and regular update of safety manuals
  - (i) Safety manuals relating to routine work including the operation and transport of machinery and equipment will be prepared.
  - (ii) Safety manuals relating to irregular work including repair, checkup and troubleshooting of machinery and equipment will be prepared.
  - (iii) Work manuals will be prepared to accompany the introduction of mechanization, automation and new materials, etc.
  - (iv) Work manuals will be prepared for industrial robots and automatic conveyor equipment, etc.
  - (v) Safe work programs will be established for construction machinery, cranes, etc.
  - (vi) Work manuals will be updated regularly, and education and training will be held so that they are implemented thoroughly.
- c. Implementation of safety education in each phase of working life
  - (i) A safety education program will be established and effective safety education will be implemented.
  - (ii) Hands-on hazard training will be implemented.
  - (iii) Officers in charge of safety education in the workplace will be trained.
  - (iv) Skill improvement training for safety supervisors will be implemented.
  - (v) Safety training will be held for workers engaged in hazardous work.
  - (vi) The qualifications of those assigned to restricted work or those assigned as operations chief shall be enhanced.
- d. Improvement of worker consciousness of safety
  - Accident cases will be analyzed, and specific industrial accident prevention methods will be formulated and widely disseminated.
  - (ii) Hazard prediction activities will be introduced and a safety improvement

- proposal system and safety rotation system will be used.
- (iii) Participation in safety issues in the workplace will be promoted through safety committees, etc.
- (iv) A Safety Day, etc., will be established.
- (v) Posters and mottos, etc., about safety will be solicited and made public.
- (vi) Outstanding foremen who directly supervise work will be commended.
- (vii) Calls will be made for the cooperation of households in safety.
- e. Enhancement of voluntary safety activities by employers and workers
- f. Promotion of measures to prevent explosions and fires
  - (i) Risk assessments and safety measures based on the results will be implemented on the basis of the Guidelines for Risk Assessment on Chemicals (as included above).
  - (ii) Regular voluntary inspections of chemical facilities will be implemented systematically.
  - (iii) There will be liaison between the orderer of work and the contractor of work that includes the provision of documents by the work orderer for refurbishment and repairs, etc., to chemical facilities.
  - (iv) The provision and utilization of information relating to the hazards and toxicity of chemical substances, etc., shall be promoted, including Material safety Data Sheets (MSDSs).
- g. Promotion of activities to prevent workrelated traffic accidents
  - (i) Management systems will be established.
  - (ii) Appropriate working hours, etc., and driving will be managed.
  - (iii) Training will be implemented for traffic safety supervisors and drivers, etc.
  - (iv) Consciousness will be raised about the prevention of work-related traffic accidents.

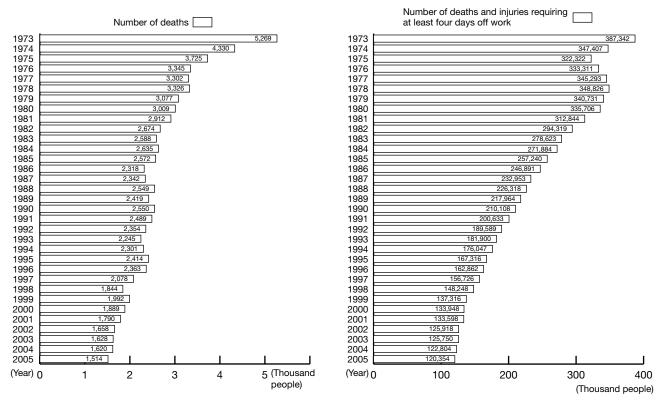
- h. Promotion of safety measures for elderly workers
  - (i) Safety measures will be implemented on the assumption that young and elderly workers will work together on the same work.
  - (ii) The working environment will improved, including machinery and equipment.
  - (iii) Work methods and job allocations will be improved.
  - (iv) Work procedures will be established, appropriate direction of work will be implemented, and safety education will be held.
- i. Promotion of safety measures for temporary workers
  - (i) Measures to ensure the safety of temporary workers will be implemented at the workplace to which the temporary workers have been dispatched.
  - (ii) Measures to ensure the safety of temporary workers will be implemented at the agency which dispatches the temporary workers.
- j. Promotion of a rationalization in working conditions including working hours
- k. Promotion of the creation of a pleasant working environment

## Chapter 2

## Current Status of Industrial Accidents

Fig. 1 Trends in the Number of Deaths and Injuries in All Industries





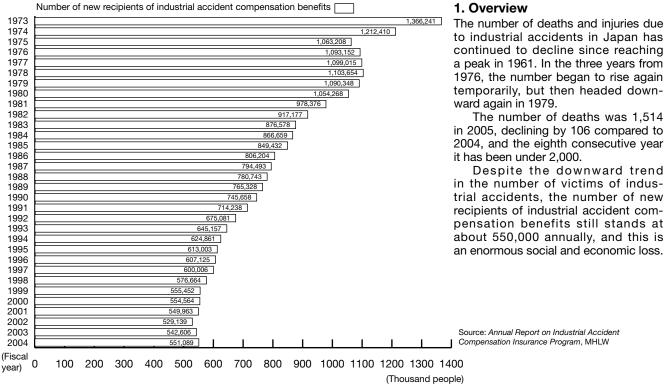
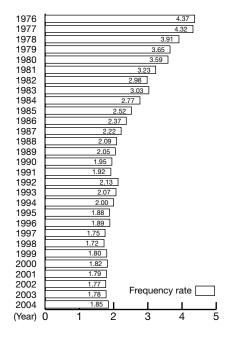
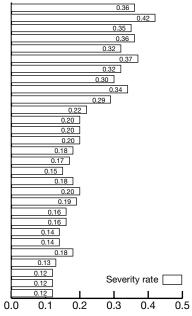
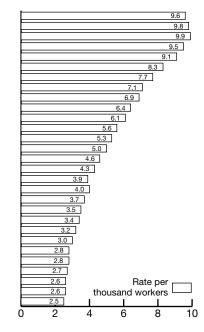


Fig. 2 Trends in Accident Frequency Rate, Accident Severity Rate and Death and Injury Rate Per Thousand Workers







Frequency and severity rates: Survey on Industrial Accidents, MHLW

Rate per thousand workers: Annual Report on Industrial Accident Compensation Insurance Program and Data on Industrial Accident Compensation Insurance Benefits, MHLW

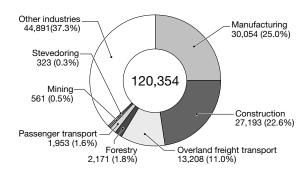
Fig. 3 Incidence of Deaths and Injuries by Industry (2005)

#### 2. Incidence by Industry

A comparison of the number of deaths and injuries due to industrial accidents (requiring at least four days off work) with the previous year shows that the number decreased by 9,640 (7.8%) for all industries.

Of the number of deaths and injuries, the manufacturing and construction industries accounted for slightly less than 50%.

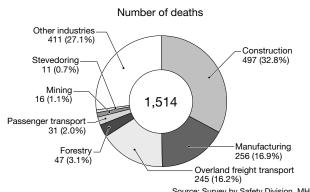
Number of deaths and injuries requiring at least four days off work



Source: Data on Industrial Accident Compensation Insurance Benefits, MHLW

Incidence of Deaths by Industry (2005)

A comparison of the number of deaths with the previous year shows that the number decreased by 106 (6.5%) for all industries. By industry, the number of deaths fell by 97 (16.3%) in construction, and increased by 2 (0.8%) in overland freight transport.



Source: Survey by Safety Division, MHLW

Fig. 5 Trends in Death and Injury Rate Per Thousand Workers by Industry

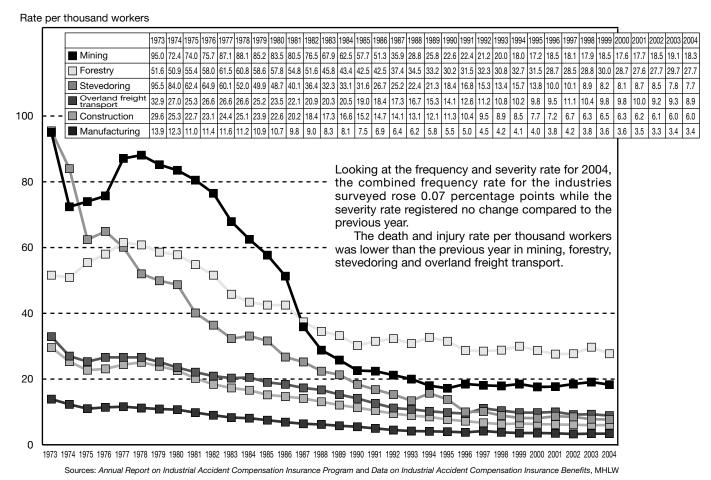


Fig. 6 Incidence of Deaths and Injuries by Size of Workplace (2005)

#### 3. Incidence by Size

About 80% of all industrial accidents with deaths and injuries requiring at least four days off work occur at workplaces with less than 100 workers.

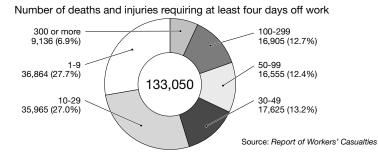
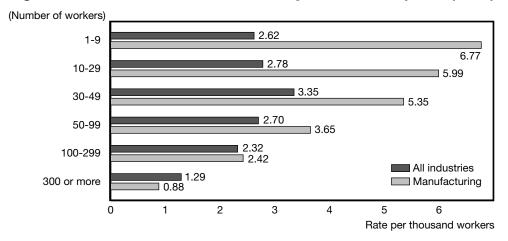


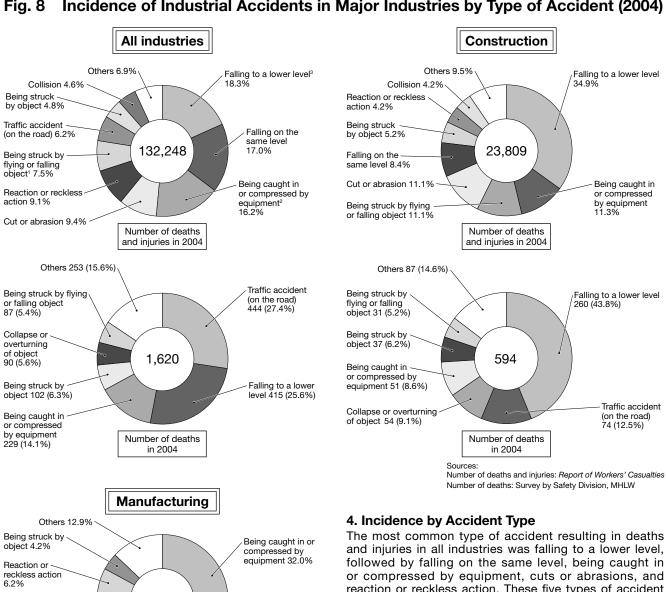
Fig. 7 Rate Per Thousand Workers by Size of Workplace (2004)



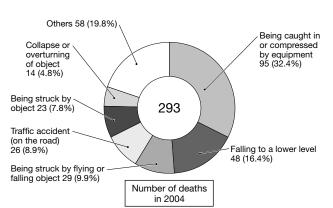
The smaller the size of the workplace, the higher the rate per thousand workers in all industries, as well as in manufacturing. In manufacturing, the death and injury rate per thousand workers for workplaces with 1 - 9 workers is about eight times the rate in workplaces with at least 300 workers.

Sources: Survey Report on Business Statistics (Statistics Bureau of Ministry of Internal Affairs and Communications), Report of Workers' Casualties

Incidence of Industrial Accidents in Major Industries by Type of Accident (2004)







and injuries in all industries was falling to a lower level, followed by falling on the same level, being caught in or compressed by equipment, cuts or abrasions, and reaction or reckless action. These five types of accident account for about 70% of all accidents.

The most common type of accident in the construction industry was falling to a lower level, which accounts for about one third of accidents in the industry. In manufacturing, being caught in or compressed by equipment accounts for about one third of accidents.

For all industries, traffic accidents and falling to a lower level were most common accidents resulting in death, and these two types of accidents account for more than half of all deaths.

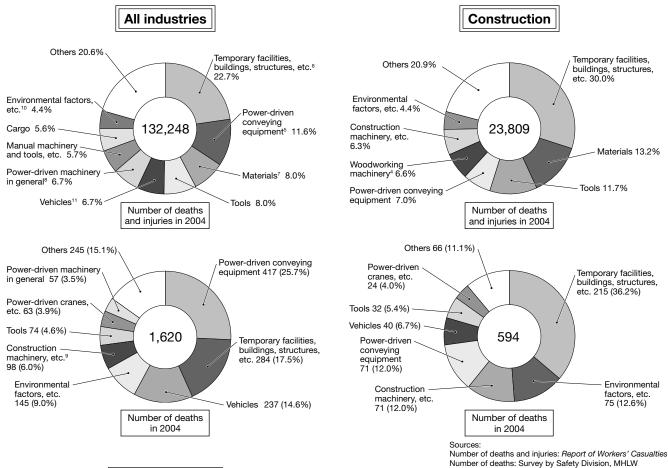
In the construction industry, falling to a lower level was the most common type of accident resulting in death, accounting for more than 40% of fatal accidents in the industry.

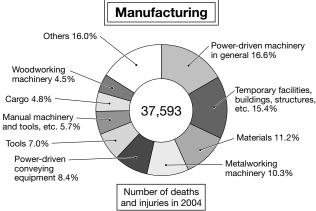
In manufacturing, being caught in or compressed by equipment is the most common type of fatal accident.

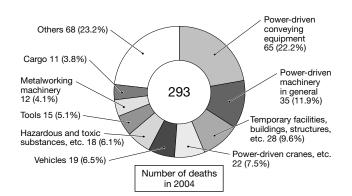
#### Notes:

- 1. A person being struck by a flying or falling object
- 2. A person being caught in or compressed by an object or machine
- 3. A person falling from a building, etc.

Fig. 9 Incidence of Industrial Accidents in Major Industries by Cause of Accident (2004)







#### 5. Incidence by Cause of Accident

The highest number of industrial accidents resulting in death and injury on an all-industry basis were caused by temporary facilities, buildings, structures, etc. This was followed by power-driven conveying equipment and materials.

In the construction industry, the largest number of accidents was caused by temporary facilities, buildings, structures, etc., and the proportion was higher than that for all industries. In addition, the proportion of accidents caused by materials and tools was higher than for all industries.

In manufacturing, the most common cause of accidents was power-driven machinery in general, temporary facilities, buildings, structures, etc., and materials. The proportion of accidents caused by power-driven machinery in general and materials was higher than for all industries.

The proportion of fatal accidents caused by powerdriven conveying equipment, temporary facilities, buildings, structures, etc., and vehicles was high in all industries.

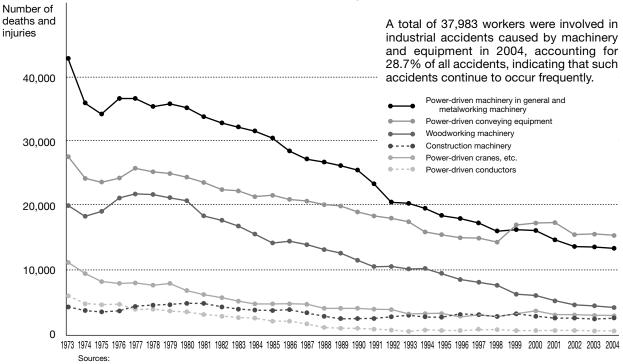
In construction, the proportion of accidents resulting in death caused by temporary facilities, buildings, structures, etc., was conspicuously high at 36.2%.

In manufacturing, a high proportion of accidents resulting in death were caused by power-driven conveying equipment and power-driven machinery in general.

#### Notes

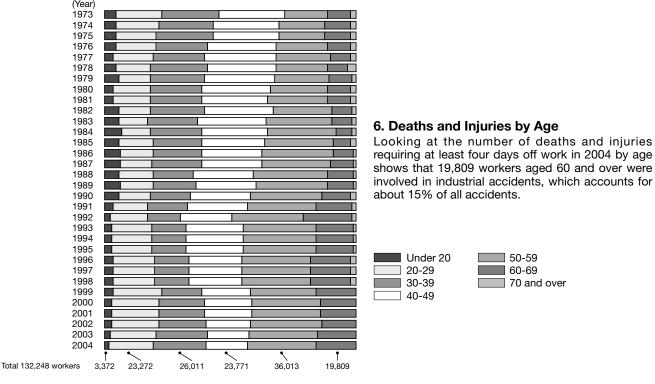
- Circular saws, band saws, planing and molding machines, etc.
- 5. Trucks, forklifts, conveyors, etc.
- Scaffolding, stairs, bridges, etc.
- 7. Metal materials, wood, glass, etc.
- 8. Power-driven presses, roll mixers, etc.
- 9. Bulldozers, excavators, pile drivers, etc.
- 10. Natural ground, rivers, abnormal air pressure, etc. 11. Passenger cars, railway rolling stock, aircraft, etc.

Fig. 10 Trends in Industrial Accidents Caused by Machinery and Equipment (Number of deaths and injuries requiring at least four days off work)



Fiscal 1973 - 1998: Data on Industrial Accident Compensation Insurance Benefits (including businesses not eligible for industrial accident compensation) Calendar 1999 - 2004: Reports of Workers' Casualties

Fig. 11 Trends in Deaths and Injuries by Age (Requiring at least four days off work)



Sources:

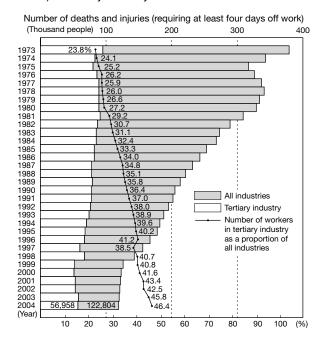
Fiscal 1973 - 1998: Data on Industrial Accident Compensation Insurance Benefits (including businesses not eligible for industrial accident compensation) Calendar 1999 - 2004: Reports of Workers' Casualties

#### Fig. 12 Trends in Incidence of Industrial Accidents in Tertiary Industry

#### 7. Industrial Accidents in Tertiary Industry

In conjunction with the development of service industries, the trend for the workforce in tertiary industry to rise has continued. Accompanying this, the proportion of industrial accidents in tertiary industry is also on the rise. In recent years, industrial accidents resulting in death or injury (requiring at least four days off work) in tertiary industry have accounted for about 40% or more of the total.

Number of deaths and injuries: Data on Industrial Accident Compensation Insurance Benefits, MHLW Number of workers: Labour Force Survey, Ministry of Internal Affairs and Communications



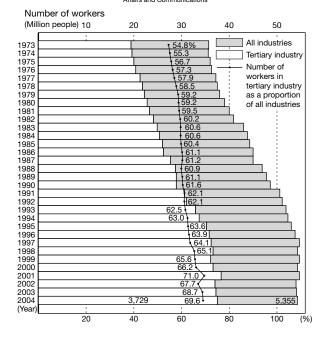
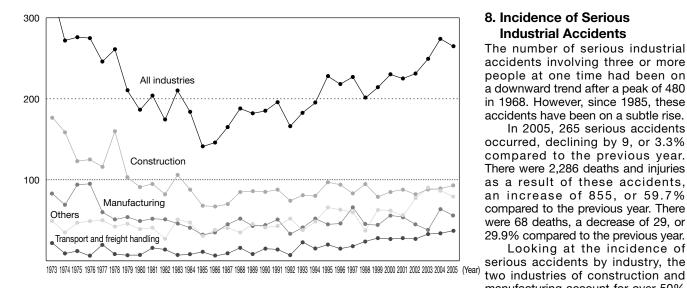


Fig. 13 Trends in Incidence of Serious Industrial Accidents by Industry



#### 8. Incidence of Serious **Industrial Accidents**

The number of serious industrial accidents involving three or more people at one time had been on a downward trend after a peak of 480 in 1968. However, since 1985, these accidents have been on a subtle rise.

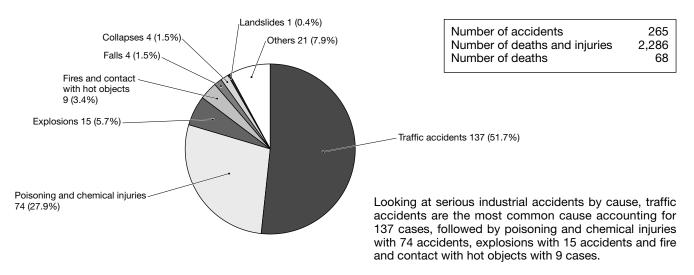
In 2005, 265 serious accidents occurred, declining by 9, or 3.3% compared to the previous year. There were 2,286 deaths and injuries as a result of these accidents, an increase of 855, or 59.7% compared to the previous year. There were 68 deaths, a decrease of 29, or 29.9% compared to the previous year.

Looking at the incidence of serious accidents by industry, the manufacturing account for over 50% of all serious accidents.

Source: Surve	/ bv l	Labour	Standards	Bureau.	MHLW

																										, ,		-				. ,	
	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
All industries	331	272	276	275	246	261	210	186	204	174	210	184	141	146	165	188	182	185	196	166	183	195	228	218	227	201	214	230	225	231	249	274	265
Construction	177	159	123	125	116	160	103	91	95	82	106	88	68	67	70	85	86	85	88	74	81	80	97	94	83	95	79	85	88	82	88	89	93
Manufacturing	83	69	94	95	60	51	54	49	52	51	46	41	32	35	45	52	43	44	51	33	41	52	45	46	66	45	44	56	54	45	38	64	56
Transport and freight handling	22	9	12	6	20	8	7	7	16	14	7	8	11	6	9	16	8	15	14	7	23	15	20	15	18	24	28	27	28	27	33	34	37
Others	49	35	47	49	50	42	46	39	41	27	51	47	30	38	41	35	45	41	43	52	38	48	66	63	60	37	63	62	55	77	90	87	79

Fig. 14 Incidence of Serious Accidents by Cause (2005)



Source: Survey by Safety Division, MHLW

## Chapter S Outline of Amendments to Industrial Safety and Health Act

### Outline of Amendments to Industrial Safety and Health Act

The number of industrial accidents has declined over the long term, but more than 1,500 precious lives are still lost each year, and the number of serious accidents in which three or more people are killed or injured has been rising since 1985. In particular, since summer 2003, there has been a succession of serious accidents, including explosions and fires, at some of Japan's most representative companies.

As the social and economic circumstances surrounding companies and workers change to include the growth of outsourcing, such as the subcontracting of operations, an increase in mergers and spin offs, and a diversification in the forms of employment, it is necessary to build a safety and health management system that has adapted to these changes.

Recently, more than 60% of workers experience strong unease or stress about work. Meanwhile, the rate of findings in the results of general medical examinations is going up each year, and these findings include a growing proportion of people with hyperlipemia and hypertension.

In these circumstances, in fiscal 2004, 294 cases of cerebral and cardiac-related complaints caused by clearly excessive burdens on workers were recognized as industrial accidents. Out of these cases, 150 were recognized as death from overwork, which has risen to account for about 10% of the number of deaths due to industrial accidents. In addition, psychological disorders caused by work-related stress have increased, and 130 cases were recognized as industrial accidents in fiscal 2004.

Furthermore, there are a great variety of chemical substances in the workplace, and work handling these chemical substances is also becoming more diverse. Diseases caused by chemical substances that are not controlled by special regulations such as the Ordinance on Prevention of Organic Solvent Poisoning account for about half of all cases while carbon monoxide poisoning leading to serious injuries and explosions and fires caused by chemical

substances continue to occur. There is also a need to respond to international developments such as the Globally Harmonized System of Classification and Labeling of Chemicals (GHS United Nations Recommendation).

In addition, there is a growing need to protect personal information. With the formulation and enforcement of the Personal Information Protection Act, guidelines relating to the employment management and considerations on the handling of health information based on the act have been set out, and it was also necessary to make provision for this in the Industrial Safety and Health Act.

The Industrial Safety and Health Act has been amended in response to issues surrounding safety and health such as those above. The date of promulgation for the amended act was November 2, 2005, and ordinances and regulations were amended as of January 5, 2006.

The main points of the amendments are as shown below.

 Provision of Medical Consultation and Guidance by a Physician for Workers with Long Working Hours (Articles 66-8, 66-9, and 104, Industrial Safety and Health Act)

#### (1) Coverage

All workplaces (Applies from April 2008 to workplaces with less than 50 full time workers)

#### (2) Details

a. The employer must provide a medical consultation and guidance by a physician when a worker whose work in excess of 40 hours per week is more than 100 hours per month with recognized accumulated fatigue and an application received from the worker (Excludes workers who have received consultation and guidance within the past month whom a physician has deemed not to require consultation and guidance).

- (i) At least one basic date per month should be established for calculating whether or not the hours above apply.
- (ii) The physician confirms the status of the worker's work, the accumulation of fatigue, and other mental and physical conditions (including mental health), and provides the necessary guidance to the worker.
- (iii) The employer must hear the opinion of the physician on the measures needed to maintain the health of the worker for whom the consultation and guidance was provided.
- (iv) The employer shall take into account the opinion of the physician and must, when deemed necessary, take measures including changing the place of employment, changing the work, shortening the working hours, and decreasing the frequency of night work, in consideration for the circumstances of the relevant worker. The employer shall also implement other appropriate measures including reporting the opinion of the physician to the Health Committee, etc.
- b. The employer shall also provide consultation and guidance for a worker that falls into either (i) or (ii) below, or must endeavor to take measures equivalent to consultation and guidance.
  - (i) A worker who is deemed to have accumulated fatigue due to long working hours (when work in excess of 40 hours per week is more than 80 hours per month) for whom there are concerns about health (provided with receipt of application)
  - (ii) A worker who meets the criteria established in the workplace Examples of criteria established by the workplace
    - Provision of consultation and guidance for all workers whose work in excess of 40 hours per week is

- more than 100 hours per month and workers whose work in excess of 40 hours per week is more than 80 hours per month on average over 2 to 6 months
- Provision of consultation and guidance for all workers whose work in excess of 40 hours per week is more than 80 hours per month
- Provision of consultation and guidance for a worker whose work in excess of 40 hours per week is more than 45 hours per month and who is deemed in need by an industrial physician
- Submission of information on working environment and working hours, etc., of a worker whose work in excess of 40 hours per week is more than 45 hours per month to an industrial physician, and receipt by employer of advice and guidance from the industrial physician
- c. The person engaged in the work of consultation and guidance is charged with a duty of confidentiality regarding its provision.

Note: A Worker Fatigue Accumulation Level Checklist is posted on the website of the Japan Industrial Safety and Health Association for self-diagnosis by workers, and this should be used.

2. Reporting of Results of Special Medical Examination to Worker (Article 66-6, Industrial Safety and Health Act)

#### (1) Coverage

All workplaces with obligation to provide special medical examinations

#### (2) Details

In addition to the general medical examination, there is an obligation to report the results of a special medical examination to the worker.

#### 3. Study of Hazards and Toxicity and Implementation of Necessary Measures (Article 28-2, Industrial Safety and Health Act)

#### (1) Coverage

Workplaces in industries that have to appoint a safety supervisor (covered regardless of scale). Studies and/or investigations relating to chemical substances which could be hazardous to workers or cause impairment of health should be conducted at all workplaces (The same as in Article 58 before amendment).

#### (2) Details

- a. The employer must carry out a study and/or an investigation (risk assessment) into the hazards and toxicity arising from equipment, raw materials and work practices, etc., in order to assess the risk of an industrial accident occurring in the workplace before it happens and endeavor to take the necessary measures based on the results. (Duty to make efforts)
- b. The timing for the implementation of risk assessments is as in (i) to (iv) below.
  - (i) When installing, moving, changing, or demolishing structures.
  - (ii) When introducing new equipment or raw materials, or when changing equipment or raw materials.
  - (iii) When introducing new work methods or procedures or when changing work methods or procedures.
  - (iv) When other changes related to hazards or toxicity arise or could arise.
- c. The guidelines for the proper and effective implementation of studies and/or investigations on hazards and toxicity and the necessary measures were promulgated by the Ministry of Health, Labour and Welfare on March 10, 2006.
- d. Matters related to studies and/or investigations on hazards and toxicity have been added to the areas of training for foremen, etc. (Article 40, Ordinance on Industrial Safety and Health)

Note: Industries that have to appoint a safety supervisor

Forestry; mining; construction; transport; cleaning; manufacturing (includes processing); power; gas; heat supply; water supply; telecommunications; miscellaneous wholesale; furniture, fittings and fixtures wholesale; miscellaneous retail; furniture, fittings and fixtures retail; fuel retail; hotels; golf courses; automobile servicing; mechanical repair

#### 4. Exemption of Approved Employers from Submission of Plan (Article 88, Industrial Safety and Health Act)

#### (1) Coverage

Workplaces that must submit a plan under paragraph 1 or 2, Article 88 of the Industrial Safety and Health Act.

#### (2) Details

- a. Workplaces that operate an Occupational Safety and Health Management System (OSHMS), including studies and/or investigations on hazards and toxicity, will be exempt from the submission of the plan on obtaining the approval of the director of the Labour Standards Inspection Office by complying with (i) to (iii) below.
  - (i) The OSHMS is deemed to be operated properly.
  - (ii) The incidence of industrial accidents is below the average for the industry.
  - (iii) There have been no serious industrial accidents, including fatal accidents, in the one year prior to the date of application.
- b. Workplaces are not exempt from the submission of the plan that shows completion inspections and changeover inspections, etc., for specified machinery, etc.
- c. Approval is valid for three years.

Note: An OSHMS is a system in which an employer specifies a series of processes and voluntarily carries out the activities listed in 1 to 4 below with the objective of improving the

level of safety and health in the workplace. (Article 24-2, Ordinance on Industrial Safety and Health)

- 1. Explicit statement of policy concerning safety and health
- Studies and/or investigations on hazards and toxicity, and measures based on the results
- 3. Establishment of targets relating to safety and health
- 4. Formulation, implementation, evaluation and improvement of a plan relating to safety and health

The Ministry of Health, Labour and Welfare has established and promulgated the Guidelines on Occupational Safety and Health Management Systems.

 Revision of Qualification Requirements for Safety Supervisors (Article 5, Ordinance on Industrial Safety and Health; Enforced October 1, 2006)

#### (1) Coverage

Workplaces that must appoint a safety supervisor

#### (2) Details

a. From October 1, 2006, a safety supervisor must be appointed from among people who

- have undergone training (totaling nine hours including matters relating to studies and/or investigations on hazards and toxicity) specified by the Minister of Health, Labour and Welfare
- b. Persons who have been appointed as safety supervisor with less than two years of experience on October 1, 2006 must also undergo the training described above in order to be appointed as safety supervisor from that date hence.
- c. The number of years of practical experience required in Article 5-1 and 2 will be reduced as a result.

#### 6. Strengthening of Safety and Health Management Systems (Articles 21, 22 and 23, Ordinance on Industrial Safety and Health)

#### (1) Coverage

Workplaces with a duty to appoint a general safety and health manager, or set up a safety committee, and a health committee, etc.

#### (2) Details

a. The matters in Table 3-1 have been added.

Table 3-1

Additions	Duties to be overseen by general safety and health manager <sup>1</sup>	Matters for study and/or investigations and deliberation by safety committee <sup>2</sup>	Matters for study and/or investigations and deliberation by health committee <sup>2</sup>
Matters related to clear statement of policy on safety and health	Added	_	_
Matters related to studies and/or investigations on hazards and toxicity and measures based on the results	Added	Added (Safety sections)	Added (Health sections)
Matters related to formulation, implementation, evaluation and improvement of plan related to safety and health	Added	Added (Safety sections)	Added (Health sections)
Matters related to the establishment of strategies to prevent impairment to the health of workers due to long working hours	_	_	_
Matters related to the establishment of strategies to maintain and improve the mental health of workers	_	_	_

#### Notes:

- Out of the duties to be overseen by the general safety and health manager, the safety supervisor and the health manager have to manage technical matters related to safety and health respectively. When a safety and health promoter is appointed, the safety and health promoter has to be responsible for these areas.
- 2. A Safety and Health Committee is an amalgamation of a safety committee and a health committee.

- b. The employer must inform the workers of the general proceedings of the safety committee, health committee, or safety and health committee without delay each time it meets.
- 7. Establishment of Liaison between Related Workers by the Master Employer in Manufacturing Industry (Article 30-2, Industrial Safety and Health Act)

#### (1) Coverage

Manufacturing industry

#### (2) Details

The master employer in manufacturing industry must take the following measures to prevent an industrial accident occurring as a result of carrying out work by the workers of the master employer and the workers of a related subcontractor in the same location.

- a. Conducting liaison and coordination between the master employer and the related subcontractor as well as between related subcontractors as necessary
- b. Standardization of signaling relating to the operation of cranes, etc., standardization of signs indicating accident sites, etc., standardization of storage location for organic solvent containers, etc., standardization of warnings for when power is being supplied to X-ray equipment, etc., and informing the related subcontractor of these matters

Note: The range of measures that must be taken by a master employer in the construction and shipbuilding industries is as is currently in operation.

## 8. Provision of Documents by the Orderer of Work such as Cleaning of Chemical Facilities (Article 31-2, Industrial Safety and Health Act)

#### (1) Coverage

- a. Facilities and equipment: chemical facilities, specified chemical facilities, and equipment used in these facilities (including pipes)
- b. Work: Work that includes the remodeling, repair, or cleaning of the facilities and equipment covered, and involving dismantling of the relevant facilities and equipment, or entry by workers into the relevant facilities

#### (2) Details

An orderer who subcontracts the work covered to a subcontractor must prepare documents that record the following matters and provide the documents to the subcontractor.

- a. Hazards and toxicity of the substances manufactured or handled at the facility
- b. Matters relating to the safety and health precautions for the relevant work
- Measures taken at the facility in relation to the relevant work to ensure safety and health
- d. Emergency measures to be taken in the event of an accident, such as a discharge of chemical substances
- Improvement of the System of Labeling and Providing Documentation for Chemical Substances (Articles 57 and 57-2, Industrial Safety and Health Act; Enforced on December 1, 2006)

#### (1) Coverage

Persons who transfer and provide hazardous and toxic materials specified by cabinet order

#### (2) Details

a. Moving from a system that covers labeling and documentation for toxic chemical substances only to a system of labeling and

- documentation for chemical substances with toxicity and/or other hazards such as inflammability as well.
- b. Illustrated labels are included in the labeling requirements when the substances covered are transferred or provided in containers or packaging. (The details, including the substances covered and the illustrated labels are scheduled to be determined in summer 2006.)

#### 10. Establishment of Reporting for Work Involving Exposure to Toxic Substances (Article 95-6, Ordinance on Industrial Safety and Health)

#### (1) Coverage

Employers who manufacture or handle 500kg or more per year of the following substances specified by Minister of Health, Labour and Welfare notification, or preparations containing more than 1% by weight of the substances

- a. Epichlorohydrin
- b. Benzyl chloride
- c. 1,3-Butadiene
- d. Formaldehyde
- e. Diethyl sulfate

#### (2) Details

Employers must submit a report using the specified form by June 30 of the relevant year (by August 31, 2006).

#### 11. Revision of the System of Licensing and Skill Training Courses

#### **Details**

- (1) The system of licensing and skill training courses will change as shown in Table 3-2.
- (2) Persons who have acquired existing licenses and completed existing skill training courses by March 31, 2006 may engage in the applicable duties as before. There are no changes to licenses and skill training courses not shown in the table.

#### 12. Date of Enforcement

The date of enforcement is April 1, 2006.

However, the qualification requirements for the safety supervisor in section 5 shall be enforced on October 1, 2006, and the improvements to the labeling and documentation of chemical substances in section 9 shall come into force on December 1, 2006. Further, the consultation and guidance in section 1 shall be applicable to workplaces employing less than 50 full time workers from April 1, 2008.

Table 3-2

Current	$\rightarrow$	Revised From April 1, 2006
Crane operator's license     Derrick operator's license	<b>→</b>	Crane/derrick operator's license  May operate both cranes and derricks. Derrick skill training course to be abolished.  Restricted license to allow operation of crane only to be established.
<ul> <li>Skill training course for operations chiefs of excavating natural ground</li> <li>Skill training course for operations chiefs of shoring</li> </ul>	$\rightarrow$	Amalgamated into skill training course for operations chief in excavation of natural ground and shoring
Skill training course for operations chiefs of boiler installation work	$\rightarrow$	Skill training course abolished. When engaging in boiler installation work, a work director must be appointed from among persons deemed to have the necessary skills.
<ul> <li>Skill training course for operations chiefs of work handling 4-alkyl lead</li> <li>Skill training course for operations chiefs of work handling specified chemical substances</li> </ul>	$\rightarrow$	Amalgamated into skill training course for operations chief of work handling 4-alkyl lead and specified chemical substances     Establishment of new, separate skill training course for operations chief for work handling asbestos

#### Figure 3-1 Promotion of Voluntary Safety and Health Activities by Employers

The introduction of a duty to make efforts to study and/or investigate the hazards and toxicity of equipment, facilities and work, etc., and to implement countermeasures based on the results in order to assess the risks of industrial accidents occurring in the workplace before they happen.

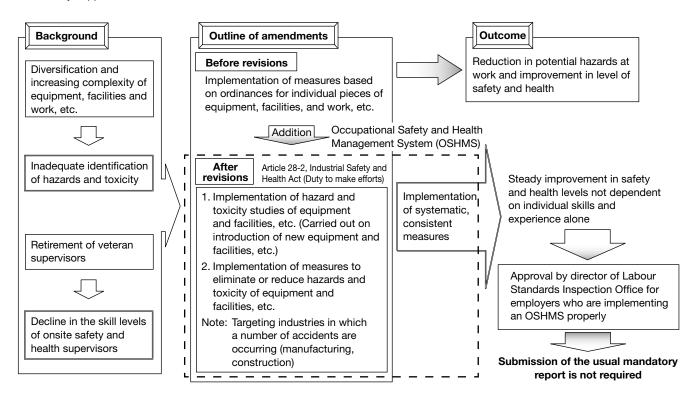


Figure 3-2 Implementation of Safety and Health Management Strategies by Master Employer in Mixed Work Site

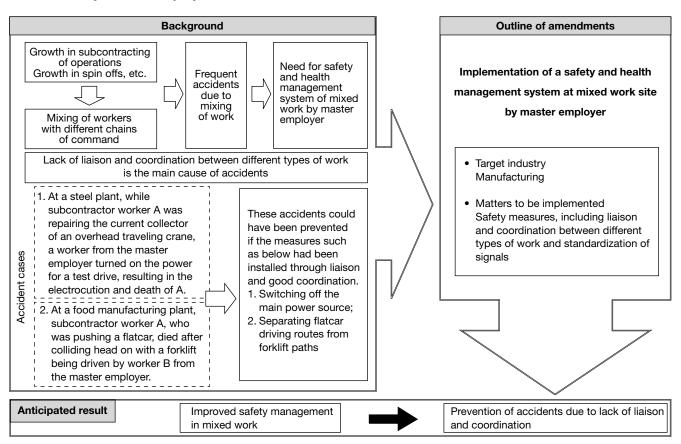
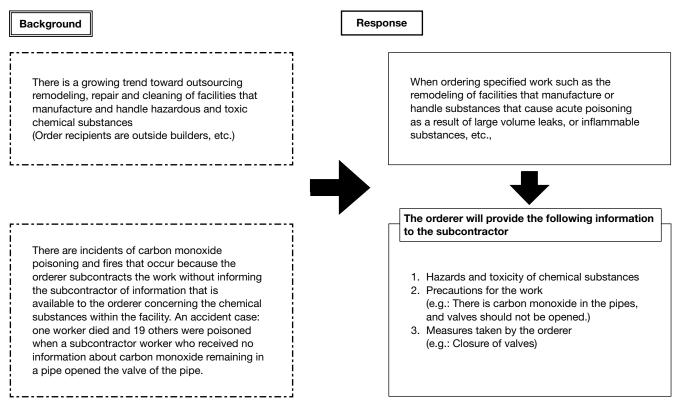


Figure 3-3 Provision of Information on Hazards and Toxicity by the Orderer



(A subcontractor who receives the information shall supply related contractors with the information.)

Figure 3-4 System of Consultation and Guidance for Workers with Long Working Hours Consultation and guidance manual, and training course 3. Opinion on follow up measures **Employer** 1. Instruction to **Physician** receive consultation (Industrial 2. Provision of consultation and guidance physician, etc.) and guidance Worker Assessment of fatigue, etc. Check on mental health High risk worker At risk worker Guidance based on assessment results A worker who works more A worker who meets than 100 hours of overtime the criteria established Provision of a month with accumulated voluntarily by the workplace counselina fatigue and who has Provision of consultation and information applied for a consultation Note: Duty to make efforts and guidance Regional Industrial Health Center Occupational Health Note: The employer takes the necessary measures, including (Registered industrial physician) **Promotion Center** providing holidays and reducing work, based on the results of the consultation and guidance.



Prevention of death from overwork and suicide due to overwork before it happens, early detection and early cure

Figure 3-5 Improvements to the System of Labeling and Exchange of Documentation for Chemical Containers

#### **Background**

The Globally Harmonized System of Classification and Labeling of Chemicals (GHS UN Recommendation)

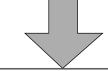
- Creation and provision of documentation with illustrated labels regarding the flammability and oncogenicity (hazards and toxicity) of chemical substances.
   Illustration should include skull symbol or flames, etc., depending of the hazards and toxicity of the substance, as well as handling precautions.
- The system should be implemented by end of fiscal 2006 in the APEC region (stated in the joint statement of the APEC Ministerial Meeting).
- Relevant ministries and agencies are reviewing the current system.
- Chemical industries request the Government to respond to the UN Recommendation.

There are incidents of explosions and fires that occur because the hazards and toxicity of the chemical substances and handling precautions have not been communicated in advance System of labeling and providing documentation based on the Industrial Safety and Health Act

#### Current

The current system does not exactly match the requirements stated in the GHS UN Recommendation in terms of the points below:

- Covers toxicity (oncogenicity, etc.) of the chemical substance only
- 2. Has no illustration



#### Response

The system will be improved to match the GHS UN Recommendation by introducing measures such as:

- 1. Adding hazards of the chemical substances including flammability, etc.
- 2. Creating illustration

# Chapter 4

# Basic Measures for Prevention of Occupational Accidents

### **Establishment of Safety Management Systems** and Vitalization of Safety Management Activities

In order to proceed appropriately with safety management and prevent occupational accidents, it is necessary to establish appropriate safety management systems and to promote voluntary safety management activities in the workplace.

There are different types of desirable safety management systems by industry, scale, production methods, and other factors. It is important that the system should effectively bring out the strength of each enterprise as a whole.

#### Clarification of the Management's Basic Policy on Safety

As it is said that the responsibility for safety management in any workplace rests with the top managers, it is important for top managers to be fully aware of safety management and to lead safety management activities themselves in order to maintain active safety and health activities in the workplace.

For that purpose, it is important for the top managers to show to all the workers in the workplace a positive stance in dealing with safety management by expressing basic thinking on safety and ideals of safety as the basic policy.

When expressing the basic policy, it is important to analyze the current status of industrial accidents in the workplace, the actual circumstances of safety management activities, and the present situation relating to personnel in charge of safety management and expenses as well as examining whether implementing further strategies to achieve the basic policy is justified or not. Moreover, it is essential to adequately take up the views of managers, supervisors, and workers at all levels as well as safety staff and to reflect these views in the basic policy.

### 2. Establishment of a Safety Goal and Formulation of a Safety Management Plan

In order to proceed effectively with safety management, it is necessary to set a safety goal to be reached within a certain period, based on the basic policy on safety management expressed by top managers as well as to formulate a specific safety management plan to achieve a goal.

In establishing a goal and formulating a safety management plan, it is necessary to analyze in detail risk factors in the workplace, past records of safety management plans, the status of attainment of the goal as well as the situations which caused occupational accidents. Problems could be elucidated from such analyses, based on which medium and long-term plans and specific annual plans should be formulated.

The basic items to be incorporated into the safety management plan include, improving the safety management systems, safety activities, improving the safety of machines and equipment, improving the safety of working environments, promotion of safety education and improving work process, etc. It is necessary to indicate as specifically and feasibly possible on each item on when, who and how these are to be implemented.

### 3. Clarification of Responsibility and Authority for Safety

It is needless to say that the responsibility for safety management in the workplace rests with the top managers. However, in order to implement safety management effectively, it is necessary to establish a system which assigns managers and supervisors at each level concerning the safety of workplaces, and to clarify the role, responsibility and authority of each person. This should also necessitate the involvement of the workplace as a whole in the systematic and continuous safety management activities in business or production activities. Moreover, while safety management activities should be carried out in unison with production activities, it is desirable to set up a system in which the production line departments can closely collaborate with the safety staff department. Collaboration includes, for example, that the safety staff department formulate a safety management plan with the cooperation of the production or business line departments, as well as inspections and evaluation of activity to be undertaken by the safety staff department.

### 4. Implementation of Safety Management Activities

In order to smoothly implement safety management activities based on a safety management plan, it is necessary to set details and points to be noted in implementing and managing a safety management plan.

Moreover, for safety management activity to become effective, it is indispensable to obtain the understanding and cooperation of the front-line workers. That requires views and opinions of workers to be reflected in safety management activities. That should ensure all the workers to develop a consciousness that they are participating in safety management activities.

Furthermore, in order to raise and stabilize workers' interest in safety management activities, the role to be played by the manager and supervisor in the workplace is important. It is important for these managers and supervisors to select hazard prediction activity, tool box meetings, safety monitor rotation system and other activities that are suitable for the workplace.

### Promotion of Safety Management Activities Involving Subcontractors' Workplaces on and off the Premises Involved

The shipping industry, steel industry, and chemical industry and the like have a large number of collaborative workplaces within their own premises. And the automobile industry and electric machinery

and equipment makers have many collaborative workplaces outside their premises.

Such sub-contracted workplaces are generally small in scale and often do not implement sufficient safety management activities. For vitalization of safety management activities there, it is important for them to make efforts of their own accord and for parent firms to take the lead in establishing a cooperative organization for the prevention of accidents and, with this organization serving as the core, to give support to them.

- (1) Establishing a consultative group for the prevention of occupational accidents, in which responsible chiefs of both the parent company and the subcontractors participate.
- (2) Compiling a basic plan concerning safety management activities involving the subcontractors.
- (3) Formulating a safety management plan for work in which workers of different subcontractors mix with each other and liaising and coordinating between the work thoroughly.
- (4) Assisting in guidance to safety management activities, such as safety education and ensuring the safety of machines and equipment at the subcontractors.
- (5) Establishing mutual discussion on cases of occupational accidents to prevent occupational accidents that have occurred in workplaces from recurring as well as to offer a variety of information concerning safety.

### 6. Promotion of Safety Management Activities in the Construction Industry

Normally in the construction industry, the workers of a prime contractor and its related subcontractors (specific contractors) intermingle with one another at one and the same construction site to do construction work. This practice is considered one of the factors for the outbreak of many occupational accidents in the construction industry.

In order to prevent occupational accidents at such construction sites, there is a need for the prime contractor, which is in a position to manage and supervise the construction site as a whole, to step up integrated safety management activities, such as the coordination of one job with another, and to promote instructions to the specific contractors.

It is also necessary that the specific subcontractors, who directly engaged in lines of construction work, carry out safety management activities to appropriately fulfill their responsibility under the overall safety management of the prime contractor.

Particularly in the construction industry, it is its characteristic feature that its construction projects are terminable. In order to strive to raise the safety level under this condition, it is important for construction sites, branch and business offices, among others, to closely collaborate with one another in stepping up safety management activities.

# Risk Assessment and Measures Based on the Results

Strategies should be developed to prevent industrial accidents in the following areas: specifying the hazards and toxicity arising from structures, raw materials and work practices in the workplace; estimating the extent of them; examining the substance of risk reduction measures based on the results (hereinafter refered to as "risk assessment"); and implementing reduction measures.

The amendment of the Industrial Safety and Health Act in April 2006 obligates employers to make efforts to implement risk assessment and measures based on it. The basic principles of risk assessment and matters for implementation are set out in the Guidelines for Risk Assessment and, in further detail, the Guidelines for Risk Assessment on Chemicals. Risk assessment regarding machinery and equipment is described in the Guidelines for Comprehensive Safety Standards of Machinery announced in 2001.

#### 1. System and Timing for Implementation, Etc.

Risk assessment must be promoted on the basis of a company-wide system of implementation, which begins with workplace management as safety and health managers and foremen observe their respective duties and further includes engaging workers in the implementation process through such means as utilization of the Safety and Health Committee.

In terms of timing, risk assessment is required when changes associated with work-related risk occur or may occur such as when installing, moving, modifying or dismantling a structure or when adopting new work methods or procedures or when altering work methods or procedures.

When there is a problem with the details of previous accident analysis, it is necessary to carry out another analysis with a risk assessment. Similarly, a risk assessment will be required in the event of wear and tear of machinery and equipment, replacement of workers, and the collection of new information on safety and health.

#### 2. Selecting Subjects and Obtaining Information

The subjects for risk assessment are areas where the occurrence of injuries or sickness is predictable such as work in which industrial accidents have occurred in the past, work which has cases of near miss accidents, and work about which workers always feel uneasy. Areas that clearly could only cause minor injury or sickness, such as walking on a level pathway, may be omitted.

Furthermore, it is necessary to obtain information such as work standards, specifications for machinery and equipment, and MSDS beforehand when carrying out a risk assessment. When the employer cannot collect some of this information himself or herself, it must be obtained from the manufacturers of machinery and equipment and other sources.

#### 3. Specifying Risk

The employer will specify risk related to hazards and toxicity that are latent in the workplace, such as hazardous machinery, toxic chemicals, noise and heat, based on categories designated in advance in accordance with information that includes work standards. Examples of the classifications are set out in the Guidelines for Risk Assessment, but the workplace's own classifications may also be used.

It is also necessary to consider the impact of unsafe practices arising from such factors as night work, hours of non-skilled manual work and fatigue in specifying risk.

 $<sup>^{\</sup>rm 1}$  "Risk assessment" refers to "studies and/or investigations of hazards and toxicity."

#### 4. Estimating Risk

The Guidelines for Risk Assessment specify that risk estimation must take into account the severity of the injury or sickness that may occur as a result of the hazard or toxicity and the degree of possibility that it will occur. However, the risk of chemical substances may be estimated by considering the level of toxicity of the chemical substance and the exposure levels.

Furthermore, an estimation of risk must also give consideration to such factors as clearly predicting the victims and the nature of the injury or sickness and forecasting its severity based on discussion of the most extreme opinion.

### 5. Examining and Implementing Risk Reduction Measures

Risk reduction measures are examined for areas with priority established based on the estimation of risk. Except for when it is considered that the burden required for risk reduction is high in proportion to the effect on preventing industrial accidents due to risk reduction, there is a marked imbalance between the burden and effect, and requiring measures is clearly unreasonable, the examination of risk reduction measures must be implemented in the following order of precedence for high priority areas as much as is possible.

- (1) Measures at the design and planning stage Includes elimination and alteration of hazardous work, substitution of low hazard and low toxicity materials, and changing to safer execution methods.
- (2) Mechanical measures
  Includes installation of guards, interlocks, safety equipment, and local ventilation equipment
- (3) Managerial measures
  Includes provision of manuals, measures to
  prohibit entry, exposure control, and education
  and training

(4) Use of personal protective equipment

This shall be limited to risks that have not been eliminated or reduced despite taking the measures in items (1) through (3).

Further, when the proper reduction of risks that may cause death, after effects, or severe injury will require some time, provisional measures must be taken immediately.

#### 6. Records

When implementing a risk assessment, items of the inquiry work, conclusive hazards and toxicity, estimated risk, established level of priority for risk reduction, and content of risk reduction measures implemented must be recorded and retained until the next risk assessment.

Recording and retention is to provide a reference when the next risk assessment is implemented. When provisional risk reduction measures are implemented, there is a need to carry out appropriate measures afterwards with a view to timing. Therefore, it is also necessary to keep a clear record of what measures have been implemented for which level of priority for this purpose as well.

### Points on the Introduction of an Occupational Safety and Health Management System (OSHMS)

The Guidelines on Occupational Safety and Health Management Systems (OSHMS) were released by the Ministry of Labour (now the Ministry of Health, Labour and Welfare) in 1999. The Guidelines have now been revised in conjunction with the creation of an obligation to make efforts to implement risk assessment under the amended Industrial Safety and Health Act that came into effect in April 2006.

The amended Industrial Safety and Health Act provides for exemption from submission of plans when the chief of the Labour Standards Inspection Office with jurisdiction finds that certain conditions such as the proper implementation of an OSHMS, which includes risk assessment, have been fulfilled.

The effectiveness of OSHMS is recognized in industrial circles and the number of workplaces introducing them is increasing rapidly. Meanwhile, there are opinions in some quarters that methods for introducing an OSHMS are not well understood.

This section provides a simple summary of points on the introduction of an OSHMS.

### 1. Differences with Conventional Safety Management Systems

General safety management systems in the past have tended to put the focus on taking measures so as not to violate laws and regulations. However, with the diversification of processes, there has also been an increase in hazards and toxicity that are not regulated by legislation.

Moreover, although hazard prediction (kiken yochi, or KY) activities, near misses, and daily safety activities such as workplace patrols are conducted, there is no mechanism for taking systematic measures for improvement based on collation of the results and prioritization of improvements for the workplace overall. The lack of such a mechanism leads to differences in strategies taken by departments, leaving the workplace without adequate evaluation of improvements or, in other words, no appropriate

follow up measures. Therefore, there is also a danger that necessary measures could be left out.

An OSHMS aims to promote constant voluntary safety and health activities and improve the level of safety and health in the workplace as the employer establishes a series of processes with the cooperation of the workers. In order to achieve this goal, it is necessary to repeatedly implement the serial PDCA cycle of "establish a plan" (Plan)  $\rightarrow$  "implement the plan" (Do)  $\rightarrow$  "evaluate the outcome of the plan" (Check) $\rightarrow$ "Review and improve based on evaluation" (Act) based on the results of a survey of hazards and toxicity present in the workplace.

Moreover, the establishment of a structure, reflection of the opinions of workers, stipulation and recording must be implemented as fundamental elements that underpin these activities.

#### 2. Points on the Repetition of the PDCA Cycle

(1) The effects of OSHMS do not appear in a short time, but rather the level of safety and health in the workplace improves gradually during the repetition of the PDCA cycle.

Therefore, with regard to workplace management, involvement at each important point in the PDCA cycle while eliminating factors that lead to injuries is key to the smooth operation of the system following the top management's statement of the basic management philosophy on safety and health and the clarification of the stance on safety and health. Top management should avoid hasty pursuit of OSHMS results alone.

- (2) It is important to steadily promote the risk assessment that is a requirement of an OSHMS. The method of proceeding should be based on section 2, "Risk Assessment and Measures Based on the Results."
- (3) In order to put a safety and health plan into practice, the appointment of the respective people in charge and the clarification of their responsibility and authority as well as a mechanism

for following up on the results of plan implementation are needed. It is effective to take advantage of the safety and health committee if one has been established in the workplace.

(4) Finally, it is necessary to perform periodical auditing of the OSHMS to determine whether the system is running without any problems. The system auditing is in principle conducted by a person from within the workplace, and the role necessitates making statements that may be disagreeable to colleagues. From a long-term perspective, however, it is certainly helpful in improving the level of safety and health in the workplace. Therefore, it is important for the workplace management to establish an environment that facilitates the activities of auditors, such as explaining the role of the system auditors to the people concerned.

#### 3. Avoiding Pitfalls

#### (1) Isn't an OSHMS for major corporations?

An OSHMS is basically a system that is transferable from conventional safety and health management activities. Many workplaces that have already implemented an OSHMS have created their systems by adding areas related to risk assessment and evaluation and improvement onto their existing safety management activities.

The Ministry of Health, Labour and Welfare guidelines only indicate the framework for the mechanism, assuming that concrete systems will be created to suit the actual circumstances of the workplace.

Therefore, even small and medium-sized workplaces can realize the creation of a system by starting at a reasonable level taking account of the accumulation of existing safety and health activities and the structures for promotion and gradually enhancing the details through the repetition of the PDCA cycle.

### (2) Isn't documentation in an OSHMS burdensome?

The documents that are required to be prepared under OSHMS guidelines are all useful

documents that are needed in the promotion of daily safety and health activities. Amid the changing shape of corporations, including spin offs, the diversification in forms of employment, and the greater mobilization in employment of recent years, it is important to specify such areas as safety and health management activities, thus making it easier to transmit skills and processes when the person in charge changes, in order to reliably pass on safety and health expertise and experience. Moreover, specification also has the advantage of facilitating the detection of problems and weaknesses.

If, despite this, it is felt that documentation is a burden, it should be checked whether the content of documents diverges from daily safety and health activities.

#### (3) Isn't the objective to lower the risk "score"?

Being obsessed with lowering the "average score" for the size of risk, making the evaluation that "risk has been lowered" through the raising of awareness despite failing to implement risk reduction based on radical strategies, and taking priority measures for areas that are easy to improve lose sight of the true form of risk management.

In the event that "there is no decrease in the number of accidents although the average risk score has fallen," it should be checked whether individual risk strategies are being implemented effectively.

## (4) Couldn't we copy a system that has been effective at another workplace and introduce it as is?

An effective workplace system is one that has been created to suit the actual circumstances of the workplace over a long period of time, and it is not necessarily universally applicable.

When using positive examples as a reference for the supplementation of areas of inadequacy in the safety management activities that have been conducted in the workplace in the past, it is important to revise the details to match the actual circumstances of the workplace based on the results of surveys of hazards and toxicity and internal inspections.

# **Upkeep of Safety in Planning** and **Designing Phases**

A check of the causes of occupational accidents reveals that quite a number of cases occurred by the obvious lack of safety consideration in the initial phase of planning or designing machinery, equipment or work procedures, such as carrying loads exceeding the maximum capacity or digging natural ground without taking measures to prevent landslide.

To prevent such accidents, it is important to detect risk factors in the workplace, take countermeasures and diminish the accidents' potentialities as low as possible.

In the construction of new machinery, equipment, plants, among others, it is well known as a safety assessment to fully check the possible risks and make a qualitative and quantitative assessment of safety. Therefore, it is important to take safety measures on the basis of these valuable findings of safety assessment.

It is necessary to make a safety assessment systematically in cooperation with not only inhouse planners and designers but also personnel responsible for production management and safety management as well.

### 1. Safety Assessment for Construction of New or Additional Plants

There were cases in which, as preference had been given to productivity over safety in the designing of a new plant, an occupational accident took place after the plant had been put into operation. Failures included insufficient assurance of safety passes or not taking measures to prevent the explosion of raw materials.

Also in the case of plant buildings which house large equipment, it would sometimes be difficult to do renovation work satisfactorily due to location problems, economics and other factors, even if some safety problems are discovered after the plant has been completed. To avoid these problems, it is important to make a prior safety assessment.

The Guidelines for Chemical Plant Safety Assessment released by the Ministry of Health, Labour and Welfare provides one of the prior assessment methodologies when plants are to be newly or additionally constructed. It is desirable to utilize the Technical Guidelines on Conveyor Safety, the Technical Guidelines on the Safe Use of Industrial Robots, which have been released as technical guidelines.

Some examples of the items which are to be assessed in effectively making a safety assessment when plants are to be newly or additionally built are given below.

#### (1) Surrounding conditions of workplaces

With respect to equipment with particularly high potential risks, such as chemical equipment, make sure to leave necessary space between equipment so that the damage may not spread to other equipment around the workplace whose equipment is involved in an accident. Also, make sure to have evacuation site/shelters for the workers.

#### (2) Location of buildings or equipment, etc.

- a. Make sure that the structure of each floor and the location of main equipment in the building are so arranged as to assure an orderly flow of raw materials, products and the like.
- b. Make sure that adequate space is set around machinery and the like and at places to store raw materials and products.
- c. Make sure that consideration is given to the prevention of damage from explosions, fires and the like from spreading to other workplaces.

#### (3) Characteristics of raw materials or products

Make sure that appropriate safety measures are taken into account with the characteristics of raw materials or products. Also, make sure that the temperature, pressure and other factors at the time of production are fully taken into consideration in a safety perspective.

#### (4) Work safety in the production phase

Make sure that work safety in the production phase is taken into full account during regular working hours and also irregular working hours, such as due to a mechanical breakdown.

### (5) Equipment and methods for prevention of occupational accidents

Make sure that safety devices, explosion-proof electrical apparatus and appliances and the like are right and proper. Also, make sure that the emergency warning system is appropriate and a life-saving system is established.

#### 2. Safety Assessment for Construction Work

It is obvious that there have been more than a few occupational accidents in the construction industry which broke out without a full advance safety assessment in the planning phase or without necessitated full safety measures.

Therefore, there is the need to fully carry out safety measures before start of construction work, such as in the surveying and designing phases and in the construction planning phase.

The Industrial Safety and Health Act stipulates that construction firms shall have persons with specified qualifications take part in the formulation of construction programs for such specified construction projects as the construction of tunnels and the like and the installation of scaffolds, etc.

A specific example of the steps by which a safety assessment is made for construction work is given below.

#### (1) Collection of basic data

Basic data necessary for an assessment of safety, such as topographic maps, geologic maps, papers on meteorological surveys, literature for designing, records on similar construction projects and the like will be collected.

### (2) Study of safety measures for basic construction systems

Safety measures for construction management systems, construction methods and other basic

matters for construction systems will be checked and if need be, the construction plans themselves will be revised.

#### (3) Ranking of degrees of danger

With respect to accidents peculiar to construction work, the degrees of danger will be checked and ranked.

### (4) Study of safety measures counterbalancing the degrees of danger for accidents peculiar to construction work

The safety measures that counterbalance the degrees of danger of accidents peculiar to construction work will be studied, and the construction plans will be assessed and examined. If need be, rules for management in case of emergency or the like will be formulated.

Incidentally, the Ministry of Health, Labour and Welfare has released safety assessment guidelines for the following types of construction work:

- a. Mountain tunnel construction work
- b. Work with air compressed shields
- c. Work with air compressed caissons
- d. Steel-bridge construction work
- e. Prestressed concrete bridge construction work
- f. Pipe jacking work
- g. Work with shield machines

### Safe Machinery and Equipment

### 1. Outbreak of Occupational Accidents Caused by Machinery and Equipment

A wide variety of machines and equipment are used at industrial worksites. Many of these machines and equipment are operated by electric power, or internal combustion engines, or other engines. As they have enormous energy internally, once an accident takes place, there is a fear of bringing about disastrous damage.

Occupational accidents caused by machines and equipment accounts for about 30% of accidents entailing deaths and injuries. In addition, occupational accidents caused by woodworking machinery and power-driven presses leave many victims with prolonged disorders. The nature of occupational accidents due to machines and equipment has become serious.

Looking at the causes of accidents involving machinery and equipment, accidents entailing deaths and injuries are most often caused by power-driven conveyor equipment, power-driven machinery in general and metalworking machinery, and woodworking machinery, in that order. Severe accidents are mostly caused by power-driven conveyor equipment, construction machinery, power-driven cranes, and power-driven machinery in general in that order with many serious accidents occurring as result of moving equipment or equipment that transports heavy objects such as trucks, cranes, construction machinery. (Refer to Figure 10 in Chapter 2, "Current Status of Industrial Accidents.")

### 2. Preventive Measures against Accidents by Machinery and Equipment

It is important to take the following measures to prevent accidents attributable to machines and equipment:

- (1) To make machines and equipment themselves safe
- (2) To install machines and equipment in an appropriate condition

- (3) To maintain the appropriate capacity of machines and equipment
- (4) To operate them in safe ways
- (5) To have workers with full knowledge and skill do work

It is possible to seal in dangers arising from machines for those that could be placed in a certain set position by completely separating the machines with operators. In such a case, the required measure is to ensure the safety of the machines and equipment themselves.

Specifically, reference should be made to the "Guidelines for Comprehensive Safety Standards of Machinery" issued in June 2001.

#### (1) Safer machines and equipment

It is possible to specify the usage of machines and equipment during the designing and manufacturing phases, and possible risks can be guessed. Therefore, it is important to take measures against the potential risks during the designing and manufacturing phases. It is necessary to take safety measures based on a risk assessment.

When conducting a risk assessment, it is necessary to specify the conditions of use of the machinery. At this time, circumstances such as the response to breakdowns, inspections, repairs, and predictable misuse must be considered over the entire period from the installation through to the removal of the machinery and equipment.

If risk has not been appropriately reduced as a result of the risk assessment, safety measures shall be taken in the order indicated below.

- a. Eliminate the hazardous sources implementing intrinsically safe design.
- b. Take safety measures by installing safeguards and additional safety devices.
- c. Employers installing the machines and equipment will provide information on remaining risks to reduce them through warning indications by compiling information on usage and providing information for safe usage in handling manuals.

At this time, intrinsically safe design in item "a" includes methods such as:

- Limiting stress to prevent hazards due to breakage of machinery
- Paying attention to ergonomic considerations to reduce operational errors and the burden accompanying work
- Ensuring that hazards do not arise despite breakdowns in control circuits (fail safe design)
- Facilitating work from outside the range of operation of machinery and equipment to allow servicing, including inspections and repairs, to be conducted safely and easily.

Moreover, the safety measures in item "b" include the installation of safety equipment such as individual safeguards, moveable safeguards and adjustable safeguards as well as photoelectric safety equipment, and the maximum range of moving parts must be considered when they are installed.

#### (2) Safety in the phase of installation

When introducing machinery and equipment into the workplace, a risk assessment on the introduction of new machinery must be conducted with reference to residual risk information, including the instruction manual provided by the manufacturer, and additional safety measures must be taken when necessary based on the results. The safety measures in the installation and its subsequent phases consist of the installation of safety fences and the provision of an appropriate operation space around them, including inspection, repairing and maintenance operations as well as ensuring of machinery safety.

### (3) Upkeep of the performance of machinery and equipment

Machinery and equipment deteriorates and gets damaged with use. In addition, some machinery is made with safety equipment to be removed when the set up is changed. In order for machinery and equipment to maintain the required performance and to ensure that the necessary safety measures have been taken, regular inspections and pre-work examinations shall be conducted, and it will be necessary to carry out repairs if there is any damage.

Furthermore, risk assessments shall be repeatedly conducted regularly or when there is a change in work methods or when an accident has occurred, and it will be necessary to carry out improvements in accordance with the circumstances.

#### (4) Upkeep of proper work methods

For the safety of machinery and equipment, it is indispensable to operate and manipulate them in a proper manner. For this, it is necessary to update the work standards, clarify what are the proper and safe work methods, brief the workers on the methods and have them master the methods. Particularly in the case of measures to cope with breakdown and other mishaps, the methods are unaccustomed ones so that erroneous methods are apt to be adopted. Here, it is important to prepare work standards. It is also necessary to provide required protection equipment and to ensure the thorough understanding of their usage.

### (5) Upkeep of the knowledge and skills of workers

It is necessary that workers who have full knowledge and skills with respect to machinery and equipment and work methods, among others, should operate and manipulate them. For this, it is only natural that legally qualified workers should do the operation and manipulation. It is also important to provide education and training so that they may have full knowledge and skills, to say the least of the work standards.

In these education training programs, it is necessary not only to teach operation methods of these machines and equipment, but also to give knowledge, which is provided by the makers, on the remaining risk of the machines and equipment, and other necessary knowledge to ensure that foreseen erroneous usage does not take place.

# **Establishment of Appropriate Working Methods**

#### 1. Need for Safe Work Manuals

In order to do work on the principle of safety first, it is important to make necessary improvements, such as by making safety of machines and equipment and construction methods, among others, adapting them to workers and studying the flow and substance of work from a safety perspective.

Furthermore, it is important to strive for the prevention of accidents and other troubles by determining safe work methods with consideration given to human errors and other factors and following the methods.

Normally, work is done while human beings come in contact with machinery, raw materials and other things (including workplaces). Many accidents and other troubles occur with causes attributable to both human beings and objects. Occupational accidents may be grasped in terms of the relations between the "unsafe conditions of objects" and the "unsafe actions of human beings." These relations naturally affect products' quality and productivity and also work efficiency.

Human beings take complicated actions that are not always accurate, unlike machines designated to do expected actions. When an accident has broken out, the causes are checked so as not to repeat the same mistakes. In such eventualities, victims often make up excuses, such as "I've done so-and-so by mistake" and "That accident has occurred despite so-and-so." A more elaborate check on those justifications reveals that there are many cases, such as a lack of appropriate perceptional judgment, misconception and errant arrangements, as is discernible from such excuses as "I didn't know that," "I forgot all about that," "I didn't think something was wrong" and "I just ignored it."

Whether those human errors may be tied in with accidents or the production of defective goods or physical damage depends largely on the work methods. People sometimes take an erroneous action, and machines sometimes break down. With

those factors in mind, it is important to do work according to the reasonable work methods determined in work manuals.

Desirably, safe work manuals should be edited with attention paid, in particular, to the following work: the operation and manipulation of machines and equipment which keep up with changes in work methods that have come out of the technological innovations, the handling of raw materials and the like, matters relevant to manipulation in case of emergency, handling of heavy goods, and operations which are difficult to mechanize or automate such as the inspection and maintenance of machinery.

#### 2. Preparation of Safe Work Manuals

In preparing a safe work manual, it is important to keep the following matters in mind.

(1) Referring to accidents or cases and experiences in which there could have occurred an accident, first, a manual will be compiled with priority given to dangerous states of affairs with respect to working actions or the types of work in which an accident is likely to break out. Here, it is important to take up not only regular work but also non-regular work, such as troubleshooting.

In regard to chemical equipment, iron ore production equipment and automated production systems, it is desirable to make effective use of the guidelines released on safety and health measures in their respective non-regular work.

(2) Depending on the workplace and job, the types of work will be subdivided into three levels: work to put things in order, unit work and factor-specific work. The types of work that should be taken up in the safe work manual will be chosen.

As there are cases in which a manual is required not only in the safety phase but also from quality control and other perspectives, it is advisable to create a unified manual that incorporates those viewpoints.

(3) The matters to which attention ought to be paid will also be incorporated, centering on those actions which have something to do with work, and the types of work sorted out, while coming up with various ideas.

Then, referring to the movements of skilled workers, workplace supervisors and the same level personnel along with workers will document the following matters in chronological order, such as preparations for work, handling of relevant machinery, equipment, tools and so on, and the peripheral conditions, among others. And then, they will check the order of movements, unnecessary movements, and the speed, rhythm and posture of each movement.

- (4) Attempts will be made to clarify the matters that must be checked and confirmed, such as the movements which may become dangerous without such confirmation, those that should become safer with it, those which should become difficult to do and unpredictable without it, and those that should become accurate and efficient with it, among others.
- (5) With the words, illustrations, layouts and the like made clear at a glance work can easily be done if those instructions are followed a safe work manual will be drafted. Try to contain descriptions about one type of work within the scope of one page.

### 3. Approval and Observance of the Safe Work Manual

Related persons along with workers will check the safe work manual thus drafted. It will be made concise and easy to understand, while coordinating with the safety and health staff and related divisions. Finally, the chief to whom those workers belong will approve and enforce it.

If need be, in-house or outside experts will be invited to take part in the evaluation of the drafted safe work manual so that its contents may fully assure safety in technical terms.

In implementing the safe work manual, it is necessary to conduct thoroughgoing education till workers become accustomed to it and put it into practical use. In particular, thorough education and training must be provided to workers who are unaccustomed to their assignments, such as the newly employed and those who have been transferred from other workplaces.

#### 4. Review of the Safe Work Manual

It is necessary to check how the safe work manual is abided by. In cases where the work conditions have changed or an accident has occurred because of work movements, it is also important to review and, if necessary, amend the manual.

Meanwhile, it is necessary to see to it that accidents do not occur because workers have lost their bearings or remain unaccustomed because of changes to the work methods.

### **Enrichment of Safety Education in Each Phase of Occupational Life**

#### 1. Necessity of Safety Education

Safety education is conducted to provide workers with necessary knowledge about safety for their work so that workers can safely engage in their work and fulfill their duties and responsibilities. The education is indispensable in the sense that it prevents occupational accidents, as well as measures to make machines and equipment safe and to establish appropriate working methods.

For that reason, when carrying out safety education, it is necessary to adequately determine the trainees, the content, and the duration depending on the each worker's assignment.

It is indispensable to provide in-house safety education, to be sure, however, depending on the workers covered and the content of a specific safety education, there is also the need to commission it to outside experts and specialized teaching institutions.

And then, conveying the top manager's enthusiasm and fundamental belief in occupational safety to workers will produce a positive impact on the workers' thought and behavior as well as increase the safety awareness of each worker. Thus, it is hoped that top managers will make efforts to convey

their ideas to workers at all occasions, including at the time of safety education or during the National Safety Week.

#### 2. Types of Education

The types of education programs that must be carried out by employers consist of the following: (1) education when hired, (2) education when changing jobs, (3) special education, (4) foremen training, (5) regular training for workers engaged in dangerous and harmful operation, (6) skill improvement training for safety supervisors and persons engaged in providing safety and health services, and (7) health education under the Industrial Safety and Health Act. In addition to those mandatory types of education, employers are highly recommended to provide the types of education listed in the table below.

The operating procedures made public for safety and health education are listed in the "Safety Education Program List Based on Occupational Safety and Health Education System with Publicly Released Operating Procedures" in Reference Materials 7-3.

	Those covered	Type of education
(1)	Workers who engage for the first time in dangerous and harmful work that corresponds to dangerous and harmful work (subject to restricted work and special education)	Education that corresponds to special education
(2)	Those engaged in dangerous and harmful work (subject to restricted work and special education)	Hazard awareness refresher training
(3)	Those engaged in dangerous and harmful work or tough work	Education for advanced aged persons upon reaching around 45 years old
(4)	Foremen, etc.	Education that corresponds to skill improvement training
(5)	Operation leaders	Education when nominated
(6)	Safety and health controllers	Education when appointed
(7)	Traffic safety supervisors	Education when appointed
(8)	Those engaged in special voluntary inspections	Training similar to skill improvement training
(9)	Managers of production/construction, design and engineering	Technical education
(10)	Senior managers	Safety and health seminar
(11)	Others  • Safety and health specialist  • Seasonal workers, workers dispatched overseas	Work enhancement training Education prior to dispatching, etc.

#### 3. Implementation of Education

In the process of education, it is necessary for employers to systematically provide it and strive to enhance its substance, etc., according to the following procedure.

#### (1) Preparation of education programs, etc.

For each type of education, an annual implementation plan will be formulated to define the trainees, dates of enforcement, places of enforcement, lecturers, teaching aids and so forth. In order to continuously provide education throughout the working lives, it is desirable to formulate long- and medium-term education programs.

#### (2) Filing of results of implementation

When education is provided, the results will be posted in ledgers, etc., and kept on permanent files.

### (3) Selection of personnel responsible for implementation

Personnel responsible for implementation will be chosen with respect to the formulation and implementation of programs and the documentation of results.

#### (4) Enrichment of the curriculum

In order to enhance the substance of education, the following points will be taken into account with respect to lecturers, teaching aids and so forth.

- a. The lecturers must be equipped with knowledge and experience in regard to the pertinent lines of work and also with knowledge and experience as regards teaching methods.
- b. The teaching materials must fully satisfy the substance of the curriculum as well as have specific examples that reflect actual occupational accidents. Video, OHP and other audiovisual aids must be put to effective use.
- c. Teaching methods include a discussion method in which trainees may be able to directly involve themselves, such as case studies and studies on given themes, in addition to lectures.

#### (5) Use of Safety and Health Education Centers

The central government has established safety and health education centers to elevate the standard of education. The management of centers is entrusted to the Japan Industrial Safety and Health Association and the Japan Construction Safety and Health Association. Education centers hold courses for the training of persons who will become lecturers. The effective utilization of centers, as the occasion may demand, will pave the way for effective education.

### (6) Use of Japan Advanced Information Center of Safety and Health

Given the decline in occupational accidents in a long-term perspective and in workers who experience occupational accidents, it is apprehended that individuals' susceptibility to safety and health may degrade. In particular, it is pointed out that there is the need to enhance the interest of the young generation in safety and health.

The Japan Advanced Information Center of Safety and Health is equipped with facilities where near-miss cases in the workplace may be experienced with three-dimensional images (3D). They also have those 3D facilities where dangerous states and accidents that workers cannot experience in normal circumstances may be virtually experienced thanks to virtual realities produced by computer graphics. Those facilities are designed so that safety education can be effectively conducted to raise consciousness about safety and the importance of danger prevention.

Moreover, such information as occupational accident cases, near-miss cases, and fine examples of innovations and improvements in machines and equipment and working methods is provided online at http://www.jaish.gr.jp. It can be used as a text for safety education.

### **Enhancement of Voluntary Safety Activities by Labor and Management**

### 1. Importance of Voluntary Safety Activities by Labor and Management

It is a matter of concern that safety consciousness may relatively decline and businesses' safety management activities become stagnant in the current strained economic environment.

In order to build up an accident-free, safe environment in such circumstances — instead of labor and management blaming each other — there is the need:

- (1) For the management to become clearly aware that the maintenance of worker safety is their own responsibility and is a cost necessary for the management of their businesses, and to develop safety activities in an aggressive manner after expressing their determination to prevent occupational accidents.
- (2) For each one of the workers, on the other hand, to realize that safety is not something which is given by someone else but may be secured at their own effort and to positively involve themselves in the problems that concern safety.

With this understanding, it is important to maintain and raise the safety level for the prevention of occupational accidents, while top management introduces a clear policy for the prevention of occupational accidents, streamlines the safety management systems and aggressively executes safety management activities, while managers and supervisors at each echelon of the managerial hierarchy and each one of the workers constructively take part in the establishment and implementation of safety measures and fulfill their own roles.

#### 2. Activation of Safety Committee, etc.

It is stipulated in the Industrial Safety and Health Act that a safety committee or a safety and health committee (safety committee, etc.) shall be established as a forum for labor and management to investigate and deliberate on the matters which are pertinent to the maintenance of safety in the workplace. The safety committee, etc., are the institutions that should serve as the crux for the involvement of workers.

The safety committee, etc., are legally obligated to meet at least once every month, investigate and deliberate on the basic measures to prevent occupational accidents, causes of occupational accidents and the measures required for the prevention of any recurrence of occupational accidents, among others, and express its views to employers. According to the basic survey on occupational safety and health made by the Ministry of Health, Labour and Welfare in 2000, 74.2% of the workplaces had safety and health committees of their own. The subjects covered in this survey included workplaces that are not obligated to have safety and health committees of their own, but the frequency of their holding meetings is not necessarily satisfactory.

A check on the management of safety committee, etc., indicates the existence of cases where full deliberations are not conducted, and the activities of the safety committee, etc., become stereotyped, thus decreasing safety awareness of labor and management.

Given this situation, it is necessary for each workplace to take another look at the activities of the safety committee, etc., and improve those activities so that the committee will fulfill its original function. For this, it is important for the top management to show that they have high hopes for the operation of the safety committee, etc., for officials in the highest echelon of the corporate hierarchy, such as the general safety and health managers, to attend meetings without fail, for the safety committee to set aside ample time for deliberations, have committee members realize the importance of their work, and translate into action whatever matter the committee has decided.

Even for small workplaces, which are not legally obligated to establish a safety committee, etc., it is stipulated that a committee meeting and the like on safety be opened or a round-table conference held. It is important to take advantage of such a meeting in stepping up safety management activities.

#### 3. Use of Information on Occupational Accidents

When an occupational accident has unfortunately broken out, it is important to learn lessons from it and use the lessons to enhance safety consciousness, and the emergence of significant effects may be anticipated because workers can think about accidents at a close distance.

For this, there is the need not only to assign responsibility but to thoroughly ascertain the causes — that is, the accident could have been prevented if such-and-such had been done by whom, when, where and how — and to formulate measures according to the realities of the workplace.

Near miss cases, in which workers feel a sudden fear or are taken aback even though they fall short of being accidents, will prove to be extremely effective in attempts to detect latent risk factors in the workplace and studying measures for the prevention of occupational accidents.

For this, it is important that near miss cases as well as occupational accidents may be unexceptionally reported to the management in each workplace. It is also important to utilize not only the cases of the corporation's own but those of other firms in the same line of business which are released by organizations for the prevention of occupational accidents or industrial associations.

The Japan Advanced Information Center of Safety and Health (JAISH) (under the management of the Japan Industrial Safety and Health Association), which opened in January 2000, offers examples of occupational accidents and near miss cases through the Internet (http://www.jaish.gr.jp). It is instructive to utilize the information from the center.

### 4. Utilization of Systems of Safety Proposals and Safety Monitor Rotation, Etc.

There are cases in which risk factors in the workplace may be detected by learning about the knowledge and experience of workers at conferences and other meetings, because it is the worker at each worksite who is thoroughly acquainted with the work. For this, the establishment of a safety proposal system will be extremely effective in the prevention of occupational accidents.

When a safety proposal system is to be established, it is necessary to make sure not to neglect translating safety proposals into action, while workers compete with each other over who makes the most safety proposals.

In order to enhance workers' consciousness about involvement in safety activities and to assume the responsibility for safety, one effective method will be to institute a safety monitor rotation system in which each worker is given a role to make a safety patrol, make a speech on safety at the morning meeting, and take other measures.

### Hazard Prediction Activities, Morning Meetings for Workplace Safety, and Tool Box Meetings

Routine activities, such as hazard prediction activities, morning meetings for workplace safety and toolbox meetings, are very effective in eliminating unsafe actions of workers and enhancing their consciousness about safety.

Firstly, the hazard prediction activity KYK (kiken yochi katsudo) is a basic technique to find, recognize and solve hidden hazards in the workplace by a small group. This technique encourages discussion of problems and mutual understanding among the group by using illustration sheets that describe various situations in the workplace and work, and through actual work experience in which the group works at an actual site or sees other workers work at the site. The technique also employs the Point and Call method, whereby concentration is elevated through a process of finger pointing and calling out potential workplace risk points and matters to be focused on.

Secondly, the morning meeting for workplace safety is a gathering where the workplace leader gives instructions on the day's work and on safety before the start of the day's work. The meeting is effective in showing the leaders' posture toward safety. However, favorable effects cannot be anticipated from abstract statements, such as "be careful, and don't get injured," at the morning meeting. There is the need to make specific statements so that workers may be able to know what they should do, such as by telling them "such-and-such danger should come out if you do such-and-such."

Thirdly, the tool box meeting is usually held for 15 minutes before the start of the day's work, which is fit to be done at the level of a smaller scale unit than the morning meeting. At this meeting, the foreman discusses with his or her workers about the day's work schedule, arrangements and work assignments. The foreman also gives instructions on important points for each worker and what should be taken into account when there are hazardous operations.

Furthermore, mental preparedness for safe work may be made through a discussion among team workers.

### 6. Introduction of an Occupational Safety and Health Management System (OSHMS)

In order to continuously raise the standards of safety and health in the workplace, an effective method will be the adoption of an Occupational Safety and Health Management System (OSHMS), which is designed to encourage employers to engage in continuous and voluntary safety and health activities in the PDCA cycle (Plan-Do-Check-Act). The basic procedures required for the adoption of such a system are incorporated in the Guidelines on Occupational Safety and Health Management Systems (Ministry of Labour Notification No. 53, April 30, 1999).

### **Safety Measures for Elderly Workers**

### 1. Necessity of Safety Measures for Elderly Workers

Japan is rapidly turning into an aging society, and the percentage of elderly workers in the nation's working population is rising at a fast pace. The rate of workers over the age of 50 in the working population stood at 32% in 2003.

Further, occupational accidents tend to occur more frequently among elderly workers compared to younger workers. Annual accident rates per 1,000 workers by age category are shown in the figure. The rate for workers in their fifties is about 1.6 times as high as that of workers in their thirties, and that among workers in their sixties is even higher. As a result, workers over 50 accounted for 41.8% of all occupational accidents that involved deaths and injuries requiring absence from work of four or more days in 2003. Besides, there are signs that, when they have fallen victim to occupational accidents, their symptoms become graver than those of younger workers.

Under such circumstances, it is necessary for elderly workers to be able to use their abilities without losing their vitality. This has become very important not only for the elderly workers themselves but also for the vitality of businesses and society as a whole.

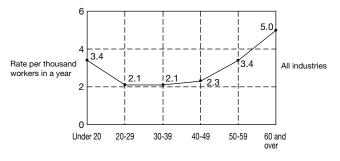
In general, elderly workers have ample knowledge and experience, and discernment and leadership with a good grasp of entire business operations. On the other hand, they constitute one of the causes of occupational accidents, as their mental and physical functions deteriorate with age.

As the aging of the working population goes on at a much faster pace in the future, it is one of the most important tasks to prevent elderly workers from being involved in occupational accidents. It is necessary to take measures, such as the improvement of machinery and equipment, working environment and work methods, the maintenance and promotion of health, creation of a comfortable

working environment and education on safety and health. These should be implemented with due consideration to deterioration of their mental and physical functions with age as well as to their reactions to new machinery and technology and communication with young workers. Moreover, when taking these measures, it is important to keep in perspective that these measures also cover younger workers rather than concentrating only on elderly workers.

Given these circumstances, comprehensive guidelines for the prevention of occupational accidents are presented, including basic knowledge about the deterioration of elderly workers' mental and physical functions and the examples of specific improvements. The guidelines come in two types: one for the manufacturing industry and the other for the construction industry. However, the basic concepts and the examples of improvements are usable also by other lines of business. It is desirable to make effective use of the guidelines and promote inspections and improvements in the workplace.

### Annual Accident Rates per 1000 Workers by Age Category (Requiring an Absence of 4 or More Days) (2003)



Sources: Labour Force Survey, Statistics Bureau, Ministry of Internal Affairs and Communications Report of Workers' Casualties, Ministry of Health, Labour and Welfare

#### 2. Work in Need of Improvements

In order to prevent elderly workers from getting involved in occupational accidents, it is necessary — in light of their degenerating mental and physical functions and the analyses of the factors for occupational accidents involving them — to improve those types of work shown in the table.

In regard to those types of work, some of the measures enumerated in the Guidelines for the Prevention of Elderly Workers' Involvement in Occupational Accidents (Edition for the Manufacturing Industry) are cited below:

#### (1) Prevention of falls to a lower level

- a. Replace work in high places with ground-based work as much as possible.
- b. Replace vertical ladders with staircases.
- c. Improve work steps.
- d. Use elevated work platforms (vehicles).

#### (2) Prevention of falls on the same level

- a. Eliminate differences in levels, which cause stumbling.
- b. Implement measures to ensure that the work floor is not slippery.
- c. Wear non-slip shoes.

### (3) Improvements in the handling of heavy objects, etc.

- a. Use handcarts, etc.
- b. Improve the dimensions and weight of lots for carriage.
- c. Use power-driven carriers for hoisting and carriage.

#### (4) Improvements in work postures

a. Improve work in forward bending and other postures with the use of devices, worktables and the like, and changes in the points of operation and work methods

#### (5) Aid to visual acuity and hearing ability

- a. Upgrade the work-lights.
- b. Use simplified and magnified descriptions on the work instruction slips, diagrams, etc.

## (6) Reassignment of elderly workers to duties in need of knowledge and skill (indirect response)

- a. Adopt dialogue-type ME equipment to respond to new technology.
- b. Give life to knowledge and experience as skilled technicians in the divisions of trial production and designing.

### (7) Enrichment of health management measures (indirect measures)

- a. Give guidance on health promotion.
- b. Come to grips with health conditions, in meetings and the like.

### Work in Need of Improvements for Elderly Workers

- Work in high places where falls to a lower level may occur (Including work for which ladders, stepladders, etc., are used)
- 2. Work at the risk of falls on the same level
- 3. Work in need of the handling of heavy objects
- 4. Work in need of sudden movements
- 5. Difficult work postures (such as half-sitting and upward-looking postures)
- 6. Work in need of a powerful sense of sight in poorly lighted places
- 7. Complicated work
- 8. Work particularly in need of quick movements with accuracy
- 9. Work in need of the ability to distinguish fine objects
- 10. Work to be pressed for time (such as work with the conveyor-belt system)

# 10 Promotion of Safety Activities in Tertiary Industry

### 1. Actual State of Occupational Accidents, Etc., in Tertiary Industry

As a result of the progressive development of a service economy in Japan, the number of workers employed in tertiary industry (excludes passenger transport, overland cargo transportation, and stevedoring at ports and harbors) has risen and stands at about 60% as a proportion of workers in all industries. In addition, the proportion of elderly workers employed has also risen.

Meanwhile, looking at the incidence of industrial accidents in tertiary industry, the number of casualties requiring at least four days off work stands at about 30% of the number of casualties in all industries. Moreover, in comparison with other industries, tertiary industry is marked by a high proportion of accidents such as falls on the same level, reaction or reckless movement, and traffic accidents, and there is a high proportion of injuries to elderly workers compared to other industries.

Furthermore, it is considered that inadequate safety measures in response to the mechanization of work, qualitative changes in business lines such as the diversification of services, and diversification in the forms of employment such as the increase in the number of part-time workers in a number of industries such as wholesale and retail lie behind the incidence of accidents in tertiary industry.

### 2. Features of Occupational Accidents by Line of Business

The features of occupational accidents in typical lines of business in tertiary industry are as follows:

#### (1) Merchandise retailer

a. Particularly in large-scale retail business, many accidents occur, such as when merchandise is taken out or cleared, when merchandise is handled and carried, and when workers are walking on the premises. b. By type of accident, there are many accidents where workers fall on the same level, get cut or suffer abrasion, and recklessly move and react.

#### (2) Building maintenance business

- a. There are many cases in which workers tumble while working on slippery floors or taking a walk.
- b. There are many falls as the workers slip down from ladders and stepladders.
- c. The rate of workers over 50 involved in accidents is higher than in other industries, accounting for more than 70% of accidents.
- d. Many accidents occur while workers are wiping the window by the use of a gondola or some other devices.

#### (3) Security business

- a. In patrolling facilities and the like, there are many falls to the same level and falls to a lower level.
- b. There are also many accidents which occur while guiding vehicles on the construction site of buildings and roads.
- c. The rate of accidents involving workers over 50 is high, accounting for about 50% of cases.

#### (4) Hotels

- a. There are many cases in which workers slip and fall in a passage or some other places and in which they make a false step and fall from staircases. Those accidents are followed by reactions or reckless actions, and cuts and abrasions.
- b. By type of work, cooking comes on top of the list as a factor responsible for accidents, followed by the accidents that take place while workers are waiting on customers, making preparations in the banquet hall and setting tables.

#### (5) Golf courses

- a. There are many accidents involving caddies. Of them, there are many cases in which workers are hit by flying golf balls and fall on the golf course.
- b. When it comes to the maintenance and management of golf courses, many accidents are caused by lawn mowers and take place while workers engage in ground's maintenance and so on.

#### (6) Fuel retailer

- a. Falls on roads and floors are many. Many traffic accidents also occur while vehicles are used or guided.
- b. By type of work, many accidents break out when cylinders and other merchandise are delivered or carried.
- c. Young workers are involved in many accidents.

#### (7) Furniture and furnishing retailer

- a. Many traffic accidents take place while furniture and furnishings are being delivered.
- b. There are many falls from staircases and load-carrying platforms, when merchandise is taken in or out.
- c. In the positioning of merchandise, there are many accidents in which the hand is caught in or cut by a tool.

### 3. Promotion of Preventive Measures against Accidents in Tertiary Industry

In order to prevent occupational accidents in tertiary industry, it is necessary to formulate and implement preventive measures against accidents, which reflect the realities of various lines of business, while referring to the safety management methods that have thus far been employed by the manufacturing and other industries.

For promotion of specific safety measures in tertiary industry, it is desirable to make effective use of the guidelines for prevention of occupational accidents formulated for each of the following lines of business:

- (1) Large-scale retailer (1986)
- (2) Building maintenance (1988)
- (3) Security (1988)
- (4) Hotels (1989)
- (5) Golf courses (1990, revised in 1999)
- (6) Fuel retailer (1991)
- (7) Furniture and furnishing retailer (1993)
- (8) Locations, etc., for motion pictures and TV programs, etc. (1998)
- \* The figure in parentheses denotes the year of formulation

#### (1) Development of safety management system

Although the responsibility for the prevention of occupational accidents rests with the employers, it is also necessary for each workplace to streamline the safety management system by choosing a safety supervisor befitting its scale, establishing a council and taking other measures.

Specifically, under the Industrial Safety and Health Act, the development of a safety management system is legally obligated, such as by choosing a safety supervisor (with a work force of 50 or more) or a safety and health promoter (with a work force of 10-49) in the workplaces which belong to the following seven lines of business. They are the merchandise wholesalers; furniture, furnishings, household goods wholesalers; fuel retailers; hoteliers; and golf courses.

For the line and scale of enterprises that are not legally obligated, it is desirable for attempts to be made to develop a corresponding safety management system.

#### (2) Establishment of safe work methods

Besides thorough sorting, tidying-up, fire control and other routine measures, it is necessary to determine safe work methods befitting the realities of each line of business and disseminate them among labor and management.

### (3) Making equipment and work environments safe

There is the need to promote measures to make equipment and the work environment safer, such as by improving the condition of passages, floors and workplaces, among others, and preventing electric shocks from electric machinery and appliances.

#### (4) Conducting safety education

In order to prevent occupational accidents, it is necessary to provide education and training in order for workers to learn knowledge and skill for safe work. Specifically, safety education must be conducted at the time when workers are employed or their jobs are changed.

Education programs should be devised so as to make trainees be fully aware of the potential risks of occupational accidents in tertiary industry.

#### (5) Conducting safety activities

Incorporating 4S (seiri, seiton, seisou and seiketsu—sorting, tidying-up, cleaning and cleanliness) activities, safety inspections, KYT (kiken yochi training—hazard prediction training) and other methods for the maintenance of safety, it is important to encourage voluntary safety activities in the workplace.

### 4. Promotion of Occupational Accident Preventive Measures for Part-time Workers

Tertiary industry employs many part-time workers. In maintaining their safety and health, it is desirable to take account of their characteristics, such as the pattern of their work, and promote measures with respect to the following matters:

- (1) Development of a safety and health management system and evolution of voluntary safety and health management activities
- (2) Establishment of safe work methods
- (3) Conduct of safety and health education and training
- (4) Availability of safe machinery, equipment, etc., and more comfortable workplace environment
- (5) Implementation of measures for health promotion
- (6) Implementation of safety activities employing virtual emergencies cases, such as the outbreak of troubles in machinery, equipment, etc., and fires and earthquakes, among others.

With respect to those measures, the Ministry of Health, Labour and Welfare carried out the Accident Prevention Project for Part-time Workers (FY 1993-2002). For the businesses including food manufacturing and merchandise retailers where the share of part-time workers is high, guidelines and checklists for the prevention of occupational accidents were already established. It is desirable to utilize those guidelines and check lists.

### 5. Implementing Infrastructure Improvement Project for Safety and Health Activities in Growth Industries

There are not a few tasks entailing dangers among the growth industries that show remarkable progress in recent years, including tertiary industry.

Since many of these growth industries grow rapidly in business scale and the number of workers, they tend to get behind in measures to ensure safety and health.

In order to decrease steadily occupational accidents in these growth industries, not only individual employers but the whole industry should uniformly cope with preventive measures on occupational accidents.

Toward this objective, the Ministry of Health, Labour and Welfare has implemented the Project for Infrastructure Improvement for Safety and Health in Growth Industries since FY 2000 together with Japan Industrial Safety and Health Association. With the cooperation of industry associations of selected growth industries, they have been conducted surveys on safety and health activities, formulation of models on safety and health rules, training of leaders in industrial associations, and group guidance (the period of implementation to a business within each industrial group is two years).

Note: The industries in which the Project has been implemented

- Iron scrap recycling industry (FY 2000-2001)
- Industrial waste disposal industry (FY 2002-2003)
- In-home nursing services industry (FY 2004-2005)

# 11 Promotion of Safety and Health Activities in Small and Medium-Sized Enterprises

The rate of occupational accidents in small and medium-sized enterprises is exceedingly high, as against those in all industries. Over 80% of them break out in enterprises with a work force of 1-99.

Accident frequency rate of workplaces with a work force of 30-99 is about 3.89, which is double the rate of those with 100 or more, 1.85, according to the Survey on Industrial Accidents conducted in 2004.

Under these circumstances, for steady reduction of accidents, it is an important task to promote safety and health activities and prevent occupational accidents in small and medium-sized enterprises.

#### 1. System of Safety and Health Promoters

In order to prevent workers from having occupational accidents, it is a grave responsibility of employers to exercise safety management in an appropriate manner such as upkeep of performance of machinery, and of proper work methods.

The minimum standards for measures that the employer must take in order to prevent industrial accidents regardless of the size of the workplace are set in the Industrial Safety and Health Act. However, efforts to prevent industrial accidents, including these measures, at small and medium-sized enterprises cannot be termed entirely adequate.

In view of this situation, under the Industrial Safety and Health Act, certain workplaces that usually employ at least ten and less than fifty workers must appoint a safety and health promoter from among persons who meet the prescribed qualification criteria and put that person in charge of duties related to safety and health in order to raise safety and health standards at small and medium-sized enterprises.

### 2. Safety and Health Activities in Small and Medium-Sized Enterprises Groups

In order to raise the safety and health standards of small and medium-sized enterprises and further reduce occupational accidents, it may be considered effective in terms of scale merits, mutual enlightenment and study for small and medium-sized enterprises to carry out voluntary safety and health activities as groups.

Such groups are:

- (1) Composed of enterprise groups on and off the premises, centering on the parent business
- (2) Composed of enterprise groups which are organized at an industrial park in a specified area or by line of business

Some of the priorities in the groups' voluntary safety and health activities may be enumerated as follows:

- (1) Establishment of a liaison council organized by employers and formulation of basic programs for safety and health activities
- (2) Selection of "safety and health leaders of small and medium-sized enterprises" and guidance to member enterprises
- (3) Implementation of mutual safety and health diagnosis
- (4) Joint formulation of safe work procedures with respect to common work
- (5) Joint execution of safety and health education
- (6) Collection and distribution of information about occupational accidents and examples of improvements, and exchanges of views
- (7) Preparation of various statistics for the assessment of safety and health activities

### 3. Support Project for Group Safety and Health Activities in Small Enterprises

The Support Project for Group Safety and Health Activities in Small Enterprises has been set up in order to promote the implementation of voluntary safety and health activities by groups of small enterprises.

Those small enterprise groups are consisted of mainly locally organized small enterprises, selected by the Director of the Prefectural Labour Bureau and registered by the Japan Industrial Safety and Health Association (JISHA). JISHA assists safety and health activities of these groups and enterprises belonging to the registered groups.

The period of assistance is three years. For the first and second year, the safety and health assistance activities consist of implementation of safety and health seminars for employers, health education and special medical examinations, and formulation of safety and health action plans, etc. The assistance in the third year is given to building a framework of medium- and long-term activities in order to ensure the continuous implementation of these safety and health programs at their own initiatives. (Refer to "Overview of Support Project for Group Safety and Health Activities in Small Enterprises" in Reference Materials 7-5.)

#### 4. Project for Streamlining Equipment to Improve Workplace Safety

This project subsidizes part of the costs for upgrading equipment on safety and health by small enterprises belonging to the groups covered by the Support Project for Group Safety and Health Activities in Small Enterprises.

The equipment to be subsidized includes that to ensure machine safety such as safety devices for automatic machinery, equipment to improve the working environment including local exhaust systems, and machines to make the working environment more comfortable including air conditioning system.

The entity giving subsidies is the Japan Industrial Safety and Health Association. In order

to qualify for the subsidy, enterprises must meet certain requirements, such as attending the safety and health diagnosis and the formulating of a plan related to installation of machines.

#### 5. Utilization of Consultants

When occupational accidents occur, employers need to find out their causes and establish measures to prevent any recurrence. However, in the case of small and medium-sized enterprises whose technological infrastructure is fragile, this measure tends to be insufficient when they implement it only by themselves.

In such case, it is important to seek help from industrial safety consultants, industrial health consultants and other outside specialists in working out appropriate measures for the prevention of occupational accidents.

With this in mind, the Ministry of Health, Labour and Welfare provides the following services through the Special Safety and Health Diagnosis Project for the Prevention of Occupational Accidents at small and medium-sized enterprises with frequent or serious accidents or occupational diseases that are considered not to have adequate capacity to plan and implement, by themselves, appropriate measures for the prevention of occupational accidents and ill health. Those services include free safety and health diagnosis by industrial safety and health consultants, etc., raising of safety and health standards, and promotion of voluntary activities for the prevention of occupational accidents.

Moreover, under the Support Project for Voluntary Safety and Health Activities by Small and Medium-Sized Enterprises, industrial safety and health consultants at mobile help desks that tour areas where small and medium-sized enterprises are concentrated deal with inquiries on safety and health from workplaces that are actively trying to take safety and health measures, in efforts to raise safety and health standards at small and medium-sized enterprises through such means as providing expertise on the prevention of industrial accidents.

# 12 Work-Related Traffic Accident Prevention Measures

There have been signs in recent years that work-related traffic accidents occur frequently. Deaths in those accidents account for about 30% of all work-related deaths. By line of business, traffic accidents break out not only in the overland freight transport industry, which engages mainly in the operation of vehicles, but also in a broad range of other industries, such as construction, commerce, manufacturing, and passenger transport.

Therefore, it is necessary for employers who use automobiles to take extensive measures to prevent work-related traffic accidents, regardless of the industry. However, compared with ordinary industrial accidents, it cannot be said that active measures have been adequately taken, partly because many work-related traffic accidents occur on the roads outside of the workplace.

Nevertheless, work-related traffic accidents take place in the context of a close relationship to the execution of work duties, and employers must not only require workers who drive automobiles to simply observe traffic regulations, but must also take comprehensive and systematic efforts to prevent work-related traffic accidents in the same way as for industrial accidents in general.

Therefore, the Ministry of Health, Labour and Welfare issued the Guidelines for Industrial Traffic Accident Prevention (Notification No. 83 of the Labour Standards Bureau, February 18, 1994). However, judging from the status of measures, adequate necessary strategies, such as the establishment of a management system for preventing work-related traffic accidents, have not been taken.

In view of this situation, the Ministry of Health, Labour and Welfare has been implementing such measures as the Project to Promote Measures to Prevent Work-related Traffic Accidents since fiscal 1996 in order to prevent work-related traffic accidents.

#### 1. Incidence of Work-related Traffic Accidents

An analysis of the 462 deaths due to work-related traffic accidents in 2004 shows that accidents while in an automobile accounted for 312 deaths or 67.5%, accidents while riding a two-wheeled vehicle accounted for 54 deaths or 11.7%, and accidents while walking or working accounted for 63 deaths or 13.6%.

Of the 312 deaths while in an automobile, of those accidents considered to be caused by the automobile being driven by the worker, accidents involving a crash with an automobile such as crashing into a stationary automobile, crashing into a moving automobile, crossing lanes and crashing into an automobile traveling in the other direction accounted for 129 deaths while single vehicle accidents such as crashing into a building or leaving the road accounted for 97 deaths, making a total of 226 deaths. This accounts for a majority, or 72.4%, of the 312 deaths, and many work-related traffic accidents can be prevented by properly moderating the speed of the automobile being driven and trying to drive safely.

By industry, of the 462 deaths due to work-related traffic accidents in 2004, overland freight transport accounted for the most with 160 deaths; but with 85 deaths in commerce, 75 in construction, 31 in passenger transport, and 27 in manufacturing, the prevention of work-related traffic accidents is not only an issue for overland freight transport, but also requires efforts in all workplaces.

### 2. Guidelines for Industrial Traffic Accident Prevention

The Guidelines aim to prevent work-related traffic accidents in conjunction with industrial safety and health legislation and measures such as the Standards for Improving Automobile Drivers' Working Hours (Ministry of Labour Notification, No. 7, 1989) by describing the concrete methods of

implementation regarding such measures as the establishment of a system of management for preventing work-related traffic accidents in the work-place, management of appropriate working hours and traffic management, driver education, health management and raising awareness of preventing work-related traffic accidents.

The text of the Guidelines has been described in Chapter 6, "Major Notifications on Safety" in this Guidebook.

Trends in Incidents of Traffic-related Occupational Accidents
(Accidents Involving Deaths)

Classification	Number of deaths	Traffic-related occupational accidents		
Year	in all death- involving accidents (in persons)	Number of deaths (in persons)	Rate (%)	
2003	1,628	492 (482)	30.2 (29.6)	
2004	1,620	462 (444)	28.5 (27.4)	
2005	1,514	482 (466)	31.8 (30.8)	

Note: Figures in parentheses are deaths in road traffic accidents. Source: Survey by Safety Division, Ministry of Health, Labour and Welfare

### 3. Safety and Health Education for Supervisors and Drivers

In accordance with the Guidelines for Industrial Traffic Accident Prevention, the Ministry of Health, Labour and Welfare has released the following operating procedures to promote traffic safety supervisor training and safety and health education for automobile drivers. In each workplace, it is necessary to conduct training on these bases.

#### (1) Traffic safety supervisor training

The Operating Procedures for Traffic Safety Supervisor Training released in December 1996 incorporate a curriculum which clarifies the responsibilities of employers, roles of traffic safety supervisors, and management methods of work-related traffic accident prevention. Moreover, in order to promote training finely tuned to the actual situation of work-related driving, the Procedures were revised in March 2001. Then, new curriculums were established for the workplaces that are not engaged in long-distance driving such as tertiary industry and

manufacturing, and for workers having driving supervisor's qualifications.

### (2) Safety and health education for automobile drivers

The Operating Procedures for Safety and Health Education for Automobile Drivers issued in August 1997 promote the implementation of education to drivers. The content incorporates the curriculum that concerns drivers' responsibilities, measures to prevent work-related traffic accidents and health management.

### 4. Project to Promote Measures to Prevent Work-related Traffic Accidents

In order to promote the dissemination of the Guidelines for Industrial Traffic Accident Prevention, the Japan Land Transportation Industry Safety and Health Association has been commissioned since fiscal 1996 to run the Project to Promote Measures to Prevent Work-related Traffic Accidents, which includes projects at the association's branches.

The content of the project includes the provision of individual guidance for workplaces by regional work-related traffic accident prevention advisors and the development of model workplaces.

The traffic hazard maps created by the project utilize computers and are very easy to use, and the application of them in traffic KYT (*kiken yochi* training, or "hazard prediction training"), for example, is desirable.

### 13 Ensuring Safety for Dispatched Workers

The amendment of the Act for Securing the Proper Operation of Worker Dispatching Undertakings and Improved Working Conditions for Dispatched Workers (Worker Dispatch Act) has made it possible to dispatch workers to manufacturing operations since March 1, 2004.

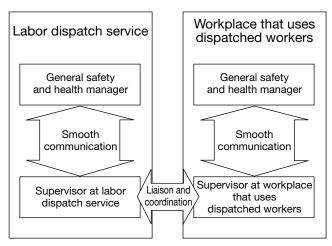
Compared to other industries, many manufacturing operations involve handling hazardous machinery or toxic chemicals, so labor dispatch services and workplaces that employ dispatched workers must take the necessary measures based on the Worker Dispatch Act and the Industrial Safety and Health Act in order to ensure the safety and health of dispatched workers.

### **Outline of Amended Worker Dispatch Act** (sections related to ensuring the health and safety of dispatched workers)

### (1) Addition of duties for supervisors at labor dispatch services and those at workplaces that use dispatched workers

The following duties related to the safety and health of dispatched workers have been added to the duties of supervisors at labor dispatch services and those at workplaces that use dispatched workers.

- a. Supervisor at labor dispatch service...has smooth communication with a person who manages general safety and health at labor dispatch service and performs liaison and coordination with the workplaces that use dispatched workers (Worker Dispatch Act Article 36, Item 5).
- b. Supervisor at workplace that uses dispatched workers...has smooth communication with a person who manages general safety and health at the workplace that uses dispatched workers and performs liaison and coordination with the labor dispatch service (Worker Dispatch Act Article 41, Item 4).



Note: Person who manages general safety and health refers to the general safety and health manager, the safety supervisor or the health supervisor when appointed, and to the employer in a small business when safety and health managers are not appointed

### (2) Appointment of supervisors who specialize in manufacturing operations at labor dispatch services and at workplaces that use dispatched workers

a. Labor dispatch service

The employer of a labor dispatch service that dispatches workers to manufacturing operations must appoint a labor dispatch service supervisor who specializes in supervising the relevant dispatched workers.

As a rule, at least one supervisor shall be appointed when the number of dispatched workers engaged in manufacturing operations is 100 or less, and at least two supervisors shall be appointed when the number of dispatched workers is more than 100 and no more than 200, with the subsequent addition of at least one supervisor per 100 workers required. (Article 29, Item 3, Enforcement Order of the Worker Dispatch Act)

b. Workplaces that use dispatched workers A workplace that uses more than 50 dispatched workers in manufacturing operations must appoint a supervisor who specializes in supervising the relevant dispatched workers.

As a rule, at least one supervisor shall be appointed when the number of dispatched workers engaged in manufacturing operations is more than 50 and no more than 100, and at least two supervisors shall be appointed when the number of dispatched workers is more than 100 and no more than 200, with the subsequent addition of at least one supervisor per 100 workers required. (Article 34, Item 3, Enforcement Order of the Worker Dispatch Act)

### (3) Cooperation of workplace that uses dispatched workers with safety and health measures

A workplace that uses dispatched workers must give the necessary cooperation and consideration, including endeavoring to comply as much as possible when there is a proposal for the commissioning of safety and health training at the time of employment from the employer of a labor dispatch service. (No. 2-17, Guidelines on Measures to Be Taken by Workplaces That Employ Dispatched Workers)

### 2. Matters Relating to Safety and Health in Worker Dispatch Agreements

The worker dispatch agreement concluded by the labor dispatch service employer and the employer at the workplace that uses dispatched workers must record the terms of employment relating to important matters in order to ensure the safety and health of dispatched workers. (7-2, Operational Guidelines for Labour Dispatch Services)

### Matters pertaining to safety and health in manufacturing and examples

- (1) Matters pertaining to measures to prevent hazards and damage to health
  - · Details of hazardous operations
  - Types of machinery, tools, other equipment and raw materials used
  - Details of measures to prevent hazards and damage to health
- (2) Matters pertaining to health management, including medical examinations
  - Matters pertaining to the provision of regular general medical examinations
  - Matters pertaining to the provision of special medical examinations
- (3) Matters pertaining to the management of the working environment, including ventilation, lighting, and illumination
- (4) Matters pertaining to safety and health training
  - Details of safety and health training provided at labor dispatch service
  - Details of safety and health training provided at workplace that uses dispatched workers
- (5) Matters pertaining to restrictions on employment, including the acquisition of licenses and completion of skill training courses
  - Types of licenses and skill training courses for employment restricted operations
- (6) Matters pertaining to safety and health management system
  - System of management for the safety and health of dispatched workers
  - Matters pertaining to the dissemination of essential matters for safety and health management to dispatched workers
- (7) Other matters
  - Matters pertaining to the submission of Report of Workers' Casualties
  - Other necessary matters for ensuring the safety and health of dispatched workers

### 3. Application of Industrial Safety and Health Act, Etc., to Labor Dispatch Services and Workplaces That Use Dispatched Workers

### Application of Industrial Safety and Health Act, etc.

Matters for which labor dispatch service is responsible	Matters for which workplace that uses dispatched workers is responsible
Responsibility of employer to ensure safety and health in the workplace.	Responsibility of employer to ensure safety and health in the workplace
Responsibility of workers to cooperate with accident prevention measures implemented in the workplace	Responsibility of workers to cooperate with accident prevention measures implemented in the workplace
Recommendation of Minister of Health, Labour and Welfare for the implementation of an Industrial Accident Prevention Plan	Recommendation of Minister of Health, Labour and Welfare for the implementation of an Industrial Accident Prevention Plan
Appointment of general safety and health manager	Appointment of general safety and health manager
	Appointment of safety supervisor
Appointment of health supervisor	Appointment of health supervisor
Appointment of safety and health promoter	Appointment of safety and health promoter
Appointment of industrial physician	Appointment of industrial physician
	Appointment of operations chief
	Appointment of overall safety and health controller
	Appointment of safety and health manager at principal employer
	Establishment of Safety Committee
Establishment of Health Committee	Establishment of Health Committee
Training for safety supervisor	Training for safety supervisor
	Measures to prevent hazards to workers and damage to health:
	Measures that must be taken by employers
	Matters that workers must comply with
	Survey of hazards and toxicity
	Measures that must be taken by principal employer
	Measures that must be taken by specified principal employer
	Regular voluntary inspections
	Survey of toxicity of chemical substances
Safety and health training (when a worker is employed and work content changes)	Safety and health training (when work content changes and upon employment in hazardous operations)
	Foremen training
Training for persons engaged in hazardous operations	Training for persons engaged in hazardous operations
	Restriction of employment
Consideration for middle aged and elderly workers	Consideration for middle aged and elderly workers

Matters for which labor dispatch service is responsible	Matters for which workplace that uses dispatched workers is responsible
Government assistance for safety and health training provided by employer	Government assistance for safety and health training provided by employer
	Duty to make efforts to maintain and manage the working environment
	Measurement of the working environment
	Evaluation of the results of working environment measurements
	Work management
	Limitation of working hours
Medical examinations (hearing opinions on the results of the relevant medical examinations, including general medical examinations)	Medical examinations (hearing opinions on the results of the relevant medical examinations, including medical examinations related to harmful operations)
Medical examinations (Measures to change work following provision of medical examination)	Medical examinations (Measures to change work following provision of medical examination)
Notification of results of medical examination	
Health advice from medical personnel	
Consultation and advice from physician	
	Prohibition of employment of the sick
Health education	Health education
Provision of facilities for physical activity	Provision of facilities for physical activity
	Safety and Health Improvement Plan
	Submission of plans for installation and transfer of machinery, and receipt of assessment of plans from the Government
Prohibition of discriminatory treatment due to reporting	Prohibition of discriminatory treatment due to reporting
	Suspension of use orders
Reporting	Reporting
Dissemination of laws and regulations	Dissemination of laws and regulations
Retention of documents	Retention of documents
Government assistance for provision of safety and health facilities by employer	Government assistance for provision of safety and health facilities by employer
Epidemiological studies	Epidemiological studies

# Chapter 5

### **Accident Case Studies**

### **Falling to Lower Level**

While loading veneer board for roof furrings on pipe scaffolding using a track crane, some pipes bent and fell

#### **Industry: Construction**

#### Circumstances

This accident took place during work to lift veneer board for roof furrings using a track crane in the construction of a wooden, single-story dwelling.

The work involved building up of beams, posts and girders for the framework using a track crane.

On the day of the accident, work commenced at 7.50 am, and the building of the framework was completed during the morning. In the afternoon, after work to secure the components such as beams, posts and girders with binder fittings, 165 sheets of veneer board for the roof furrings (90 cm wide, 180 cm long, 1.2 cm thick, weighing 12.5 kg per sheet) were delivered at about 1.30 pm, so it was decided to lift it using the track crane and temporarily keep it on the southern side of the scaffolding that had been completed the day before.

A grid was laid on the scaffolding about 4 m above the ground using three pipes hung parallel at 90 cm intervals to prevent deflection, one of the scaffolding handrail pipes and two rectangular bars, and it was decided to divide the veneer board into two loads and lift and load it on top of this grid. The first load of 75 sheets of veneer board had been moved using the track crane, and just as the second load of 90 sheets (about 1125 kg) had been lifted and loaded on top of the rectangular bars, the three pipes to prevent deflection suddenly bent, and the worker on top of the rectangular bars fell together with the veneer board.

#### Causes and Countermeasures

The causes of this accident are those listed as follows.

(1) The work platform for loading the veneer board set up on the southern side of the pipe scaffolding (a grid by three pipes to prevent

#### Casualties: One death

deflection, one scaffolding handrail pipe and two rectangular bars) was not strong enough to hold the veneer board, so the three pipes bent suddenly, causing the rectangular bar placed in a horizontal position to slide down.

(2) The worker was on the rectangular bars, which were not the work floor that should have been installed on the scaffolding, and was loading and unloading veneer board in a position with no measures to prevent falls.

The following measures are necessary to prevent similar accidents.

(1) When it is necessary to temporarily store veneer board for roof furrings in view of workability as in this case study, a work platform that is stable as well as being of a construction that can ensure the adequate strength should be installed.

Basically, it is necessary to make it known that scaffolding should not be substituted for a work platform.

- (2) When working in a position that is 2 m or more in height, effective measures to prevent falls should be taken that include conducting work on scaffolding with a safe work floor or putting up a lifeline and having workers use safety belts.
- (3) Slinging and lifting of veneer board, etc., using a track crane and signaling should be carried out by qualified personnel.
- (4) A safety management system should be established to manage workplace safety in a systematic manner.

### **Explosions and Fires**

During gas welding work, flammable vapor from a waste oil pit was ignited by sparks from welding and exploded

### Industry: Petroleum products, coal products manufacturing

#### Casualties: One death

#### Circumstances

This accident took place at a plant that collects and mixes industrial waste oil to manufacture supplementary fuel for cement factories, during work to weld anchor bolts accompanying the replacement of a circulation pump next to a pit for the temporary storage of waste oil and oil sludge raw materials.

There are four pits within the plant, each containing waste oil that is mixed and processed to make it into the supplementary fuel. As the circulation pump for storing the product in a tank was leaking oil, it was decided to replace it without waiting for regular maintenance and repairs.

On the day of the accident, the maintenance chief decided to gas weld four bolts because the circulation pump anchor bolts did not match the replacement pump, and he began work after 2 pm. When he had finished welding the second bolt, he turned in the direction of the pit containing low calorie oil and saw that flames were shooting up from the top of the pit cover.

Inflammable liquids and vapor such as methanol, acetone and isopropyl alcohol had accumulated inside and around the pit, and the worker was not aware of the existence of these as measurements had not been taken prior to the work.

Sensing danger, the worker immediately evacuated, but was burnt on the face and hands by the blast from the ensuing explosion.

All workers within the plant were evacuated because of the fire and explosion, but it was discovered after the fire was extinguished that a worker engaged in pressing used drums next to the high calorie oil pit had fallen in and died.

#### **Causes and Countermeasures**

The causes of this accident are those listed as follows.

- (1) Conducting work using fire regardless of the accumulation of inflammable liquids and vapor in and around the pit.
- (2) Installing a press next to a pit with a danger of explosion and having work carried out.

The following measures are necessary to prevent similar accidents.

- (1) Improve equipment to ensure that vapor from inflammable substances does not leak and disperse inside the plant.
  - a. Tightly seal the covers of pits for storing raw materials.
  - b. Create negative pressure inside pits.
  - c. Tightly seal manufacturing equipment as much as possible.
  - d. Keep the temperature inside the plant below the ignition point of chemical substances. Pay particular attention in summer.
- (2) Prohibit entry of non-related personnel into hazardous areas as well as regularly measuring the environment and recording the results.
- (3) Establish hazardous areas and prohibit the use of fire within hazardous areas. When fire must be used, establish an approval system and set standards for use.
- (4) Establish a safety management system.

### **Collapses**

A wall collapsed during work to demolish a concrete wall on the fourth floor of a reinforced concrete building

#### **Industry: Other construction**

#### Circumstances

This accident took place on the demolition site of a five-story building when a concrete wall collapsed, crushing a worker in the course of work to dismantle an exterior concrete wall on the west side of the fourth floor.

On the day of the accident, following the recommencement of work in the afternoon, workers A and B of demolition company X, the principal contractor, fixed a wire rope to a hole in the upper part of the wall approximately 2 m in breadth, and laid the wire rope on the inside of the building in an eastward direction. The western exterior wall was free-standing because the upper part and both sides of the wall had been cut.. After they had done this, workers A and B directed workers C and D, employees of a subcontracting concrete chipping company to make a horizontal cut in the intersection between the floor surface and the wall from the outside of the wall on the scaffolding using an air chipper.

At about 2 pm, worker C directed worker D to increase the depth of the cut in the intersection between the wall and the floor surface in order to facilitate collapse to achieve demolition of the wall. In addition, worker C, departing from the instructions of worker A, directed worker D to make a cut in the interior wall on the fourth floor where the work was easier than making the cut in the exterior wall from the scaffolding. Workers C and D began working from each end of the interior wall.

While workers C and D were doing this work, the wall being demolished collapsed towards the inside of the building where workers C and D were. Worker C failed to escape and the lower half of his body was crushed by the collapsing concrete

#### Casualties: One death

wall. Despite being extricated immediately, he had already lost consciousness, and died.

#### **Causes and Countermeasures**

The causes of this accident are those listed as follows.

- (1) Despite the danger that the concrete wall could collapse towards the inside of the building, concrete chipping was conducted using an air chipper at the intersection of the interior wall and the floor.
- (2) The workers of the subcontractor changed the content of the demolition work by themselves while working, regardless of the directions for the work from the worker of the principal contractor before carrying out the demolition work.
- (3) When the work of making a cut at the intersection between the exterior wall and the floor was carried out, a wire rope prop was set up internally, but this was inadequate as a measure for preventing the collapse of the wall.
- (4) The employer did not appoint an operations chief of demolishing concrete buildings despite carrying out demolition work on a concrete building at least 5 m in height.
- (5) The principal contractor had not prepared a work plan for the demolition.
- (6) The employer had not provided training on safe working methods in demolition for workers.

The following measures are necessary to prevent similar accidents.

(1) In addition to setting up supports such as wire ropes to prevent a demolished concrete wall from collapsing to one side, concrete chipping should be carried out from the side to which the wall will not collapse.

- (2) Before carrying out demolition work, adequate consultation on work procedures and the work should be held, and the employees of subcontractors should be required to comply with directions from the employees of the principal contractor and not be allowed to change the content of demolition work by themselves.
- (3) The principal contractor should adequately examine safe methods of demolition in advance, prepare a demolition plan, and disseminate it to subcontractor workers.
- (4) When carrying out demolition work on a concrete building that is 5 m or higher, the employer should appoint an operations chief of demolishing concrete buildings, have the operations chief determine the methods of work and the allocation of workers and directly oversee the work.
- (5) The employer should provide thorough safety training for workers concerning the work equipment used and work methods to prevent collapses of buildings under demolition.
- (6) The principal contractor should establish a safety management system that includes subcontractors to manage safety on site in a systematic manner.

# Overview of the Serious Occupational Accidents in 2004 (January through December)

By industry	ndustry Month Prefecture Type of accident Description of accident		Deaths and injuries	Deaths		
Lumber and wood products	Jan.	Fukuoka	Explosions and bursts	An explosion occurred while manufacturing building material boards by compressing pieces of wood and adhesives, and workers were injured.	3	1
Chemicals and allied products	Jan.	Ibaraki	Explosions and bursts	A high-pressure gas plant used to increase the purity of polytetrafluoroethylene monomers, a processing material of fluoric resin, exploded, starting a fire, and workers were injured.	4	0
Livestock farming and fishery	Jan.	Nagasaki	Marine accidents	Three workers returning to a home port on a fish breeding raft were thrown out into the sea when the raft collided with a fishing boat and capsized, and two drowned.	3	2
Cleaning	Jan.	Fukuoka	Falls	A worker doing painting on a scaffold lost his balance and fell to the ground. The scaffold also toppled, and another worker who was on it also fell. Moreover, the scaffold hit the worker who was working below in the head.	3	0
Civil engineering	Feb.	Fukushima	Falls	When workers were getting into a car on a breakwater to return because waves were high, they were caught by a wave, fell and were injured.	4	0
Building construction	Feb.	Aichi	Struck by objects	When workers were pressure-transporting raw concrete by using a concrete mixer truck with a boom in concrete placement work on the antiseismic foundations for hospital construction work, the boom of the concrete mixer truck snapped, and one end of the falling boom hit workers, and three were injured.	3	0
Civil engineering	Feb.	Hokkaido	Falls	Workers working on an anchor for a free frame on the face of a slope were hoisting up tools, etc., on a work table from the ground to the working height by means of a crawler crane.  When three workers were being taken to the work table from the slope face, the rear part of the crawler crane rose, and two workers who were on the work table slammed into the ground with the table and died.		2
Cleaning	Mar.	Oita	Contact with hot objects or substances	As the outlet of a rotary kiln used to burn waste plastics was clogged up, a worker stopped the kiln and tried to take out the ashes with a fire hook. When the ashes, which were over 400°C, in the outlet fell and then flew up, three workers suffered burns.		0
Other construction	Mar.	Hokkaido	Falls	When 18 workers were dismantling the ceiling of an office building to repair air conditioning equipment, the entire ceiling (6 meters by 5 meters) fell, and four workers making preparations to erect column supports to prevent the fall of the ceiling were injured.		0
Other construction	Mar.	Hyogo	Falls	When nine workers were temporarily placing cement bags (each weighing about 25kg) and tile boxes (each weighing about 20kg) on a mobile pallet of a two-story parking garage to prepare for a private view of a newly-built building to be held the same day, the central part of the upper pallet deformed under the load, the wheels on one side came off, and the upper pallet fell with the workers (including those working on the pallet) and the freight onto the lower pallet about 1.6 meters below, and the workers were injured.	4	0
Chemicals and allied products	Mar.	Kanagawa	Explosions and bursts	When workers had brought the cartridges of semiconductor material gas detoxifying equipment to a factory and were carrying them after unloading, a caster (a wheel on a swivel frame) was caught in a ditch. When the workers shook the caster, a cartridge exploded, and they were injured.	7	1
Building construction	Mar.	Hyogo	Falls	When workers had removed half of the canopy of a heavy oil tank (26.7 meters in diameter and 15.6 meters in height), which they were dismantling, the tank toppled and three workers who were working on the canopy fell to the bottom of the tank.	3	2

By industry	Month	Prefecture	Type of accident	Description of accident	Deaths and injuries	Deaths
Ship and boat building and repairing	Mar.	Yamaguchi	Falls	When workers were attaching parts to a gravel carrier on the scaffold in a dock, the belt of a chain block from which the parts were suspended snapped, and the parts fell on the scaffold. The scaffold collapsed under the impact, and three workers fell to the concrete floor about 3.5 meters below and were injured, some seriously.	3	0
Stone, clay and glass products	Mar.	Yamagata	Explosions and bursts	When workers washed a quartz product with water during reshaping, water accidentally entered the product. When they injected a methanol-mixed fluid and used a gas burner to dry the product, the product exploded, and four workers were injured.	4	0
Non-ferrous metals	Apr.	Okayama	Struck by objects	When workers were scaling off sulfite calcium scales from the top-most part of the eliminator of a desulfurization-absorption tower during regular repair work at a smeltery, workers were hit by falling scales and were injured.	3	0
Metal products	Apr.	Mie	Explosions and bursts	When workers were heating an aluminum section with a torch made from a gas cylinder sold in the market during the test of a wrapping machine, the cylinder exploded and three workers suffered burns.	3	0
Lumber and wood products	Apr.	Fukuoka	Fires	A fire broke out in a sawmill, and five workers who were living in the second story of the sawmill jumped from the window to the ground 3 meters below, and were injured.	5	0
Entertainment businesses	Apr.	Osaka	Fires	A worker committed suicide at a golf course by pouring gasoline for a lawn mower on himself and setting fire to it with a cigarette lighter. Other workers suffered burns and respiratory trouble when they tried to extinguish the fire.	5	1
Building construction	May	Hyogo	Collapses	Workers placed three steel sheets on an internal scaffold and an external scaffold when they were fixing an ALC sheet on a wall of a middle school building, placed five scaffold boards in parallel to each other on the three steel sheets, and put a concrete-formwork panel on them as a work floor, and five workers were working on it. When workers raised a 90-kilogram board, the scaffold collapsed, and three workers were injured.	3	0
Other construction	May	Gifu	Explosions and bursts	When a worker sprayed a dye penetrant into a waste heat boiler pipe during the cleaning and checking of a boiler, which is part of a garbage incineration facility in a recycling center, an explosion occurred in the pipe, and three workers were injured.	3	1
Hotels and restaurants	May	Oita	Fires	When a worker was degassing the steel cylinder of a portable gas stove in a store kitchen, the gas drifting to the floor caught fire, and three workers suffered burns.	3	0
Building construction	May	Ehime	Falls	When workers who were constructing a wooden one-storied pigsty hoisted up the hut assembled on the ground with a crane, and were riveting the hut onto a floor joist, the hut fell, and four workers who were on it were injured.	4	0
Pulp	May	Shizuoka	Explosions and bursts	On a line to produce cottony pulp from waste newsprint, sparks broke out from metal pieces in a secondary material crushing line. The sparks flew to the cottony pulp tank, causing an explosion of the tank, and workers were injured.	4	1
Lumber and wood products	May	Ibaraki	Explosions and bursts	A dust collector exploded in a building material plant, and 12 workers were injured, some seriously.	12	0
Civil engineering	Jun.	Chiba	Fires	A fire broke out in the dormitory of a business establishment, and three workers suffered burns.	3	0
Chemicals and allied products	Jun.	Akita	Explosions and bursts	A hydrogen fluoride absorption tower made of polypropylene exploded in an electrolytic fluorination plant, and workers were injured from exposure to acid and by the blast.	4	1
Building construction	Jun.	Niigata	Traffic accidents	When a microbus carrying workers was halted on a side strip because the left front tire had become flat, workers were changing the tire, and the vehicle was hit from behind by a station wagon.	18	3
Civil engineering	Jun.	Shizuoka	Falls	When four workers were returning to a forest road on a monorack after completing a check on the monorack, the monorack fell 15 meters.	3	1

By industry	Month	Prefecture	Type of accident	Description of accident	Deaths and injuries	Deaths
Other construction	Jun.	Kyoto	Falls	When three workers were cleaning a smoke vent by setting a ladder on the lid, the lock on the lid suddenly came off, and the workers fell together with the ladder.	3	0
Other construction	Jun.	lwate	Contact with hot objects or substances	During the replacement of a gas pipe, natural gas that had settled in a ditch ignited from an unknown cause, and four workers suffered burns.	4	0
Ship and boat building and repairing	Jul.	Hiroshima	Collapses	When workers were working on a block for the hull in the construction of a containership, a clamp snapped and the block toppled, and the workers who were cast off it fell to the bottom of the dock 20 meters below.	4	2
Transportation	Jul.	lwate	Caught in or compressed by equipment	When workers were making adjustments in a casting mold on a motor vehicle parts casting line, a worker who was on the outside, not knowing there were people in the mold, switched on the casting line. The line started, and the three workers in the mold were crushed to death.	3	3
Overland cargo transportation	Jul.	Nagano	Traffic accidents	Two taxis with workers in them were hit from behind by a truck when the taxis were waiting at a red light.	11	0
Cleaning	Jul.	Kumamoto	Electric shock	When a worker was cleaning a distribution board in the panel room on the first story of a multi-tenant building, he accidentally approached the point where the lead wire is connected with a cable. As a result, an electric arc was generated, and he and two others working nearby suffered burns.	3	0
Building construction	Jul.	Kanagawa	Fires	When a worker was doing gas cutting in a herbicide plant, residual toluene caught fire, and three workers suffered burns.	3	0
Chemicals and allied products	Jul.	Toyama	Contact with hot objects or substances	Water was leaking from the check valve of a water-tube boiler. When workers were replacing the check valve, hot water escaped and the workers were scalded.	3	0
Building construction	Aug.	Shimane	Collapses	The deckplate fell off a formwork and workers were injured.		0
Other construction	Aug.	Fukui	Contact with hot objects or substances	When workers were making preparations for a regular check of an electric power plant, a pipe of hot water near the ceiling exploded, and five workers were killed by hot vapor and six were scalded.	11	5
Hotels and restaurants	Aug.	Fukuoka	Contact with hot objects or substances	Boiling water was released when the lid on a caldron in a kitchen came off, and three workers were scalded.	3	0
Chemicals and allied products	Aug.	Fukuoka	Fires	A fire broke out from a mixer used to refine crude rubber and spread to the surrounding area, and 13 workers suffered burns.	13	0
Ship and boat building and repairing	Aug.	Kagawa	Explosions and bursts	An explosion occurred while workers were painting the interior of a ship, and two men died, one suffered a burn, and another worker engaged in rescue operations suffered carbon monoxide poisoning.	4	2
Overland cargo transportation	Aug.	Tokyo	Falls	When workers had taken out a copying machine to a veranda, the verandah collapsed, and three workers fell and were injured.	3	0
Building construction	Aug.	Osaka	Collapses	When workers were dismantling a four-layer two-span scaffold erected in a park, strong winds from Typhoon No. 16 blew and the scaffold toppled, and three workers on it were injured.	3	0
Stone, clay and glass products	Aug.	Yamaguchi	Explosions and bursts	Workers engaged in the incineration of rubbish threw a combustible onto it since the rubbish did not burn well. An explosion occurred, and three workers suffered burns.	3	0
Other	Sep.	Okinawa	Fires	During work operations, a fire started from a washing machine for dry cleaning, and workers suffered burns.	3	0
Cleaning	Sep.	Okinawa	Contact with hot objects or substances	When a worker raked out ashes that clogged up an ash cooling facility at an incinerating plant, the hot ashes fell, and three workers were exposed to the ashes and suffered burns.	3	0

By industry	Month	Prefecture	Type of accident	Description of accident	Deaths and injuries	Deaths
Building construction	Sep.	Yamaguchi	Falls	When workers were attaching a projecting scaffold to a plant, a scaffold cramp got loose, the scaffold tilted, and three workers on it fell and were injured.	3	0
Building construction	Sep.	Tokyo	Explosions and bursts	A gas pipe broke during the dismantling of a building, and the gas that leaked out ignited and exploded. Two workers died and one was injured.	3	2
Chemicals and allied products	Sep.	Ibaraki	Fires	A fire broke out in a styrofoam plant, and workers fighting the fire suffered burns and other injuries.	3	0
Other products	Oct.	Yamagata	Electric shock	When workers had removed a rail from a railway track and were taking it out with a truck crane, the arm of the crane touched an electric wire, and one worker who was touching the hook and two workers who were touching a different rail got an electric shock.	3	0
Ship and boat building and repairing	Oct.	Kagawa	Explosions and bursts	An explosion occurred when workers switched on a ventilator after completing painting of a ship's interior, and four of them were injured.	4	0
Non-ferrous metals	Oct.	Aichi	Fires	A fire broke out when workers were changing the mold of a diecasting machine, and three of them suffered burns.	3	0
Other	Oct.	Oita	Landslides	When workers in a prefabricated hut at a construction site were collecting information about casualties and damage due to a typhoon, the hut was washed away in a landslide, and four workers were injured.	4	0
Civil engineering	Oct.	Chiba	Marine accidents	Two workers working on the edge of dike of a fishing port were carried away by waves and died, and one who tried to rescue them was injured.	3	2
Other products	Nov.	Shizuoka	Contact with hot objects or substances	After workers had removed the hopper from an injection molding machine and added new resin and were confirming the ejection, hot resin retrofired from the hopper's mouth, and three workers suffered burns.	3	0
Civil engineering	Nov.	Kagawa	Landslides	Four workers working in a ditch dug out to bury a conduit pipe were buried under earth and sand and were injured.	4	0
Civil engineering	Nov.	Kagoshima	Landslides	When workers were removing a formwork near the fore levee of a mud control dam, the ground of the slope on the left bank gave way, and four workers were caught in the landslide. One died of suffocation, two others were injured. One escaped uninjured.		1
Building construction	Nov.	Tokyo	Collapses	A slab formwork collapsed and fell when workers were placing concrete on a slope in one sector of the third basement of a building under construction, and eight workers fell about 2.5 meters together with the slab reinforcement.	8	0
Non-ferrous metals	Dec.	Hyogo	Fires	During a process to produce ferro-molybdenum by thermite reaction, workers put molybdenum trioxide into a mixing hopper and began to drop it into a vessel to be put into a mixer. They hit the steel frame of the hopper to release the material, and a fire suddenly started. Two workers suffered burns, and one inhaled gas.	3	0
Civil engineering	Dec.	Kumamoto	Explosions and bursts	When workers were bailing out water from a manhole with buckets for the installation of a cesspipe, one worker who was in the manhole tried to light a cigarette. An unidentified gas caught fire and flamed up, and three workers suffered burns.	3	0
Furniture and fixtures	Dec.	Kyoto	Contact with hot objects or substances	Two workers fighting a fire that had started in a dust collector in the factory suffered burns, and another worker working on a wide belt sander, which had a duct connected to the dust collector, also suffered burns as the sander also caught fire.	3	0
Other construction	Dec.	Kagoshima	Marine accidents	A ship carrying workers who had completed the installation of receivers of a disaster prevention system developed engine trouble, began to drift and capsized, leaving the workers injured.	5	0
Other construction	Dec.	Oita	Collapses	As workers had cut off a beam from the second story during the dismantling of a building, the imbalance of weight affected part of the second floor, the floor fell, and workers were injured.	3	0

By industry	Month	Prefecture	Type of accident	Description of accident	Deaths and injuries	Deaths
Commerce	Dec.	Saitama	Fires	A fire of an unknown cause started in a household electrical appliance mass-sale shop; employees and firemen inhaled smoke, and three employees died and six were injured.	9	3
Civil engineering	Dec.	Oita	Collapses	A waterway under construction collapsed, and three workers who were placing ready-mixed concrete on the waterway fell into a river 8 meters below.	3	0
Chemicals and allied products	Dec.	Shizuoka	Fires	While mixing sodium hydride and liquid paraffin evenly in a mixer, ignition occurred when workers were inputting the two substances into the mixer, and four workers suffered burns.	4	0
General machinery and equipment	Dec.	Aichi	Contact with hot objects or substances	A fire started in a silo, and workers who were in the silo for repair work suffered burns.	3	0

# Chapter 6

Major Notifications on Safety

### Guidelines on Occupational Safety and Health Management Systems

(Ministry of Labour Notification No. 53, April 30, 1999)

(Amendment: Ministry of Health, Labour and Welfare Notification No. 113, March 10, 2006)

#### (Purpose)

#### Article 1

The purpose of these Guidelines is to raise the level of safety and health in workplaces. To achieve these objectives, these Guidelines have been designed to encourage employers to adopt, with the cooperation of their workers, a series of processes, and to engage in continuous and voluntary safety and health activities, thereby preventing industrial accidents, promoting workers' health and facilitating the establishment of a comfortable working environment.

#### **Article 2**

These Guidelines do not stipulate specific measures that employers are required to adopt in accordance with the Industrial Safety and Health Act (Act No. 57, 1972, hereinafter referred to as the "Act"), in order to reduce or eliminate hazards or health impairments associated with machinery, equipment, chemical substances, etc.

#### (Definitions)

#### **Article 3**

The terms that appear in these Guidelines are used in accordance with the following definitions.

(1) Occupational Safety and Health Management System (OSHMS)

An Occupational Safety and Health Management System (OSHMS) constitutes a framework for a series of voluntary safety and health management activities, based on which the following measures are implemented systematically and continuously in workplaces. These measures are implemented as part of overall business management activities including production management.

- a. Release of a safety and health policy
- b. Risk assessments and control measures based on the results
- c. Establishment of safety and health objectives

- d. Formulation, implementation, evaluation and improvement of safety and health plans
- (2) System audit

A system audit is a review and assessment carried out by an employer in order to determine whether the measures to be taken in accordance with its OSHMS are being properly implemented, taking into consideration the period of its safety and health plan.

#### (Scope)

#### **Article 4**

Measures to be taken in accordance with the OSHMS shall principally be implemented for each workplace as a single unit. However, an employer in the construction industry shall implement such measures by regarding all workplaces where all subcontractors conduct related work as a single workplace.

#### (Release of Safety and Health Policies)

#### **Article 5**

- Employers shall specify their safety and health policies, and ensure that all their workers, related contractors and other persons concerned are fully informed of such policies.
- 2. The safety and health policy presents the philosophy of safety and health that guides all workplaces to improve the level of safety and health, and shall include the following items.
  - (1) Prevention of industrial accidents
  - (2) Implementation of safety and health activities with cooperation of workers
  - (3) Compliance with the Act, any orders under the Act, all rules pertaining to safety and health established at workplaces (hereinafter referred to as "workplace safety and health rules"), etc.
  - (4) Proper implementation of measures to be taken in accordance with the OSHMS

### (Incorporation of Workers' Opinions in Safety and Health Measures)

#### Article 6

Employers shall establish specific procedures for incorporating workers' opinions in setting safety and health objectives and in formulating, implementing, evaluating and improving safety and health plans. Such procedures may include, for example, the use of a safety and health committee, etc. (meaning a safety and health committee, a safety committee or a health committee; hereinafter the same). Employers shall incorporate workers' opinions in their safety and health measures in accordance with these procedures.

### (Establishment of an OSHMS Implementation Structure)

#### Article 7

In order to establish a structure for properly implementing measures to be taken in accordance with the OSHMS, employers shall implement the following measures.

- (1) Employers shall clearly stipulate the roles, responsibilities and authority of workers engaged in system management at each organizational level (referring to a general manager supervising the overall business operations of a workplace, and managerial or supervisory personnel in production, safety and health, and related departments, such as senior managers, managers, section chiefs, and foremen who are in charge of the OSHMS; hereinafter the same). Employers shall ensure that all workers, contractors and other persons concerned are fully informed of such roles, responsibilities and authority of said parties.
- (2) Employers shall designate workers who engage in system management at each organizational level.
- (3) Employers shall make a reasonable effort to provide sufficient personnel and budget for the OSHMS.
- (4) Employers shall provide their workers with education and training about the OSHMS.

(5) Employers shall use a safety and health committee, etc. for the implementation of measures to be taken in accordance with the OSHMS.

#### (Documentation)

#### **Article 8**

- 1. Employers shall specify the following items in written form.
  - (1) Safety and health policy
  - (2) Roles, responsibilities and authority of workers engaged in system management at each organizational level
  - (3) Safety and health objectives
  - (4) Safety and health plans
  - (5) Procedures established in accordance with the provisions of Article 6, Paragraph 2 of this Article, Article 10, Article 13, Paragraph 1 of Article 15, Article 16 and Paragraph 1 of Article 17
- 2. Employers shall establish specific procedures to maintain the documents specified in the preceding paragraph and maintain them in accordance with these procedures.

#### (Records)

#### Article 9

Employers shall record the activities related to the implementation of measures to be taken in accordance with the OSHMS, including the implementation status of their safety and health plans, the results of system audits, etc. Employers shall keep these records properly.

#### (Risk Assessment and Control Measures)

#### **Article 10**

- Employers shall establish specific procedures for risk assessment in accordance with the guidelines adopted pursuant to Paragraph 2, Article 28-2 of the Act, and shall implement risk assessment in accordance with these procedures.
- 2. Employers shall establish specific procedures to determine measures to be implemented in accordance with the Act, any orders established under the Act, workplace safety and

health rules, etc. and necessary measures to reduce or eliminate hazards or workers' health impairments based on the result of the risk assessment in the preceding paragraph. Employers shall determine the control measures in accordance with these procedures.

#### (Establishment of Safety and Health Objectives)

#### **Article 11**

Employers shall establish safety and health objectives based on their safety and health policies and by taking into consideration the following items. Employers shall clarify the level of achievement during a specific period for each objective. Employers shall ensure that all their workers, related contractors and other persons concerned are fully informed of the objectives.

- (1) The results of the risk assessment specified in Paragraph 1 of Article 10
- (2) Status of achievement of the safety and health objectives established in the past

#### (Formulation of a Safety and Health Plan)

#### Article 12

- In order to achieve their safety and health objectives, employers shall formulate a safety and health plan by specifying a fixed period for implementation of such a plan based on the results of the risk assessment in a workplace.
- 2. A safety and health plan shall stipulate specific measures and an associated schedule to achieve safety and health objectives, including the following matters.
  - (1) The specific contents of the measures determined pursuant to Paragraph 2 of Article 10 and the timing of the implementation of such measures
  - (2) Matters related to the implementation of routine safety and health activities
  - (3) The specific contents of safety and health education and training, and the timing of providing such education and training
  - (4) The specific contents of measures to be taken for related contractors and the timing of the implementation of such measures

- (5) Matters related to the applicable period of a safety and health plan
- (6) Matters related to reviews of a safety and health plan

#### (Implementation of Safety and Health Plans)

#### Article 13

- 1. Employers shall establish specific procedures to properly and continuously implement their safety and health plans, and shall implement the plans in accordance with these procedures.
- 2. Employers shall establish specific procedures to fully inform all workers, related contractors and other persons concerned of measures necessary to properly and continuously implement their safety and health plans. Employers shall inform them in accordance with these procedures.

#### (Responses to Emergencies)

#### Article 14

Employers shall assess in advance the possibility of an imminent risk of the occurrence of an industrial accident (hereinafter referred to as "emergency situation"), and shall determine measures to prevent the occurrence of an industrial accident if such an emergency situation takes place. At the same time, employers shall take these measures to properly respond to such a situation if it occurs.

#### (Routine Monitoring, Improvements, Etc.)

#### **Article 15**

- Employers shall establish specific procedures for conducting routine monitoring and making improvements with respect to the implementation of a safety and health plan. Employers shall monitor and improve the plan in accordance with these procedures.
- 2. When employers formulate a new safety and health plan, they shall incorporate into the plan the results of the monitoring and improvements specified in the preceding paragraph and the results of investigation specified in Article 16.

#### (Investigation of Causes of Industrial Accidents)

#### **Article 16**

Employers shall establish specific procedures to determine a cause, identify a problem and to take corrective actions if an industrial accident or any accident occurs. Employers shall determine the cause, identify any problems and take corrective actions in accordance with these procedures if such an accident occurs.

#### (System Audits)

#### **Article 17**

- Employers shall formulate a plan for periodic system audits, and establish specific procedures to properly implement system audits on the matters specified in Articles 5 through 16.
   Employers shall conduct the audits in accordance with these procedures.
- 2. Employers, where they deem it necessary as a result of such a system audit, shall take corrective actions for measures to be taken in accordance with the OSHMS.

#### (Management Review)

#### Article 18

Employers shall periodically review the OSHMS based on the results of system audits specified in Paragraph 1 of Article 17 to maintain the validity and effectiveness of the OSHMS. In this process, the overall OSHMS shall be reviewed, including the safety and health policy, the procedures established pursuant to these Guidelines, etc.

# Guidelines for Risk Assessment (LSB Notification No. 0310001, March 10, 2006)

#### 1. Purpose

Greater diversification and complexity in production processes as well as increased use of new machinery, equipment and chemical substances have been giving rise to a wide variety of causes of industrial accidents, and have been making it difficult to identify any specific cause.

In view of this situation, to raise the level of safety and health in workplaces, Paragraph 1 of Article 28-2 of the Industrial Safety and Health Act (Act No. 57, 1972; hereinafter referred to as the "Act") requires employers to comply with the standards for preventing hazards that are specified in laws and ordinances related to industrial safety and health as minimum requirements. In addition, these provisions also require employers to voluntarily conduct assessment of risks in each workplace that may be associated with structures, facilities, raw materials, gases, vapors, dust, etc., or that may be attributable to working behaviors or other work-related factors (hereinafter referred to as "risk assessment"), and mandate that they take necessary measures to prevent workers from being exposed to risks or health impairments based on the results of such risk assessment.

Pursuant to the provisions of Paragraph 2 of Article 28-2 of the Act, these Guidelines specify the basic concept and actions to facilitate the appropriate and effective implementation of these measures at each workplace, thereby encouraging employers to more often conduct voluntary safety and health activities.

Based on these Guidelines, more detailed guidelines focusing on specific types of risks or hazards shall be separately developed. Such detailed guidelines include the Guidelines for the Necessary Measures to Prevent Health Impairments to Workers Due to Chemical Substances, Etc. and guidelines on machinery safety stipulated by the director general of the Labour Standards Bureau of the Ministry of Health, Labour and Welfare.

These Guidelines shall be designed to address the risk assessment and associated measures as stipulated in the Guidelines on Occupational Safety and Health Management Systems (Ministry of Labour Notification No. 53, 1999).

#### 2. Scope

These Guidelines shall be applicable to all hazards inherent in work performed by workers that may be associated with structures, facilities, raw materials, gases, vapors, dust, etc., or that may be attributable to working behaviors or other work-related factors (hereinafter referred to as "hazards").

#### 3. Implementation Items

The employer shall implement the following items as part of the risk assessment and measures to be taken based on the results of such risk assessment.

- (1) The identification of hazards relative to job performance by workers
- (2) An estimation of the severity and the extent of possibility of occurrence of injuries or diseases that might be caused by the hazards identified in item (1) (hereinafter referred to as "risks")
- (3) Setting priorities to reduce the risks estimated under item (2), and examining measures to reduce risks (hereinafter referred to as "risk reduction measures")
- (4) Implementing risk reduction measures in accordance with priorities set under item (3)

#### 4. Organizational Structure

- (1) The employer shall implement risk assessment and control measures under the following organization.
  - a. The employer shall have the person who supervises and manages an overall business undertaking (who assumes the highest position in a workplace), such as a general safety

- and health manager, supervise and manage the implementation of risk assessment and control measures.
- b. The employer shall have a safety supervisor, a health supervisor, etc., in a workplace manage the implementation of risk assessment and control measures.
- c. The employer shall have workers participate in related activities through opportunities such as a safety and health committee, a safety committee or a health committee.
- d. In implementing risk assessment and control measures, the employer shall strive to assign a person who is well acquainted with specific work details such as a foreman to identify hazards, estimate risks and examine risk reduction measures.
- e. In implementing risk assessment and control measures relative to machinery and equipment, the employer shall strive to have person(s) who have technical knowledge regarding the relevant machinery or equipment participate in such activities.
- (2) The employer shall provide education and training programs necessary to implement risk assessment and control measures to persons designated in item (1) above.

#### 5. Implementation Timing

- (1) The employer shall implement risk assessment and control measures when work specified in "a" through "e" below is conducted.
  - a. When a structure is installed, relocated, modified or dismantled
  - b. When a facility is newly introduced or a change is made to a facility
  - c. When a raw material is newly adopted or changed
  - d. When a working method or working procedures are newly adopted or changed
  - e. Otherwise, when risks perceived in a workplace change or are likely to change, such as in the following cases:
    - (i) If an industrial accident occurred and problems were found in the contents of

- risk assessment and control measures conducted in the past
- (ii) Because of the elapse of a certain period after the most recent risk assessment and control measures, when the quality of machinery, equipment, etc., has been degraded due to aging, when workers do not have adequate knowledge and/or experience relative to safety and health due to turnover, or when new safety and health expertise is acquired
- (2) The employer shall recognize that it is necessary to implement risk reduction measures before the start of work specified in "a" through "d" of item (1) above.
- (3) It is also desirable for the employer to conduct risk assessment and control measures when plans relative to "a" through "d" of item (1) above are formulated.

### 6. Determination of Risk Assessment and Control Measures

Based on the following considerations, the employer shall determine what work is subject to risk assessment and control measures.

- (1) Work in which the occurrence of injuries or diseases due to hazards associated with that specific work is reasonably foreseeable, such as work in which an industrial accident or a hazardous incident occurred in the past, shall be subject to risk assessment and control measures.
- (2) Of work specified in item (1) above, work that is expected to cause only minor injuries or diseases such as walking on a flat walkway can be excluded.

#### 7. Collection of Information

(1) When implementing risk assessment and control measures, the employer shall gather the materials listed below and make use of the information contained in such materials. In gathering the materials, the actual situation of work sites shall be taken into consideration, and not only materials concerning routine

work but also those related to non-routine work shall be gathered.

- a. Work standards, operation procedures, etc.
- b. Information concerning hazards relative to machinery, equipment, materials, etc., that are used, such as specifications and material safety data sheets (MSDS)
- c. Information on the peripheral work environment such as the layout of machinery and equipment, etc.
- d. The results of working environment measurements, etc.
- e. Information on situations where multiple employers conduct work in one place, such as danger arising from several kinds of operations performed in a single location
- f. Actual cases of occurrences of accidents and statistics on accidents, etc.
- g. Other materials and information relevant to implementing risk assessment and control measures
- (2) When gathering information, the employer shall take note of the following matters.
  - a. When the employer plans to introduce new machinery, equipment, etc., the employer shall require the manufacturer of such machinery, equipment, etc., to conduct risk assessment and control measures at the design and production stages of said facility and shall obtain the results of such risk assessment and control measures.
  - b. When the employer plans to use or remodel machinery, equipment, etc., that is not owned by the employer, the employer shall obtain the results of risk assessment and control measures conducted by the person or company that owns management title over such facilities.
  - c. When multiple employers conduct work in one location, each employer shall obtain the results of risk assessment and control measures conducted by the principal employer to prevent an industrial accident due to the performance of different types of work at one location.

d. When multiple employers conduct work in a hazardous location such as a place where machinery, equipment, etc., may overturn, each employer shall obtain the results of risk assessment and control measures conducted by the principal employer regarding such hazardous location.

#### 8. Identification of Hazards

- (1) Based on work standards, etc., the employer shall examine work in detail on units necessary to identify hazards associated with job performance by workers, and shall identify hazards inherent in each work unit in accordance with the classification of hazards that is predetermined according to specific machinery, equipment, work, etc., in the workplace.
- (2) In identifying risks or hazards as specified in item (1), the employer shall take into consideration the additional effect of worker fatigue, etc., on risks or hazards.

#### 9. Estimation of Risks

- (1) In order to determine priorities to reduce risks, the employer shall estimate risks using a method such as those described below, taking into consideration the severity and the extent of possibility of the occurrence of injuries or diseases that may be caused by hazards. However, with respect to diseases caused by chemical substances, etc., the employer can estimate risks in consideration of the level of toxicity of and the extent of exposure to chemical substances, etc.
  - a. A method in which the severity of injuries or diseases and the extent of possibility of the occurrence of injuries or diseases are measured and plotted on vertical and horizontal axes, and risks are estimated by using a table in which risks are predetermined according to the severity and the degree of possibility
  - b. A method in which the extent of possibility of the occurrence of injuries or diseases and

- the severity of such injuries or diseases are numerically expressed based on prescribed criteria, and such numerals are added or multiplied to estimate the degree of risk
- c. A method in which risks are estimated by separating the severity of injuries or diseases and the extent of possibility of the occurrence of injuries or diseases on a phased basis
- (2) In estimating risks as specified in item (1), the employer shall take note of the following matters.
  - a. Accurately identifying those persons who may suffer estimated injuries or diseases and the details of such injuries or diseases
  - b. Estimating the severity of the most serious injuries or diseases by assuming the worst possible case, rather than using the severity of injuries or diseases that actually occurred in the past
  - c. Because it is desirable to use common criteria to measure the severity of injuries or diseases regardless of their type, the employer shall principally use the number of days absent, etc., due to such injuries or diseases as the measurement criteria.
  - d. Even if the existence of hazards is not proved, if there are reasonable grounds for suspecting hazards, the employer shall strive to estimate risks by assuming the existence of hazards based on such grounds.
- (3) The employer shall estimate risks as specified in item (1) according to the characteristics of machinery, equipment, work, etc., for each type of injury or disease listed below.
  - a. Physical accidents such as being caught in machinery or falling
  - b. Physical effects of chemical substances that cause explosion and/or fire
  - c. Poisoning by toxic chemical substances
  - d. Physical hazards such as disorders caused by vibration

During this estimation process, the employer shall also consider the following matters.

a. Reliability of functions or measures to prevent industrial accidents (hereinafter referred to as "safety functions, etc.") such

- as the installation of safety devices and "off limits" measures as well as the ability to maintain such functions or measures.
- b. Possibility of undoing or ignoring safety functions
- c. Possibility of foreseeable intentional or accidental incorrect use or dangerous behavior, such as deviation from work procedures or errors in handling

### 10. Study and Implementation of Risk Reduction Measures

- (1) The employer shall ensure that the measures required by applicable laws and ordinances are fully implemented. In addition, the employer shall study and implement measures for reducing risks in the order of priority given below.
  - a. Measures to reduce or eliminate hazards associated with job performance by workers, starting from the design and planning stage, such as elimination or change of dangerous work
  - b. Engineering measures to prevent or reduce risks such as the installation of interlocks and local exhaust ventilation systems
  - c. Administrative measures such as the preparation of instruction manuals
  - d. Use of personal protective equipment
- (2) In studying measures as specified in item (1), the risk reduction measures to which a higher priority is given must be implemented in as many cases as possible, except for cases in which the burden incurred to reduce such a risk is substantially greater than the expected effect of preventing an industrial accident, leading to a significant imbalance between the cost and effect, and where the implementation of such measures is considered highly irrational.
- (3) If a long time is required to implement appropriate risk reduction measures for risks that might lead to fatalities, residual disability or severe diseases, provisional measures shall immediately be taken.

#### 11. Recording

The employer shall maintain a written record of the following activities.

- (1) Examined and identified work
- (2) Identified
- (3) Estimated risks
- (4) Priorities established for risk reduction measures
- $(5) \quad Contents \ of \ implemented \ risk \ reduction \ measures$

### Guidelines for Risk Assessment on Chemicals (Notification No. 2, Guidelines for Risk Assessment, March 30, 2006)

#### 1. Purpose

Pursuant to the provisions of Paragraph 2 of Article 28-2 of the Industrial Safety and Health Act, these Guidelines shall stipulate the basic concept and actions for assessment of risks associated with chemical substances, pharmaceutical products containing chemical substances or other materials that may cause hazards or health impairments to workers, so that measures necessary to prevent workers from being exposed to risks or hazards are appropriately and effectively implemented in each workplace based on the results of such assessment, and aim to promote voluntary safety and health activities by the employer.

As part of the Guidelines for Risk Assessment (Notification No. 1, Guidelines for Risk Assessment, 2006), these Guidelines shall stipulate detailed matters related to chemical substances, etc. For the sake of convenience, these Guidelines also include matters that are stipulated in the general guidelines in an overlapped manner even if there are no detailed matters that should be specified in these Guidelines.

These Guidelines shall also be designed to address risk assessment and associated measures as stipulated in the Guidelines on Occupational Safety and Health Management Systems (Ministry of Labour Notification No. 53, 1999).

#### 2. Scope

These Guidelines shall be applicable to all hazards inherent in work performed by workers that may arise when producing, handling, storing or transporting chemical substances, pharmaceutical products containing chemical substances or other materials that may cause hazards or health impairments to workers (hereinafter referred to as "chemical substances, etc.").

#### 3. Implementation Items

The employer shall implement the following items as part of the risk assessment to be taken based on the results of such risk assessment (hereinafter referred to as "risk assessment and control measures").

- (1) The identification of hazards caused by chemical substances, etc.
- (2) An estimation of the severity and the extent of possibility of occurrence of injuries or diseases that might be caused by hazards from chemical substances, etc., identified in item (1) (hereinafter referred to as "risks")
- (3) Setting priorities to reduce the risks estimated under item (2), and examining measures to reduce risks (hereinafter referred to as "risk reduction measures")
- (4) Implementing risk reduction measures in accordance with priorities set under item (3)

#### 4. Organizational Structure

- (1) The employer shall implement risk assessment and control measures under the following organization.
  - a. The employer shall have the person who supervises and manages an overall business undertaking (who assumes the highest position in a workplace), such as a general safety and health manager, supervise and manage the implementation of risk assessment and control measures, etc.
  - b. The employer shall have a safety supervisor, a health supervisor, etc., in a workplace manage the implementation of risk assessment and control measures.
  - c. The employer shall designate a person to take charge of the management of chemical substances, etc. (hereinafter referred to as a "chemical substance management officer") from among those who have the ability to appropriately manage chemical substances,

- etc., and have such chemical substance management officer perform technical work related to risk assessment and control measures, under the management of the safety supervisor, health supervisor, etc.
- d. The employer shall have workers participate in related activities through opportunities such as a safety and health committee, a safety committee or a health committee.
- e. In implementing risk assessment and control measures, the employer shall strive to have a chemical substance management officer and other persons who have professional knowledge regarding chemical substances, etc., and machinery or facilities associated with chemical substances, etc., participate in such activities. As necessary, the employer shall seek participation in risk assessment by persons who are well versed in the characteristics of chemical facilities, experts such as a production engineer, and those who have expertise in chemical substances, etc.
- (2) The employer shall provide education and training programs necessary to implement risk assessment and control measures to persons designated in item (1) above.

#### 5. Implementation Timing

- (1) The employer shall implement risk assessment and control measures when work specified in "a" through "e" below is conducted.
  - a. When a structure associated with chemical substances, etc., is installed, relocated, modified or dismantled
  - b. When a facility associated with chemical substances, etc., is newly introduced or a change is made to a facility
  - c. When raw materials that are chemical substances, etc., are newly adopted or changed
  - d. When a working method or working procedures associated with chemical substances, etc., are newly adopted or changed
  - e. Otherwise, when risks perceived in a workplace change or are likely to change, such as in the following cases:

- (i) If an industrial accident caused by chemical substances, etc., occurred and problems were found in the contents of risk assessment and control measures conducted in the past
- (ii) When new expertise concerning risks or hazards from chemical substances, etc., is acquired
- (iii) Because of the elapse of a certain period after the most recent investigation, etc., when the quality of machinery, equipment, etc., associated with chemical substances, etc., has been degraded due to aging, when workers do not have adequate knowledge and/or experience relative to safety and health due to turnover or when new safety and health expertise is acquired
- (2) The employer shall recognize that it is necessary to implement risk reduction measures before the start of work specified in "a" through "d" of item (1) above.
- (3) It is also desirable for the employer to conduct risk assessment and control measures when plans relative to "a" through "d" of item (1) above are formulated.

### 6. Determination of Risk Assessment and Control Measures

Based on the following considerations, the employer shall determine what work is subject to risk assessment and control measures.

- (1) All risks or hazards caused by chemical substances, etc., in a workplace shall be subject to risk assessment and control measures.
- (2) Work in which the occurrence of injuries or diseases due to risks or hazards caused by chemical substances, etc., is reasonably foreseeable, such as work in which an industrial accident caused by chemical substances, etc., or an incident that caused hazards or health impairments from chemical substances, etc., occurred in the past, shall be subject to risk assessment and control measures.

#### 7. Collection of Information

- (1) When implementing risk assessment and control measures, the employer shall gather the materials listed below and make use of the information contained in such materials. In gathering the materials, the actual situation of work sites shall be taken into consideration, and not only materials concerning routine work but also those related to nonroutine work shall be gathered.
  - a. Information concerning hazards caused by chemical substances, etc., and machinery, equipment, etc., associated with chemical substances, etc., such as material safety data sheets (MSDS) for chemical substances and specifications
  - b. Work standards, operated procedures, etc., associated with chemical substances, etc.
  - c. Information on the peripheral work environment such as the layout of machinery and equipment, etc., associated with chemical substances, etc.
  - d. The results of working environment measurements, etc.
  - e. Information on situations where multiple employers conduct work in one place, such as hazards caused by chemical substances, etc., arising from several kinds of operations performed in a single location
  - f. Actual cases of occurrences of accidents and statistics on accidents, etc.
  - g. Other materials and information relevant to implementing risk assessment and control measures
- (2) When gathering information, the employer shall take note of the following matters.
  - a. When the employer plans to acquire new chemical substances, etc., the employer shall obtain material safety data sheets (MSDS) for the relevant chemical substances, etc., from those who transfer or provide said chemical substances, etc.
  - b. When the employer plans to introduce new machinery, equipment, etc. associated with chemical substances, etc., the employer shall

- require the manufacturer of such machinery, equipment, etc., to conduct risk assessment and control measures at the design and production stages of said facility and shall obtain the results of such risk assessment and control measures.
- c. When the employer plans to use or remodel machinery, equipment, etc., associated with chemical substances, etc., that is not owned by the employer, the employer shall obtain the results of risk assessment and control measures conducted by the person or company that owns management title over such facilities.
- d. When multiple employers conduct work in one location, each employer shall obtain the results of risk assessment and control measures conducted by the principal employer to prevent an industrial accident caused by chemical substances, etc., due to the performance of different types of work at one location.
- e. When multiple employers conduct work in one location where risks or hazards from chemical substances, etc., exist such as where workers may be exposed to chemical substances, etc., each employer shall obtain the results of risk assessment and control measures conducted by the principal employer regarding such relevant location.

#### 8. Identification of Hazards

(1) Based on work standards, etc., the employer shall examine work in detail on units necessary to identify risks or hazards from chemical substances, etc., and shall identify hazards inherent in each work unit in accordance with the classification of hazards that is specified in the "Globally Harmonized System of Classification and Labelling of Chemicals (GHS)" published by the United Nations (hereinafter referred to as "GHS"), etc.

However, in chemical plants, etc., the employer may divide such a plant into several sections by using a method of division by a process, a method of division by layout, or other appropriate methods. Then, facilities in each

- section shall be made subject to risk assessment and control measures to identify hazards caused by chemical substances, etc.
- (2) In identifying risks or hazards caused by chemical substances, etc., as specified in item (1), the employer shall take into consideration the additional effect of worker fatigue, etc., on risks or hazards.

#### 9. Estimation of Risks

- (1) In order to determine priorities to reduce risks, the employer shall estimate risks using a method such as those described below, taking into consideration the severity and the extent of possibility of the occurrence of injuries or diseases that may be caused by hazards from chemical substances, etc.
  - a. A method in which the severity of injuries or diseases and the extent of possibility of the occurrence of injuries or diseases are measured and plotted on vertical and horizontal axes, and risks are estimated by using a table in which risks are predetermined according to the severity and the degree of possibility
  - b. A method in which the extent of possibility of the occurrence of injuries or diseases and the severity of such injuries or diseases are numerically expressed based on prescribed criteria, and such numerals are added or multiplied to estimate the degree of risk
  - c. A method in which risks are estimated by separating the severity of injuries or diseases and the extent of possibility of the occurrence of injuries or diseases on a phased basis
- (2) Notwithstanding the provisions in item (1), the employer may estimate risks with respect to diseases caused by chemical substances, etc., by using one of the following methods and by taking into consideration the degree of hazards of and the amount of exposure to the relevant chemical substances, etc. However, of the following two methods, the employer is encouraged to adopt the method indicated in "a."
  - a. A method in which a worker's exposure concentration of the chemical substance, etc.,

- that is subject to investigation is measured and the measurement result is compared to exposure limits of the relevant chemical substance ("occupational exposure limits" published by the Japan Society for Occupational Health). If the measured exposure concentration is below such exposure limits, the relevant risks may be treated as being within the permissible range
- b. A method in which the degree of hazards of the chemical substance, etc., which is subject to investigation and the level of a worker's exposure to the relevant chemical substance, etc., are measured and plotted on vertical and horizontal axes, and risks are estimated by using a table in which risks are predetermined according to the degree of hazards and the level of exposure
- (3) In estimating the extent of possibility of the occurrence of injuries or diseases as specified in item (1) and exposure concentration as specified in item (2), the employer shall be aware of and make use of the following matters.

However, information indicated in "i" below shall be required only when such information is available.

- a. Properties of the relevant chemical substance, etc.
- b. Production or handling volume of the relevant chemical substance, etc.
- c. Details of work related to the production, etc., of the relevant chemical substance, etc.
- d. Working conditions for the production, etc., of the relevant chemical substance, etc., and the status of associated facilities
- e. Personnel assignments to work related to the production, etc., of the relevant chemical substance, etc.
- f. Working hours
- g. Installation of ventilation systems
- h. Utilization of protective devices
- With respect to the relevant chemical substance, etc., measurement results of concentration in the existing working environment or exposure concentration, or results of biological monitoring

- (4) The employer shall estimate risks relative to chemical substances, etc., as specified in items (1) and (2) in accordance with the classification of risks or hazards specified in the GHS. During this estimation process, the employer shall consider the following matters.
  - a. Reliability of functions or measures to prevent industrial accidents (hereinafter referred to as "safety and health functions, etc.") such as the installation of safety devices, "off limits" measures and the installation of exhaust ventilation systems as well as the ability to maintain such functions or measures
  - b. Possibility of undoing or ignoring safety and health functions, etc.
  - c. Possibility of foreseeable intentional or accidental incorrect use or dangerous behavior, such as deviation from work procedures or errors in handling
  - d. Even if the existence of a hazard is not proven, if there are reasonable grounds for suspecting a hazard, the employer shall strive to estimate risks by assuming the existence of a hazard based on such grounds
- (5) In estimating risks as specified in item (1), the employer shall take note of the following matters.
  - a. Accurately identifying those persons who may suffer estimated injuries or diseases and the details of such injuries or diseases
  - b. Estimating the severity of the most serious injuries or diseases by assuming the worst possible case, rather than by using the severity of injuries or diseases that actually occurred in the past
  - c. Because it is desirable to use common criteria to measure the severity of injuries or diseases regardless of their type, the employer shall principally use the number of days absent, etc., due to such injuries or diseases as the measurement criteria.

### 10. Study and Implementation of Risk Reduction Measures

- (1) The employer shall ensure that the measures required by applicable laws and ordinances are fully implemented. In addition, the employer shall study and implement measures for reducing risks in the order of priority given below.
  - a. Cessation of the use of high-hazard chemical substances, etc., or replacement with lowerhazard materials
  - b. Reduction of the extent of the possibility of the occurrence of injuries or the level of exposure such as by changing the operating conditions of chemical reaction processes and the form of chemical substances, etc., handled in a workplace
  - c. Engineering measures such as the adoption of explosion-protected structures for machinery and equipment associated with chemical substances, etc., and double safety devices, and/or industrial hygiene engineering measures such as the enclosure of machinery and equipment associated with chemical substances, etc., and the installation of local exhaust systems, etc.
  - d. Administrative measures such as the preparation of instruction manuals
  - e. Use of personal protective equipment
- (2) In studying measures as specified in item (1), the risk reduction measures to which a higher priority is given must be implemented in as many cases as possible, except for cases in which the burden incurred to reduce such a risk is substantially greater than the expected effect of preventing an industrial accident, leading to a significant imbalance between the cost and effect, and where the implementation of such measures is considered highly irrational.
- (3) If a long time is required to implement appropriate risk reduction measures for risks that might lead to fatalities, residual disability or severe diseases, provisional measures shall immediately be taken.

#### 11. Recording

The employer shall maintain a written record of the following activities.

- (1) Investigated chemical substances, etc.
- (2) Examined and identified work or process
- (3) Identified hazards
- (4) Estimated risks
- (5) Priorities established for risk reduction measures
- (6) Details of implemented risk reduction measures

### Guidelines for Comprehensive Safety Standards of Machinery (LSB Notification No. 501, June 1, 2001)

#### 1. Purpose

The Guidelines for Comprehensive Safety Standards of Machinery (hereinafter referred to as "Guidelines"), in an effort to reduce the risk of machinery and to improve machinery safety, establish standards for comprehensive safety measures, etc., applicable to all machinery with respect to the design, manufacture, etc., of machinery by machinery manufacturers, etc., and to the use of machinery by workers of employers. The Guidelines were established with the purpose of preventing occupational accidents caused by machinery by encouraging the manufacture, etc., of safe machinery by manufacturers, etc., and the safe use of machinery by employers.

#### 2. Scope of Application

These Guidelines apply to manufacturers, etc., that design, manufacture, etc., machinery and to employers that employ workers to use the machinery concerned.

#### 3. Terms and Definitions

These Guidelines use the following terms and definitions.

#### (1) Machine

An item assembled of parts and components for the specific application of processing, treating, moving, packaging, etc., materials, that has a mechanical activating mechanism, a control section, and a power section, and in which at least one of the parts concerned and components move.

#### (2) Hazard

A source that can cause occupational accidents.

#### (3) Hazardous situation

A situation in which a worker is exposed to a hazard.

#### (4) Risk

An indicator for evaluating the degree of hazard; comprised of a combination of the probability of an occupational accident occurring and the severity of occupational accidents concerned.

#### (5) Risk assessment

Identifying hazards and hazardous situations using information available, estimating the risk of hazards and hazardous situations, and determining whether or not this risk is permissible based on the risk assessment.

#### (6) Usage information

Information provided by manufacturers, etc., for the purpose of using machinery safely, being provided by posting displays and warning labels, installing signal devices and warning devices, distributing written instruction manuals, etc., conducting education and training, and other means.

#### (7) Manufacturers, etc.

Parties that design, manufacture, or modify machinery, and parties that import machinery.

#### (8) Safety measures

Measures to reduce risk (including the elimination of hazards). Safety measures for manufacturers, etc., include intrinsically safe design, safeguarding, additional safety measures, and the provision of usage information. Safety measures for employers include the consolidation of the work structure, preparation of work procedures, installation of safeguards, provision of protective equipment, and education and training for workers.

#### (9) Intrinsically safe design

Safety measures taken to reduce risk by designing machinery to be safe even without the installation of additional safeguards or other such equipment.

#### (10) Safeguarding devices

Devices such as light beam type safety devices and two-hand tripping safety devices that are installed on machinery and used either independently or in combination with guards in order to reduce risk.

#### (11)Safeguards

Guards and safeguard devices.

#### (12) Safeguarding

Safety measures taken by installing safeguards.

#### (13) Additional safety measures

Safety measures taken to avoid, etc., emergency situations that could potentially lead to occupational accidents (limited to measures other than intrinsically safe design, safeguarding, and the provision of usage information).

#### (14) Residual risk in manufacturing, etc.

Risk that remains after safety measures such as intrinsically safe design, safeguarding, and additional safety measures have been taken by manufacturers, etc.

#### (15)Intended use

The use of a machine according to the purpose and method shown in the usage information provided by the manufacturer, etc.

#### (16) Reasonably foreseeable misuse

Use of a machine that is not according to the purpose and method intended by the manufacturer, etc., which is reasonably foreseeable based on the common behavioral traits of human beings.

### 4. Procedures for Manufacturers, Etc., to Reduce the Risk of Machinery

(1) Manufacturers, etc., shall perform risk assessment when designing, manufacturing, or modifying a machine, or when delivering or leasing an imported machine (hereinafter referred to as "manufacturing, etc.").

(2) Manufacturers, etc., shall implement necessary safety measures concerning the hazards and hazardous situations of a machine determined to have higher than tolerable levels of risk based on the manufacturing risk assessment, etc., in order to reduce the risk of the machine concerned.

#### 5. Risk Assessment Methods

- (1) Risk assessment of a machine in manufacturing, etc., shall be performed according to the following sequence:
  - a. Identify the usage situation of the machine.
  - b. Identify hazards and hazardous situations of the machine.
  - c. Estimate the risk of the identified hazards and hazardous situations of the machine.
  - d. Evaluate the estimated risk and determine the necessity of reducing this risk.
- (2) Usage situations of a machine include the following:
  - a. The machine is used as intended.
  - b. Situations regarding a program for use of the machine, measures to address a malfunction, cleaning, inspection, repair, transport, installation, trial operation, disposal, etc.
  - c. The machine is broken down, malfunctioning, etc.
  - d. Reasonably foreseeable misuse of the machine.
  - e. A worker, etc., is in close proximity to the machine.

### 6. Implementation of Safety Measures by Manufacturers, Etc.

- (1) Safety measures to reduce the risk of a machine shall be implemented by manufacturers, etc., according to the following sequence:
  - a. Implement intrinsically safe design.
  - b. For risk that cannot be reduced to tolerable levels through intrinsically safe design, implement necessary safeguarding and additional safety measures.

- c. For risk that cannot be reduced to permissible levels through intrinsically safe design, safeguarding, and additional safety measures, inform the party receiving or leasing the machine of this risk in the usage information.
- (2) Manufacturers, etc., shall be careful not to create new hazards or additional risk when implementing safety measures.

### 7. Specific Methods, etc., for Safety Measures Implemented by Manufacturers, Etc.

#### (1) Methods for intrinsically safe design

Manufacturers, etc., shall implement intrinsically safe design based on the methods prescribed in Attachment 1 (omitted) as well as other appropriate methods.

### (2) Methods for safeguarding against mechanical hazards

Manufacturers, etc., shall safeguard against hazards that result from the operation of the machine's moving parts based on the methods prescribed in Attachment 2 (omitted) as well as other appropriate methods.

#### (3) Methods for additional safety measures

Manufacturers, etc., shall implement additional safety measures based on the methods prescribed in Attachment 3 (omitted) as well as other appropriate methods.

#### (4) Providing usage information

- a. Manufacturers, etc., shall provide usage information covering the matters prescribed in Attachment 4 (omitted) as well as other information required for the safe use of the machine.
- b. Manufacturers, etc., shall provide usage information based on the methods prescribed in Attachment 5 (omitted) as well as other appropriate methods.
- c. Manufacturers, etc., shall not provide usage information as a substitute for implementing equipment safety measures for risk that can be reduced through equipment safety measures.

# (5) Considerations related to safety measures Manufacturers, etc., when implementing safety measures, shall give consideration to the matters prescribed in Attachment 6 (omitted), according to the type

of hazard.

#### 8. Recording Measures Taken to Reduce Risk

Manufacturers, etc., shall record measures taken to reduce the risk of a machine based on the results of the machine risk assessment in manufacturing, etc., the details of safety measures implemented, and other details specified in these Guidelines.

#### 9. Procedures for Employers to Reduce Risk

- (1) Employers that employ workers to use a machine shall verify the details of usage information provided by manufacturers, etc., and shall perform risk assessment as circumstances require.
- (2) Employers shall implement necessary safety measures based on usage information or the results of independent risk assessment.

#### 10. Conditions of Ordering Machinery

Parties placing an order for the manufacture, etc., of a machine shall consider the conditions of the order concerned to ensure that they do not conflict with the intent of these Guidelines.

Figure 1. Procedure for Improving Machinery Safety

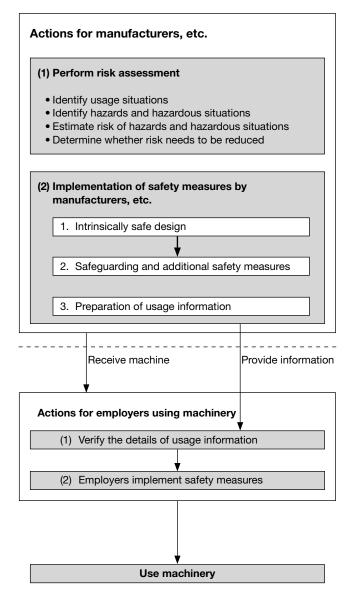
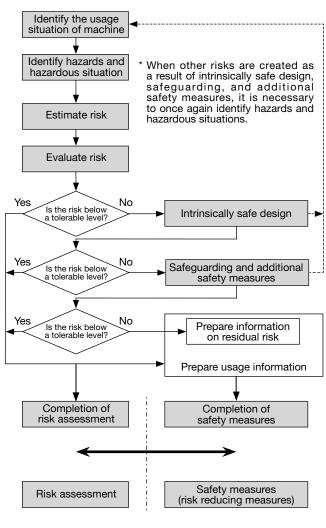


Figure 2. Procedures for Risk Assessment and Safety Measures for Manufactures, Etc.



# Guidelines for Industrial Traffic Accident Prevention (LSB Notification No. 83, February 18, 1994)

#### I. Objectives, Etc.

#### 1. Objectives

In combination with the Industrial Safety and Health Act, pertinent regulations, as well as the standards for the improvement of vehicle driver working hours (Ministry of Labour Notification No. 7; 1989; hereinafter referred to as the "improvement standards notification"), etc., these guidelines are aimed at promoting the prevention of industrial traffic accidents by positively encouraging the establishment of a management structure at workplaces for industrial traffic accident prevention, appropriate working hour management, etc., vehicle operational management, providing education for drivers, health preservation and raising awareness with respect to industrial traffic accident prevention.

#### 2. Industrial Traffic Accidents Subject to These Guidelines

Industrial traffic accidents subject to these guidelines shall be those involving automobiles and motorbikes (hereinafter referred to as "vehicles, etc.") that occur on the road or within the premises of workplaces.

#### 3. Responsibility of Employers and Drivers

Employers who assign workers to drive vehicles, etc. (hereinafter referred to as "employer") shall follow these guidelines in endeavoring to prevent industrial traffic accidents by positively promoting measures to prevent industrial traffic accidents at workplaces.

Workers who operate vehicles, etc. (hereinafter referred to as "drivers") shall endeavor to prevent industrial traffic accidents by observing all required items such as the employer's instructions, etc., as well as cooperating with the steps for the prevention of industrial traffic accidents implemented by the employer.

### II. Management Structure for the Prevention of Industrial Traffic Accidents

#### 1. Establishing a Management Structure for the Prevention of Industrial Traffic Accidents

### (1) Preparation of rules for the prevention of industrial traffic accidents

In order to set out the basic items for dealing with the prevention of industrial traffic accidents at workplaces, rules for the prevention of industrial traffic accidents shall be prepared with respect to the following items, and said rules shall be widely publicized among all drivers.

- a. Management structure
- b. Manager's duties
- c. Items to be observed by drivers
- d. Contents of education and training for drivers

### (2) Appointment of manager in charge of industrial traffic accident prevention

- a. A manager who will take charge of industrial traffic accident prevention (hereinafter referred to as the "industrial traffic accident prevention manager") shall be appointed, and said manager shall be assigned the responsibility to carry out the following duties.
  - (i) Preparation of industrial traffic accident prevention promotion plans indicated in these guidelines
  - (ii) Driving management
  - (iii) Providing education, raising awareness, etc.
- b. In appointing an industrial traffic accident prevention manager, a person who is in

a position of being capable of performing the relevant duties shall be selected, and such person shall be delegated the necessary authority to perform such duties. In addition, a person who is able to render assistance as necessary in the performance of said duties shall also be appointed.

### (3) Examination and deliberations at safety committees, etc.

Matters related to the prevention of industrial traffic accidents shall be examined and deliberated on at industrial safety committees, etc. (meaning industrial safety committee, industrial health committee, industrial safety and health committee, etc.; hereinafter the same).

Efforts shall be made to ensure that matters examined and deliberated on by the industrial safety committee are those stipulated by Articles 17 and 18 of the Industrial Safety and Health Act (hereinafter referred to as the "Act").

In this case, the industrial traffic accident prevention manager shall be appointed as a member of the industrial safety committee, etc.

In addition, it is desirable to deal intensively with the prevention of industrial traffic accidents by such means as installing an industrial traffic accident prevention subcommittee within the industrial safety committee, etc.

#### (4) Organizing the management structure for the prevention of industrial traffic accidents

The management organization for the prevention of industrial traffic accidents should be organized so that it can be operated in conjunction with a general industrial safety and health management organization, and should be a structure that enables the provision of thorough-going guidance on industrial traffic accident prevention within the operations of general industrial safety and health management.

#### 2. Preparation of Industrial Traffic Accident Prevention Promotion Plan

In order to effectively promote the prevention of industrial traffic accidents, an industrial traffic accident prevention promotion plan shall be prepared through studies and deliberations by the industrial safety committee, etc., and such plan shall specify the following items.

- (1) Specific goals in consideration of the incidence of industrial traffic accidents in the past
- (2) Basic items to be implemented
- (3) Special items to be implemented
- (4) Timing or period for implementation of the plan
- (5) Personnel in charge of implementation and those who actually carry out such implementation

Overall, efforts shall be made to promote the effectiveness of such measures by periodically evaluating such matters as the extent to which the plan is being achieved and the demonstrated effectiveness of the plan.

### III. Appropriate Working Hour Management and Driving Management

#### 1. Appropriate Working Hour Management

In order to prevent industrial traffic accidents caused by driver fatigue, efforts shall be made to full observe the standards for the improvement of drivers' working hours, etc., as specified in the improvement standards notification, the special exceptions relating to the total hours spent in work and rest periods for vehicle drivers engaged in activities other than the general passenger vehicle transportation business (Notification No. 92 of the Labour Standards Bureau, March 1, 1989), and the standards for the improvement of working hours, etc., for vehicle drivers (Notification No. 93 of the Labour Standards Bureau, March 1, 1989).

#### 2. Appropriate Driving Management

#### (1) Formulating driving plan

a. Investigating driving routes

When drivers are assigned to operate vehicles, etc., information shall be gathered on road conditions, the required driving time, traffic control, speed limits, fuel locations, en-route inspection locations, rest/nap/meal locations, dangerous locations, weather, etc., from investigations conducted in advance, road maps, past driving records, radio reports, etc., and such information shall be used in determining appropriate driving routes, deploying vehicles, etc., suitable for driving such routes, and informing drivers of any items necessary for driving safety.

In addition, efforts shall be made to convey such information to drivers in an easy-tounderstand way by means such as preparing traffic safety information maps incorporating such information, or general guidance maps, and distributing such maps to drivers.

#### b. Preparing driving plans

In order to prevent industrial traffic accidents caused by driver fatigue, suitable driving plans shall be prepared that set reasonable and appropriate driving hours, etc., based on the improvement standards notification, etc., and the investigation of driving routes specified in item a above.

With respect to the necessary procedures for preparing work plans involving the driving of trucks, etc., in off-road locales, the requirements prescribed in Article 151-3 ~ 7 of the Ordinance on Industrial Safety and Health (hereinafter referred to as the "Ordinance") shall be strictly observed.

### (2) Appropriate driving management by driving records, etc.

The actual driving performance of drivers shall be continuously monitored through driving records such as daily driving reports in order to conduct appropriate management of driving operations based on the driving plan, and improvement measures shall promptly be taken in the event any problems are noted.

When using vehicles equipped with metering devices such as tachographs, appropriate driving management shall be conducted on the basis of such records, which shall also be utilized as reference materials in providing driving safety guidance, etc.

## (3) Prevention of industrial traffic accidents at the time of workers commuting to and from workplace

In the case of workers commuting to and from workplaces by a vehicle such as microbus or van, the following items in addition to those listed in (1) above shall becarried out.

- a. From among those with the necessary qualification for driving the vehicle used, the driver assigned shall be one who is fully qualified and who demonstrates a high level of skills.
- b. In the case of driving in particularly dangerous places, such as railway crossings (excluding those equipped with automatic crossing gates or attended crossings), places with an obstructed view, narrow sites, and roads with soft shoulders, a qualified person with adequate skills shall be appointed in advance to serve as a guide, and clear hand signals that the guide can use in providing directions shall be established.
- c. In the case of requiring workers to engage in vehicle driving operations after doing work other than vehicle driving, consideration shall be given to reducing non-driving work in order to prevent industrial traffic accidents due to driver fatigue.

#### (4) Vehicle inspections

a. Inspections before driving

In order to secure the safety of vehicles, etc., implementation guidelines shall be established concerning the specific methods of inspecting vehicles, etc., before they are driven, and such inspections shall be conducted on the basis of these implementation guidelines.

In the event any abnormality is observed during such inspections, repairs and/ or other appropriate steps shall be undertaken immediately.

With respect to such inspections before driving and follow-up steps in the case of using trucks, etc., the pertinent provisions in Articles 151-75 and 151-76 of the Ordinance shall be carefully observed.

#### b. En-route inspections

In the event long-distance runs are involved, drivers shall be required to inspect the condition of the vehicle, etc., and the cargo at periodic intervals during the route.

In this case, such inspections shall be incorporated in the driving plan.

#### c. Inspections after driving

In order to secure the safety of vehicles, etc., implementation guidelines shall be established concerning the specific methods of inspecting vehicles, etc., after they are driven, and such inspections shall be conducted on the basis of these implementation guidelines.

In the event any abnormality is observed during such inspections, repairs and/or other appropriate steps shall be undertaken immediately.

#### (5) Roll call inspections, etc.

In order to secure driving safety, roll call inspections prior to driving shall be conducted, at which time the attire, shoes, etc., of drivers as well their physical condition shall be checked.

Driver who appears to be in poor physical condition at the time of the roll call inspection prior to driving shall be prohibited from driving and steps shall be taken to ensure that they take appropriate rest.

#### (6) Steps in case of abnormal weather, etc.

In the event that safe driving conditions may possibly be compromised due to abnormal weather, natural disasters, etc., drivers shall be provided

with the necessary instructions in order to secure driving safety.

In cases of abnormal weather, natural disasters, etc., a full and clear understanding of the situation shall be ascertained and efforts shall be made to promptly convey such details to drivers, as well as to provide appropriate instructions as necessary such as discontinuing the run, temporarily waiting in safe places or proceeding with extreme caution.

In such cases, drivers shall be required to contact the workplace as appropriate and follow the instructions given.

#### (7) Appropriate cargo loading

When drivers are assigned to operate trucks with cargo loads, the following items in particular must be fully observed.

- a. Not exceeding the maximum load.
- b. Carefully loading cargo to prevent any load imbalance.
- c. Fastening the cargo with ropes or providing tarpaulin covers to prevent any cargo shifting or falls.

With respect to items "a" through "c" above, the related provisions in Articles 151-10 and 151-66 of the Ordinance must be fully observed.

### (8) Safety devices, etc., to be installed on vehicles

In order to try to prevent industrial traffic accidents and/or to minimize damage in case an accident does occur, it is desirable to equip vehicles with safety devices such as antilock brakes, air bags, etc.

#### (9) Emergency tools, etc.

To allow for emergency repairs in case of trouble, etc., during driving, all vehicles shall be equipped with appropriate tools and equipment, such as chocks, jacks, wrenches to install and remove tires, screwdrivers, pliers, insulating tape, spare tires, spare light bulbs and spare fuses.

In addition, in order to provide first aid in case of injuries during driving, all vehicles shall be equipped with first-aid equipment and supplies such as tourniquets and bandages.

#### IV. Education and Driver Certification System

#### 1. Education, Etc.

### (1) Education for industrial traffic accident prevention management

Industrial traffic accident prevention managers, etc., shall be provided with education on such matters as their duties as well as the contents of the rules for industrial traffic accident prevention as outlined in Section 2-1-(1).

#### (2) Education at the time of employment, etc.

In conducting education at the time of employment as specified in Paragraph 1, Article 59 of the Act, newly hired drivers shall be provided with education on those matters that drivers should observe, such as obeying traffic regulations, matters requiring attention while driving, and shall be encouraged to strictly observe the regulations requiring inspections before driving, and shall be provided with on-the-job training by making arrangements for them to be accompanied by veteran drivers, etc., who have abundant knowledge and experience in driving safety.

Moreover, in conducting education as specified in Paragraph 2, Article 59 of the Act for those who will become drivers due to changes in their job description, the education and guidance provided shall be in conformity with the education and guidance for newly hired drivers.

#### (3) Daily education

Drivers shall be provided with education on those matters that they should observe, such as obeying traffic regulations, matters requiring attention while driving, and shall be encouraged to strictly observe the regulations requiring inspections before driving.

In assigning drivers to routes that they have never driven before, guidance shall be provided concerning all necessary matters for driving safety by utilizing information such as past driving records and road maps.

#### (4) Traffic danger prediction training

It is desirable to continuously conduct traffic danger prediction training to enable drivers to acquire the necessary skills for driving safety by providing training in predicting the potential dangers of industrial traffic accidents and planning prevention measures through the use of illustrations, photos, etc., that assume actual driving scenarios.

### (5) Driving safety instructor system and practical training in driving safety

In order to promote the thoroughgoing conduct of driving safety, it is desirable to introduce a driving safety instructor system in which driver guidance is provided by arranging for qualified persons to accompany drivers and provide guidance.

In such cases, the qualifications, activities, etc., of driving safety instructors shall be determined in accordance with the actual circumstances of each workplace.

In addition, it is desirable to conduct practical training in driving safety to ensure that drivers acquire the necessary skills for safe driving by such means as utilizing organizations that carry out practical training in driving safety practices.

### (6) Seminars on industrial traffic accident prevention

Drivers shall be provided with knowledge on industrial traffic accident prevention via seminars on this theme (such as case studies of industrial traffic accidents and the reconfirmation of traffic regulations) or by making arrangements for drivers to attend seminars provided by related organizations.

#### 2. Driver Certification System, Etc.

#### (1) Driver certification system

It is desirable to introduce a driver certification system whereby driving operations are restricted only to those who have completed certain education and guidance or those who have passed a certification test. This system would be used to select potential drivers from among those who have the necessary qualifications for driving the applicable vehicle, etc.

The contents of education, guidance and certification tests shall be determined in accordance with the actual circumstances of each workplace.

#### (2) Driving aptitude tests

In order to understand the physiological and psychological characteristics of drivers, it is desirable to conduct driving aptitude tests by such means as utilizing organizations which carry out such testing, notifying the drivers of the test results, and providing guidance as required on driving safety based on the results.

In this connection, proper attention must be given to handling the results of such testing from the viewpoint of ensuring privacy protection.

#### V. Health Preservation

#### 1. Medical Examinations

#### (1) Implementing medical examinations

Appropriate steps shall be taken to ensure that medical examinations are carried out for drivers, and that health guidance, etc., is promoted on the basis of the results through a comprehensive usnderstanding of driver health conditions.

Although the provisions of Article 66 of the Act require the implementation of medical examinations at the time of employment and regular checkups once every year, careful attention must be given to the fact that regular medical examinations must be conducted at least once in every six-month period for drivers engaged in various operations, including late-driving.

### (2) Measures based on the results of medical examinations

With respect to those drivers for which positive or cautionary findings are observed during medical examinations, appropriate follow-up measures shall be taken, such as providing guidance on proper treatment as required, providing guidance on whether they can continue driving operations, as well as points requiring special attention concerning driving safety, all as based on the views of industrial physician, etc.

### 2. Maintaining and Promoting the Health of Both Mind and Body

In order to maintain and promote the health of drivers in both mind and body, measures aimed at continuously and systematically maintaining and promoting health at workplaces shall be carried out.

#### 3. Recovery from Fatigue During Driving

In order to prevent industrial traffic accidents due to fatigue, drivers shall be provided with guidance to encourage steps to overcome fatigue while driving, such as by means of stretching the shoulders, arms and back and performing other exercise in the course of driving the routes.

### VI. Raising Awareness Concerning Industrial Traffic Accident Prevention, Etc.

#### 1. Raising Awareness Concerning Industrial Traffic Accident Prevention

Efforts shall be made to raise the awareness of drivers concerning industrial traffic accident prevention by such means as soliciting and posting posters or slogans, posting photographs of the scenes of industrial traffic accidents, establishing a commendation system, publicly acknowledging drivers with commendable records, and holding industrial traffic accident prevention rallies.

#### 2. Preparing Traffic Danger Maps

Efforts shall be made to call the attention of drivers to industrial traffic accident prevention by preparing, distributing and posting traffic danger maps indicating danger spots, matters requiring attention, etc., based on traffic accident experience and case examples in which drivers felt themselves exposed to the potential danger of a traffic accident (such as examples of near-miss cases).

### 3. Industrial Traffic Accident Prevention for General Workers

For general workers other than drivers, efforts shall be made to prevent industrial traffic accidents by such means as requiring their active participation in traffic safety seminars, etc., conducted by related administrative agencies, etc.

### 6

# Comprehensive Measures for the Prevention of Accidents Involving Woodworking Machines (LSB Notification No. 520-2, September 1, 1998)

#### I. Emphasized Items

In order to prevent accidents involving woodworking machines (hereinafter referred to as "machinery"), it is important to promote effective measures at each stage from the time of manufacturing to the time of usage.

Accordingly, the following items shall be emphasized in implementing the comprehensive measures, and those items that should be specifically implemented by employers manufacturing such machinery (hereinafter referred to as "manufacturers"), employers using such machinery, and related organizations shall be listed in Section II.

- Promoting the design and manufacturing of machinery in consideration of the need to prevent machinery accidents.
- 2. Fully implementing the correct installation and effective maintenance of proper safety devices.
- 3. Promoting the appointment of operations chiefs of handling woodworking machinery (hereinafter referred to as "operations chiefs") and safety confirmation personnel as indicated in Section II-1-(1) b, and ensuring the thorough fulfillment of their duties.
- 4. Establishing working procedures for regular work and non-regular work such as cleaning, inspections and repairs, and implementing safety education as required to ensure that such work is appropriately implemented.
- 5. Promoting the full implementation of measures to prevent machinery accidents in the wooden house construction industry, etc.
- 6. Promoting the full implementation of voluntary activities by such means as carrying out campaigns to encourage measures to prevent woodworking machinery accidents as indicated in Section II-3-(1).
- 7. Promoting the publicizing and full implementation of the following guidelines (hereinafter

referred to as the "circular saw machine guidelines, etc."). Items (1) and (2) should be the most recent revisions of such guidelines.

- (1) Safety guidelines on the structure, use, etc., of circular saw machines (Attachment 1, Notification No. 521 of the Labour Standards Bureau [Safety Guidelines on the Structure, Use, Etc., of Circular Saw Machines] dated September 1, 1998; hereinafter referred to as the "circular saw machine guidelines").
- (2) Safety guidelines on the structure, use, etc., of band saw machines (Attachment 2 of the above notification; hereinafter referred to as the "band saw machine guidelines").
- (3) Safety guidelines on the structure, use, etc., of hand-feed planers, etc. (Attachment 1, Notification No. 656 of the Labour Standards Bureau [Determining the Safety Guidelines, Etc., on the Structure, Use, Etc., of Hand-Feed Planers, Etc.] dated October 24, 1994; hereinafter referred to as the "hand-feed planer guidelines, etc.," including items [4] and [5] below).
- (4) Safety guidelines on the structure, use, etc., of wood shapers (Attachment 2 of the above notification).
- (5) Safety guidelines on the structure, use, etc., of routers (Attachment 3 of the above notification).

#### **II. Implementation Items**

#### 1. Implementation Items at the Workplace

(1) Enhancing organization for safety management Management executives shall create an organization for safety management by such means as appointing safety supervisors, safety and health promoters and those listed in the following, and shall promote the clarification of their responsibilities and authority and the thorough conduct of their duties. In doing so, they shall also pay attention to implementing safety inspections of the machinery as well as pay attention to the organization established to confirm the implementation status.

In addition, they shall also hold periodic safety committee meetings, etc., and shall promote the effective utilization of such meetings by bringing up machinery accident prevention measures, etc., as matters for deliberation.

- a. Appointing an operations chief
  In a workplace where the appointment of an operations chief is required, the appointment of such an employee and the appropriate performance of that person's duties shall be fully implemented.
- b. Appointing safety confirmation personnel
  In a workplace where the appointment of an operations chief is not required, safety confirmation personnel shall be appointed to implement such duties by carrying out the following. It is desirable that safety confirmation personnel be appointed from among those who have completed the skill training course for operations chiefs of handling woodworking machinery.
  - (i) Providing instructions on work involving the use of such machinery
  - (ii) Confirming the proper use of safety device and tools
  - (iii) Carrying out safety inspection and confirming the implementation status of such inspection
  - (iv) Confirming measures to prevent unauthorized entry to a worksite
- c. Fully implementing assigned duties

  The name and duties of the operations chief and safety confirmation personnel shall be publicized by posting such information at the workplace, and the thorough performance of said duties shall be promoted by recording the implementation status of said duties by the use of charts detailing inspection results, etc., and by appointing the number of personnel in accordance with the number of machinery unit, etc.

d. Utilization of those who have completed the skill training course for operations chiefs
In work involving large machinery such as automatic-feed band saws, etc., and which requires more than one person, efforts shall be made to ensure that those who have completed the skill training course oversee such work, even in cases that would not otherwise fall under the requirements for appointing an operations chief.

#### (2) Making the machinery safe

- a. Improving the safety of the machinery
   Efforts shall be made to promote the improvement of machinery safety by the following.
  - (i) Promoting the introduction of machinery for which essential safety improvement measures have been taken so that worker er safety is secured even if the worker engaged in machinery operation (hereinafter referred to as the "operator") makes a mistake in machinery operation.
  - (ii) Promoting work automation by means such as the installation of an automatic feeder device in the machinery, the introduction of exclusive machinery suitable for specific work such as a circular saw with a sliding rip table for cutting plywood and panels, and the introduction of woodworking machinery with automatic control.
- b. Designing safety devices and the thorough conduct of effective maintenance

  Efforts shall be made to use the following methods in fully implementing the proper installation and use of safety devices to prevent contact with cutting edges, rebound prevention devices and covers, as well as the equipment or tools prescribed in the proviso of Paragraph 1, Article 127 of the Ordinance on Industrial Safety and Health (hereinafter referred to as "safety device, etc.").
  - (i) Reviewing work contents, workplace layout, etc., and machinery usage by classifying machinery into units for exclusive use and units for general-purpose use in

- order to reduce the frequency of adjustments to safety devices.
- (ii) In the case of conducting work such as processing small objects, preparing all the proper safety devices in advance depending on the material shape, processing method, etc., and selecting and using the appropriate safety devices in accordance with the material shape, processing method, etc.
- c. Measures by type of machinery Efforts shall be made to take the following steps by type of machinery.
  - (i) Circular saw machines

Many accidents involving circular saw machines occur due to such reasons as not using devices to prevent contact with the teeth of the saw blade. Therefore, the only teeth guards that shall be used are those that conform to laws and regulations. Furthermore, efforts shall be made to promote the introduction of those that specifically conform to the structure specified in I-2-(21) of the circular saw machine guidelines, and to strictly observe the usage standards outlined in I-3.

When portable circular saw machines are used, it is desirable that they be equipped with split blades to prevent rebound. In particular, in cases in which a portable circular saw machine is used by affixing it to the work floor, a stand, etc., safety devices that conform to laws and regulations, and a split blade to prevent rebound as outlined in II-2-(2) of the circular saw machine guidelines, shall be installed and used.

Moreover, in case of difficulties in using a teeth guard as prescribed under items  $A \sim D$  of I-2-(21) of the circular saw machine guidelines due to the nature of work such as cutting decorative laminated panels and the processing of small objects, safety shall be secured by observing the provisions of item E of I-2-(21).

#### (ii) Band saw machines

As there have been a number of band saw machine accidents caused by operators' hands getting pinched between the feeder roller, the automatic-feed device and the band saw machine, etc., efforts shall be made to introduce not only those safety devices that conform to laws and regulations, but also those that conform to the standards on feeder rollers specified in 2-1-(4) and 2-1-(5) of the band saw guidelines and the standards on automatic-feed devices in 2-2, and to thoroughly observe the standards on usage in 3.

(iii) Planing and molding machines, wood shapers and routers

As many accidents involving planing and molding machines, wood shapers and routers are caused by coming into contact with the cutting edges, efforts shall be made to introduce guard devices that prevent such contact and not only conform to laws and regulations, but also conform to the structure specified in 2-(6) of the hand-feed planer guidelines in particular, and to promote the strict observance of the standards on usage in 3.

- (3) Establishing proper working procedures and implementing safety education
  - a. Establishing proper working procedures Efforts shall be made to establish proper working procedures through the following.
    - (i) In accordance with the machinery, materials, etc., establishing in advance the respective work procedures for regular work and non-regular work, and taking steps to ensure that operators are made thoroughly aware of such procedures through periodic announcements by the operations chief and safety confirmation personnel.

In particular, in case of conducting non-regular work such as machinery cleaning, inspection and repair, establishing work procedures concerning stopping the operation of said machinery, locking the startup device, posting a sign, etc., and providing guidance on conducting such work in accordance with said work procedures.

(ii) Using jigs and tools in accordance with work contents when processing small objects.

Moreover, when processing materials that are excessively large in comparison to the machinery table, such as long and/or wide materials, using extension tables, roller conveyors, etc.

#### b. Implementing education

Safety education for operators, operations chiefs, safety confirmation personnel and management executives shall be systematically implemented as follows in accordance with the provisions outlined in Notification No. 39 of the Labour Standards Bureau (Promotion of Safety and Health Education) dated January 21, 1991, etc.

(i) Safety education for operators Safety education for operators is particularly important in order to ensure the full implementation of work procedures and to establish proper working procedures. Accordingly, safety education for operators shall be systematically implemented with respect to the proper use of safety devices, the observance of work procedures, etc. In particular, such education shall be implemented on an intensive basis for operators who carry out the processing of small objects, etc., operators who use rip saws, gang rip saws or edgers, operators who operate automatic-feed band saw machines, etc.

### (ii) Skill improvement training for operations chiefs

In workplaces where an operations chief is appointed, skill improvement training for the operations chief shall be systematically implemented on the basis of Notification No. 536 of the Labour Standards Bureau (Skill Improvement Training for Operations Chiefs of Handling Woodworking Machinery) dated September 6, 1991.

Moreover, it is also desirable to conduct such education for safety confirmation personnel in conformity with that for operations chiefs.

(iii) Safety education for management executives

Management executives shall participate in safety education implemented by related industrial accident prevention organizations as indicated in 3-(2).

#### (4) Implementing safety inspections

In order to maintain the safety and functions of machinery, etc., the personnel to implement safety inspections and the personnel to confirm the implementation status shall be clarified to ensure the thorough conduct of safety inspections.

a. Inspection before work starts Machinery, safety devices and attached equipment shall be inspected prior to starting work.

#### b. Periodic inspections

Machinery, safety devices and attached equipment shall be periodically inspected at least once each year, and the results of such inspections shall be recorded and kept. In the event any abnormalities are observed, appropriate steps such as repairs shall be implemented.

c. Inspection items, etc.

With respect to the inspection items, etc., in a and b, the respective inspection standards in 4 of the circular saw machine guidelines, 4 of the band saw machine guidelines and 4 of the hand-feed planer guidelines, etc., shall be used as a reference.

- (5) Promoting machinery accident prevention measures in the construction industry
  - a. The master employer in the construction industry shall take the following steps to ensure the proper condition of machinery used at worksites, etc.

- (i) Thoroughly carrying out safety management to ensure that related subcontractors do not bring any machinery that is in an unsafe condition onto the site by confirming the presence, functions, etc., of safety devices for machinery brought onto the site by employees of the related subcontractors.
- (ii) In the course of conducting worksite patrols, confirming the proper use of machinery, as well as the installation and effective maintenance of safety devices.
- b. Making efforts to establish proper work procedures by implementing items (1) to (4) above at the wood processing workplaces of construction company offices.

#### 2. Items to Be Implemented by Manufacturers

(1) Designing and manufacturing machinery in consideration of safety

Efforts shall be made to design and manufacture machinery and safety devices in consideration of safety and operability, and which conform to the standards on structure outlined in the circular saw machine guidelines, etc.

In addition, efforts shall be made to provide workplaces with the necessary information in terms of machinery accident prevention by such means as posting the following items in the manuals, etc.

- a. Fully implementing effective maintenance procedures for safety devices.
- b. Giving careful attention to establishing respective work procedures in advance for regular work and non-regular work in accordance with the machinery, materials, etc., and making such procedures known to operators.
- c. In case of conducting work such as machinery cleaning, inspection and repair, taking steps such as stopping the operation of said machinery, locking the startup device, and posting a sign.
- d. Implementing inspection prior to starting work, and also implementing periodic inspection at least once within a year.

(2) Efforts shall be made to develop machinery for which essential safety improvement measures are taken, so that operator safety is secured even if the operator makes predictable mistakes in operation or if the machinery malfunctions.

### 3. Items to Be Implemented by Related Organizations

(1) Implementing promotion campaigns
Related industrial accident prevention organizations and industry organizations shall implement woodworking machinery accident prevention measures promotion campaigns (hereinafter referred to as "promotion campaigns"), whose contents include the publicizing of the comprehensive measures and

the publicizing of the comprehensive measures and the circular saw machine guidelines etc., implementing patrols, implementing voluntary inspections, widely promoting "woodworking inspection day" and other creative voluntary activities.

(2) Implementing safety education

Related industrial accident prevention organizations shall systematically implement safety education that targets the management executives of workplace where such machinery is installed, as based on Notification No. 217 of the Labour Standards Bureau (Promoting Safety and Health Education) dated February 20, 1976.

(3) Establishing accident prevention conferences Related industrial accident prevention organizations, industry organizations such as those in the lumber industry, wood product manufacturing and fixture manufacturing organizations, machinery manufacturing and sales organizations, etc., shall serve as the main constituents in establishing machinery accident prevention conferences to be organized by prefecture and by district, with the participation of related administrative organizations, etc., in order to discuss machinery accident prevention measures including promotion campaigns and to conduct effective safety activities based on annual plans.

7

### Comprehensive Measures for Press Machine Accident Prevention (LSB Notification No. 519-3, September 1, 1998)

#### I. Basic Matters

#### 1. The Nature and Problems of Press Machines

(Omitted)

#### 2. Emphasized Measures

#### (1) Promoting the safety of press machines

In order to prevent press machine accidents, the safest measure is to take the "no hand in dies" approach, which prevents any part of the body from entering the danger limit by using such means as installing safety enclosures as described in Paragraph 1, Article 131 of the Ordinance on Industrial Safety and Health. While this is the basic step among measures that should be promoted, accident prevention steps that use safety presses as prescribed in the proviso of Paragraph 1, Article 131 of the Ordinance shall be taken in cases where the "no hand in dies" approach is difficult to apply due to the nature of the work. It is necessary to take accident prevention steps by installing the safety device prescribed in Paragraph 2, Article 131 of the Ordinance only in cases where the use of safety presses is also difficult.

A specific safety promotion measure that is effective for many types of press machines is to switch from foot-pedal operation to the use of push buttons that require both hands to operate. In all cases, however, it is necessary to give particular attention to improvements that adopt the "no hand in dies" method as a fundamental accident prevention measure.

### (2) Full implementation of press machine safety devices, etc.

With respect to the safety devices and safety mechanisms of safety presses (hereinafter referred to as "safety devices, etc."), it is important to fully implement the appropriate selection, use, etc., of press

machine safety devices, etc., in order to prevent accidents stemming from the failure of safety devices, etc., to function effectively. Such reasons are often related to the fact that the type of safety device, etc., is not appropriate for the type of press machine or the content of the work, and/or the usage method is not appropriate due to such reasons as an insufficient safety distance.

This requires that careful attention and consideration be given to appointing an operations chief of handling press machines, etc., and that the duties of this appointee be thoroughly carried out. In addition, it is necessary that positive safety management activities focused on the operations chief of handling press machines be implemented through safety education, etc., for employers, press machine operations chiefs and press workers.

#### (3) Effective measures in accordance with the situation at workplaces where press machines are installed

In large-scale workplaces and their affiliated company groups, it is important to make efforts to establish an organization to discuss safety issues related to press machines and to carry out voluntary safety activities through this organization, and it is also important that multiple subcontractors be included in these activities.

In industrial accident prevention organizations, press-related industrial associations, etc., it is necessary to make efforts to enhance voluntary safety activities including the promotion of new membership by non-member workplaces that have press machines installed. Moreover, in small and medium-sized workplaces where it is difficult to fully take press machine accident prevention steps due to technical and financial reasons, it is important to receive external technical guidance, etc., as well as carry out continuous voluntary safety activites.

#### II. Specific Implementation Items

#### Implementing Safety Activities Such as Establishing an Organization for Safety Management

(1) Establishing an organization for management Safety supervisors, safety and health promoters, operations chiefs of handling press machines, etc., shall be appointed in accordance with the scale of the workplace, the situation of press machine work, etc., and the respective scope of their responsibilities and work assignments shall be clarified.

#### (2) Deliberations at the safety committee

The safety committee shall discuss and deliberate such matters as the preparation of rules on press machine work safety and the prevention of dangers concerning press machines to be newly introduced.

#### (3) Scrupulous management by operations chiefs, etc.

In order to firmly establish the maintenance and inspections of press machines and appropriate work in the workplace, the necessary number of operations chiefs of handling press machines shall be appointed to fully carry out the assigned duties in consideration of the number of press machine units installed, the situation of press machine work, etc. The management responsibilities and authority for each press machine unit shall be clarified to promote the establishment of safety management activities. For this purpose, the appointment of operations chiefs of handling press machines shall be implemented without fail where required. In addition, workplaces not required to make such an appointment shall designate personnel in charge of items 1, 2 and 4, Article 134 of the Ordinance, and shall instruct such personnel to take charge of the practical application of the following matters.

In addition, the name of the operations chief of handling press machines, etc., in charge of the management, as well as the names of personnel in charge of installing and adjusting metal dies and safety devices for each press machine unit shall be conspicuously posted. a. Special voluntary inspection and checks before starting work

The special voluntary inspection based on the inspection items, inspection methods and judgment standards stipulated in the periodical voluntary inspection guidelines for power-driven press machines (Voluntary Inspection Guidelines Notification No. 18, 1997) shall be established, and checks shall be fully implemented before the start of work.

#### b. Safety inspections

In order to maintain the safety and functions of machines and equipment, safety inspection manuals shall be prepared that stipulate the personnel in charge of inspection, specific inspection items, inspection methods, judgment standards for acceptance and rejection decisions, inspection timing (frequency), etc., and such inspection shall be fully implemented on the basis of such manual.

The definite implementation of these inspections shall be confirmed by the press machine operation chief, etc.

c. Early detection of abnormalities (faults) and countermeasures

Any abnormalities observed as the result of said safety inspections and special voluntary inspections, or any abnormalities (faults) detected during work processes shall be reported to a superior manager such as a foreman. In such an event, the foreman, etc., receiving such a report shall immediately suspend the work, and take appropriate repair steps by contacting outside specialist organizations such as the manufacturer of the press machine if necessary.

#### 2. Promoting Press Machine Safety

#### (1) Steps to secure the safety of press machines

In preventing press machine accidents, the steps specified in Paragraph 1, Article 131 of the Ordinance should be undertaken as a fundamental measure. Accordingly, it is necessary to limit the number of press machine units that require other

safety measures as much as possible. Safety steps involving the installation of safety devices as specified in Paragraph 2, Article 131 of the Ordinance shall be taken only in cases in which the usage of the fundamental measure is difficult due to the nature of work.

### a. Steps under Paragraph 1, Article 131 of the Ordinance

As steps to prevent any body part from entering the danger limit, safety measures that include one or more of the following shall be adopted: using press machines equipped with safety enclosures (i.e., those that enclose the edge of the dangerous area, thus preventing hands and fingers from entering); the use of safety dies (i.e., metal dies constructed with an aperture of 8 mm or less, thus preventing any body part from entering); using exclusive press machines (i.e., those that can be used for specific purposes only, and which have a structure that prevents any body part from entering the dangerous area); or using automatic press machines (i.e., those in which the materials are automatically fed and discharged).

However, in case it is difficult to take steps to prevent hands from entering the dangerous area, such as the need for large apertures for feeding and discharging materials due to the nature of work, safety press machines equipped with a safety mechanism at the time of manufacturing shall be used.

#### b. Steps under Paragraph 2, Article 131 of the Ordinance

Only in cases in which it is difficult to take the steps prescribed in Paragraph 1, Article 131 of the Ordinance in A above due to the nature of work, equipment with the following types of safety devices shall be installed: units with movable barriers; unit with two-hand control; unit with PSDI functions; unit with photoelectric beams; unit with pull-out function; or unit with sweeping functions. In addition, efforts shall be made to further improve safety by installing multiple safety devices or using a structure that does not

allow safety features to be easily removed or deactivated.

With respect to the installation of such safety devices, care shall be taken to ensure that enclosure-type safety devices cover all moving parts of the machine except for apertures where materials are inserted or removed.

### (2) Appropriate selection and management of safety devices

The appropriate selection and use of safety devices shall be thoroughly carried out on the basis of the guidelines prescribed in Notification of the Labor Standards Bureau (LSB Notification) No. 446-2 (Guidelines for Safety Device Management of Press Machines) dated July 9, 1993, and the safety standards indicated in LSB Notification No. 130 (Special Cases in Applying Press Machine or Shearing Machine Safety Device Structural Standards and Power-Driven Press Machine Structural Standards to Presence Sensing Device Initiation Equipment) dated March 26, 1998, and steps in the installation, use, maintenance management, etc., of PSDI prescribed in LSB Notification No. 130-4 (Handling of Presence Sensing Device Initiation Equipment) dated the same.

### (3) Switching from foot-pedal to both-hand push button operation

As many accidents still occur in the case of press machines operated by foot-pedals, it is important to switch from foot-pedal operation to push button operation requiring both hands, not only for press machines that involve positive clutch, but also for those that involve friction clutch. In making such a switchover, it is necessary to improve the metal die or use a pedestal for operation that requires the object being processed to be held by hand. In this connection, implementing the switchover from foot-pedal operation of press machines with friction to push buttons that require both hands shall be positively carried out in conformance with the procedures outlined in LSB Notification No. 459-2 (Determining the Guidelines to Switch from Foot-Pedal to Two-Handed Push-Button Operation in Press Machines with Positive Clutch) dated July 15, 1994.

In switching a press machine with positive clutch to two-handed push-button operation, there are many cases in which it is generally difficult to secure a safe distance. As installations of this type do not conform to the steps prescribed in Paragraph 2, Article 131 of the Ordinance, due attention must be given in such cases to the appropriate use of pull-out safety devices.

### (4) Improving the safety of press machine operation

In addition to promoting the safety of press machines, safety devices and related equipment in order to prevent press machine accidents, work standards shall be prepared and efforts shall be made to ensure that all operation are organized and implemented on the basis of these work standards. Such work standards shall cover not only regular operations, but also non-regular operations such as safety inspections, steps at the time of abnormalities, and the installation and adjustment of metal dies and safety devices.

#### (5) Using proper metal dies

In order to prevent accidents caused by the scattering of metal parts from dies that break during processing, metal dies shall be properly designed and manufactured on the basis of the Technical Guidelines Concerning the Safety Standards for Metal Dies Used in Press Machines (Technical Guidelines Notification No. 9, 1977), inspection shall be carried out before use, and appropriate life-cycle management shall be implemented.

In addition, in order to prevent accidents during operation to replace metal dies (which are heavy objects), appropriate safety measures such as reducing the manual labor in handling metal dies shall be carried out.

### (6) Securing safety at the manufacturing and installation stages

Manufacturers of press machines, safety devices and metal dies shall make efforts to conform to structural standards as well as make efforts to manufacture safer press machines, etc. In addition, they shall establish maintenance structures that can appropriately deal with repair requests from users.

Under the proviso of Article 88 of the Industrial Safety and Health Act, moreover, employers installing or changing power-driven press machines shall full comply with all reporting requirements in submitting such plans to the applicable Labour Standards Inspection Office. Each manufacturer shall also inform users of the system to report plans.

#### 3. Safety Education

The legally required safety education programs such as education for press machine operators at the time of hiring as well as special education related to such topics as handling metal dies shall be fully implemented. In addition, positive steps shall be taken to encourage participation in safety and health seminars for management executives, skill improvement courses for operations chiefs of handling press machines, and safety education for press machine operators.

All of these educational programs shall be conducted on a systematic basis.

#### 4. Carrying Out Voluntary Safety Activities

#### (1) Affiliated company groups

In affiliated company groups which conduct press machine operations such as general machinery and tool manufacturing, automobile manufacturing and electric machinery and tool manufacturing, voluntary safety management activities led by the parent company shall be carried out by installing a safety consultative organization, observing all related laws and regulations, and implementing safety education for press machine operators at affiliated companies.

#### (2) Small and medium-sized workplaces

Small and medium-sized workplaces shall examine the possibility of utilizing the industrial safety and health loan system or the small and medium-sized safety and health activity promotion subsidy system for company groups, etc., and positively introduce technologies concerning safety from the outside.

### (3) Press machine accident prevention conferences, etc.

Small and medium-sized workplaces in particular shall be encouraged to participate in press machine accident prevention conferences, etc., conducted by accident prevention organizations, press-related industry associations, etc., and voluntary safety management activities by member workplaces shall be activated by preparing press machine accident and improvement case files, preparing model work standards and safety inspection manuals, and implementing voluntary safety patrols. Efforts shall be made to spread these activities not only to workplaces represented at such conferences, but also to other local workplaces that conduct related operations.

### 8

# Guidelines on the Installation of Proprietary Shoring Systems (LSB Notification No. 1217001, December 17, 2003)

#### I. Purpose

These Guidelines, in conjunction with related industrial safety and health legislation, aim to avoid trench cave-ins and rock falls, thus preventing industrial accidents in work such as water supply and sewerage that is accompanied by small-scale trench excavation and work inside trenches through the installation of suitable shoring, etc., using proprietary shoring systems.

#### **II.** Application

These Guidelines apply to work such as water supply and sewerage that is accompanied by smallscale trench excavation in order to lay pipes, etc.

#### III. Definition of Terminology

The definitions of the main terminology used in these Guidelines, other than those specified in related industrial safety and health legislation, shall be as follows.

#### 1. Work Such as Water Supply and Sewerage

Refers to construction work for waterworks, sewerage, telecommunications facilities, gas supply facilities, etc.

#### 2. Small-Scale Trench Excavation

Refers to the excavation of largely vertical trenches of at least 1.5m and a maximum of 4m in depth which is no more than 3m wide, and includes both mechanical and manual excavation.

#### 3. Work in Trenches

Refers to work carried out inside trenches such as laying of pipes, measurements, inspections, compaction, etc. (excludes excavation)

#### 4. Shoring, Etc.

In addition to shoring, refers to independent retaining structures without waling and strut supports based on a sheet pile system.

#### 5. Proprietary Shoring Systems

Refers to systems for installing shoring, etc., in advance before workers enter a trench when conducting trench excavation or work in trenches. It also allows, in principle, workers to install and remove the shoring, etc., without entering the trench.

#### 6. Installation and Removal of Shoring, Etc.

In addition to the installation and removal of waling and struts for shoring, refers to the fitting and removal of all structural components related to shoring, etc., including the driving and extraction of sheet piles.

#### 7. Trench Collapse Accident

Refers to an industrial accident caused by a trench cave-in or rock fall.

### IV. Responsibility of the Employer and Worker

When performing construction work such as installation of water supply and sewerage, the employer shall comply with industrial health and safety legislation and endeavor to avoid industrial accidents in work such as water supply and sewerage through the installation of suitable shoring, etc., using the proprietary shoring systems based on these Guidelines.

Workers engaged in work such as water supply and sewerage shall comply with the matters to be observed by workers stipulated in industrial safety and health legislation, and endeavor to avoid industrial accidents in work such as water supply and sewerage by cooperating with the measures that the employer takes based on these Guidelines.

#### V. Measures to Be Taken

### 1. Formulation of Execution Plan Relating to Proprietary Shoring System

When carrying out work such as water supply and sewerage that is accompanied by small-scale trench excavation, the employer shall conduct a preliminary survey of the work location where the trench is to be excavated as follows. The employer also shall formulate an execution plan relating to the proprietary shoring system by preparing a shoring plan, a work plan, a temporary facilities plan, a safety and health management plan, and a schedule of work, and then disseminate the overall project plan to the relevant workers.

#### (1) Preliminary survey

#### a. Ground survey

The employer shall conduct a survey into the following matters regarding the work location where the trench is to be excavated and the surrounding ground, using methods which include field investigation, collation of past work records, confirmation with the owners' of underground structures, and boring.

- (i) Configuration, geological features and geological formations;
- (ii) Presence and condition of cracks, water content, springs, frozen ground, and frost heaves;
- (iii) Presence and condition of underground structures;
- (iv) Presence and condition of high temperature gases and vapor.

#### b. Survey of surroundings

The employer shall conduct a survey into and assess the condition of the roads, buildings and overhead power lines, etc., surrounding the work location that could be affected by the trench excavation and the installation or removal of shoring, etc., as well as the volume of traffic and the traffic regulations, etc., surrounding the work area that could affect the execution of work using such methods as field investigation.

#### c. Application to plans

The employer shall apply the results of the preliminary surveys in a. and b. to the preparation of the plans in (2) below.

#### (2) Shoring plan

#### a. Selection of shoring method

The employer shall select a method of shoring, etc., that applies to the results of the preliminary survey in (1) with reference to the Appendix of these Guidelines and formulate a shoring plan adapted for the relevant method.

#### b. Structure

The employer shall prepare a plan for shoring, etc., with a solid structure suited to the ground conditions, including the configuration of the ground and its geological features and formation, cracks, surface water run-off from precipitation, water content, springs, frozen ground, frost heaves, and underground structures, etc.

#### c. Design

The employer shall prepare a suitable design for the shoring, etc., based on calculation of the earth pressure and water pressure acting on the shoring, etc., as well as the load weighting of machinery and excavated earth, etc., the self-weight of the structural components of the shoring, and the earthquake loading, etc.

#### d. Securing of structural components

The employer shall confirm the types and quantities of the structural components suitable for use in the structure of shoring, etc., as well as confirming the machinery needed to install and remove the shoring, etc., and formulating a plan that enables them to be secured by the necessary date.

#### e. Use of machinery

When using mobile cranes and vehicle-type construction machinery, etc., in the installation and removal of shoring, etc., the employer shall formulate a plan to make clear the methods of work and service routes for such machinery.

f. Protection of underground structures

The employer shall indicate a method and schedule for protecting or moving underground structures, when necessary, in the shoring plan.

#### g. Construction drawing

The employer shall prepare a construction drawing that clearly shows the arrangement, measurements, quality of materials, and the schedule and order for the installation of each of the structural components in the shoring, etc.

#### h. Inspection

The employer shall indicate the methods and schedule, etc., of inspections and repairs for the shoring, etc. The matters for inspection shall include the following.

- (i) The presence and condition of damage, deformation, displacement or slippage of components and materials;
- (ii) Condition of strut set;
- (iii) Condition of joints, mountings, and intersections of components and materials.

#### (3) Work plan

#### a. Trench excavation

The employer shall determine a method of trench excavation suited to the results of the preliminary survey in (1) and the method of shoring, etc., selected in (2) and prepare a work plan relating to trench excavation that clearly states the following matters.

- (i) The type, capacity and necessary quantity of machinery for trench excavation;
- (ii) Details of the routes for transporting the machinery in (i) in and out, places of installation, and operation routes;
- (iii) When mechanical and manual excavations are conducted simultaneously, the extent and methods of the respective work;
- (iv) Methods when taking measures to prohibit entry during operation of the machinery in (i);
- (v) The relationship between the trench excavation, the installation and removal of shoring, etc., and the work in the trench.
- b. Installation and removal of shoring, etc.

  The employer shall prepare a work plan that clearly states the relationship between the installation and removal of shoring, etc., based on the shoring plan in (2) and work in trenches.

#### c. Work in trenches

The employer shall prepare a work plan that clearly states the following matters relating to work in trenches.

- (i) The type and content of the work in the trench;
- (ii) The schedule for entry by workers into the trench and the position of the work for each type of work in the trench;
- (iii) The types, capacities, and the necessary quantity of machinery used for each type of work in the trench;
- (iv) The details of the routes for transporting the machinery in (iii) in and out, places of installation and operation routes;

- (v) Methods when taking measures to prohibit entry during operation of the machinery in (iii);
- (vi) The relationship between the work in the trench, the trench excavation and the installation and removal of shoring, etc.

#### (4) Temporary facilities plan

When installing temporary facilities related to the matters below for trench excavation, the installation and removal of shoring, etc., and work in a trench, the employer shall prepare a temporary facilities plan that clearly states its relationship to each area of the work.

- a. Facilities for ascending and descending safely;
- b. Facilities to prevent falls into the trench;
- c. Pathways running to the work site;
- d. Facilities to cover path surfaces;
- e. Facilities to secure power, including power distribution boards and power lines;
- f. Other necessary temporary facilities

#### (5) Safety and health management plan

The employer shall prepare a safety and health management plan that clearly states the measures to prevent industrial accidents suitable for each process of trench excavation, installation and removal of shoring, etc., and the work in the trench as well as the following matters.

- a. Safety and health management system;
- b. Safety and health training;
- c. Safety and health inspections and safety and health activities.

#### (6) Schedule of work

The employer shall prepare a schedule of work that clearly states the following matters for trench excavation, the installation and removal of shoring, etc., and the work in the trench.

- a. The procedure, the scheduled start and finish times for each area of work;
- b. The relationships between each area of the work;

c. Schedule relating to safety and health management.

#### 2. Implementation of and Revisions to Execution Plan Relating to the Proprietary Shoring System

The employer shall execute the series of work using a proprietary shoring system based on the execution plan relating to the proprietary shoring system formulated under V-1.

Moreover, when the need arises to revise the execution plan, the employer shall make the revisions after fully consulting the relevant parties in advance and be certain to disseminate the revised execution plan to the relevant workers.

### VI. Considerations Relating to the Execution of Proprietary Shoring

### 1. Considerations in the Installation and Removal of Shoring, Etc.

The employer shall, when carrying out the installation or removal of shoring, etc., in the proprietary shoring system, carry out the work based on the shoring plan prepared under V-1-(2) at the same time as taking the following matters into consideration.

#### (1) Shoring structure components

Components for shoring, etc., that are not obsolete shall be used, and those with obvious damage, deformation or corrosion shall not be used.

#### (2) Installation

- a. Installation based on construction drawing The employer shall install the shoring, etc., in accordance with the construction drawing in V-1-(2)-g.
- b. Installation of structural components The employer shall install structural components such as struts and waling securely to sheet piles, etc., to prevent slippage.

#### c. Installation of sheet piles

The employer shall determine the material quality, configuration and dimensions, etc., of the sheet piles, including light weight steel sheet piles or vertical sheet pile plates, taking into account such factors as the depth of the excavation, the earth pressure, the run-off of surface water from precipitation, springs and geological features, in order to produce sheeting wall surfaces with no gaps while also taking measures to prevent collapse and displacement into the trench.

#### d. Installation of waling

The employer shall determine the quality and measurements of waling, taking into account such factors as the earth pressure and workability used for sheet piles, and shall attach it firmly and horizontally to the sheet piles.

#### e. Installation of struts

The employer shall determine the quality, measurements and method, including water hydraulic jack, oil hydraulic jack, or strut support for struts, taking into account such factors as the earth pressure and workability used for the sheet piles and waling, and install them horizontally at right angles to the waling.

#### (3) Dismantling

a. Removal of struts and waling

The employer shall remove struts and waling after the trench has been backfilled up to the position from which they are to be removed.

#### b. Extraction of sheet piles

Sheet piles shall only be extracted up to the height to which the trench has been backfilled.

#### (4) Work overall

a. Appointment of operations chief of shoring, etc.

When carrying out the installation or removal of shoring, etc., the employer shall appoint an operations chief in shoring, etc., and have that person to oversee the work directly.

b. Prohibition of entry into trench

When carrying out the installation or removal of shoring, etc., the employer shall prohibit workers from entering the trench except when using special work platforms, etc., to prevent trench collapse accidents.

c. Measures to prohibit entry of persons other than authorized workers

The employer shall take measures to prohibit the entry of persons other than authorized workers into a site where the installation or removal of shoring, etc., is being carried out.

d. Inspections

The employer shall conduct regular inspections based on the methods of inspection, etc., specified in V-1-(2)-h, after the installation of shoring, etc., and make immediate repairs when abnormalities are discovered.

In addition, the employer shall give special consideration to the condition of components, materials and tools that are often used in the proprietary shoring system.

### 2. Considerations in Trench Excavation and Work in Trenches

The employer shall, when carrying out trench excavation or work in a trench, conduct the work based on the work plan prepared under 5-1-(3) at the same time as giving consideration to the following matters.

#### (1) Trench excavation

a. Appointment of operations chief of excavating natural ground

The employer shall appoint an operations chief of excavating natural ground when carrying out trench excavation, and have that person directly oversee the work.

#### b. Manual excavation

(i) Commencement of manual excavation Manual excavation inside the trench, including leveling and excavation of corner sections, shall not be conducted until after the installation of shoring, etc.

#### (ii) Use of hanging nets

The employer shall direct the workers to use hanging nets and hanging bags when lifting or lowering materials and tools, etc.

#### (iii) Elevator equipment

The employer shall direct the workers to use elevator equipment installed based on the temporary facilities plan under V-1-(4) when ascending or descending.

#### c. Ground inspection

When carrying out trench excavation, the employer shall, before the commencement of work and after the completion of work, inspect the work location and the surrounding ground for the presence and condition of pumice stone and cracks as well as changes in the condition of surface water run-off from precipitation, water content, springs, frozen ground and frost heave while also carrying out an inspection into the presence and condition of the signs that there may be a trench cave-in shown below, and continue to monitor the situation as necessary.

- (i) Distortion or movement at the top of the trench;
- (ii) Occurrence or development of cracks in the ground surface near the trench wall;
- (iii) Occurrence of new fissures in rocky ground or noises;
- (iv) Swelling or bulging in the side of the excavation;

- (v) Swelling at the base of the excavation or subsidence of the ground surface near the trench wall;
- (vi) Seepage of water and sand into the base of the excavation;
- (vii) An increase in spring volume or changes in water turbidity;

(viii)Development of an overhang.

#### d. Underground structures, etc.

The employer shall not carry out trench excavation in a location close to an underground structure, etc., or a structure such as concrete block piles until after taking preventative measures based on the shoring plan prepared under V-1-(2).

#### e. Protective helmets

The employer shall direct workers engaged in trench excavation to wear protective helmets.

#### f. Lighting

The employer shall maintain necessary lighting in an area where trench excavation is being carried out through such means as installing lighting equipment.

#### g. Drainage

When water seeps into the area where trench excavation is being conducted, the employer shall discharge the water through such means as setting up a sump for water collection and pumping it out.

#### (2) Work in trenches

- a. Commencement of work in trenches
   Work in trenches must not commence until after the installation of shoring, etc.
- b. Use of hanging nets, etc.
  The employer shall direct the workers to use hanging nets and hanging bags, etc., when lifting or lowering materials and tools, etc.

#### c. Protective helmets

The employer shall direct workers engaged in work in a trench to wear protective helmets.

#### d. Elevator equipment

The employer shall direct workers to use elevator equipment installed based on the temporary facilities plan under V-1-(4) when ascending or descending.

#### 3. Considerations in the Use of Machinery

The employer shall, when using machinery that includes mobile cranes and vehicle-type construction machinery in trench excavation, the installation and removal of shoring, etc., and work in trenches, make appropriate use of such machinery based on the service routes and work methods specified in the shoring plan under V-1-(2) and the work plan under V-1-(3) while also considering the following points.

#### (1) Signals

The employer shall, when using mobile cranes and vehicle-type construction machinery, etc., determine specific signals, designate a person to make the signals, and direct that person to make the signals.

#### (2) Measures to prohibit entry

The employer shall take measures to prohibit entry to areas where there is a danger of coming into contact with the operating range of a mobile crane or vehicle-type construction machinery, etc.

#### (3) Extraction of sheet piles, etc.

The employer shall, when extracting sheet piles, etc., using a mobile crane, determine the capacity and installation position of the mobile crane, taking into account the resistance of the sheet piles, etc. The employer shall, at the same time, give consideration to LSB Notification No. 595, October 15, 1985 "Safety Measures in Pile Extraction Using Mobile Cranes."

#### (4) Driving in of sheet piles, etc.

The employer shall, when driving in sheet piles, etc., using an excavator, press in with the bucket, and shall not strike with the bucket.

### (5) Restriction on use other than main application

When using vehicle-type construction machinery other than for its main application, such as the use of an excavator for lifting loads, in the installation and removal of shoring, etc., and work in trenches, the employer shall give consideration to Article 164 of the Ordinance on Industrial Safety and Health (Ministry of Labour Ordinance No. 32, 1972) and LSB Notification No. 542 of October 1, 1992 on Ensuring Safety in Work Lifting Loads Using Vehicle-type Construction Machinery.

#### **Appendix**

Types and Features of Shoring, etc., of Proprietary Shoring Systems

#### 1. Types and Features of Shoring, Etc.

Shoring that uses a proprietary shoring system refers to shoring, etc., that is installed before workers enter a trench. There are various systems, and active efforts are currently underway to design new techniques and improve on existing ones. The typical systems considered applicable to small-scale trench excavation in relatively common use at present are listed below.

### (1) Toeing-in a lightweight-steel sheet pile system

This technique assumes that the excavated ground will be self-supporting. After excavation of the trench with excavation machinery to a certain depth and the boring of the lightweight-steel sheet piles, it is pressed into the prescribed depth, and the top frame of the waling and strips and struts are installed from the ground above using a special jig. The installation of the second and subsequent frames of waling and struts is carried out using a special work platform.

#### (2) Driven lightweight-steel sheet pile system

This system is commonly used in the excavation of weak ground that is sandy or swampy. After lightweight-steel sheet piles that match the width of the trench are driven in using a pile driver, the trench is excavated to the depth of installation for the top frame of struts, and the waling and struts are installed from the ground above using a special jig. The installation of the second and subsequent frames of waling and struts is carried out using a special work platform when necessary.

#### (3) Slide rail shoring system

After the boring in of "slide rails," sheeting panels called "shoring panels" are inserted, and the panels and slide rails are repeatedly pushed down as the trench is excavated to a certain depth. A slide rail consists of vertical soldier posts and struts assembled in advance. The number of struts is determined depending on the geological features of the location where shoring is to be installed and the depth of the excavation.

#### (4) Sheeting box shoring system

As in (3), after the boring in of a "sheeting box," the plate is repeatedly pushed in as the trench is excavated to a certain depth. A sheeting box consists of two sheet plates and struts assembled in advance. The number of struts is determined depending on the geological features of the location where shoring is to be installed and the depth of the excavation

#### (5) Other systems

Apart from the four techniques described above, shoring, etc., using proprietary shoring systems includes the open shield system, formerly called the blade shield system, etc., for larger scale excavations. Moreover, sheet pile systems, including steel sheet pile systems, that allow the installation of a self-supporting retaining structure without supports such as waling and struts and with adequate foundation depth are also considered proprietary shoring systems, as long as the shoring is installed before workers enter an excavated trench.

#### 2. Selection of Shoring System

The employer shall take the following conditions into account when selecting shoring, etc., using a proprietary shoring system.

The criteria for selection shall generally be as in the table below.

- (1) Type of work
- (2) Soil characteristics, and status of soil characteristics such as presence of backfilled soil.
- (3) Status of ground water
- (4) Scale and shape of excavation
- (5) Presence, type, depth, and condition, etc., of underground structures
- (6) Condition of surroundings, including roads, buildings and overhead power lines
- (7) Area of work site
- (8) Traffic volume and regulations, etc.
- (9) Need for countermeasures for noise and vibrations
- (10) Contract terms, including work period

#### General Selection Criteria for Shoring, etc., in Small-scale Trench Excavation

Type of shoring system		el sheet pile system draulic jack)	Pre-installed retaining structure system			
Comparison category	Toeing-in	Driven	Slide rail	Sheeting box		
Condition of ground						
Weak	×	0	0	0		
Sandy	Δ	0	0	0		
Clayey	0	0	0	0		
Gravelly	×	× × O		0		
Ground water level						
High	×	0	0	0		
Low	0	0	0	0		
Work conditions						
Noise / Vibrations*	0	×	0	0		
Subsidence of surrounding ground	×	Δ	Δ	Δ		
Bending stiffness of walls	0	0	0	0		
Scale of excavation						
Shallow	0	0	0	0		
Deep	×	0	0	Δ		
Wide	0	0	0	0		
Suitability of proprietary shoring system	Suitable	Suitable	Suitable	Suitable		

Type of shoring system	Wood sheet pile system	Steel sheet pile system	Soldier piles and wood plates system
Comparison category	System	System	System
Condition of ground			
Weak	×	0	×
Sandy	×	0	0
Clayey	0	0	0
Gravelly	×	Δ	0
Ground water level			
High	×	0	×
Low	0	0	0
Work conditions			
Noise / Vibrations*	0	×	×
Subsidence of surrounding ground	×	0	×
Bending stiffness of walls	×	0	0
Scale of excavation			•
Shallow	0	0	0
Deep	×	0	0
Wide	×	0	0
Suitability of proprietary shoring system	Unsuitable	Suitable	Unsuitable

Note:  $\bigcirc$  Best,  $\bigcirc$  Good,  $\triangle$  Possible,  $\times$  Unsuitable \* Determination of this category varies depending on the system used.

### 9

### Guidelines for Sling Work Safety (LSB Notification No. 96, February 24, 2000)

#### I. Purpose

These guidelines aim to prevent industrial accidents in sling work, etc., by taking safety measures for sling work, etc., using cranes, mobile cranes, derricks or deck cranes (hereinafter referred to "cranes, etc."), together with the requirements of legislation related to the industrial safety and health.

#### II. Responsibility of the Employer, Etc.

The employer, when undertaking sling work, should make efforts to prevent accidents by taking proper measures for sling work, etc., according to these guidelines.

Workers engaged in sling work should make efforts to prevent accidents by performing safe sling work under these guidelines as well as by cooperating with the safety measures taken by their employers according to these guidelines.

#### III. Measures to Be Taken by the Employer

#### 1. Provision of Work Standards, Etc.

The employer should provide work standards in which, corresponding to the type and content of material handling work including sling work (hereinafter referred to as "sling work, etc."), the workers assigned to them, work descriptions for operators of cranes, etc., slingers, signalers, etc., the type and capacity of cranes, etc., to be used, the sling equipment to be used and the signaling methods are prescribed, and in which the utmost care for ensuring safety in sling work, etc., has been taken. In addition, the employer should also fully notify the workers concerned of these work standards.

When undertaking the sling work, etc., for which work standards have not been provided, the employer should, before commencement of the sling work, etc., provide a work plan that clarifies the items to be included in the work standards and notify the workers involved of this plan.

### 2. Determining Work Assignments in Sling Work, Etc.

The employer should, according to the predetermined work standards or work plan, and taking into account the mass or shapes of loads to be handled, decide the assignments of crane operators, slingers, signalers, assistants, etc., and appoint a person to act as the supervisor of the sling work, etc. (hereinafter referred to as "lifting supervisor"), among the workers engaged in sling work, etc.

In addition, the employer should inform the lifting supervisor of the items related to the type, the mass, the shape and quantity of loads, transporting routes, etc.

#### 3. Coordinating Meeting before Commencement of the Work

When performing sling work, etc., the employer should have the lifting supervisor hold a coordinating meeting with the workers concerned and have the supervisor notify the workers engaged in the sling work, etc., of the following items.

#### (1) Outline of work

- a. Matters implemented by slingers
   To make known to all concerned the type,
   mass, shape and quantity of loads to be slung.
- b. Matters concerning the working area including transporting routes
  To make known to all concerned the working area including the transport routes, the condition of buildings, temporary structures, etc., as well as the conditions of any other

- work when other work is taking place within such working area.
- c. Matters related to the positioning of workers

  To make known to all concerned the work
  positioning of slingers, signalers and assistants, and evacuation sites during transportation, and the positioning of the workers
  assigned to prevent loads from swinging in
  case that the work is required.

#### (2) Work procedures

- a. Matters related to slinging methods To provide slingers with instructions on the type and quantity of sling equipment to be used as well as the slinging method. In addition, to determine a main person in charge when multiple workers are engaged in sling work.
- b. Matters related to cranes, etc., to be used

  To make fully known to all workers engaged
  in sling work the specifications of the cranes,
  etc., to be used (rated load, working radius).

  In addition, when using a mobile crane, to
  make an operator of such mobile crane confirm the installation location, installation
  direction and overturn prevention measures.
- c. Matters related to signaling To give specific instructions on the signals to be used, and also to make sure that the workers involved confirm the meaning of such signals.
- d. Matters related to coordination with other work

When other work is being conducted along the transport route, to appoint a person to instruct the workers performing such other work to move from the route, as well as to instruct said workers on the evacuation timing and evacuation sites.

e. Matters related to measures in case of emergencies

If any unsafe conditions are observed, to ensure that all workers confirm the suspension of the work, as well as provide instructions to the operators of cranes, etc., on the method to signal the suspension of work in the event they sense danger.

#### 4. Implementing Sling Work, Etc.

During sling work, etc., employers should instruct the person in charge to implement the following.

### (1) Matters to be implemented by the person in charge of lifting supervision

- a. Confirm that the mass, shape and quantity of the load to be lifted are as instructed by the employer, and confirm that the type and quantity of the sling equipment to be used are appropriate, and if necessary, change or replace the sling equipment.
- b. Confirm the installation situation of the cranes, etc., as well as the condition within the working area including the transport route, and take whatever steps are necessary to remove obstacles, etc.
- c. Confirm that the slinging method is appropriate, and instruct the slingers to make whatever improvements are necessary, as appropriate.
- d. If any unsafe condition is observed, such as the potential danger that the load may fall, take immediate steps such as instructing the crane operator, etc., to suspend the work and lower the load to the ground.

#### (2) Matters implemented by slingers

- a. Prepare the sling equipment used in sling work, and also check sling equipment, and make suitable replacements in the event any damage, etc., is observed.
- b. Confirm that the mass and shape of the load are as instructed, and also confirm that safe operations can be carried out with the prepared sling equipment, and request the lifting supervisor to change the slinging methods or replace the sling equipment if necessary.
- c. In carrying out sling work, determine the center of gravity of the load, conduct the sling work using the methods instructed at the coordinating meeting, and signal to the signaler upon evacuating to a safe location. In addition, confirm the condition of the lifted load when lifted off the ground, and

- take steps such as returning the load to the ground for re-slinging if necessary.
- d. When landing a load, confirm the condition of the location where the load is to be set down, and take steps to stabilize the load by deploying sleepers, stoppers, etc. In addition, detach the sling equipment upon confirming the stability of the load after it has been set on the ground.

#### (3) Matters to be implemented by a signaler

- a. Position oneself in a location with a view of the operator of the crane, etc., and the slingers, and upon receiving a signal from the slingers, give a signal to the operator of the crane, etc., after confirming that the related workers are in a safe place and that no third party is in the transport route.
- b. Always monitor the lifted load, and guide the load while confirming the condition of the transport route such as making sure that no workers are under the load.
- c. When the lifted load becomes unstable, immediately send a stop signal to the operator of the crane, etc., and suspend the operation.
- d. When landing a lifted load, confirm the condition of the landing location and the location where the slingers are standing by.

### (4) Matters to be implemented by crane operators, etc.

- a. Inspect the cranes, etc., to be used before starting work. When using a mobile crane, confirm the ground condition, and install the mobile crane on the basis of the instructions provided at the coordinating meeting upon requesting such steps as the reinforcement of the ground and taking whatever other steps are necessary.
- b. Confirm the condition of the working area including the transport route, and request the lifting supervisor to take steps such as removing obstacles if necessary.
- c. When a worker enters into the area under the lifted load, immediately stop crane operations and instruct the worker to evacuate the area.

d. In the event of any possibility of exceeding the rated load during transport of the lifted load, immediately stop crane operations and take the necessary steps by informing the lifting supervisor of the situation.

#### 5. Selecting the Slinging Method

When performing sling work, the employer should ensure that the work is conducted in consideration of the following, depending on the slinging method.

#### (1) Common matters

- a. In selecting sling equipment, secure the necessary safety coefficient or use gear that can handle the range of the specified working load, etc.
- b. In principle, the lifting angle ("a" in Figure 1) shall be 90 degrees or less.
- c. When slinging a load by the choker hitch using a shackle and a wire rope sling, make certain that the eyebolt passes through the eye of the wire rope sling.
- d. Make certain that the wire rope slings do not overlap each other at the top or sides of the hook, etc.
- e. Do not directly touch the lifted load or sling equipment while the crane, etc., is moving.
- f. When removing sling equipment such as a wire rope sling, do not pull it by hoisting a hook etc.

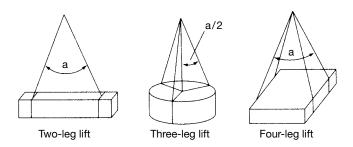
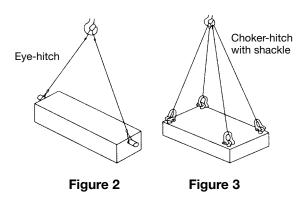


Figure 1

#### (2) Method using wire rope slings

Conduct all sling work with careful attention to the following under the standard slinging methods, respectively.

- a. Two-leg with two-point lifts, and four-leg with four-point lifts (Figures 2 and 3, respectively)
  - (i) In case of two-leg lifts, confirm that the metal fittings for lifts are attached above the center of gravity to prevent the load from turning over.
  - (ii) Make certain that no eyes overlap on the hook and hitch all eyes in accordance with the direction of the hook.



- b. Double wrap basket hitch by two-leg with four-point (Figure 4); double wrap choker hitch by two-leg with two-points (Figure 5)
  - (i) Avoid any overlapping of the wire rope at the wrapped part.
  - (ii) In case of deep choker hitch, assume that the sling is subject to two to three times the normal working tension and therefore select the appropriate wire rope slings that stand against tension.

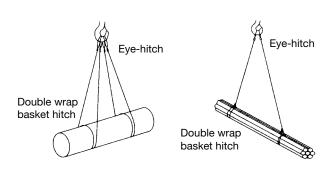


Figure 4 Figure 5

c. Two-leg with four-point basket hitch (Figure 6)

Because of the poor stability of the lifted load (the wire rope sling's hitch positions may shift due to shaking of the load during conveyance, etc.), the lifting angle should be 60 degrees or less, in principle. Steps should also be taken to prevent the wire rope from slipping out of position by using anti-slip pads, etc.

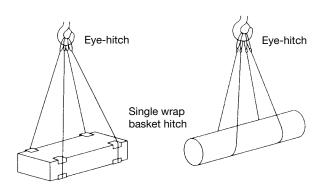


Figure 6

- d. Two-leg with two-point choker hitch (Figure 7)
  - (i) When using a shackle, follow "c" under (1), "Common matters," stated above.
  - (ii) Use this method for a load so that extreme stress is not applied on the metal steeve of the wire rope slings.

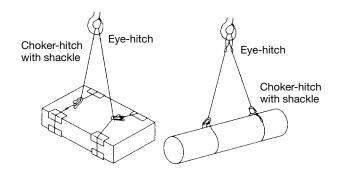
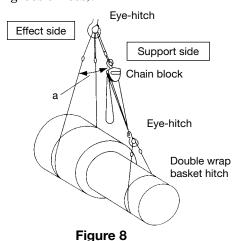


Figure 7

- e. Adjusting hitch with three-points (Figure 8)
  - (i) Use the adjusting gear (chain block in the figure) on the support side.
  - (ii) Hitch eyes of the wire rope sling on the upper and lower hooks of the adjusting gear.
  - (iii) Handle the adjusting gear with no load condition.
  - (iv) In case of double wrap basket hitch, choker hitch or single wrap basket hitch at the support side, make sure that the angle of the wire rope slings such that it will not slip sideways (the angle as shown in "a" of Figure 8 is some 60 degrees or less).



#### f. Cross-hitch (Figure 9)

- (i) Intersect the wire rope slings at the center of the bottom of the load.
- (ii) Select wire rope slings on the assumption that approximately two times the normal working tension will act on the intersecting part.

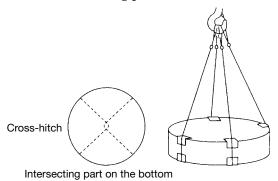


Figure 9

#### (3) Methods using clamps and lifting hooks

- a. Strictly observe the working load and the working range specified by the manufacturer.
- b. In case of using general-purpose clamps, use at least two or more of the clamps that are suitable for the shape of the load.
- c. Keep the lift angle ("a" in Figure 10) at 60 degrees or less.
- d. In case of using horizontal-lift clamps, keep the hitch width angle ( $\theta$  in Figure 10) at 30 degrees or less.
- e. Do not use these for loads that may be broken or deformed due to the compression force of the clamps at the time of the load lifting.
- f. If anything adheres to the surface of the load (such as grease or paint), be sure to remove it well in advance.
- g. Do not use lifting hooks that have been welded or remanufactured.

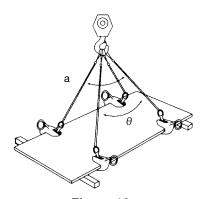


Figure 10

#### 6. Check, Inspection and Maintenance

Employers should conduct inspection, repair, etc., of sling equipment such as wire rope slings in accordance with the following.

- (1) Establish a periodic inspection interval and appoint a person in charge.
- (2) Implement the inspections in accordance with the inspection methods and criteria shown in the annexed table, and take the necessary steps according to the results of such inspections.

- (3) In case the results of such inspections reveal that repairs are necessary, do not conduct such repairs by using heating, welding or localize high pressure.
- (4) Use the appropriate methods in storing sling equipment, and give proper attention to the prevention of corrosion, damage, etc.

### 10

## Major Notifications Issued by the Director-General of the Labour Standards Bureau in Fiscal 2005

### 1. Related to Act to Partially Amend Industrial Safety and Health Act

This notification indicated the enforcement of the act providing for the enhancement and strengthening of measures to prevent industrial accidents in manufacturing and other industries and measures to protect the health of workers with long working hours in order to secure even greater safety and health for workers in the workplace amidst changing social and economic conditions that include increasing diversification in forms of employment. (LSB Notification No. 1102002, November 2, 2005)

# 2. Related to Amendment of Guidelines on Systems for the Preinstallation of Scaffolding

This notification indicated the amendment of the Guidelines on Systems for the Preinstallation of Scaffolding to further promote safety measures in low-rise residential construction work, including wooden housing, as fatal accidents due to falls have continued to occur in wooden housing construction work.

(LSB Notification No. 0210002, February 10, 2006)

#### 3. Related to Enforcement of Act to Partially Amend Industrial Safety and Health Act

This notification indicated the enforcement of ministerial ordinances to partially amend the Enforcement Order for Industrial Safety and Health Act and the Ordinance on Industrial Safety and Health promulgated on January 5, 2006 to accompany the partial revision of the Industrial Safety and Health Act on November 2, 2005.

(LSB Notification No. 0224003, February 24, 2006)

4. Regarding Specific Matters Related to
Training Requirements Stipulated by the
Minister of Health, Labour and Welfare in
the Correction of Item 1, Article 5 of the
Ordinance on Industrial Safety and Health

This notification indicated the specific matters such as the scope of training subjects and requirements for the instructor for the initial training for newly appointed safety managers. The initial training is considered to be the qualification requirement for a safety manager.

(LSB Notification No. 0224004, February 2, 2006)

5. Regarding the Application of Skill
Training Course Regulations for
Operations Chiefs in Excavation of
Natural Ground and Shoring, Skill
Training Course Regulations for
Operations Chiefs for Work Related to
Chemicals, and Skill Training Course
Regulations for Operations Chiefs for
Work Handling Asbestos

This notification indicated the application of the skill training course regulations for operations chiefs for excavation of natural ground and shoring, etc., to accompany the amalgamation, etc., of skill training courses.

(LSB Notification No. 0224005, February 24, 2006)

### 6. Related to Crane and Derrick Operator's License Examination

This notification indicated the enforcement and application of related notices to accompany the amalgamation of the crane operator's license and the derrick operator's license and the creation of a crane and derrick operator's license.

(LSB Notification No. 0224006, February 24, 2006)

#### 7. Related to Guidelines for Risk Assessment

This notification indicated considerations related to the objectives and substance of the Guidelines for Risk Assessment, which were promulgated on March 10, 2006.

(LSB Notification No. 0310001, March 10, 2006)

#### 8. Related to Revision of Guidelines on Occupational Safety and Health Management Systems

This notification indicated considerations related to the objectives and substance of the Guidelines on Occupational Safety and Health Management Systems notified on March 10, 2006.

(LSB Notification No. 0317007, March 17, 2006)

### 9. Related to Guidelines for Risk Assessment on Chemicals

This notification indicated considerations related to the objectives and substance of the Guidelines for Risk Assessment on Chemicals, which were promulgated on March 30, 2006.

(LSB Notification No. 0330004, March 30, 2006)

### 10. Related to Appointment of Person Other than Company Worker as Health Manager

This notification indicated the requirements, etc., for a person other than a company worker to be appointed as a health manager, etc., in the workplace of an industry in which the appointment of a Class 2 health manager is approved.

(LSB Notification No. 0331004, March 31, 2006)

#### Related to Concurrent Service of Safety Managers, etc., in Workplaces Divided Accompanying a Spin Off

This notification indicated the requirements for when concurrent service as a safety manager, etc., in workplaces that were divided accompanying a corporate spin off is acceptable.

(LSB Notification No. 0331005, March 31, 2006)

#### 12. Related to Dissemination of Guidelines for the Partial Amendment of Guidelines on Education to Improve the Capabilities of Persons Engaged in Duties to Prevent Industrial Accidents

This notification indicated matters relating to the dissemination of Guidelines for the Partial Amendment of Guidelines on Education to Improve the Capabilities of Persons Engaged in Duties to Prevent Industrial Accidents accompanying the enforcement of the Act to Partially Amend the Industrial Safety and Health Act (Act No. 108 of 2005) and related ordinances.

(LSB Notification No. 0331023, March 31, 2006)

### General Guidebook on Industrial Safety

# Chapter

### Reference Materials

### **Statistics on Occupational Accidents**

#### (1) Trends in the Number of Deaths and Injuries by Industry (Deaths and injuries requiring an absence for 4 or more days)

(Unit: persons)

Year	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
Industry										
All industries	162,862	156,726	148,248	137,316	133,948	133,598	125,918	125,750	122,804	113,164
	(2,363)	(2,078)	(1,844)	(1,992)	(1,889)	(1,790)	(1,658)	(1,628)	(1,620)	(1,514)
Manufacturing	43,293	47,054	42,269	38,840	37,753	36,165	32,921	32,518	31,275	28,583
	(405)	(351)	(305)	(344)	(323)	(326)	(275)	(293)	(293)	(256)
Mining	960	942	837	823	760	729	628	669	597	523
	(36)	(40)	(29)	(24)	(26)	(24)	(17)	(14)	(16)	(16)
Construction	44,886	41,688	38,117	35,310	33,599	32,608	30,650	29,263	28,414	25,742
	(1,001)	(848)	(725)	(794)	(731)	(644)	(607)	(548)	(594)	(497)
Passenger transportation	2,065	2,073	2,092	1,902	1,872	1,892	1,880	1,963	2,011	1,818
	(32)	(38)	(47)	(29)	(29)	(32)	(35)	(32)	(36)	(31)
Overland cargo transportation	13,792	16,555	15,646	14,590	14,653	14,988	13,858	13,991	13,703	12,441
	(333)	(290)	(225)	(270)	(271)	(241)	(234)	(241)	(243)	(245)
Stevedoring at ports and harbors	590	589	463	411	388	406	389	348	334	305
	(28)	(17)	(19)	(10)	(11)	(18)	(15)	(12)	(10)	(11)
Forestry	3,392	3,190	3,089	2,914	2,773	2,633	2,531	2,572	2,392	2,097
	(80)	(56)	(69)	(71)	(53)	(54)	(49)	(61)	(46)	(47)
Others	53,884	44,635	45,735	42,526	42,150	44,177	43,061	44,426	44,078	41,655
	(448)	(438)	(425)	(450)	(445)	(451)	(426)	(427)	(382)	(411)

Notes: The number of deaths and injuries in 2005 is preliminary data. The figures in parentheses are the number of deaths within the total.

Sources:
Number of deaths and injuries: Data on Industrial Accident Compensation Insurance Benefits, Ministry of Health, Labour and Welfare (MHLW)
Number of deaths: Survey by Safety Division, MHLW

#### (2) Accidents Rates by Industry

Classification		2004		2005			
	Accident free	Accident frequency rate		Accident free	quency rate	Accident	
Industry	Total of deaths and injuries	Deaths	Accident severity rate	Total of deaths and injuries	Deaths	severity rate	
All surveyed industries (excluding general construction)	1.85	0.01	0.12	1.95	0.01	0.12	
Forestry	*	*	*	*	*	*	
Forestation	*	*	*	*	*	*	
Mining	0.70	0.09	0.73	1.84	0	0.08	
Metal	0.62	0.16	1.20	2.89	0	0.14	
Coal and lignite	_	_	_	_	_	_	
Nonmetal	1.22	0.14	1.06	1.34	0	0.05	
Construction (general construction)	1.77	0.06	0.57	0.97	0.01	0.14	
Civil engineering works	1.81	0.08	0.88	0.93	0.06	0.43	
River civil engineering works	2.17	0	0.05	2.86	0	0.05	
New hydroelectric power plant construction works	2.10	0.20	1.53	1.81	0	0.01	
New railway and track construction works	3.58	0	0.10	0.67	0	0.00	
New bridge construction works	1.76	0.13	2.04	0.71	0.13	0.98	
New tunnel construction works	1.54	0	0.05	2.24	0.24	1.81	
Subway construction works	4.72	0	0.02	2.03	0.25	1.97	
New roads construction works	1.61	0	0.10	1.51	0	0.01	
Other civil engineering projects	1.85	0.14	1.09	0.43	0	0.01	
Building projects	1.76	0.06	0.51	1.00	0.00	0.09	
Other building projects	1.75	0.02	0.19	0.53	0	0.02	
Machinery & tools installation projects	0.31	0	0.01	0.55	0	0.01	

Classification		2004		2005		
	Accident fre	quency rate	Assidant	Accident frequency rate		Assident
Industry	Total of deaths and injuries	Deaths	Accident severity rate	Total of deaths and injuries	Deaths	Accident severity rate
Electric construction projects	0.40	0.02	0.19	0.47	0.01	0.08
Plumbing (excluding well drilling)	0.91	0	0.03	0.81	0	0.04
Manufacturing	0.99	0.01	0.11	1.01	0.01	0.09
Food, drink, feed and tobacco	2.86	0.01	0.17	2.86	0.00	0.12
Dairy products	2.65	0	0.07	3.11	0	0.06
Seafood products	4.02	0	0.12	3.53	0	0.07
Canned and bottled seafood products	5.91	0	0.22	0.68	0	0.01
Condiments	2.35	0	0.02	1.42	0	0.04
Soy sauce, edible amino acids	3.42	0	0.04	2.51	0	0.11
Wheat flour	0.58	0	0.23	0.58	0	0.00
Saccharide	1.47	0	0.02	0.80	0	0.03
Bread, confectionery	1.99	0	0.05	1.94	0.01	0.12
Soft drink, alcoholic beverage	1.77	0	0.05	2.66	0	0.07
Beer	1.06	0	0.04	1.82	0	0.06
Refined sake	1.73	0	0.18	2.47	0	0.11
Animal and vegetable oils	0.89	0	0.00	1.06	0	0.04
Vegetable oils and fats	*	*	*	*	*	*
Textiles (excluding clothing and other textile products)	1.77	0.02	0.18	1.90	0	0.09
Silk-reeling	*	*	*	*	*	*
Spinning	1.24	0	0.10	0.73	0	0.01
Cotton spinning	1.03	0	0.16	0.52	0	0.01
Chemical textile spinning	3.09	0	0.01	1.47	0	0.02
Wool spinning	0.78	0	0.01	1.42	0	0.01
Thread plying	*	*	*	*	*	*
Thread plying	_	_	_	_	_	_
Weaving	1.81	0	0.03	1.47	0	0.05
Knitted clothes	0	0	0	2.88	0	0.05
Dyeing	2.15	0.05	0.42	2.05	0	0.06
Wood, woodworking (excluding furniture)	3.26	0	0.39	2.86	0.07	0.69
Lumbering, woodworking	3.47	0	0.14	3.24	0	0.16
Fixture materials, plywood	3.24	0	0.45	2.76	0.09	0.81
Furniture, fittings	1.42	0	0.08	1.12	0	0.03
Pulp, paper, processed paper products	1.56	0.02	0.28	1.58	0.01	0.10
Pulp	0.93	0	1.03	0.66	0	0.04
Paper	1.25	0.02	0.31	1.28	0.02	0.17
Printing, related industries	1.49	0.01	0.08	1.45	0	0.13
Newspapers	0.90	0	0.01	(Newspa	apers and pu	blishing)
Publishing	0.64	0	0.01	0.43	0	0.01
Printing (excluding mimeographs)	1.49	0.01	0.08	1.45	0	0.14
Chemicals	0.88	0.00	0.06	0.90	0.01	0.07
Chemical fertilizer	0.59	0	0.01	0.60	0	0.03
Nitrogenous fertilizer, calcium phosphate	*	*	*	*	*	*
Inorganic chemical products	1.01	0	0.02	1.57	0	0.04
Soda	0.30	0	0.00	0.28	0	0.01
Salt production	1.38	0	0.00	4.70	0	0.07
Organic chemical products	0.68	0	0.02	0.79	0.01	0.09
Ring-type intermediate goods,						
synthetic dyestuff, organic pigments	0.71	0	0.01	1.71	0	0.08
Plastics	0.82	0	0.03	0.50	0	0.04
Chemical fiber	1.00	0	0.05	0.68	0	0.02
Rayon, acetate	*	*	*	*	*	*
Synthetic textiles	1.07	0	0.06	0.34	0	0.02
Soap, synthetic detergents	1.13	0	0.03	0.62	0	0.00
Print	1.49	0	0.01	1.12	0	0.04
Printing ink	0.76	0	0.01	1.30	0	0.02
Medical supplies	1.05	0.01	0.08	0.90	0.02	0.15
Primary drug components, pharmaceuticals	0.89	0	0.01	1.31	0	0.02

Classification		2004		2005		
	Accident fre	quency rate	Assidant	Accident frequency rate		
dustry	Total of deaths and injuries	Deaths	Accident severity rate	Total of deaths and injuries	Deaths	Acciden severity rate
Other chemical industries	0.62	0.02	0.18	0.61	0	0.01
Gunpowder	0.37	0	0.04	1.78	0	0.07
Perfumery	0	0	0	3.69	0	0.08
Cosmetics, toothpaste	1.11	0	0.03	1.15	0	0.02
Photosensitive materials	0.07	0	0.00	0.13	0	0.00
Oil products, coal products	0.46	0	0.01	0.84	0	0.03
Oil refinery	0.19	0	0.01	0.63	0	0.02
Rubber goods	0.90	0	0.04	0.93	0.03	0.30
Tires, tubes	0.73	0	0.02	0.65	0.05	0.38
Rubber and plastic footwear, accessories	0.65	0	0.04	1.37	0	0.04
Rubber belts, rubber hoses,						
occupational rubber products	1.01	0	0.05	1.06	0.03	0.28
Tanned leather, its products, fur	1.33	0	0.03	2.68	0	0.05
Leather footwear	1.15	0	0.03	2.82	0	0.08
Ceramic, soil-and-stone products	1.17	0.01	0.27	1.04	0.02	0.26
Glass, its products	1.02	0.02	0.21	0.86	0.02	0.20
Cement, its products	1.70	0.02	0.67	1.71	0.04	0.06
Cement	0.33	0.07	0.07	0.35	0	0.00
Ceramic ware, related products	0.77	0	0.23	0.92	0	0.05
Ceramic ware for dining tables and kitchens	0	0	0	2.01	0	0.02
Fireproof goods	0.84	0	0.04	1.26	0.14	1.11
Carbon and graphite products	1.31	0	0.91	1.46	0	0.08
Carbon electrodes	*	*	*		*	
Aggregate, stonecutters' products	0.91	0	0.06	3.05	0	5.71
Iron and steel	1.17	0.05	0.47	1.01	0.03	0.28
Steel production with high furnaces	0.43	0	0.08	0.83	0.16	1.24
Ferro-alloy	2.89	0	0.22	1.04	0	0.02
Steel manufacture, steel rolling	1.38	0.06	0.50	1.09	0.03	0.26
Production of steel materials						
(excluding surface treated steel)	1.17	0.04	0.32	1.33	0.03	0.28
Hot rolling (excluding steels pipes and goethite)	1.07	0	0.14	1.18	0	0.03
Cold rolling (excluding steel pipes and goethite)	1.08	0	0.01	2.41	0	0.09
Goethite wire	-	_	_	*	*	*
Steel casting	4.27	0	0.19	3.64	0	0.20
Cast iron products						
(excluding cast iron pipes, malleable cast iron)	2.41	0	0.12	0.82	0	0.03
Malleable cast iron	1.34	0	0.04	0.80	0	0.04
Nonferrous metal	0.86	0.01	0.18	1.00	0.02	0.22
Primary refining and careful manufacturing						
of nonferrous metal	1.37	0	0.04	1.64	0.06	0.52
Primary refining and careful manufacturing		_				
of copper	1.98	0	0.07	1.82	0	0.21
Nonferrous metal and alloy rolling	1.00	ŭ	0.01	1.02		0.21
(including wire intromission and through-dice						
thinning, through dice extrusion)	0.79	0.02	0.27	0.99	0.02	0.25
Electric wire and cables	0.79	0.02	0.24	0.58	0.02	0.23
Metal goods	1.08	0.02	0.19	1.03	0.02	0.04
-						
Tin-plated cans, plated plates and other products	0.39	0	0.17	1.36	0	0.21
Western dinnerware, cutlery, manual tools, hardware Metal products for construction and building	0.87	0	0.05	1.26	0	0.03
(including metal plates for can production)	1.11	0.01	0.29	0.97	0.05	0.67
Metal products for construction	0.97	0	0.02	2.36	0.07	1.64
Metal plates for can production	0	0	0	0.78	0	0.00
Metal materials process manufacturing industry	1.16	0.02	0.20	0.97	0	0.04
Metal wire products (excluding screws)	1.73	0.02	0.04	1.12	0	0.03
General machinery and equipment	0.74	0.00	0.04	0.82	0.00	0.06
Boilers, motors	0.86	0.00	0.04	0.66	0.00	0.02

Classification		2004			2005	
	Accident fre	quency rate		Accident frequency rate		
Industry	Total of deaths and injuries	Deaths	Accident severity rate	Total of deaths and injuries	Deaths	Accident severity rate
Farm machinery (excluding farming tools)	1.14	0	0.05	1.29	0	0.02
Construction machinery, mining machinery (including						
tractors for construction, farm work and forwarding)	0.81	0	0.23	1.11	0.02	0.22
Metal processors	0.51	0	0.01	0.73	0	0.03
Metal machine tools	0.44	0	0.01	0.71	0	0.01
Metal processors (excluding metal machine tools)	1.15	0	0.01	0.58	0	0.00
Textile machinery	0.53	0	0.01	0.70	0	0.01
General occupational machinery, fixtures	0.81	0.02 0	0.14	0.92	0.01 0	0.14 0.01
Elevators, escalators Stevedoring machinery	0.54 1.11	0	0.00 0.03	0.52 0.58	0	0.01
Machinery and equipment for business administration	0.42	0	0.03	0.36	0	0.02
Other machines, their components and parts	0.42	0	0.01	1.02	0	0.01
Valves, their accessories	1.67	0	0.01	1.55	0	0.00
Ball bearings, roller bearings	0.99	0	0.02	0.95	0	0.04
Electric machinery and appliances	0.39	0	0.02	0.40	0.00	0.02
Electric machinery and appliances for industry	0.37	0	0.03	0.39	0	0.01
Generators and electric motors	0.24	0	0.01	0.24	0	0.00
Transformers						
(excluding those for electronic machinery)	1.58	0	0.04	1.04	0	0.01
Switches, switchboards, electric control systems	0.51	0	0.01	0.28	0	0.00
Electric welders	*	*	*	*	*	*
Other electric machinery and appliances for						
industry (including those for vehicles and ships)	0.58	0	0.00	0.29	0	0.01
Electric bulbs	0.81	0	0.03	0.34	0	0.00
Communication machinery and instruments,						
related machinery and instruments	0.28	0	0.01	0.35	0	0.01
Electronic computers and their accessories	0.23	0	0.01	0.24	0	0.01
Electric measuring instruments	0.30	0	0.00	0.30	0.03	0.23
Other electric machinery and appliances	0.37	0	0.01	0.59	0	0.02
Primary batteries (dry and wet) Transport machinery and appliances	1.49 0.55	0 0.01	0.03 0.11	0.36 0.55	0 0.01	0.01 0.07
Automobiles, their accessories	0.55	0.01	0.11	0.52	0.01	0.07
Automobiles	0.51	0.01	0.00	0.52	0.01	0.07
(including three-wheelers, two-wheelers)	0.29	0.01	0.11	0.27	0	0.02
Automotive bodies, trailers	1.37	0	0.02	0.86	0	0.03
Automotive components, accessories	0.59	0.01	0.10	0.69	0.01	0.10
Rolling stock, its components	1.24	0.23	1.72	0.54	0	0.03
Bicycles, their components	*	*	*	*	*	*
Ship construction, repair, ship-related engines	1.13	0.02	0.20	1.12	0	0.04
Construction and repair of ships	1.34	0.03	0.28	1.20	0	0.04
Precision machinery and appliances	0.54	0.00	0.05	0.64	0	0.02
Precision measuring instruments	0	0	0	0.53	0	0.01
Timepieces, their components	0.27	0	0.03	0.43	0	0.01
Playthings, sporting goods	1.14	0	0.01	0.84	0	0.02
Pens, pencils, painting instruments and other stationery		0	0.02	0.72	0	0.01
Transportation	2.89	0.01	0.13	3.07	0.02	0.29
Railways	1.26	0	0.03	0.95	0.01	0.19
Tracks Subways	2.99 1.90	0	0.07 0.04	1.33 1.24	0 0	0.10 0.02
Subways Repair of rolling stock	1.65	0 0	0.04	1.58	0	0.02
Buses in general	4.21	0	0.02	3.52	0	0.08
Trucks in general	3.08	0.01	0.11	3.49	0.06	0.11
Specified trucks	3.20	0.01	0.14	1.74	0.00	0.07
Normal warehousing	1.62	0	0.04	1.69	0	0.07
Stevedoring	1.01	0	0.87	2.60	0.03	0.40
			-	1		-

Classification		2004			2005	
	Accident fre	quency rate	Accident	Accident fre	quency rate	Accident
Industry	Total of deaths and injuries	Deaths	severity rate	Total of deaths and injuries	Deaths	severity rate
Electric power, gas, heat supply, tap water	0.53	0.00	0.04	0.60	0	0.01
Electric power supply	0.30	0.01	0.06	0.42	0	0.01
Thermal power generation	0.35	0	0.01	0.29	0	0.01
Gas supply	0.71	0	0.02	1.13	0	0.03
Water supply	1.11	0	0.02	0.93	0	0.02
Communications				2.76	0	0.06
Wholesalers and retailers	2.76	0.01	0.15	2.50	0	0.04
Wholesalers	1.55	0.03	0.23	1.41	0	0.03
Merchandise wholesalers	0.39	0	0.00	0.58	0	0.02
Retailers	3.40	0	0.11	3.06	0	0.05
Merchandise retailers	3.37	0	0.14	2.85	0	0.04
Retailers of furniture, fixture, household goods	2.18	0	0.11	1.26	0	0.02
Compounding services				12.14	0	0.47
Postal services	12.04	0	0.23	12.14	0	0.47
Services	3.26	0.01	0.19	4.27	0	0.13
Laundries	3.33	0.06	0.57	3.03	0	0.13
Hotels	3.06	0	0.05	_	_	_
Tourism				1.17	0	0.03
Golf courses	6.40	0	0.17	7.21	0	0.14
Automotive maintenance	1.82	0	0.32	1.37	0	0.04
Machinery repair	1.02	0	0.03	0.70	0	0.24
Building management	1.85	0	0.06	3.18	0	0.11
Waste disposal (including industrial-waste disposal)	13.50	0.06	1.04	13.98	0	0.23

### Notes

- 1. This table was a result of the survey made by the Statistics and Information Department of the Ministry of Health, Labour and Welfare on the rates of death and injuries requiring

- Inis table was a result of the survey made by the Statistics and Information Department of the Ministry of Health, Labour and Welfare on the rates of death and injuries requiring an absence for 1 or more days from work during 2004 and 2005 at about 16,000 workplaces employing more than 100 workers and beloging to the industries listed above.
   The lines of business enumerated in this table are in the line with the Japan Standard Industry Classification, excluding the construction and transport industries.
   "Construction (general construction)" covers construction sites for which the contract price exceeds ¥120 million or the approximate premiums of the Industrial Accident Compensation Insurance were in excess of ¥1 million, excluding construction sites for machinery & tools installation projects, electric construction projects and plumbing.
   For table (1), figures in "All industries" are total of industries surveyed.
   The accident frequency rate is expressed in terms of the number of deaths and injuries in occupational accidents per 1 million work hours in the aggregate. The rate is gained by dividing the numbers of deaths and injuries (multiplied by 1 million) in occupational accidents that occurred during the survey period by the aggregate number of work hours for all workers who were exposed risks in the same period.

 $Accident frequency rate = \frac{Number of deaths \ and \ injuries \ in \ occupational \ accidents}{Aggregate \ number \ of \ work \ hours} \times 1,000,000$ 

6. The accident severity rate is expressed in terms of the number of workdays lost per 1,000 work-hours in the aggregate. The rate is gained by dividing the number of workdays lost (multiplied by 1,000) in occupational accidents that occurred during the survey period by the aggregate number of work-hours for all workers who were exposed to risks in the same period.

 $Accident \ severity \ rate = \frac{Number \ of \ workdays \ lost}{Aggregate \ number \ of \ work \ hours} \times 1,000$ 

7. "0" indicates that no occupational accidents occurred. "0.00" denotes a rate less than 0.005. "—" shows that the applicable workplace did not exist. "" shows that no public releases were made because the number of workplaces was few.

### Number of workdays lost

- a. Deaths: 7,500 days
  b. Workdays lost with physical disorders

Grade of physical disorder	1-3	1	5	6	7	8	<u> </u>	10	11	12	13	1/
Cirade of priyalcal disorder	1-0		J	U	,	U	3	10	- 11	12	10	
Number of workdays lost	7,500	5,500	4,000	3,000	2,200	1,500	1,000	600	400	200	100	50

c. Workdays lost without physical disorders

Number of workdays lost = Number of days off x  $\frac{300}{365}$ 

# Tenth Industrial Accident Prevention Plan (Excerpt)

"Aiming to Reduce Risks in the Workplace and Ensure the Safety and Health of All Workers"

### 1. Aim of the Plan

## (1) Fundamental principles

a. Securing safety and health of workers Securing the safety and health of workers is one of the most important national challenges.

Employers have a fundamental responsibility to ensure the safety and health of workers. From this perspective, it is necessary that they not only implement the measures to prevent occupational accidents regarded as minimum standards required by the Industrial Safety and Health Act, but also systematically and proactively develop voluntary safety and health activities and take steps to reduce workplace risk. Moreover, workers are required to treat the securing of safety and health in the workplace as their own issue by seeking to maintain and improve their professional knowledge, and to take an active part in safety and health activities implemented by employers.

### b. New challenges

Taking a long-term perspective, occupational accidents have decreased. However, about 550,000 workers still fall victim to accidents each year. While the number of fatal accidents is now less than 2,000 per year, it still remains at a level closer to 2,000 than 1,000. Therefore Japan's industrial community must devote every effort to prevent occupational accidents.

Moreover, Japan's social and economic system, which has supported the economic development of the past and has matured, is confronted with significant reform for the future in the context of dramatic changes in Japan and overseas. Companies are reviewing all aspects of their business

operations, including business sectors, management models, and personnel and labor management, in order to adapt to the new economic environment. In the labor market there is diversification of working patterns, including an increase in temporary and part time work, and greater mobility in employment. As a result of such changes, new circumstances may arise in the occupational safety and health field. Therefore, it is necessary to carefully assess the impact of these changes on safety and health. Based on this, it will be essential to consider the form that future safety and health strategies should take and to seek to promote effective safety and health measures.

Taking account of these circumstances, this plan is designed to introduce the main strategies in occupational accident prevention and other important issues related to the prevention of occupational accidents in Japan.

### (2) Measures in the past

(Omitted)

### (3) Basic policies of the plan

This plan has been formulated based on the basic policies indicated below, grounded on the above fundamental principles, in consideration of social and economic changes, seeking to secure the safety and health of all working people.

### a. Eradication of fatal accidents

Since workers, who each play an important role in society, are irreplaceable, the death of a person in the course of earning his or her daily bread is completely unacceptable in any era. Employers and other relevant parties must devote their efforts to preventing loss of life.

The number of workers killed in occupational accidents fluctuated over the 2,000 mark for 17 years from 1981, but finally went below the 2,000 barrier in 1998. In 2001, the number was in the 1,700 to 1,800 range. In the future, the plan will seek to consolidate this steady decrease and further reduce the number of workers losing their lives.

b. Securing safety and health at small and medium-sized enterprises

The level of safety and health in Japan has steadily improved. However, safety and health management at small and mediumsized enterprises is not exactly satisfactory, and the incidence of occupational accidents at small and medium-sized enterprises is high in comparison to large-scale enterprises. In order to secure safety and health at small and medium-sized enterprises, the plan will ensure the implementation of the measures to prevent occupational accidents regarded as minimum standards required by industrial safety and health-related legislation. It will also provide appropriate assistance for promoting voluntary safety and health activities as well as collective efforts at small and medium-sized enterprises.

- c. Promotion of occupational health strategies to tackle increasing psychological and physical burdens at work (Omitted)
- d. Development of safety and health management techniques to reduce risks Although the present economic environment remains severe, ensuring occupational safety and health should be one of the most important issues for business management, whatever the social and economic conditions are. It is necessary to embed a "safety culture," in which systems and individuals give top priority to safety, in companies and to establish self-sustaining mechanisms for the promotion of occupational safety and health measures. Moreover, reducing risks is a fundamental strategy because there are a variety of safety and health-related risks within companies and these risks change frequently.

For this purpose, the plan will promote the adoption by employers of Occupational Safety and Health Management Systems (OSHMS). Under OSHMS, in cooperation with workers, employers will evaluate risks through the plan-do-check-act (PDCA) cycle, take necessary measures in order to reduce such risks, and seek to gradually improve the level of safety and health.

Moreover, with regard to machinery and equipment, the plan will promote accurate risk assessments by employers that manufacture and import machinery and equipment, rational and systematic risk reduction, and the dissemination of information on residual risk and mechanisms for supplying it to employers that use machinery and equipment. The aim will be for employers that actually use machinery and equipment to reduce residual risk by devising safety and health strategies for the machinery and equipment they procure which match the way it is used. The plan also seeks to diffuse mechanisms for disseminating information on risks to workers who handle machinery and equipment.

e. Response to the diversification of working patterns and the increase in employment mobility (Omitted)

### 2. Term of the Plan

This plan will be a five-year plan commencing in fiscal 2003 and ending in fiscal 2007.

However, in the event that special circumstances relating to the prevention of occupational accidents arise during the term of the plan, revisions to the plan shall be made as necessary.

### 3. Targets of the Plan

(1) In addition to firmly maintaining the reduction in the number of workers killed in occupational accidents, the plan will aim to further reduce this number, setting a target of significantly below 1,500 deaths annually.

- (2) The plan will aim to reduce the overall number of occupational accidents during its term by more than 20%.
- (3) The plan will aim for the reduction in cases of serious occupational diseases such as pneumoconiosis and occupational cancers, and the eradication of anoxia and carbon monoxide poisoning, which often result in fatal accidents.
- (4) The plan will aim to steadily reduce workrelated diseases such as health disorders caused by excessive work or stress in the workplace.

## 4. Issues in Promoting the Prevention of Occupational Accidents

(Omitted)

## 5. Occupational Accident Prevention Strategy in Key Sectors

## (1) Occupational accident prevention strategy by industry

The plan will put priority on promoting measures in the industries listed below. In addition, measures to prevent occupational accidents will continue to be actively promoted in industries such as forestry, overland freight transport and mining, which have high accident rates. The implementation of the measures will be based on numerical targets established by occupational accident prevention organizations and others based on the characteristics of each industry.

## a. Construction industry measures

The plan will seek to promote comprehensive measures to prevent occupational accidents, focused on specified master employers. In particular, it will push for comprehensive strategies to support foreman training and explanatory meetings for workers who have never experienced the worksite in order to improve supervision capabilities for safety and health management of specialist contractors, which are subcontracted by small and medium-sized general construction firms. In addition, strategies will be promoted in order to improve safety and health

management capabilities at specialist contractors.

Moreover, the plan will examine the appropriate form for an overall management system, and will devise the necessary measures based on the outcome with regard to new working and contracting models, such as Construction Management (CM) method, which are forecast to increase in the future.

In order to reduce fall accidents, the plan will promote the spread and establishment of a method of erecting scaffolding that installs handrails prior to the next level in construction work. For the construction of low-rise buildings, such as wooden houses, it will continue to advocate the spread and consolidation of the method of installing scaffolding prior to the construction of the building.

Furthermore, in order to reduce accidents involving construction machinery, the plan will aim to contribute to the spread of drag shovels with a built-in crane function and increase awareness of hazard alert systems. At the same time, it will seek to publicize protective equipment that ensures driver safety when machinery collapses.

In addition, in order to reduce landslide accidents, the plan will promote the spread and consolidation of the installation of a proprietary shoring system prior to work on water and sewerage pipes as well as examining effective countermeasures for the collapse of slopes during excavation work. Moreover, it will conduct investigations into the safety of temporary structures in construction and bridge building work.

Furthermore, in addition to promoting comprehensive measures to prevent health hazards caused by dust, the plan will seek to take through preventive measures against exposure to asbestos during demolition work, and carbon monoxide and organic-solvent poisoning.

The cooperation of the ordering entities that place orders for construction work is essential in the implementation of these measures to prevent occupational accidents, and the plan will actively promote occupational accident prevention strategies in conjunction with ordering entities also future.

b. Overland freight transport industry measures
The plan will push for thorough measures to
prevent work-related traffic accidents with
a focus on the Guidelines for Industrial Traffic Accident Prevention including appropriate traffic management techniques using
traffic hazard maps and other methods.

In addition, in order to reduce accidents caused by falls during loading and unloading work, and accidents involving loading and unloading machinery, the plan will seek to encourage thorough methods of safe work based on the provision of safe work manuals and education that uses such manuals.

Furthermore, the plan will try to encourage shippers to improve terms and conditions in ordering and to establish safe working environments at sites where freight is loaded and unloaded.

### c. Tertiary industry measures

The plan will enhance the thorough implementation of strategies to prevent work-related traffic accidents and the guidelines for the prevention of occupational accidents formulated for each industry. At the same time, in industries with high rates of occupational accidents, such as waste processing, business groups for the relevant industry will be encouraged to implement safety and health management activities in order to reduce specific risk of the particular industry.

Moreover, the plan will work to promote voluntary safety and health activities in other industries based on the effective utilization of safety and health information supplied by the Japan Advanced Information Center of Safety and Health (JAISH) to business groups.

In addition to this, the plan will advocate the use of safety and health fault diagnosis conducted by industrial safety consultants and industrial health consultants at workplaces that have a large number of problems related to safety and health management.

### (2) Specific accident prevention strategies

a. Strategies to prevent occupational accidents involving machinery

In order to reduce accidents caused by machinery, the plan will seek to ensure that manufacturers conduct risk assessments, and to guarantee the effectiveness of Comprehensive Safety Standards of Machinery for safe design, production and use. Moreover, it will promote stipulating performance in the form of standards and requirements, which constitute the basis of improved machinery safety, international coordination on standards and requirements for individual machines and the use of private sector requirements. Furthermore, with regard to procedures for checking compliance with standards and regulations, the plan will promote the transition from authorized inspection agencies designated by the government to registered institutions that implement tests and inspections at the time of manufacturing.

At the same time, it will aim to examine and introduce incentive systems for employers with outstanding safety and health management records to conduct their own checks.

In addition, in order to make it easier for employers that use machinery to introduce machines with higher level of safety, the plan will advocate measures for the indication of safety levels related to the safety control devices of machinery.

In view of the current high accident rate in metal processing machinery, wood processing machinery and food processing machinery, the plan will aim for the introduction of comprehensive strategies based on the results of cause analyses of accidents.

## Strategies to prevent work-related traffic accidents

In order to reduce work-related traffic accidents, it is important for employers to take independent steps with regard to the management of working hours and safety and health management rather than entrusting strategies to workers who operate vehicles. From this perspective, the plan will continue to seek the thorough implementation of the Guidelines for Industrial Traffic Accident Prevention. At the same time, studies in the causes of accidents will be implemented at the workplaces of parties at fault in work-related traffic accidents and measures will be thoroughly sought to prevent the recurrence of accidents based on the results of the analysis.

Moreover, about 70% of fatalities in industrial traffic accidents occur while driving or riding in a vehicle, and about 60% of these fatalities occur while not wearing a seatbelt. In view of this, the plan will promote education on compliance with traffic laws in the workplace, including the wearing of seatbelts.

Furthermore, the plan will push for effective strategies, such as safe traffic direction, in order to protect workers from work-related traffic accidents caused by vehicles that mistakenly enter roadwork sites.

## c. Strategies to prevent explosion and fire accidents

The plan will encourage thorough implementation of strategies based on the Guidelines on Safety Assessments for Chemical Plants for factories that handle chemical substances with a high risk of explosion or fire.

From the perspective of preventing explosion and fire accidents, the plan will seek the active utilization of information concerning hazards recorded on Material Safety Data Sheets (MSDS).

Furthermore, the plan will urge the implementation of safety and health education by employers with regard to fire safety in multiple-tenant buildings with small businesses. At the same time, it will seek allembracing strategies to prevent explosion and fire accidents, including measures to prevent dust explosions caused by magnesium alloys.

### 6. Strategies to Secure Occupational Health

(Omitted)

## 7. Strengthening Safety and Health Management Strategy

## (1) Promoting the utilization of Occupational Safety and Health Management Systems

Occupational Safety and Health Management Systems (OSHMS) are effective for reducing the risk of occupational accidents rationally and systematically, as well as achieving the transmission of safety and health management expertise. Furthermore, with the increasing mix of workers with different chains of command in the workplace as a result of the diversification of working patterns, it serves to implement safety and health management in an appropriate manner. Consequently, the plan will actively promote the introduction of the OSHMS in accordance with the requirements of each industry and business size.

In order to promote the dissemination and consolidation of OSHMS and with the aim of encouraging business motivation for implementation, the plan will consider the adoption of a mechanism that can provide external confirmation, in response to requests from employers, of whether a system based on the Guidelines on Occupational Safety and Health Management Systems has been appropriately introduced and whether the system is being properly operated for improving the level of safety and health stage by stage.

In addition, the plan will encourage the establishment of manuals for each industry in order to effectively implement risk assessment by workplaces. Pursuing the widespread adoption of the manuals, it will promote self-sustained safety and health management at small and medium-sized enterprises.

Furthermore, the plan will consider the form that incentives to encourage safety and health management activities at workplaces should take for businesses with outstanding safety and health standards where self-sustained safety and health management is entrenched, and it will aim to introduce these incentives.

## (2) Strategies for small and medium-sized enterprises

In order to reduce occupational accidents at small and medium-sized enterprises, the plan will seek the thorough implementation of the occupational accident prevention measures required by legislation, and it will promote voluntary safety and health activities.

To achieve this, it will encourage the conduct of voluntary safety and health activities, working through occupational accident prevention organizations, and increase the penetration of these activities into small and medium-sized enterprises. At the same time, the plan will step up provision of and access to safety and health information. In the provision of safety and health information, it will take full advantage of channels including the Labour Insurance Affairs Union and small and medium-sized business groups. Combined with this, the plan will seek to introduce methods of providing safety and health information using electric media, for example, e-mail magazines, in response to requests from small and medium-sized businesses.

Furthermore, the plan will actively promote the establishment of self-sustained safety and health management mechanisms within small and medium-sized enterprises so that they are able to continue voluntary safety and health activities beyond the period during which they receive government assistance.

## (3) Promotion of voluntary safety and health activities by employers and workers

The plan recognizes that employers and workers have a responsibility to seek to step up the activities of safety and health committees, with an awareness of their own roles in the prevention of occupational accidents as those most familiar with workplace circumstances. In addition, it will aim for the introduction of mechanisms that

provide information of the activities of safety and health committees to all relevant parties including workers and call for opinions from them in order to foster greater interest and a sense of participation.

Meanwhile, at small businesses, which are not required to establish safety and health committees, the plan will promote the establishment of opportunities for hearing the opinions of relevant workers in place of safety and health committees, and the proactive adoption and reflection of workers' opinions in occupational safety and health strategies using this forum.

Furthermore, the plan will encourage the adoption of hazard prediction activities, which are effective techniques for promoting an atmosphere of taking preemptive safety and health action in the workplace, and will promote voluntary safety and health activities as well as enhance safety awareness among workers.

### (4) Enhancement of the personnel base

There is a need to adapt the various qualifications in the industrial safety and health field to advances in technology. Therefore, the plan will consider mechanisms to evaluate the levels of knowledge and skills required of qualification holders using the private sector. With regard to restricted work, onsite practical qualifications such as those for operation chiefs, and safety and health education for onsite workers, the plan will enhance the content of training for response to emergencies. Furthermore, it will implement hazard awareness refresher training to increase sensitivity to hazards and to refine the skills for avoiding hazards.

In order to foster workers with a strong awareness of safety and health, education before starting work is effective. Therefore, the plan will work in cooperation with education at the school level to disseminate safety and health education.

In addition, the understanding of the general public, including the families of workers, is essential in promoting the prevention of occupational accidents. Accordingly, the plan will use every opportunity to publicize the importance of occupational accident prevention and request cooperation from the general public.

# (5) Strategies in response to the diversification of work patterns and the increase in employment mobility

The plan will consider strategies to prevent occupational accidents at facilities that include subcontracted workers working under supervisors with management authority from the perspective of ensuring equal safety and health conditions regardless of working patterns, in the context of the rapid diversification of working patterns.

In addition, from the perspective of securing equal safety and health conditions regardless of the length of the term of employment in the context of rapidly increasing employment mobility, the plan will seek to promote safety and health education, which includes education at the time of employment, as well as examining mechanisms that facilitate continuous health management.

## (6) Strategies to prevent occupational accidents involving older workers

In order to prevent accidents involving older workers, the plan will promote improvements to machinery and facilities that take account of the physical characteristics of older workers as well as improvements to the working environment and work methods. Moreover, the plan will push for the development and diffusion of techniques to increase comfort in the workplace that take account of ergonomics, and it will seek the realization of a comfortable workplace environment for all workers, including older workers. Furthermore, the plan will seek to popularize comfort in the workplace by publishing workplaces that have been recognized as comfortable workplaces and liaising with employment security organizations.

### (7) Strategies for non-Japanese workers

In order to prevent accidents involving non-Japanese workers, the plan will promote the development of safety and health educational materials that are effective and easy for non-Japanese workers to understand in order to make up for communication gaps. It will seek the thorough adoption of safety and health education at the time of employment using these educational materials. In addition, the plan will seek to provide foreign-language information through the Japan International Center for Occupational Health and Safety (JICOSH) in order to facilitate easy access to Japan's occupational safety and health data for non-Japanese workers. Concerning the workplaces that employ non-Japanese workers, the plan will also encourage the conduct of safety and health audits by industrial safety consultants and industrial health consultants.

## 8. Consolidation of the Support System for Preventing Occupational Accidents

(Omitted)

# Safety Education Program List Based on Occupational Safety and Health Education System with Publicly Released Operating Procedures

	Subject	Name of education program, etc.	Content	Entity for enforcement	Related provisions and notifications
ī.	. Instructors, etc.	Training of occupational safety and health leaders in small and medium-sized enterprises	"Education at the time of employment, etc." jointly provided by industrial parks, cooperatives and other groups and learning of knowledge necessary for guidance on the prevention of occupational accidents in the groups	(Occupational Safety and Health Education Center)	LSB Notification No. 377, July 25, 1984
		2. Trainer's training (RST Course)	Imparting of knowledge, etc., necessary for foremen and others to take charge of education	(Ditto)	LSB Notification No. 177, March 26, 2001
			b. Training on necessary knowledge to be in charge of education for those responsible for safety and health programs	(Ditto)	(Ditto)
			c. Training on necessary knowledge to be in charge of education for foremen and those responsible for safety and health programs	(Ditto)	(Ditto)
			d. Imparting of necessary knowledge for persons who take charge of education of items required for the execution of duties in the building custodian or cleaning businesses	(Ditto)	LSB Notification No. 387, August 1, 1984
		3. Instructors training	Imparting of knowledge, etc., necessary to take charge of special education	(Ditto)	LSB Notification No. 148, March 26, 1984
II.	New employees or workers who have been assigned to a new job	Education, etc., at the time of employment or assignment to a new job	Imparting of knowledge, etc., necessary to new employees or workers who have been assigned to a new job (legally mandatory)	Employers (jointly performed in group for industrial parks and other groups)	Article 59, Industrial Safety and Health Act; Article 35, Ordinance on Industrial Safety and Health
III.	Workers engaged in dangerous work	1. Special education	Imparting of knowledge, etc., necessary to workers who engage in dangerous or harmful work (legally mandatory)	Employees or industrial safety and health organizations, etc., which take the place of the em- ployers (Labour Standards Association, etc.)	Article 59, Industrial Safety and Health Act; Article 26, Ordinance on Industrial Safety and Health on Provision of Special Education
		Education for     workers engaged     in dangerous or     harmful operations     (For work on	Imparting of knowledge, etc., necessary to workers who actually engage in risky or hazardous work (legally mandatory)	(Ditto)	Article 60-2, Industrial Safety and Health Act; Guidelines on Occupational Safety and Health Education
		whose engagement restrictions are imposed in the category of risky and hazardous work, refer to IV-2.)	Imparting of knowledge, etc., necessary to workers who actually engage in the driving of forklifts with a maximum load of less than 1 ton (legal mandatory)	(JCSHA, JLTISHA, JPTISHA, JFTMLAPA)	LSB Notification No. 114, March 1, 1990

	Subject	Name of education program, etc.	Content	Entity for enforcement	Related provisions and notifications									
III.	II. Workers engaged in dangerous work (Continued)	Education for     workers engaged     in dangerous or     harmful operations     (For work on     whose engagement	b. Imparting of knowledge, etc., necessary to workers who actually engage in the operation of mechanical timber collectors (regularly or as needed)	(JFTMLAPA)	LSB Notification No. 518, September 17, 1992									
		restrictions are imposed in the category of risky and hazardous work, refer to IV-2.) (Continued)	c. Imparting of knowledge, etc., necessary to workers who actually engage in the felling of trees with chain saws (regularly or as needed)	(Ditto)	LSB Notification No. 260, April 23, 1992									
		3. Education equivalent in quality to special education (Safety and Health)	Imparting of knowledge, skills, etc., necessary for the safe driving of straddle carriers, to straddle carrier drivers	Employers or safety and health organizations, etc., which take the place of the employers (Labour Standards Association, etc.)	LSB Notification No. 659, December 21, 1992									
			b. Imparting of knowledge, etc., necessary for safe work, to workers who work in a prostrate posture with stevedoring and material handling machinery, etc.	Employers or safety and health organizations, etc., which take the place of the employers (JLTISHA)	LSB Notification No. 128, March 4, 1988									
			c. Training on necessary knowledge for safely implementing tasks for workers engaged in gathering lumbers with a forest vehicle	Employers or safety and health organizations, etc., which take the place of the employers	LSB Notification No. 646, November 11, 1991									
					d. Imparting of knowledge, etc., necessary for safe work to workers who engage in work with press machinery	Employers or safety and health organizations, etc., which take the place of the employers	LSB Notification No. 367, June 11, 1996							
														e. Imparting of knowledge, etc., necessary for safe driving to workers who engage in the driving of automobiles
			f. Imparting of knowledge, skills, etc., necessary for safe operation of grass cutters, to workers who engage in handling grass cutters	(Ditto)	LSB Notification No. 66, February 16, 2000									
IV.	Special technicians, etc. (excluding workers associated with operations chief)	Classes on skills or licensing	Acquisition of skills for special technicians, etc., who engage in work on whose engagement restrictions are imposed (legally mandatory)	State or designated testing institutions or designated training institutions	Article 61, 75, 76, and Annex Table 17 and 18, Industrial Safety and Health Act; Article 69, Ordinance on Industrial Safety and Health									
		Training of workers engaged in dangerous or harmful operations	Imparting of knowledge, etc., to workers who actually engage in work on whose engagement restrictions are imposed (regularly or as needed) (legally mandatory)	Employers or safety and health organizations, etc., which take the place of the employers (Labour Standards Association, etc.)	Article 60-2, Industrial Safety and Health Act; Guidelines on Occupational Safety and Health Education									
			a. Imparting of knowledge, etc., necessary to workers who are licensed as cargo lift operators (regularly or as needed)	(JPTISHA)	LSB Notification No. 111, March 1, 1990									
			b. Imparting of knowledge, etc., to workers who engage in the operation of boilers (regularly or as needed)	(JBA, BCSA)	LSB Notification No. 472, July 23, 1990									

	Subject	Name of education program, etc.	Content	Entity for enforcement	Related provisions and notifications	
IV.	IV. Special technicians, etc. (excluding workers associated with operations chief) (Continued)	Training of     workers engaged     in dangerous or     harmful operations     (Continued)	c. Imparting of knowledge, etc., to workers who actually engage in the welding of boilers and class 1 pressure vessels (regularly or as needed)	(Ditto)	LSB Notification No. 473, July 23, 1990	
			d. Imparting of knowledge, etc., necessary to workers who are licensed as boiler maintenance workers (regular or as needed)	(Japan Boiler Maintenance and Installation Association)	LSB Notification No. 474, July 23, 1990	
			e. Imparting of knowledge, etc., to workers who are licensed as crane operators (regularly or as needed)	(JCA, BCSA)	LSB Notification No. 112, March 1, 1990	
			f. Imparting of knowledge, etc., to workers who are licensed as mobile crane operators (regularly or as needed)	(JCSHA, JCA, BCSA, Japan Crane Construction Con- tractors Association, etc.)	LSB Notification No. 113, March 1, 1990	
			g. Imparting of knowledge, etc., to workers who engage in the operation of forklifts with a maximum load of more than 1 ton (regularly or as needed)	(JCSHA, JLTISHA, JPTISHA, JFTHLAPA, etc.)	LSB Notification No. 114, March 1, 1990	
				h. Imparting of knowledge, etc., to workers who engage in the operation of vehicle-type construction machinery (for land preparation, transportation, loading and drilling) with a bodyweight of more than 3 tons (regularly or as needed)	(JCSHA, National Association of Designated Training Institutions)	LSB Notification No. 366, June 11, 1993
			i. Imparting of knowledge, etc., to workers who engage in slinging (banding with wire and hooking objects which are to be lifted), such as with cranes with a lifting load of more than 1 ton (regularly or as needed)	(JCA, BCSA)	LSB Notification No. 709, December 22, 1993	
			j. Imparting of knowledge, etc., to workers who engage in the operation of vehicle-type construction machinery (for basic construction work) with a bodyweight of more than 3 tons (regularly or as needed)	(JCSHA, National Association of Ground Works Construction Unions)	LSB Notification No. 756, December 15, 1997	
		3. Hazard awareness refresher training	Training for those engaged in tasks involving excavator driving to become more aware of hazards and to be thorough in safe operation methods	Designated training institution	LSB Notification No. 623, July 12, 2001; LSB Notification No. 0408006, April 8, 2003	
V.	Top management, etc.	Seminars for top management of enterprises under special guidance system	Seminar designed to impart knowledge, etc., necessary to carry out comprehensive safety management to top management of enterprises under special guidance system	Carried out in cooperation with the government (Regional Safety and Health Service Center or Safety and Health Education Center)	LSB Notification No. 545, October 9, 1984	
		Safety and health seminar for top management	Seminar designed to impart knowledge, etc., necessary to deepen understanding about safety and health, primarily to the top management of small and medium-sized enterprises	Safety and Health Association, etc. (Labour Standards Association, etc.)	LSB Notification No. 217*, February 20, 1976	

	Subject	Name of education program, etc.	Content	Entity for enforcement	Related provisions and notifications
V.	Top management, etc. (Continued)	General safety     and health     manager training	Imparting of knowledge, etc., necessary to prevent serious accidents, in particular, to overall safety and health controllers in the construction industry	(JCSHA)	LSB Notification No. 91*, February 20, 1977
VI.	Managers, supervisors, etc.	Initial training for newly appointed safety supervisors	Requirement to be qualified as a safety supervisor, excluding safety consultants (legally mandatory).	Individuals who finished instructor training course	Article 5, Ordinance on Industrial Safety and Health; LSB Notification No. 0224004, February 24, 2006
		2. Skill improvement training for safety supervisors and other safety and health related parties	Imparting of knowledge, etc., necessary to carry out duties, to safety supervisors and other officials who engage in the prevention of occupational accidents (regularly or occasionally) (legally mandatory)	Employers or safety and health organizations which take the place of the employers (Labour Standards Association, etc.)	Article 19-2, Industrial Safety and Health Act; Educational Guideline for Ability Enhancement
			Imparting of knowledge, etc., necessary to carry out duties, to safety supervisors (regularly or as needed)	(JLTISHA, JPTISJA, JISHA)	LSB Notification No. 124, March 17, 1992; LSB Notification No. 555, September 17, 1999; LSB Notification No. 665, July 24, 2001
			b. Imparting of knowledge, etc., necessary to carry out duties, to safety and health promoters (at the time of the initial appointment)	(JCSHA, JLTISHA, JPTISHA, JFTMLAPA, JISHA)	LSB Notification No. 129, 130, 131, March 15, 1990; LSB Notification No. 166, March 22, 1991; LSB Notification No. 636, November 2, 1999; LSB Notification No. 774, December 26, 2000
			c. Imparting of knowledge, etc., necessary to carry out duties, to site safety and health supervisor (at the time of the initial appointment)	(JCSHA)	LSB Notification No. 36, January 19, 1994
			d. Imparting of knowledge, etc., necessary to carry out duties, to operations chiefs of excavating work for quarrying (regularly or as needed)	Japan Crushed Stone Association	LSB Notification No. 284, May 23, 1985
			e. Imparting of knowledge, etc., necessary to carry out duties, to operations chiefs of handling boilers (regularly or as needed)	(JBA, BCSA)	LSB Notification No. 469, July 23, 1990
			f. Imparting of knowledge, etc., necessary to carry out duties, to operations chiefs of handling ordinary class 1 pressure vessels (regularly or as needed)	(Ditto)	LSB Notification No. 470, July 23, 1990
			g. Imparting of knowledge, etc., necessary to carry out duties, to operations chiefs of handling class 1 pressure vessels relating to chemical facilities (regularly or as needed)	(Ditto)	LSB Notification No. 471, July 23, 1990
			h. Imparting of knowledge, etc., necessary to carry out duties, to operations chiefs of press machines (regularly or as needed)	(Labour Standards Association, designated training institutions, etc.)	LSB Notification No. 593, September 3, 1990

Subject	Name of education program, etc.	Content	Entity for enforcement	Related provisions and notifications	
VI. Managers, supervisors, etc. (Continued)	training for safety supervisors and other safety and health related	i. Imparting of knowledge, etc., necessary to carry out duties, to operations chiefs in the assembling scaffolds (regularly or as needed)	(JCSHA)	LSB Notification No. 602, October 1, 1990	
	parties (Continued)	j. Imparting of knowledge, etc., necessary to carry out duties, to operations chiefs of assembling wooden buildings. (regularly or as needed)	(Ditto)	LSB Notification No. 604, October 1, 1990	
		k. Imparting of knowledge, etc., necessary to carry out duties, to operations chiefs of stevedor- ing (regularly or as needed)	(JPTISHA)	LSB Notification No. 667, November 6, 1990	
		I. Imparting of knowledge, etc., necessary to carry out duties, to operations chiefs of handling woodworking machinery (regularly or as needed)	(JFTMLAPA)	LSB Notification No. 536, September 6, 1991	
		m.Imparting of knowledge, etc., necessary to carry out duties, to operations chiefs of forestry cable ways (regularly or as needed)	(Ditto)	LSB Notification No. 125, March 17, 1992	
		n. Imparting of knowledge, etc., necessary to carry out duties, to operations chiefs of gas welding (regularly or as needed)	(JISHA)	LSB Notification No. 320, June 1, 1992	
		Imparting of knowledge, etc., necessary to carry out duties, to operations chiefs of handling industrial dryer (regularly or as needed)	(Ditto)	LSB Notification No. 438, July 6, 1994	
			p. Imparting of knowledge, etc., necessary to carry out duties, to traffic safety supervisors (regularly or as needed)	(JLTISHA)	LSB Notification No. 236, March 30, 2001
		q. Imparting of knowledge, etc., necessary to enhance the skills of safety and health controllers, in order to prevent industrial accidents due to mixed work at construction sites (at the time of the initial appointment)	(JCSHA)	LSB Notification No. 179, March 28, 2000	
	3. Foremen training	Imparting of knowledge, etc., necessary to direct and supervise work, to foremen and the like in regard to specified types of work (legally mandatory)	Employers or safety and health organizations which take the place of the employers (Labour Standards Association, etc.)	Article 60, Industrial Safety and Health Act; Article 40, Ordinance on Industrial Safety and Health	
		b. Imparting of knowledge, etc., necessary to direct and supervise work, to foremen of cleaning and building maintenance services	Employers (Jointly carried out in group for coopera- tives and other groups)	LSB Notification No. 387, August 1, 1984	
	Skill training     or licensing of     operations chiefs	Acquisition of qualifications for operations chiefs of restricted work (legally mandatory)	Designated testing institutions, registered training institutions	Article 61, Industrial Safety and Health Act; Article 69, 73 and 78, Ordinance on Industrial Safety and Health	

	Subject	Name of education program, etc.	Content	Entity for enforcement	Related provisions and notifications
VI.	VI. Managers, supervisors, etc. (Continued)	5. Training for workers participating in construction planning process	Imparting of knowledge, etc., necessary to maintain safety in the preparation of construction plans, to workers who take part in the preparation of general construction plans (legally mandatory)	(JCSHA, Scaffolding and Construction Equipment Association of Japan)	Article 88, Industrial Safety and Health Act; Article 92-3 and Annex Table 9, Ordinance on Industrial Safety and Health
		6. Rescue supervisor training	Imparting of knowledge, etc., required to take life-saving measures in the outbreak of explosions and other accidents, to technical supervisors for rescue in the construction of tunnels, etc. (legally mandatory)	(JCSHA)	Article 25-2, Industrial Safety and Health Act; Article 24-7, Ordinance on Industrial Safety and Health
		7. Production technology supervisor training	a. Imparting of knowledge, etc., necessary to prevent serious accidents, to safety manage- ment chiefs and other produc- tion technology supervisors including technology managers in the chemical industry	Safety and health organizations, etc., in the chemical industry	LSB Notification No. 91*, February 21, 1977
			b. Imparting of knowledge, etc., necessary to prevent serious accidents, to safety manage- ment chiefs and other produc- tion technology supervisors including technology managers in the construction industry	(JCSHA)	(Ditto)
			c. Imparting of knowledge, etc., necessary to manage the use of vehicle-type construction machine (for land preparation, transportation, loading and excavating) in a manner suitable for the site and construction methods, to workers, who manage the operation of vehicle-type construction machines (for land preparation, transportation, loading and excavating)	Employers or safety and health organizations which take the place of the employers (JCSHA)	LSB Notification No. 544, October 9, 1984
			d. Imparting of knowledge, etc., in conformity with the evolution of the latest technology to the licensed mobile crane operators and workers who will control and supervise the mobile-crane operation	(JCSHA, Japan Crane Construction Contractors Association)	LSB Notification No. 543, September 13, 1986
		Design engineer training	Imparting of knowledge, etc., necessary to assure safety in the phases of designing and production, to the designers and workers responsible for production of cranes, etc.	Organizations for safety training on cranes, etc. (JCA)	LSB Notification No. 424*, August 11, 1980
			b. Imparting of knowledge, etc., necessary to assure safety in the phases of designing and production, to the designers and workers responsible for production of boilers and pressurized containers	Organizations for safety training on boilers, etc. (JBA, BCSA)	LSB Notification No. 152, March 25, 1985

Sub	ject	Name of education program, etc.	Content	Entity for enforcement	Related provisions and notifications		
supervi	/I. Managers, supervisors, etc. (Continued)	rs, etc. training	c. Imparting of knowledge, etc., necessary to assure safety in the phases of designing and production, to workers respon- sible for production of such machinery subject to inspection as power-driven presses	Organizations for inspection of machinery, etc. (Technology Institution of Industrial Safety)	LSB Notification No. 417*, August 1, 1983		
			d. Imparting of knowledge, etc., necessary to assure safety in the phases of designing and production, to workers respon- sible for production of machinery, etc., for type inspections	Organizations for inspection of machinery, etc. (Technology Institution of Industrial Safety)	LSB Notification No. 321, June 10, 1985		
		9. Team leader training	Imparting of knowledge, etc., necessary to workers who direct forestation, including the cleaning of underbrush and land preparation in forestry	Employers or safety and health organizations which take the place of the employers (JFTMLAPA)	LSB Notification No. 141, March 18, 1985		
			b. Imparting of knowledge, etc., necessary to workers who direct timber collection by tractor and the like	(Ditto)	LSB Notification No. 572, September 25, 1987		
			c. Imparting of knowledge, etc., necessary to workers who direct the loading and unloading of trucked cargo	Employers or safety and health organizations which take the place of the employers (JLTISHA)	LSB Notification No. 133, March 13, 1985		
	10. Training of officials for periodical voluntary inspections		d. Imparting of knowledge, etc., necessary to workers who direct the assembling and dis- assembling of climbing cranes	Employers or safety and health organizations which take the place of the employers (JCA, BCSA)	LSB Notification No. 676, December 4, 1987		
					e. Imparting of knowledge, etc., necessary to workers who direct the assembling and disassembl- ing of construction elevators	Employers or safety and health organizations which take the place of the employers	LSB Notification No. 0322004, March 22, 2006
			f. Imparting of knowledge, etc., necessary to workers who direct the installation of boilers	Employers or safety and health organizations which take the place of the employers (Japan Boiler Maintenance and Instal- lation Association, etc.)	LSB Notification No. 0330007, March 30, 2006		
			g. Imparting of knowledge, etc., necessary to workers who direct electric work	Employers or safety and health organizations which take the place of the employers	LSB Notification No. 782, December 28, 1988		
			h. Imparting of knowledge, etc., necessary to workers who direct the disassembling of wooden buildings	(Ditto)	LSB Notification No. 485, September 5, 1989		
			i. Imparting of knowledge, etc., necessary to workers who direct stevedoring with the use of vehicle-type stevedoring machinery, etc.	(Ditto)	LSB Notification No. 650, December 11, 1992		
		voluntary	Imparting of knowledge, etc., necessary to control the inspection, testing, etc., of temporarily installed equipment, to safety supervisors of aged equipment and materials for temporarily works	Employers or safety and health organizations which take the place of the em- ployers (Scaffolding and Construction Equipment Association of Japan)	LSB Notification No. 205, April 25, 1984: LSB Notification No. 223, April 4, 1996		

	Subject	Name of education program, etc.	Content	Entity for enforcement	Related provisions and notifications													
SL	anagers, upervisors, etc. continued)		b. Imparting of knowledge, etc., necessary to workers who engage in the periodical voluntary inspection of mobile cranes	Employers or safety and health organizations which take the place of the employers (JCA, BCSA)	LSB Notification No. 546, October 9, 1984													
	ne du on	c. Imparting of knowledge, etc., necessary to workers who con- duct maintenance work, etc., on the basis of the inspection and test of mobile cranes	Employers or safety and health organizations which take the place of the employers (JCA)	LSB Notification No. 547, October 9, 1984														
			d. Imparting of knowledge, etc., necessary to workers who engage in the periodical voluntary inspection of overhead cranes	Employers or safety and health organizations which take the place of the employers	LSB Notification No. 670, November 21, 1986													
			e. Imparting of knowledge, etc., necessary to workers who engage in the periodical voluntary inspection of chemical facilities and their annexed facilities	Employers or safety and health organizations which take the place of the employers	LSB Notification No. 213, April 13, 1987													
					f. Imparting of knowledge, etc., necessary to workers who engage in the periodical voluntary inspection of shovel loaders	(Safety Association of Construction and Loading Vehicles, JLTISHA)	LSB Notification No. 163, March 24, 1987											
			g. Imparting of knowledge, etc. necessary to workers who engage in the special voluntary inspection of vehicle-type construction machinery (for foundation work) (skill improvement training)	(Safety Association of Construction and Loading Vehicles)	LSB Notification No. 480, July 23, 1993													
								necessary to workers who engage in the special volu inspection of forklifts (skill improvement training i. Imparting of knowledge, e necessary to workers who engage in the special volu inspection of vehicle-type construction machinery fo preparation, carriage, load and excavating									(Ditto)	LSB Notification No. 600, September 29, 1994
									i. Imparting of knowledge, etc., necessary to workers who engage in the special voluntary inspection of vehicle-type construction machinery for land preparation, carriage, loading	(Ditto)	LSB Notification No. 620, October 5, 1994							
		j. Imparting of knowledge, etc., necessary to workers who engage in the special voluntary inspection of vehicle-type construction machinery for concrete depositing (skill improvement training)	(Ditto)	LSB Notification No. 547, September 14, 1999														
										k. Imparting of knowledge, etc., necessary to workers who engage in the special voluntary inspection of vehicle-type construction machinery (for disassembling) (skill improvement training)	(Ditto)	(Ditto)						

Subject	Name of education program, etc.	Content	Entity for enforcement	Related provisions and notifications
VI. Managers, supervisors, etc. (Continued)	10. Training of officials for periodical voluntary inspections (Continued)	Inparting of knowledge, etc., necessary to workers who engage in the special voluntary inspection of vehicle-mounted aerial platforms (skill improvement training)	(Ditto)	(Ditto)
		m.Imparting of knowledge, etc., necessary to workers who engage in the special voluntary inspection of off-road transportation (skill improvement training)	(Ditto)	(Ditto)
		n. Imparting of knowledge, etc., necessary to workers who engage in the special voluntary inspection of vehicle-type construction machinery for tightening (skill improvement training)	(Ditto)	LSB Notification No. 165, March 22, 2001

- Notes:
  1. The names in parentheses are those of specific and other organizations.
  2. As regards the asterisked (\*) instructions, refer to LSB No. 148, March 26, 1984.
  3. With respect to the safety and health training system, refer to the Procedure for the Promotion of Safety and Health Training stipulated in LSB Notification No. 39, January 21, 1991.

  BCSA: Boiler and Crane Safety Association

  JBA: Japan Boiler Association

  JCA: Japan Crane Association

  JCSHA: Japan Construction Safety and Health Association

  JFTMLAPA: Japan Forestry and Timber Manufacturing Labour Accident Prevention Association

  JISHA: Japan Industrial Safety and Health Association

  JLTISHA: Japan Land Transportation Industry Safety and Health Association

  JPTISHA: Japan Port Transportation Industry Safety and Health Association

  LSB Notification: Notification of the Director-General of the Labour Standards Bureau, Ministry of Labour

# Designated Testing Institutions and Occupational Safety and Health Education Centers

### 1. Designated Testing Institutions

The Industrial Safety and Health Act stipulates that certain qualifications are required for workers engaged in specified dangerous and potentially harmful works. Boiler operators, crane and derrick operators, and health supervisors are required to obtain a license from the Director-General of their Prefectural Labour Bureau.

The acquisition of these licenses requires that applicants pass the examination given by the Institute for Safety and Health Qualifying Examinations designated by the Ministry of Health, Labour and Welfare.

The Institute conducts 23 kinds of license examination, of which 15 are associated with occupational safety.

## 2. Occupational Safety and Health Education Centers

## Occupational Safety and Health Education Center — Japan Industrial Safety and Health Association (JISHA)

Playing an important part in the prevention of occupational accidents, safety and health education is considered one of the pillars of the Industrial Safety and Health Act.

The Occupational Safety and Health Education Center of the Japan Industrial Safety and Health Association (JISHA) has been established by the central government for the development of trainers and instructors in safety and health education by businesses, and its management is commissioned to the Japan Industrial Safety and Health Association. Such centers are established in Tokyo and Osaka. Since their establishment, 150,000 persons have finished a wide variety of courses provided by the centers.

The main lecture courses include "Safety Management," "Safety and Health Management," "Safety and Health at Specialized Levels," "RST,"

"Instructors in Special Education" and "Specified Voluntary Inspections," among others. Instructors of ample experience provide appropriate and useful education by making effective use of the latest education facilities with accommodation facilities.

## (2) Construction Safety and Health Education Center

The Construction Safety and Health Education Center has been established by the central government for the further development of construction industry-associated safety and health education, such as development of a safety and health management system for tunnel construction and other dangerous construction work, reinforcement of a planning and screening system for particularly dangerous construction work, and establishment of a life-saving system invoked at the occurrence of serious accidents. The management of this center, established in Sakura City, Chiba Prefecture, is commissioned to the Japan Construction Safety and Health Association.

The main lecture courses include "Training for Life-saving Technology Management in Tunneling, etc.," "Safety and Health Management in the Construction Industry," "Occupational Health Management in the Construction Industry" and "Safety and Health for Construction Engineers."

Focused on practical work and technology, full-fledged education is provided by the wellexperienced teaching staff, and the center is equipped with accommodation facilities.

# Overview of Support Project for Group Safety and Health Activities in Small Enterprises

The project is to support safety and health activities conducted by groups that are mainly comprised of the workplaces of small and medium-sized enterprises (paid-in capital of no more than 100 million yen and no more than 300 workers employed) with less than 50 full-time workers (hereinafter referred to as "target small-scale workplaces") and the group's constituent small-scale workplaces.

The project is to assign an advisory team consisting of safety and health experts and safety and health promoters for small and medium-sized enterprises in each of the prefectures to conduct fact-finding surveys on safety and health activities in the workplace. Based on the results of these surveys, these advisors offer know-how and support to formulate a safety and health action plan and to implement basic safety and health measures, such as safety and health education. The objective of this support is to upgrade the safety and health levels in small enterprises.

The project is managed by the Safety and Health Promotion Center for Small and Medium-sized Enterprises, Small and Medium-sized Enterprises Department, Japan Industrial Safety and Health Association (JISHA).

## 1. Subjects of the Project

The subjects of this project are groups that satisfy the following conditions, and are selected by the Ministry of Health, Labour and Welfare and then registered with JISHA.

- (1) The subjects must be groups whose members are small enterprises, mainly in the manufacturing business.
- (2) The subjects must be groups the majority of whose members are small enterprises.
- (3) The subjects must be groups that are in local unions.

(4) The subjects must be groups with established rules, officers and offices relating to the operation of the group with an expectation of sustained activity.

## 2. Contents of the Project

The contents of the project are as follows:

## (1) Support for the first and second fiscal year following registration

- a. Support for the safety and health activities of the group
  - The project will provide instruction and support for the implementation of the following safety activities in order to ensure that the safety and health activities of the registered group are implemented smoothly.
  - (i) Group safety and health management activities (essential activities)
     The necessary management activities to promote the group's safety and health activities
    - Convening a steering committee
    - Convening meetings of the constituent workplaces
    - Implementation of fact-finding surveys into safety and health activities
    - Formulation of program for group safety and health activities
  - (ii) Daily safety and health activities
  - (iii) Training of group activity leaders, etc.
- b. Support for the safety and health activities of constituent small-scale workplaces

  The project will offer the necessary safety and health services to improve and maintain the workplace environment, the safety of equipment, and the capabilities and health of workers at individual small-scale workplaces.

(i) Safety and health diagnoses, etc.

The project will provide instruction and support for constituent small-scale workplaces to receive a safety and health diagnosis from an industrial safety and health consultant. Moreover, there will be support for obtaining instruction on inspection standards for machinery and equipment and the formulation of work standards.

(ii) Safety and health education, etc.

Constituent small-scale workplaces will be coached and supported so that their workers may be able to receive the following education and other programs.

- Skill improvement training
- Foremen training, etc.
- Special education, etc.
- Skill training courses

### (iii) Specified voluntary inspection

The project will provide instruction and support for the implementation of the following specified voluntary inspections relating to machinery and equipment owned by constituent smallscale workplaces.

- Power press machinery
- Forklifts

### (iv) Special medical examination

The project will provide instruction and support to constituent small-scale workplaces for the implementation of the special medical examination based on the Industrial Safety and Health Act and notifications.

Moreover, it will provide instruction and support for the implementation of the periodical medical examination for night shift workers conducted by workplaces with no more than ten workers.

(v) Work environment measurement, etc.

The project will provide instruction and support to constituent small-scale work-places in obtaining the measurement of the workplace environment by a work environment measurement institution.

## (2) Support for the third fiscal year following registration (aftercare period)

The project will provide support for the formulation of a medium-term safety and health action program for a further one year to groups that have completed two years of support so that the groups implement voluntary and ongoing safety and health activities in the future. At the same time, the project will provide instruction and suggestions on safety and health activities and information on safety and health.

# List of Qualifications Specified in Industrial Safety and Health Act (Qualifications Related to Safety)

(1) List of Dangerous Work Subject to Work Restrictions (Article 61, Industrial Safety and Health Act)

Conter	nt of work	Workers able to engage in the work (qualifiers)	Methods for acquisition of qualifications	Remarks
Blasting	Boring, loading, wiring and detonation in cases with blasting done, and handling of misfired gunpowder or the inspection and disposal of residual gunpowder	Blasting operators, and others	Having passed the licensing examination conducted by a designated testing institution	
Operation of hoisting equipment	Operation of hoists with a maximum load of 5 tons or more	Cargo hoisting equipment operators	(Ditto)	
Operation of boilers	Operation of boilers (excluding small boilers)	Special class boiler operators, first class boiler operators, second class boiler operators or workers who have finished the training course on boiler operation skills	Having passed the licensing examination conducted by a designated testing institution     Having finished the training course conducted by a registered training institution	Workers who have finished the training course for the operation of boilers may be able to operate specified boilers only
Welding of boilers or class 1 pressure vessels	Welding of boilers or class 1 pressure vessels	Special class boiler welders or ordinary class boiler welders	Having passed the licensing examination conducted by a designated testing institution	Ordinary class boiler welders may be able to do the specified types of welding work only
Maintenance of boilers or class 1 pressure vessels	Maintenance of boilers or class 1 pressure vessels	Boiler maintenance workers	(Ditto)	
Operation of cranes	Operation of cranes with a hoisting load of 5 tons or more (excluding telphers)	Crane and derrick operators (including those with an operation license limited to cranes) or workers who have finished the training course for operating floor-controlled cranes that move on the floor, or crane operators	Having passed the licensing examination conducted by a designated testing institution     Having finished the training course conducted by a registered training institution	There is a crane license limited to the operation of floor-controlled cranes (cranes operated on the floor with the operator simultaneously moving with the cargo). Workers who have finished the skill training course for floor-controlled cranes can operate floor-controlled cranes only.
Operation of mobile cranes	Operation of mobile cranes with a hoisting load of 1 ton or more	Mobile crane operators or workers who have finished the skill training course for operating small mobile cranes	(Ditto)	Workers who have finished the skill training course for small mobile crane operators can operate mobile cranes with a hoisting load of from 1 ton or more to less than 5 tons. For the running of cranes on the road, a license is required under the Road Traffic Act.
Operation of derricks	Operation of derricks with a hoisting load of 5 tons or more	Crane and derrick operators or derrick operators	Having passed the licensing examination conducted by a designated testing institution	
Gas welding, etc.	Metal welding, cutting or heating with inflam- mable gas and oxygen	Operations chief of gas welding, workers who have finished the skill training course for gas welding, and others	Having passed the licensing examination conducted by a designated testing institution     Having finished the training course conducted by a registered training institution	

Content of work		Workers able to engage in the work (qualifiers)	Methods for acquisition of qualifications	Remarks
Operation of forklifts	Operation of forklifts with a maximum load of 1 ton or more	Workers who have finished the course given on the skills required for the operation of forklifts, and others	Having finished the technical course conducted by a registered training institution	For driving and operating forklifts on the road, a license is required under the Road Traffic Act.
Operation of shovel loaders and fork-loaders	Operation of shovel loaders or fork- loaders with a maximum load of 1 ton or more	Workers who have finished the course given on the skills required for the operation of shovel loaders, etc., and others	(Ditto)	(Ditto)
Driving of vehicle- type construction machinery	Driving of vehicle- type construction machinery with a body weight of 3 tons or more for land preparation, carriage, loading and excavating  Driving of vehicle- type construction machinery with a body weight of 3 tons or more for foundation work  Driving of vehicle- type construction machinery with a body weight of 3 tons or more for foundation work  3 tons or more for demolition work	Workers who have finished the course given on the skills required for the driving of vehicle-type construction machinery (for land preparation, carriage, loading and excavating), and others  Workers who have finished the course given on the skills required for the driving of vehicle-type construction machinery (for foundation work), and others  Workers who have finished the course given on the skills required for the driving of vehicle-type construction machinery (for demolition machinery (for demolition work), and others	(Ditto)	(Ditto)
Driving of off-road transportation vehicles	Driving of off- road transportation vehicles with a maximum load of 1 ton or more	Workers who have finished the course given on the skills required for the driving of off-road transportation vehicles, and others	(Ditto)	(Ditto)
Driving of vehicle- mounted aerial work platforms	Driving of vehicle- mounted aerial work platforms with the work floor at 10 meters or more in height	Workers who have finished the course given on the skills required for the driving of vehiclemounted aerial work platforms, and others	(Ditto)	(Ditto)
Slinging work (banding with wire and hooking objects which are to be lifted)	Slinging work with hoisting equipment with a maximum load of 1 ton or more, or cranes, mobile cranes or derricks with a hoisting load of 1 ton or more	Workers who have finished the course given on the skills required for slinging work, and others	(Ditto)	

## (2) List of Safety Supervisors, Etc.

Classification	Scope of application	Qualifiers, etc.	Pertinent act, order and ordinance <sup>Note</sup>
General safety and health manager	Workplaces with a workforce of 100 or more (forestry; mining; construction; transportation; cleaning), 300 or more (manufacturing; electric power; gas; heat supply; tap water; communications; wholesale of various merchandise; wholesale of furniture, fixtures, household goods and other goods; retail of various merchandise; retail of furniture, fixtures, household goods and other goods; retail of fuels; hoteliers; golf courses; automobile maintenance; machine repair), 1,000 or more (other lines of business) at all times		ISHA 10; EOISHA 2
Safety supervisor	Workplaces with a workforce of 50 or more at all times (forestry; mining; construction; transportation; cleaning; manufacturing; electric power; gas; heat supply; tap water; communications; wholesale of various merchandise; wholesale of furniture, fixtures, household goods and other goods; retail of various merchandise; retail of furniture, fixtures, household goods and other goods; retail of fuels; hoteliers; golf courses; automobile maintenance; machine repair)	Qualifiers defined in Article 5, OISH	ISHA 11; EOISHA 3
Safety and health promoter	Workplaces with a workforce of 10-49 at all times (forestry; mining; construction; transportation; cleaning; manufacturing; electric power; gas; heat supply; tap water; communications; wholesale of various merchandise; wholesale of furniture, fixtures, household goods and other goods; retail of various merchandise; retail of furniture, fixtures, household goods and other goods; retail of fuels; hoteliers; golf courses; automobile maintenance; machine repair)	Qualifiers designated by means of notification	ISHA 12-2; OISH 12-2, 12-3, 12-4
Overall safety and health controller	Workplaces with a workforce of 50 or more, including subcontractors, at one and the same place, at all times (30 or more at all times for construction of tunnels, etc., work in the compressed air method and constriction of specified bridges) (Construction and shipbuilding)	Designated from among the original contractor's workers	ISHA 15; EOISHA 7
Master safety and health supervisor	(Ditto)	Qualifiers designated under Article 18-3, OISH. Designated from among the original contractor's workers	ISHA 15-2
Safety and health controller	(Ditto)	Designated from among the workers of each subcontractor	ISHA 16
Site safety and health supervisor	Construction sites with a workforce of 20-29, including the subcontracted workers at one and the same place, at all times, for construction of tunnels, etc., work in the compressed air method and construction of specified bridges (workforce of 20-49 for construction of steel-framed structures, steel-framed and reinforced concrete structures)	Qualifiers designated under Article 18-7, OISH. Designated from among the original contractor's workers	ISHA 15-3

Note:
EOISHA: Enforcement Order of the Industrial Safety and Health Act
ISHA: Industrial Safety and Health Act
OISH: Ordinance on Industrial Safety and Health

## (3) List of Operations Chiefs, Etc. (Article 14, Industrial Safety and Health Act)

Appellation		Contents of work	Qual	ifiers	
Operations chief of work in compressed air	chamber or shaft w	essure chamber (limited to work done inside a work ith its air pressure exceeding the atmospheric pressure me other compressed air method)	Licensed operations chief of work in compressed air		
Operations chief of gas welding	Metal welding, cutti equipment using a	ng and heating with acetylene welders or welding gas manifold	Licensed operatio welding	ns chief of gas	
Operations chief of forestry cableways	mechanical log han following categories or the collection or a. With a rated out b. With the total slo	embling, dismantling, remodeling, or repair of the dlers or logging cableways which fall under one of the scarriage of timber with these instruments out of the motor exceeding 7.5 kW. Ope distance between supports in excess of 350 meters in usage load of 200 kilograms or more	Licensed operatio cableways	ns chief of forestry	
Operations chief of handling boilers	Handling of boilers (excluding small boilers)	Handling of boilers with the total heating surface area of 500 m <sup>2</sup> or more (save cases where only one-through boilers are handled)	Licensed special class boiler operators		
		Handling of boilers with the total heating surface area standing at 25 m² or more and less than 500 m² (including cases with the total area of heat conduction in excess of 500 m² when only once-through boilers are handled)	Licensed special of operators or licensed boiler operators		
		Handling of boilers with the total heating surface area standing at less than 25 m <sup>2</sup>	Licensed special class boiler operators, licensed first class boiler operators or licensed second class boiler operators		
		Handling of only the boilers enumerated in Article 6-16-a to 6-16-d in the Enforcement Order of the Industrial Safety and Health Act.	Licensed special of operators, license boiler operators, li class boiler operators, li who have finished course for handlin	d first class censed second cors, or workers the skill training	
Operations chief of handling woodworking machinery	planing and molding portable types) at w	odworking machinery (limited to circular saws, band saws, g machines, wood shapers and routers, and excluding orkplaces where five or more of them (three or more at the said machinery includes band saws with automatic lible	Workers who have training course for of handling woods		
Operations chief of handling press machines	Work done with power press machines at workplaces where five such machines or more are available  Workers who have finished training course for operation of handling press machines.				
Operations chief of handling industrial dryers	Heating and drying a. Drying facilities t volume of 1 m³ c b. Drying facilities t use fuels (limited more an hour wi 1 m³ or more an (limited to a rate	Workers who have training course for of handling indust	operations chiefs		
Operations chief of working with concrete crushers	Crushing work with	concrete crushers	Workers who have finished the skill training course for operations chiefs of working with concrete crushers		
Operations chief of excavating natural ground	Excavation of natural ground to a depth of 2 meters or more (excluding excavation of tunnels and pits other than shafts) (excluding excavation for quarrying)  Excavation of natural ground to a depth of 2 meters or more (excluding excavation have finished the skill training course for operations chiefs of excavating natural ground natural ground natural ground in the skill training course for operations of excavating natural ground natural ground in the skill training course for operations of excavating natural ground in the skill training course for operations of excavating natural ground in the skill training course for operations of excavating natural ground in the skill training course for operations of excavating natural ground in the skill training course for operations of excavating natural ground in the skill training course for operations of excavating natural ground in the skill training course for operations of excavating natural ground in the skill training course for operations of excavating natural ground in the skill training course for operations of excavating natural ground in the skill training course for operations of excavating natural ground in the skill training course for operations of excavating natural ground in the skill training course for operations of excavating natural ground in the skill training course for operations of excavating natural ground in the skill training course for operations of excavating natural ground in the skill training course for operations of excavating natural ground in the skill training course for operations of excavating natural ground in the skill training course for operations of excavating natural ground in the skill training course for operations of excavating natural ground in the skill training course for operations of excavating natural ground in the skill training course for operations of excavating natural ground in the skill training course for operations of excavating natural ground in the skill training course for operations of excavating natur				
Operations chief of shoring	Work to install or remove struts or waling strips for shoring  Workers who have finished the skill training course for operations chiefs of shoring				

Appellation	Contents of wor	k	Qualifiers			
Operations chief of tunnel excavation	Excavation of tunnels (tunnels and pits other that shafts for quarrying) (excluding that kind of excamachinery which is done without workers comin accompanying muck loading, assembling tunnel to prevent roof falls in mines, surface falls, etc., installation, or operations to pneumatically applications.	Workers who have finished the skill training course for operations chiefs of tunnel excavation				
Operations chief of tunnel lining	Operations involving tunnel lining structures (me move or dismantle concrete form shoring for tun accompanying such assembly or moving; concretemporary facilities consisting of formwork, sup braces, etc., used for placing arch and side wal	Workers who have finished the skill training course for operations chiefs of tunnel lining				
Operations chief of excavating work for quarrying	Excavation to a depth of 2 meters or more for q	uarrying	Workers who have finished the skill training course for operations chiefs of excavating work for quarrying			
Operations chief of cargo piling	Piling and breaking of cargo where the height of or more (excluding the type of work which is calloading/unloading machinery only)		Workers who have finished the skill training course for operations chiefs of cargo piling			
Operations chief of stevedoring	Loading and unloading of ships or cargo mover type of work in which loading and unloading are machinery in the ships less than 500 tons gross	e done without cargo handling	Workers who have finished the skill training course for operations chiefs of stevedoring			
Operations chief in the assembling and disassembling of concrete form shoring	Assembling and disassembling of concrete form	Assembling and disassembling of concrete form shoring				
Operations chief in the assembling of scaffolds	Assembling, disassembling or remodeling of ha gondola-hanging scaffolds), bow scaffolds or so of 5 meters or over	Workers who have finished the skill training course for operations chiefs in the assembling of scaffolds				
Operations chief in the assembling of steel frames for buildings	Assembling, disassembling or remodeling of me frames or towers for buildings (limited to those or more)	Workers who have finished the skill training course for operations chiefs in the assembling of steel frames for buildings				
Operations chief in the installation of metal components of bridges	Installing, disassembling or remodeling of the mupper structures of bridges (limited to those wit or an effective span of 30 meters or more)	Workers who have finished the skill training course for operations chiefs in the installation of metal components of bridges				
Operations chief of assembling wooden buildings		Assembling of structural components for wooden buildings with their eaves at a height of 5 meters or more or the installation of foundations for roofs or external walls				
Operations chief in the disassembling of concrete structures	Disassembling or demolition of concrete structu height is 5 meters or more)	Workers who have finished the skill training course for operations chiefs in the disassembling of concrete structures				
Operations chief in the installation of concrete components of bridges	nstalling, disassembling or remodeling of concrete components in the upper tructures of bridges (limited to those with a height of 5 meters or more or n effective span of 30 meters or more)		Workers who have finished the skill training course for operations chiefs in the installation of concrete components of bridges			
Operations chief of handling class 1 pressure vessels	Handling of class 1 pressure vessels (excluding small pressure vessels and the ones enumerated below)  a. The vessels enumerated in Article 1-5-a of the Enforcement Order of the Industrial Safety and Health Act with a capacity of 5 m³ or less  b. The vessels enumerated in from Article 1-5-b to 1-5-d of the Enforcement Order of the Industrial Safety and Health Act with a capacity of 1 m³ or less	Handling of class 1 pressure vessels for chemical facilities  Work other than the work mentioned above	Workers who have finished the skill training course for operations chiefs of handling class 1 pressure vessels relating to chemical facilities  Licensed special class boiler operators, licensed first class boiler operators, licensed second class boiler operators, workers who have finished the skill training course for operations chiefs of handling class 1 pressure vessels relating to chemical facilities, workers who have finished the skill training course for operations chiefs of handling ordinary class 1 pressure vessels			

### (4) Types of Work Requiring Special Education (Article 59, Industrial Safety and Health Act)

- 1. Replacement of a grinding wheel or trial runs at its replacement
- 2. Mounting, dismounting or adjustment of dies for power presses, blades of shears or safety devices or safety fences for press machines or shears
- 3. Welding or cutting of metals with arc welders
- 4. Laying, inspection, repair or manipulation of charging circuits or their props at high voltage (voltage higher than 750 V for D.C. and 600 V for A.C. but 7000 V or less) or at a special high voltage (voltage in excess of 7000 V); laying, repair of charging circuits (excluding voltage to ground at 50 V or less and for telegraph and telephone services, etc., without a possible electric shock) at voltage (voltage lower than 750 V for D.C. and 600 V for A.C.); or the manipulation of switches with exposed charging devices with respect to the low-voltage electric circuits (excluding voltage to ground at 50 V or less and for telegraph and telephone services, etc., without a possible electric shock) installed at distribution board rooms, transformer rooms and other compartments
- 5. Driving of forklifts with a maximum load of less than 1 ton (excluding driving on the roads specified in Article 2-1-1 of the Road Traffic Act [hereinafter referred to as "the roads"])
- 6. Driving of shovel loaders or fork loaders with a maximum load of less than 1 ton (excluding driving on the roads)
- 7. Driving of off-road transportation vehicles with a maximum load of less than 1 ton (excluding driving on the roads)
- 8. Operation of cargo hoisting equipment with a maximum load of less than 5 tons
- Operation of mechanical log handlers (the facilities which are made of a skidder, aerial cables, carriages, props and their accessories and which use power in rolling up material wood and materials for firewood and charcoal and carrying them while they are suspended in the air)
- 10. Felling of standing trees with diameter at breast height of 70 centimeters or larger, felling of standing trees with diameter at breast height of 20 centimeters or larger and for which the equilibrium is not maintained, felling in tsurikiri (hanging, such as with a wrecker) or some other special method, and felling of a tree with diameter at breast height of 20 centimeters or larger which is leaning against another one
- 11. Felling of standing trees with chain saws, and disposal or logging of leaning trees (excluding those types of work which are enumerated in the preceding paragraph)
- 12. Driving of machinery with a body weight of less than 3 tons, enumerated in Annex Table No.7-1, -2, -3 or -6 of Enforcement Order of the Industrial Safety and Health Act (construction machinery), which is power-driven and self-propelled to unspecified places (excluding driving on the roads)
- 13. Operation of machinery enumerated in Annex Table No.7-3 of the Enforcement Order of the Industrial Safety and Health Act (machinery for foundation work) excluding those which are both power-driven and self-propelled to unspecified places
- 14. Manipulation of machinery enumerated in Annex Table No. 7-3 of the Enforcement Order of the Industrial Safety and Health Act (machinery for foundation work), which is power-driven and self-propelled to unspecified places (excluding manipulation which may be done at the driver's seat)
- 15. Driving of machinery enumerated in Annex Table No. 7-4 of the Enforcement Order of the Industrial Safety and Health Act (machinery for hardening), which is power-driven and self-propelled to unspecified places (excluding driving on the roads)
- 16. Manipulation of the work devices of machinery enumerated in Annex Table No.7-5 of the Enforcement Order of the Industrial Safety and Health Act (concrete placing equipment)
- 17. Operation of boring machinery
- 18. Adjustment or operation of jack-type lifting machines for construction work (which have a number of retaining devices [the devices for retention such as tightening ropes], alternately open or close, use their power in expansion and contraction to roll up or down cargo with ropes)
- 19. Driving (excluding driving on the roads) of vehicle-mounted aerial platforms (the vehicle-mounted aerial platforms referred to in Article 10-4 of the Enforcement Order of the Industrial Safety and Health Act) with the work floor at less than 10 meters in height (the height referred to in Article 10-4 in the Enforcement Order of the Industrial Safety and Health Act.)
- 20. Power-driven winches (including electric hoists, air hoists and other kinds of winches other than those associated with gondolas)
- 21. Driving of the machines (excluding winches) referred to in Article 15-7 of the Enforcement Order of the Industrial Safety and Health Act
- 22. Handling of small boilers
- 23. Operation of the following cranes (excluding the mobile cranes [referred to in Article 1-8 of the Enforcement Order of the Industrial Safety and Health Act])
- a. Cranes with a hoisting load of less than 5 tons
- b. Telphers with a hoisting load of 5 tons or more
- 24. Driving of mobile cranes with a hoisting load of less than 1 ton (excluding driving on the roads)
- 25. Driving of derricks with a hoisting load of less than 5 tons
- 26. Operation of lifts for construction work
- 27. Slinging work (banding with wire and hooking objects to be lifted) for cranes, mobile cranes or derricks with a hoisting load of less than 1 ton
- 28. Driving of gondolas
- 29. Operation of compressors designed to supply air to work rooms and air locks
- 30. Manipulation of valves or cocks for the adjustment of air supply to work rooms with compressed air
- 31. Manipulation of valves or cocks for the adjustment of air supply to or exhaust from air locks
- 32. Work associated with work in compressed air
- 33. Handling, maintenance and repair of special chemical facilities (excluding the maintenance of class 1 pressure vessels referred to in Article 20-5 of the Enforcement Order of the Industrial Safety and Health Act)
- 34. Excavation of tunnels or accompanying transport of muck and materials, etc., concrete placing in tunnel lining work (only those types of work done inside the said tunnels)

- 35. This paragraph concerns machinery that has manipulators and memory devices (including variable sequence controllers and fixed sequence controllers) and for which the extension or contraction, bending or stretching, vertical movement, horizontal movement or rotation or a complex series of such movements may be automatically done (excluding those under research and development and others which are specified by the Ministry of Health, Labour and Welfare; hereinafter referred to as "industrial robots"). Establishment, alteration or confirmation of the order, position or speed of the movement of manipulators for the said industrial robots (hereinafter referred to as "instructions, etc.") within the working range (with a maximum working range within which the manipulator and other components of an industrial robot may work according to the information of the memory device) (excluding the instructions made while the driving mechanism of the industrial robot was switched off) or manipulation of the devices associated with the said instructions, etc., made beyond working range of the said industrial robot while teaming up with the worker who makes instructions, etc., with respect to the said industrial robot within the working range of the industrial robot.
- 36. Inspection, repair or adjustment of an industrial robot within the working range of the said industrial robot (excluding what are construed as instructions, etc.) or confirmation of those results (hereinafter referred to as "inspections, etc.") (only those made during the operation of the industrial robot) or manipulation of the kind which is associated with the said inspections, etc., made beyond the working range of the said industrial robot while teaming up with the worker who makes inspections etc., of the said industrial robot within its working range
- 37. Pumping up the tires of the automobiles (excluding two-wheelers) with air compressors in the tire assembling work

Reference Material: Enforcement Order of the Industrial Safety and Health Act

Annex Table No.7: Construction Machinery

- 1. Leveling, transporting and loading machinery
  - (1) Bulldozers
  - (2) Motor graders
  - (3) Tractor shovels
  - (4) Muck loaders
  - (5) Scrapers
  - (6) Scrape-dozers
  - (7) Machinery defined as similar to (1) to (6), above, in the Ministry of Health, Labour and Welfare Ordinances
- 2. Excavating Machinery
  - (1) Power shovels
  - (2) Drag shovels
  - (3) Drag lines
  - (4) Clamshells
  - (5) Bucket excavators
  - (6) Trenchers
  - (7) Machinery defined as similar to (1) to (6), above, in the Ministry of Health, Labour and Welfare Ordinances
- 3. Machinery for foundation work
  - (1) Pile drivers
  - (2) Pile extractors
  - (3) Earth drills
  - (4) Reverse circulation drills
  - (5) Boring machines (only those with tubing machines)
  - (6) Earth augurs
  - (7) Paper drain machines
  - (8) Machinery defined as similar to (1) to (7), above, in the Ministry of Health, Labour and Welfare Ordinances
- 4. Machinery for hardening
  - (1) Rollers
  - (2) Machinery defined as similar to (1), above, in the Ministry of Health, Labour and Welfare Ordinances
- 5. Concrete placing equipment
  - (1) Concrete pump vehicles
  - (2) Machinery defined as similar to (1), above, in the Ministry of Health, Labour and Welfare Ordinances
- 6. Machinery for demolition
  - (1) Breakers
  - (2) Machinery defined as similar to (1), above, in the Ministry of Health, Labour and Welfare Ordinance

## **Notification System of Safety Programs**

Items subject to notification	Necessary documents, etc.	Where and by what date to notify	Related legislation, etc.
(Construction of new plants, etc.)  (1) Installation or moving of structures or machinery, etc., or remodeling of main structural components with respect to workplaces where the rated capacity of the electric facilities comes to 300 kW or more in the manufacturing industry excluding those enumerated in (a) to (e), below, electric power industry, gas industry automotive maintenance business or machine repair business.  a. Food, tobacco manufacturing (save production of chemical condiments and animal and vegetable oil and fat)  b. Textile industry (save spinning and dying)  c. Clothing and other textile product manufacturing  d. Paper processing and manufacturing (save cellophane manufacturing)  e. Newspaper, publishing, bookbinding and printing	<ul> <li>a. Building plans/blue prints showing the peripheral conditions of the workplace and its relationship with its environment</li> <li>b. Building plans/blue prints showing the places of buildings and main machinery, etc., on the compounds</li> <li>c. Documents outlining the handling, production, etc., of raw materials or products</li> <li>d. Ground and cross section drawings of each floor of the buildings (only those where the lines of work which are specified in [c], above, are conducted), and documents or drawings giving the outline and installation of main machinery, etc., in the buildings</li> <li>e. Documents or drawings outlining methods and facilities for the prevention of occupational accidents in the buildings specified in (d), above, and other workplaces</li> </ul>	Chief of Labour Standards Inspection Office, 30 days before the start of construction work	ISHA 88-1; EOISHA 24; OISH 85, 86; OISH 87 for temporary buildings, etc. requiring no notifications
(Installation, etc., of dangerous and hazardous machinery, etc.) Installation or moving of the machines enumerated in (2) to (5) or remodeling of main structural components (2) Machines, etc., enumerated in Annex Table 7 of OISH (Power-driven presses, smelting furnaces, chemical facilities, drying facilities, acetylene welders, welding equipment using a gas manifold, mechanical log handlers, logging cableways, railway equipment, concrete form shoring, temporary passages, scaffolds)	The documents, etc., enumerated in the middle and lower boxes of Annex Table 7 of OISH, such as the drawings of structures and their installation	Chief of Labour Standards Inspection Office, 30 days before the start of construction work	ISHA 88-1, 2; OISH 86, 88 and Annex Table 7; OISH 89 for temporarily installed machinery, etc., which does not require notification; The persons specified in Annex Table 9 of OISH must participate in the preparation of plans for concrete form shoring and scaffolds. (ISHA 88-5 OISH 92-2, 92-3 and Annex Table 9)
(3) Boilers, class 1 pressure vessels	<ul> <li>a. Notification of installation: Documents, etc., describing the peripheral conditions of the place of installation, conditions of plumbing, etc.</li> <li>b. Notification of modification: Documents, etc., showing the changes to be made</li> </ul>		OSBPV 10, 56  OSBPV 41, 76
(4) Cranes, mobile cranes, derricks, elevators, construction lifts	a. Notification of installation:    Assembly drawings, documents, etc.,    describing the computed strength    of structural components, peripheral    conditions of the places of installation,    outline of the foundation  b. Notification of modification:		OSCE 5, 96, 140, 174  OSCE 44, 85, 129, 163,
			OSCE 44, 85, 12 197

	Itams subject to notification		Nooccon documents ata	Where and by what	Related
	Items subject to notification	L	Necessary documents, etc.	date to notify	legislation, etc.
ha	stallation, etc., of dangerous and zardous machinery, etc.) (Continued) Gondolas	a.	Notification of installation: Assembly drawings, documents, etc., describing the peripheral conditions of the places of installation, fixing methods, etc. Notification of modification: Drawings, etc., showing the changes to be made	Chief of Labour Standards Inspection Office, 30 days before the start of construction work	OSG 10 OSG 28
•	rge-scale construction work)				
a. b. c. d. e.	The types of construction work which are described in (a) to (f), below Construction of towers 300 meters or more in height Construction of dams with their faces 150 meters or more in height Construction of bridges with a maximum span of 500 meters (1,000 meters for suspension bridges) Construction of tunnels 3,000 meters or more in length Construction of tunnels, etc., 1,000 meters to 3,000 meters in length with the drilling of shafts 50 meters or more in depth Work with a compressed air method with a gauge pressure of 0.3 MPa or more	c.	Drawings showing the peripheral conditions of the places of construction and relations with the environment Drawings outlining the buildings, etc., which are to be constructed Drawings indicating the places of construction machinery, facilities, structures, etc.  Documents or drawings outlining methods of construction  Documents or drawings outlining methods and facilities for the prevention of occupational accidents Work schedule  Outline of work procedures using the compressed air method in the case of any work involving operations by the compressed air method	Minister of Health, Labour and Welfare, 30 days before the start of construction work	ISHA 88-3; OISH 89-2, 91-1; The persons enumerated in Annex Table 9 of OISH must participate in the preparation of work plans. (ISHA 88-5, OISH 92-3 and Annex Table 9)
•	onstruction work of certain scale				
	larger [excluding those subject to tification to Minister of Health, Labour				
	d Welfare, above])				
(7) a. b. c. d. e. f.	The lines of work which are listed in (a) to (h), below. Construction of buildings or structures higher than 31 meters Construction of bridges with a maximum span of 50 meters or more	The	e same as in (6), above.	Chief of Labour Standards Inspection Office, 14 days before the start of work	ISHA 88-4; OISH 90, 91-2; The persons enumerated in Annex Table 9 of OISH must participate in the preparation of plans for those lines of work (limited to construction with respect to [a] to [d]) (except for [g] to [h] tasks). (ISHA 88-5, OISH 92-2, 92-3 and Annex Table 9)

Items subject to notification	Necessary documents, etc.	Where and by what date to notify	Related legislation, etc.
(Construction work of certain scale or larger [excluding those subject to notification to Minister of Health, Labour and Welfare, above]) (Continued)  h. Tasks involving the dismantling of equipment, such as waste incinerators and dust collectors installed in a waste incineration facility. The waste incinerators are confined to 2 m² or more of grate area and to 200 kg or more per one hour of burning capacity as stipulated in the Annex Table 1-5 of Enforcement Ordinance of the Dioxin Special Measures Act.  (Construction works mentioned in [a] to [d] are building, remodeling, dismantling			
or destroying)			
(Quarrying) (8) The following types of work in the quarrying work a. Excavation for quarrying at a height or depth of 10 meters or more b. Excavation for quarrying with a minetype excavation method	<ul> <li>a. Building plans/blue prints showing the peripheral conditions of the places of work and relations with the environment</li> <li>b. Building plans/blue prints indicating the places of machinery, facilities, buildings, etc.</li> <li>c. Documents or drawings showing the quarrying methods</li> <li>d. Documents or drawings outlining methods and facilities for the prevention of occupational accidents</li> </ul>	Chief of Labour Standards Inspection Office, 14 days before the start of work	ISHA 88-4; OISH 90, 92

Notes:
EOISHA: Enforcement Order of the Industrial Safety and Health Act
ISHA: Industrial Safety and Health Act
OISH: Ordinance on Industrial Safety and Health
OSBPV: Ordinance on Safety of Boilers and Pressure Vessels
OSCE: Ordinance on Safety of Cranes, etc.
OSG: Ordinance on Safety of Gondolas

## **List of Major Safety Organizations**

## Ministry of Health, Labour and Welfare

Safety Division, Industrial Safety and Health Department, Labour Standards Bureau, Ministry of Health, Labour and Welfare 1-2-2 Kasumigaseki, Chiyoda-ku, Tokyo 100-8916

Phone (03) 5253-1111 http://www.mhlw.go.jp/

National Institute of Occupational Safety and Health, Japan 1-4-6 Umezono, Kiyose-shi, Tokyo 204-0024
Phone (042) 491-4512 http://www.jniosh.go.jp/

Japan Industrial Safety and Health Association (JISHA)

Industrial Safety Building 5-35-1 Shiba, Minato-ku, Tokyo 108-0014

Phone (03) 3452-6841 http://www.jisha.or.jp/

Japan Advanced Information Center of Safety and Health (JAISH)
Phone (03) 3452-3385, Fax (03) 5443-0273 http://www.jaish.or.jp/

Leave below at and Ocate for Occasion 10 of the cell by III (IIOOOII)

Japan International Center for Occupational Safety and Health (JICOSH)
Phone (042) 495-5931, Fax (042) 495-5936 http://www.jicosh.gr.jp/

Tokyo Occupational Safety and Health Education Center Phone (042) 491-6920, Fax (042) 492-5478, http://www.jisha.or.jp/tyo.ec/

Osaka Occupational Safety and Health Education Center Phone (0721) 65-1821, Fax (0721) 65-1472

http://www.jisha.or.jp/facility/safety\_education/osaka/top.html

Hokkaido Regional Safety and Health Service Center Phone (011) 512-2031, Fax (011) 512-9612

Tohoku Regional Safety and Health Service Center Phone (022) 261-2821, Fax (022) 261-2826

Kanto Regional Safety and Health Service Center Phone (03) 5484-6701, Fax (03) 5484-6704

Chubu Regional Safety and Health Service Center Phone (052) 682-1731, Fax (052) 682-6209

Hokuriku Branch Office, Chubu Safety and Health Service Center Phone (076) 441-6420, Fax (076) 441-4641

Kinki Regional Safety and Health Service Center Phone (06) 6448-3450, Fax (06) 6448-3477

Chugoku and Shikoku Regional Safety and Health Service Center Phone (082) 238-4707, Fax (082) 238-4716

Shikoku Branch Office, Chugoku and Shikoku Regional Safety and Health Service Center

Phone (087) 861-8999, Fax (087) 831-9358

Kyushu Regional Safety and Health Service Center Phone (092) 437-1664, Fax (092) 437-1669

### **Industrial Accident Prevention Organizations by Industry**

Industrial Safety Building, 5-35-1 Shiba, Minato-ku, Tokyo 108-0014

Japan Construction Safety and Health Association (JCSHA)

Phone (03) 3453-8201, Fax (03) 3456-2458 http://www.kensaibou.or.jp/

Japan Land Transportation Industry Safety and Health Association
Phone (03) 3455-3857, Fax (03) 3453-7561 http://www.rikusai.or.jp/

Japan Port Transportation Industry Safety and Health Association Phone (03) 3452-7201, Fax (03) 3452-7205

Japan Forestry and Timber Manufacturing Labour Accident Prevention

Phone (03) 3452-4981, Fax (03) 3452-4984 http://www.rinsaibou.or.jp/

Japan Mining Safety and Health Association

Phone (03) 3456- 0666, Fax (03) 3456 0668 http://www.kosaibo.or.jp/

### **Related Organizations**

Japan Boiler Association (JBA)

Phone (03) 5473-4500, Fax (03) 5473-4520 http://www.jbanet.or.jp/

Japan Crane Association (JCA)

Phone (03) 3473-3351, Fax (03) 3473-3498 http://www.cranenet.or.jp/

Boiler and Crane Safety Association (BCSA)

Phone (03) 3685-2141, Fax (03) 3685-2189 http://www.bcsa.or.jp/

Scaffolding and Construction Equipment Association of Japan (SCEA)
Phone (03) 3455-0448, Fax (03) 3455-0527 http://www.kasetsu.or.jp/

Technology Institution of Industrial Safety (TIIS)

Phone (042) 955-9901, Fax (042) 955-9902 http://www.ankyo.or.jp/

Japan Boiler Maintenance and Installation Association Phone (03) 3255-3621, Fax (03) 3255-3616

http://www6.ocn.ne.jp/~boseikyo/

Technology Institution of Constructing Plywood Scaffold Phone (03) 3451-4710, Fax (03) 3455-3202

Institute for Safety and Health Qualifying Examinations

Phone (03) 5275-1088, Fax (03) 5275-1097 http://www.exam.or.jp/

Safety Association of Construction and Loading Vehicles (SACL)

Phone (03) 3221-3661, Fax (03) 3221-3665 http://www.sacl.or.jp/

Japan Registered Training Institutions Association

Phone (03) 3456-4787, Fax (03) 3456-1304 http://www.zentokyo.or.jp/

Japan Association of Safety and Health Consultants

Phone (03) 3453-7935, Fax (03) 3453-9647 http://www.jashcon.or.jp/

Japan Safety Appliances Association (JSAA)

Phone (03) 5804-3125, Fax (03) 5804-3126 http://www.jsaa.or.jp/

## General Guidebook on Industrial Safety 2006

March 15, 2007

Japan Industrial Safety and Health Association (JISHA)

(ILO-CIS National Center in Japan)

5-35-1 Shiba, Minato-ku, Tokyo 108-0014

Phone: +81-3-3452-6297 Fax: +81-3-3454-4596

E-mail: kokusai@jisha.or.jp

Website: http://www.jisha.or.jp/english/index.html