



Contents

Cover Story

- 01** A New Beginning: "Watchful, Careful Korea"
Season's Greetings to fellow experts in safety and health

KOSHA News

- 02** Occupational Accident Prevention 5-Year National Strategic Plan
- 03** The Types of Occupational Accidents to Watch Out For in Winter
- 04** Accident Prevention Efforts Targeting Small-scale Construction Sites
KOSHA pays special attention to the safety in small construction sites
- 05** Establishing Comprehensive Safety and Health Measures for Each Occupation
- 06** Special Edition of JKMS provides full information on Korea's Occ. Diseases
Seventeen academic papers contributed by OSHRI-KOSHA
- 07** Service Industry Safety+ Campaign 2011
KOSHA launches accident prevention campaign on 7 service sectors
- 08** Icy or Snowy Surface Cause 1 in 4 Slips and Trips Injuries in the Service Industry
KOSHA announces accident prevention campaign period and a safety check-list
- 09** KOSHA Provides Easy-to-use Info on Website
Work hazards and safe work procedures on 50 occupations
- 10** KOSHA's Commitments to Clean Culture and Credible Governance Recognized
KOSHA wins PM's Commendation in "National Sinmungo Award"

Accident Report

- 11** Liquefied Petroleum Gas Explosion during H-Beam cutting operation

06



09



11





A New Beginning: "Watchful, Careful Korea"

Season's Greetings to fellow experts in safety and health:



The year 2011 has dawned.
May the best of happiness be with you and I hope you to accomplish everything that you wish for.
Also, I hope this year to be a meaningful time, when the safety culture takes deep root in our

society as an integral part of people's daily lives.

The Korean government has set "The realization of livable and fair society through decent work" as the key goal of the New Year's employment and labor policy.

By creating "safe workplaces where people can actively engage in work" without any concerns about occupational accidents, the government aims to achieve a 15% reduction in lost workdays due to work-related fatalities and accidents by 2012.

To realize the policy goals of the government, KOSHA will take the lead in "safe workplaces" creation activities.

Against this backdrop, I would like to share with you some of KOSHA's key implementation plans for this year.

First - Launching tailor-made projects for accident-prone industries

In order to work on tailor-made projects for industries namely the automobile, steel, small-scale construction, and service, safety and health leadership groups will be set up (for automobile, steel, and ship-building industries) to encourage more direct engagement of chief executives in safety and health activities. In addition, a comprehensive system will be created to enhance safety of subcontractors.

"Construction Safety Guardian" program, and on-site patrol activities will be launched by region to facilitate safety of small-scale worksites. On the other hand, various

projects will continue through local autonomous governments and vocational training organizations in order to respond to the needs of seven occupations in the service industries, which have the highest number of accident occurrences.

Second - Strengthening the capacity of regional agencies

To substantially reduce occupational accidents, activities that meet the needs of each region's unique characteristics are necessary.

To facilitate regionally based prevention activities, KOSHA will actively work on cooperative projects that engage diverse actors in accident prevention, including local autonomous governments, public agencies and NGOs.

Third - Implementing health improvement activities in consideration of each occupation

Safety and health projects of so far have mainly taken engineering and technical approaches, with the primary focus on the manufacturing industry. However, it is time to broaden our perspective to consider other risk factors to workers health, such as work hours and work methods. In other words, we should turn our attention away from the hardware, and focus more on workers. The selection of occupations vulnerable to occupational accidents should be followed by the discovery of health hazards that are inevitable to some occupations. After taking these steps, ways to alleviate or completely eliminate the risk factors should be developed and distributed.

Fourth - Enhancing the safety and health capabilities of the Korean society

Efforts of the government and KOSHA alone are inadequate to solve the issues facing 1.6 million workplaces and their 15 million workers. Each and every



member of our society should have common understanding on the seriousness of occupational accidents and make concerted efforts. Through substantive and continued cooperation with partner agencies in safety and health, we can create a social atmosphere that works toward achieving “Zero Safety accidents” society.

Fifth - Making continued efforts to bridge the gap in safety and health

The labor market is going through rapid transformation. The number of small-scale workplaces increased eight folds in the past decade, and the number of working population who are vulnerable to occupational accidents (aged, female, migrant, and non-regular workers), is on the rise.

Therefore, training and PR activities, including the development and distribution of various safety and health media targeting these vulnerable workers need to be strengthened.

In 2010, KOSHA launched a nationwide safety slogan “Watchful, Careful Korea” to spread safety culture in the

Korean society. The slogan’s main idea is to internalize the habit of taking caution at all times, even at the expense of some delay or minor discomfort. This year, KOSHA will focus its effort to make Korea safer, by paying keen attention to possible risk factors and by taking safety as something to be earned, not given.

We are at the starting point of a New Year.

I would like to encourage you to take this opportune time of the year to make new resolutions for you, your family, and co-workers.

Once again, I wish you and your family the best of happiness and good luck.

Happy New Year!

Noh, Min-ki



“ Occupational Accident Prevention 5-Year National Strategic Plan ”

I. Background

Occupational accidents are a key factor that indicate the level of a country's national competitiveness and determine its national standing. The irreversible human and material losses caused by occupational accidents undermine productivity in the workplaces and erode the potential for economic development at the national level. Furthermore, creating decent jobs and raising national competitiveness are not possible without the improvements in work environment and workers' health. Massive occurrences of occupational accidents as well as large-scale accidents that lead to multiple deaths caused by the violation of basic safety and health regulations, would certainly bring down a country's prestige to a lower level.

However, occupational accident prevention capacity of Korea falls behind that of advanced countries. During the course of rapid economic growth in the past decades, safety and health of workers were often neglected and inadequate amount of investment, if any, were made in these areas. As Korean society is going through major changes, namely the increasing focus on the service industry, diversifying employment types, and the broadening scope of workplaces subject to supervision, the standardized regulatory framework and government-led projects of so far, have proven to be ineffective to substantially reduce occupational accidents. As a result, occupational accident rates of the country have remained at the 0.7% level for the past 10 years, and the fatality due to work-related causes is one of the highest among OECD countries.

As a result, the development of occupational accident prevention system is called for through a strategic approach toward safety and health. Against this backdrop, improvements in national accident prevention system, such as the legal framework and operational methods, can be effective in reducing work-related accidents when they encourage to upgrade prevention capabilities in workplaces. Furthermore, it is imperative to create safe and reliable workplaces to realize a fair labor market.

That is why it is important to make amendments and improvements to “The Third Five-Year Occupational Injury Prevention Plan (2010~2014),” launched in the first half of 2010.

II. Occupational Accident Trend and Changes in the Safety and Health Environment

1. The scale and characteristics of occupational accidents

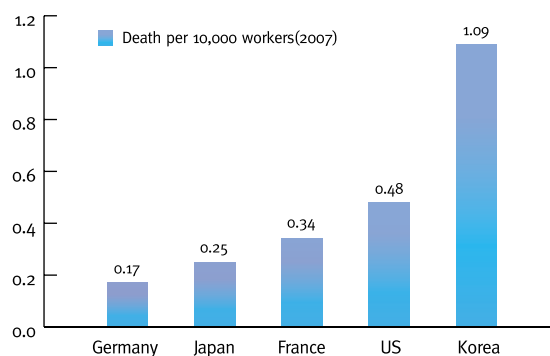
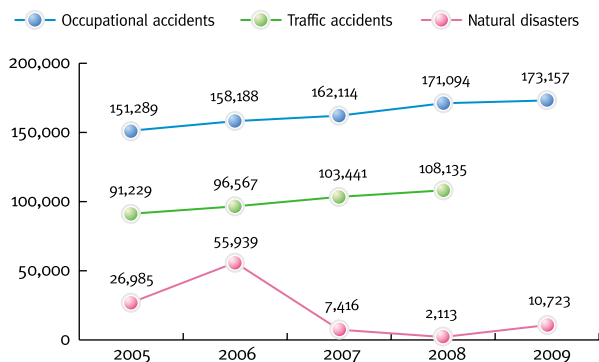
The number of occupational accidents victims is continuously rising. Although fatal cases are decreasing, the number of injured or killed people at work has increased since 2001. Accident rate, on the other hand, has decreased since 2003 but remains above 0.7% level.

	2001	2002	2003	2004	2005	2006	2007	2008	2009
No. of accident victims (No. of deaths)	81,434 (2,748)	81,911 (2,605)	94,924 (2,923)	88,874 (2,825)	85,411 (2,493)	89,910 (2,453)	90,147 (2,406)	95,806 (2,422)	97,821 (2,181)
Accident rate (%)	0.77	0.77	0.90	0.85	0.77	0.77	0.72	0.71	0.70

Each year, more workers become unable to go to work or disabled due to occupational accidents and injuries. Since 2004, the share of occupational accident victims left with permanent disabilities among all accident victims has been above 35%. Korea has been recording more than 60 million lost work days each year since 2001, with the exception of 2009 when it recorded 51.9 million lost work days.

		2001	2002	2003	2004	2005	2006	2007	2008	2009
No. of accident victims	Total No. of accident victims (%)	81,434 (100)	81,911 (100)	94,924 (100)	88,874 (100)	85,411 (100)	89,910 (100)	90,147 (100)	95,806 (100)	97,821 (100)
	No. of disabled workers due to accidents (%)	25,360 (31.1)	26,354 (32.2)	30,356 (32.0)	33,899 (38.1)	36,973 (43.3)	38,597 (42.9)	35,793 (39.7)	36,883 (38.5)	35,273 (36.1)
Lost Work days (% of change compared to the previous year)		54.5 million (23.7)	54.0 million (-0.9)	59.1 million (9.4)	61.5 million (4.1)	69.1 million (12.4)	71.1 million (2.9)	63.9 million (-10.1)	70.0 million (9.5)	51.9 million (-25.9)

Occupational accidents lead to tremendous economic and human losses. The direct and indirect economic loss due to occupational accidents amounts to KRW 17 trillion, which is 1.6 times that of traffic accidents and 16 times that of natural disasters. These figures are considerably higher than many OECD countries.



When looking at occupational accident by the size of workplaces, the number of occupational accident victims is decreasing in workplaces with 50 or more employees. However, the share of occupational accident victims in workplaces with less than 50 employees is rising (approximately 80%).

〈No. of accident victims (accident rate) by the size of workplaces (%)〉

	2001	2003	2005	2007	2009
● Workplaces with 50 or more employees	25,184 (0.44)	29,330 (0.55)	25,669 (0.43)	21,373 (0.35)	19,962 (0.31)
● Workplaces with less than 50 employees	56,250 (1.16)	65,594 (1.24)	59,742 (1.17)	68,774 (1.07)	77,859 (1.06)

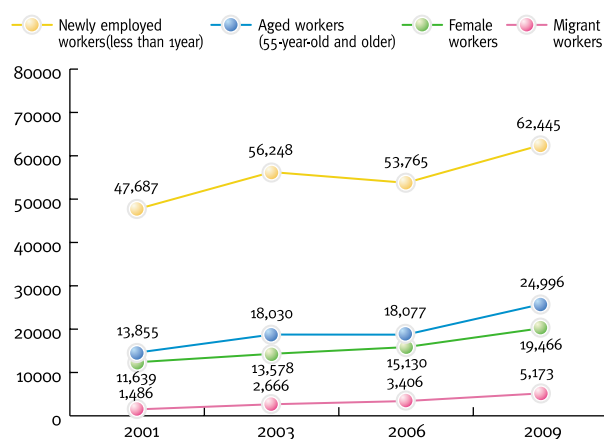


Accidents are rising in the service industry and among certain groups of workers. With the rise of the service industry, workers in this industry take up larger portion among the injured or diseased. On the other hand, low birth rate, population aging, and changes in the employment structure led to higher accident occurrences among female workers, aged workers, the newly employed workers, and migrant workers.

2. Changes in Occupational Safety and Health Environment

(1) Reduction in the size of workplaces

In the past nine years, about 609,000 new workplaces with workers compensation policy have been added to Korea's labor market. Among these newly established workplaces, 597,000 workplaces or 98% of them are small-scale enterprises with less than 50 employees.



〈No. workplaces with workers compensation policy〉

	2001	2002	2003	2004	2005	2006	2007	2008	2009
Total	909,461	1,002,263	1,006,549	1,039,208	1,130,094	1,292,696	1,429,885	1,594,793	1,560,949
Workplaces with less than 50 employees	882,782	974,858	977,619	1,009,937	1,099,159	1,260,426	1,395,576	1,558,180	1,522,607
Workplaces with 50 or more employees	26,679	27,405	28,930	29,271	30,935	32,270	34,309	36,613	38,342

(2) Growing importance of the service industry

With the emphasis on the service industry in the Korean economy, accidents and illnesses in the industry are growing in number. Also, the changes in work method it has brought along may pose new health threats to workers, including new occupational diseases and work-related stress.

〈No. of workers by industry types (%)〉

	2001	2002	2003	2004	2005	2006	2007	2008	2009
Manufacturing Industry	2,923,112 (27.6)	2,858,337 (27.0)	2,840,359 (26.8)	2,929,998 (28.0)	3,054,064 (27.6)	3,033,228 (25.9)	3,096,006 (24.7)	3,104,554 (23.0)	3,182,262 (22.9)
Construction Industry	2,449,485 (23.1)	2,779,437 (26.3)	2,642,747 (24.9)	2,019,974 (19.3)	2,137,745 (19.3)	2,558,093 (21.9)	2,899,285 (23.1)	3,259,512 (24.2)	3,206,526 (23.1)
Service Industry	5,208,589 (49.2)	4,933,505 (46.7)	5,116,239 (48.3)	5,523,118 (52.7)	5,867,384 (53.1)	6,097,476 (52.2)	6,533,588 (52.1)	7,125,920 (52.8)	7,496,139 (54.0)



(3) Higher job mobility

As the number of non-regular workers rises, and workers have higher tendency to move between different jobs, many low-skilled and newly employed workers become vulnerable to occupational accidents.

〈No. of workers by each employment type and their employed time〉

(unit: 2,000 persons)

		Aug. 2002	Aug. 2003	Aug. 2004	Aug. 2005	Aug. 2006	Aug. 2007	Aug. 2008	Aug. 2009
Regular workers	No. of workers	10,190	9,542	9,190	9,486	9,894	10,180	10,658	10,725
	Employed time	5 years	5 years and 8 months	5 years and 10 months	6 years	5 years and 10 months	5 years and 11 months	6 years and 2 months	6 years and 7 months
Non-regular workers	No. of workers	3,839	4,606	5,394	5,483	5,457	5,703	5,445	5,754
	Employed time	1 year and 10 months	1 year and 8 months	2 years	2 years	2 years and 1 month	2 years and 2 months	2 years	1 years and 9 months

(4) Increasing number of workers who are more vulnerable to occupational accidents

(aged workers, female workers, and migrant workers)

In the past nine years, the numbers of female workers and aged workers have been constantly on the rise.

〈No. of workers by industry types (%)〉

(unit: 1,000 persons)

	2001	2002	2003	2004	2005	2006	2007	2009	'09
Female workers	5,609	5,857	5,970	6,237	6,391	6,573	6,756	6,868	6,955
Aged workers	1,232	1,350	1,411	1,510	1,575	1,697	1,859	1,917	2,078

It is estimated that the inflow of foreigners to Korea contributes to the rise in migrant workers in the country.

〈No. of foreigners entering Korea by Year (through Employment Permit System)〉

(unit: persons)

Before 2004	2005	2006	2007	2008	2009	As of Sept. 2010	Total
7,095	60,473	79,199	118,772	180,669	100,668	39,812	586,688

(5) Rising share of in-house subcontracted workers in Korea's key industries

In-house subcontracted workers account for more than one-third of the total workers in key industries such as shipbuilding, chemicals, and steel industries. The number and share of these workers increased even more remarkably in recent years.

〈No. and % of total and subcontracted workers in key industries〉

Industries	Aug. 2010			May 2008			Changes in the No. of subcontracted workers
	Total workers	Subcontracted workers	The % of subcontracted workers	Total workers	Subcontracted workers	The % of subcontracted workers	
Total	385,791	145,492	37.7%	424,402	141,625	33.4%	3,867
Shipbuilding	138,748	85,119	61.3%	140,213	77,329	55.1%	7,790
Steel	65,233	28,512	43.7%	68,346	28,760	42.1%	- 248
Chemical	89,424	16,786	18.8%	90,773	17,647	19.4%	- 861
Automobile	92,386	15,075	16.3%	125,070	17,889	14.3%	- 3,259



III. Vision and Strategic Goals

Vision

Safer Workplaces, Healthier Workers, and a Happy Nation

Mission

- 30% reduction in lost work days due to occupational accidents by 2014: from 3.25 million to 2.28 million days (baseline: the average lost work days from 2005 to 2009)
- 30% reduction in fatalities due to occupational accidents by 2014: from 1,392 deaths to 974 deaths (baseline: the average work-related fatalities from 2005 to 2009)
- 30% reduction in the number of accidents per 1,000 workers: from 4.45 to 3.12 (baseline: the average number of workers who spent days away from work due to occupational accidents from 2005 to 2009)

Overarching Goals

- create self-regulatory safety and health management system through effective sharing of roles amongst enterprises, labor market, and the government.
- To secure the necessary infrastructure by fundamentally managing hazards and risks, promoting safety and health culture, and improving statistics.
- To implement safety and health measures that are suitable for the Korean workers and industrial structure.

Strategic Objectives

〈Establishing self-regulatory safety and health system〉

Strategy 1.

Developing safety and health management capacity in enterprises

Strategy 2.

Sharing of roles in the safety and health area

Strategy 3.

Creating new incentives for safety and health management



〈Strengthening safety and health management capacity〉

Strategy 4.

Fundamentally managing and controlling safety and health in workplaces

Strategy 5.

Securing the infrastructure for safety and health management



〈Implementing safety and health plans for each industry and worker group〉

Strategy 6.

Implementing tailor-made measures for each industry

Strategy 7.

Providing realistic and substantive support to work groups more vulnerable to occupational accidents



"The Types of Occupational Accidents to Watch Out For in Winter"

- The most frequent occupational accidents in winter are road traffic accidents, slips and trips, and cerebro- and cardiovascular diseases, according to a report released on January 11.
- Occupational Safety and Health Research Institute of Korea Occupational Safety and Health Agency (OSHRI-KOSHA; Director General: Seong-Kyu Kang) released the result of a recent study "Weather and Occupational Accidents." According to the report, the key seasonal factors that lead to occupational accident in winter are heavy snow and cold waves. On the other hand, there were high occurrences of traffic accidents, and slips and trips, while the incidence of cerebro- and cardiovascular diseases rose during the cold season as well.
- The report is the result of analysis conducted by OSHRI researchers during the 3-year period from 2007 to 2009. The researchers compared the occurrences of occupational accidents in winter in three categories: winter time with no irregular weather conditions (normal period), heavy snow period, and restoration period after the heavy snowfall. Based on the analysis, 178 service industry workers fell victims to occupational accidents during heavy snow period, which is a 17.1% increase from that of winter time with no irregular weather conditions at 152.
- In the case of the manufacturing industry, more accidents happened during the restoration period, compared to heavy snowfall or normal periods. While 180 casualties occurred among manufacturing workers during normal winter period, restoration period after the heavy snowfall lead to an 16.7% increase in the number of accident victims at 210.

〈No. of accident victims by industries in heavy snowfall, restoration, and normal periods in winter〉

(unit: persons)

Category	Heavy snowfall period (A)	Restoration period after heavy snowfall (B)	Normal period with no irregular weather conditions (C)	Rise in accidents in heavy snowfall period compared to normal period (A/C-1)	Rise in accidents in restoration period compared to normal period (B/C-1)
Service Industry	178	160	152	17.1%	5.3%
Construction Industry	61	130	143	- 4.9%	- 9.1%
Manufacturing Industry	172	210	180	- 4.4%	16.7%



- The accident type negatively affected by the heavy snowfall the most was road traffic accidents, showing a 48.7% increase in casualties compared to normal period. Slips and trips increased 43.4% during the

heavy snowfall period. On the other hand, strenuous movements and slips and trips increased 77.8% and 40.4%, respectively, during the restoration period.

〈No. of victims by accident types in heavy snowfall, restoration, and normal periods in winter〉

(unit: persons)

Category	Heavy snowfall period (A)	Restoration period after heavy snowfall (B)	Normal period with no irregular weather conditions (C)	Rise in accidents in heavy snowfall period compared to normal period (A/C-1)	Rise in accidents in restoration period compared to normal period (B/C-1)
Road traffic accidents	58	34	39	48.7%	- 12.8%
Slips and trips	172	168	120	43.3%	40.4%
Strenuous movement	10	16	9	11.1%	77.8%
Crush injuries	86	108	95	- 9.5%	13.7%

- Based on the analysis of 161,904 occupational accidents involving slips and trips in the past 10 years, an average of 16,485 workers got hurt or killed annually due to slips and trips and this translates into 1,374 victims

of such accident types in each month. When comparing each month of the year, December and January where the months of higher-than-average occurrences of slips and trips, leading to 1506 and 1489 victims, respectively.

〈The monthly average No. of slips and trips casualties in the past decade〉

(unit: persons)

Total	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.
16,485	1,489	1,223	1,383	1,378	1,423	1,386	1,347	1,304	1,250	1,370	1,426	1,506

- On the other hand, based on the analysis of 11,580 workers who developed cerebro- and cardiovascular disease in the past decade, an average of 1,193 workers developed the disease annually, which is equal to 99 new cases of the

disease among workers in each month. The disease was most common in December and January at 121 and 106 cases, respectively, when the temperature differences between indoors and outdoors are the highest.

〈The monthly average No. of cerebro- and cardiovascular cases in the past decade〉

(unit: persons)

Total	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.
1,193	106	98	110	106	103	91	79	75	84	103	117	121

- “Crush injuries rise in spring time, when worker are likely to suffer from spring fever. In summer, skin burns become more frequent in the service industry due to higher exposure of bare

skin. Also, rapid and irregular patterns of strong wind and heavy rain are observed in spring and fall seasons,” said a researcher from OSHRI, calling for special caution in each season.



"Accident Prevention Efforts Targeting Small-scale Construction Sites"

KOSHA pays special attention to the safety in small construction sites

- Special attention is being paid by Korea Occupational Safety and Health Agency (KOSHA) toward small-scale construction sites, working on projects worth less than KRW 2 billion. These small sites have seen an increase in accidents for the past years.
- According to the occupational accidents statistics released by KOSHA (President: Min-Ki Noh), the number of accidents victims in small-sized construction sites (projects worth less than KRW 2 billion) has been constantly on the rise from 14,111 workers in 2008, 14,415 workers in 2009 to 16,095 workers in 2010.
- In particular, in 2010, the number of accidents victims in such small-scale construction sites accounted for 72% of the total victims in the construction industry as a whole. (In 2010, 22,502 construction workers fell victim to occupational accidents). While accidents in larger construction sites (projects worth KRW 2 billion or more) actually decreased in the past few years, increasing number of accidents are occurring in small construction sites.

〈No. of accident victims in construction sites with projects sizes less than KRW 2 billion (2008~2010)〉

(Unit: worker)

Category	2008	2009	2010
Accident victims in all construction sites	20,835	20,998	22,502
No. of accident victims in construction projects less than KRW 2 billion	14,111	14,415	16,095
No. of accident victims in construction projects worth KRW 2 billion or more	6,079	5,654	5,177
unclassifiable	645	929	1,230

※ Unclassifiable category: Accidents occurring in worksites that are impossible to measure the scale of construction projects (Public works, "The Hope and Work Project", maintenance of construction machinery, etc.)

- Relatively high number of small-scale construction sites, which account for the majority of such worksites, and their short construction periods usually lasting for only around three months, are the reasons behind the increase in accidents. It is also true that systematic safety management is very difficult in these worksites with short construction cycle.
- Against this backdrop, KOSHA set out to strengthen safety patrol of small construction sites and make on-site assistance readily available.
- By the end of this year, KOSHA plans to provide timely support to small construction sites by dispatching guidance officers from construction accident prevention



agencies and “construction safety partners.” They will make visits to the worksites and provide consultations in one of the 24 regions of the nation, which they are assigned to.

- To help guidance officers and safety partners gain easy access to construction sites in residential areas or other small worksites such as dismantling sites of buildings and artifacts, they will be provided with scooters. The scooters will make the patrolling work easier and faster, as they can reach almost any high-risk construction sites such as alleys.
- The guidance officers will visit the construction sites and provide support on safety techniques on risk factors free of charge. In addition, the construction sites will be provided with educational materials related to accident prevention, while safety campaigns will also take place.
- To mark the beginning of such efforts, KOSHA held a ceremony to boost the commitment of guidance officers in accident prevention activities. The ceremony was held in the headquarters of KOSHA on February 15 (Tue.) located in Incheon.
- The ceremony was attended by guidance officers, who will be in charge of on-site consultation. During the

ceremony, “zero-accident flags” were attached to the patrol scooters and some participants made a speech about their commitments to accident prevention efforts.

〈Ceremony to Reaffirm Commitments to Reduce Accidents in Small-scale Construction Sites〉

- **Date & Time:** February 15, 2011 (13:00~14:00)
 - **Location:** Headquarters of KOSHA (Incheon)
 - **Participants:** President of KOSHA, Director General of OSH policy from the Ministry of Employment and Labor, Korea, Directors of KOSHA who are in charge of accident prevention in construction industry, and, Representatives of agencies in charge of accident prevention projects in small-scale construction sites
- According to an official from KOSHA, “Construction sites have many innate work hazards. When an accident happens in the industry, it is often fatal. Furthermore, construction sites with limited resources for accident prevention are vulnerable to accidents. I ask for active participation from each worksite so that KOSHA's efforts can bear fruit and bring about substantial progress in reducing accidents in the industry as a whole.”



“Establishing Comprehensive Safety and Health Measures for Each Occupation”

- The trends toward smaller workplaces, high job mobility, and the vulnerable populations' increasing participation to economic activities are some of the changes witnessed in today's work environment. Therefore, a tailored and comprehensive safety and health service to meet the needs of different industries, workplace sizes, work conditions, and workers are called for. Furthermore, the society we are living in requires measures to protect workers such as health care workers and cleaners, who are in the blind spots of safety and health.
- Against this backdrop, KOSHA plans to select occupations that are rising as a social issue or require safety and health related measures. After the selection, KOSHA will come up with solutions through field investigation and problem analysis.
- “Comprehensive Safety and Health Measures for Each Occupation” primarily deals with people working in six categories of occupations including dye factories, retailers & wholesalers, health care settings, cleaning works, auto repairs, welding, and flame cutting works. The comprehensive response measures will be conducted in the form of a task force team (TFT). The TFT will conduct safety, health, education, and research activities. Also, the TFT will analyze the data collected through the study of related institutions and documents, field inspections, visits of related agencies, and analysis of practices in other countries. Based on the analysis, the TFT will suggest future improvements. The analysis report of the TFT's activities is to be submitted by the end of March.
- Aside from the six occupations stated above, additional study on other occupations in the service industry including occupations in the informal economy will also be conducted if necessary. The results of the comprehensive measure for each occupation will be published as leaflets and distributed for use.



" Special Edition of JKMS provides full information on Korea's Occ. Diseases"

Seventeen academic papers contributed by OSHRI-KOSHA



- Occupational Safety and Health Research Institute of Korea Occupational Safety and Health Agency (OSHRI-KOSHA; Director General: Seong-Kyu Kang) published a special issue (supplement issue) to the Journal of Korean Medical Science (JKMS). The special issue contains 17 academic papers, which provides information about occupational diseases found in Korea.
- The JKMS is an academic journal listed in the Science Citation Index (SCI) of the US. The journals in the SCI only include internationally well-recognized ones, considering the quality of the papers and the number of times they are cited as references.
- This special issue of the JKMS provided a systematic picture about the history of Korea's occupational diseases and their current status. A total of seventeen papers are in the special issue in its 126-page, English edition. The issue will be very useful academic information, widely available in public libraries and universities. In addition, the full texts of the papers are also available at the JKMS's website at <http://jkms.org>.

- "The special edition contains full information about Korea's occupational diseases. The publication of this special issue has much to contribute to enhancing academic study of health at work not only in Korea, but across the globe," said a researcher from OSHRI-KOSHA.

〈The list of academic papers in the supplement issue of the JKMS〉

Journal of Korean Medical Science, Volume 25 (Suppl); December 2010

- Occupational Diseases in Korea
- Current Status of Pneumoconiosis Patients in Korea
- Occupational Asthma in Korea
- Occupational Neurological Disorders in Korea
- Occupational Hepatic Disorders in Korea
- Occupational Reproductive Function Abnormalities and Bladder Cancer in Korea
- Occupational Skin Diseases in Korea
- Occupational Infection in Korea
- Occupational Hearing Loss in Korea
- Ionizing Radiation-induced Diseases in Korea
- Characteristics of Work-related MSDs in Korea and Their Work-relatedness Evaluation
- Occupational Psychiatric Disorders in Korea
- Occupational Respiratory Cancer in Korea
- Occupational Lymphohematopoietic Cancer in Korea
- Work-related Cerebro-Cardiovascular Diseases in Korea
- Disease Prevalence and Mortality among Agricultural Workers in Korea
- Management System of Occupational Diseases in Korea: Statistics, Report and Monitoring System



"Service Industry Safety+ Campaign 2011"

KOSHA launches accident prevention campaign on 7 service sectors

June 21, 2010

- Korea Occupational Safety and Health Agency (KOSHA; President: Min-Ki Noh) takes a decisive move to respond to accidents in seven sectors in the service industry with high occurrences of accidents.
- The seven sectors in the service industry vulnerable to occupational accidents are:
 - Maintenance works (including building maintenance)
 - Healthcare & Social Assistance
 - Hygiene
 - Education
 - Wholesale & retail, maintenance of consumer products
 - Hotel, restaurant, and catering (HORECA) services, and
 - Leasing service
- Against this backdrop, on February 16 (Wed), KOSHA launched "Service Industry Safety+ Campaign 2011" in Sangnok Resort in Cheonan, aimed at reducing accidents in the industry.
- The launching ceremony was attended by 400 campaign agents, who will carry out the on-site Service Industry Safety+ Campaign, as well as the representatives of related agencies. Also, President and executives of KOSHA, Director General of OSH Policy from the Korean Ministry of Employment and Labor attended the ceremony. The participants of the ceremony committed to accidents reduction in the service industry promised to produce concrete results.
- With the launch of Service Industry Safety+ Campaign, the designated agencies to carry out the campaign- Citizens Coalition for Safety, Korea Housing Managers Association, and Korean Nurses Association-will engage in accident prevention activities with the focus on accident-prone service sectors.
- This year's campaign is an expanded version of last year's campaign by including two additional sectors: hotel, restaurant, and catering (HORECA) services sector and leasing service sector. On the other hand, unlike last year when the campaign started in April, this year's campaign will start from February. Last year, the campaigns were done in 250,000 workplaces belonging to the five service sectors.
- Prior to the official launch of the campaign, 400 campaign agents received training from February 14 to 16 in Sangnok Resort, mainly on key risk factors of each occupation and accident prevention measures.
- According to an official from KOSHA, "The campaign in 2010 contributed to reducing the number of accident victims in the five service sectors by 1,023 compared to the year before. With the earlier launch of the campaign this year, we expect that safety culture will take root in more workplaces and it helps to reduce accidents."

	2009	2010
No. of accident victims in the 5 service sectors	19,796	19,796

※ Five accident-prone service sectors: Maintenance works, Health care & social assistance, Hygiene, Education, Wholesale & retail, maintenance of consumer products



"Icy or Snowy Surface Cause 1 in 4 Slips and Trips Injuries in the Service Industry"

KOSHA announces accident prevention campaign period and a safety check-list

[Accident Cases: Slips and Trips injuries caused by icy or snowy surfaces]

Case 1.

On January 8, 2010, a 64-year-old janitor of a building broke a bone in his toe when he slipped on an icy road. He had been out of the building on patrol and was just returning to his office at 4 a.m.

Case 2.

On January 19, 2010, a 52-year-old city employee broke his ankle when he slipped on an icy road. He was in charge of regulating illegal advertising installments and he got injured on duty at a bus station.

Case 3.

On January 15, 2010, a 37-year-old food deliveryman was walking down the stairs and fell when he accidentally stepped on an icy surface. He injured his lower back when it hit the edge of the stair.

Case 4.

At around 9 a.m. on February 19, 2010, a 30-year-old hospital employee broke his left ankle when he slipped on an icy surface of a parking lot.

- The most frequent type of slips or trips accidents ? about one in four such accidents - in the service industry is caused by snowy or icy roads, according to the numbers released by Korea Occupational Safety and Health Agency (KOSHA; President: Min-Ki Noh).
- Occupational accidents statistics released by KOSHA showed that 7,260 service industry workers have fallen victims to accidents involving slips and trips from January to March, in 2010. Out of the 7,260 injured workers, as many as 1,885 of them got hurt due to snowy or icy surfaces

〈No. of slip and trip accident victims in the service industry, due to snowy or icy surfaces〉

	January ~ March, 2010		January ~ March, 2009	
	Slips and trips accidents in total	Slips and trips accidents due to snowy or icy surfaces	Slips and trips accidents in total	Slips and trips accidents due to snowy or icy surfaces
No. of injured workers	7,260	1,885	4,668	475



- In particular, the number of slips and trips victims in the service industry stood at 1,885 from January to March, 2010, which is a four-fold increase from the same period in the previous year (475 injured workers).
- Looking at each sector of the service industry, the most number of slip and trip accidents happened among building maintenance workers (569 injured workers), followed by retail & wholesale, HORECA (hotel, restaurant, and catering), hygiene, health and social welfare workers.

〈No. of slip and trip accident victims in different sectors of the service industry (January ~ March, 2010)〉

	Total	Building maintenance	Retail & wholesale	HORECA	Hygiene	Health and social welfare	others
No. injured workers	1,885	569	244	241	231	200	400

- Against this backdrop, KOSHA has designated the first three months of this year as “Slip and trip accident prevention campaign period for the Service Industry” and it plans to come up with various measures to protect workers in each workplace.
- To begin with, KOSHA urged workplaces to always keep the floor of work areas dry in order to prevent any liquids on the floor from freezing. Also, based on KOSHA’s guidelines, warning signs should be installed on slippery surfaces, and workers need to wear skid-proof shoes when cleaning up the snow.
- On the other hand, KOSHA will designate officials in each regional and local office, who will be responsible for slips and trips prevention activities in the service industry. Also, information about accident prevention in workplaces will be distributed to workplaces and related campaigns will be launched as well. Furthermore, workplaces will receive text message alerts before heavy snow or when the temperatures drop to unusually low level, to help them make necessary preparations.
- KOSHA will also provide “self checklist”, which will help some sectors in the service industries to check risk factors before starting actual work. Sectors in the service industry that require outdoor works include building maintenance, retail & wholesale, and so on.
- “Shoes with wide soles must be worn to prevent slips or trips in winter. Long working hours in outdoors, such as snow cleanups, can compromise workers’ flexibility due to the low temperature and cause more severe injuries. Therefore, taking regular breaks and doing stretching can go a long way to prevent accidents.” said, an official from KOSHA.



“ KOSHA Provides Easy-to-use Info on Website ”

Work hazards and safe work procedures on 50 occupations



- For example, fire, explosion, slips, and trips are key hazards facing welders. The information sheet advises to measure flammable fumes or gas concentrations before work and to remove combustibles from worksites. On the other hand, forklift operators should watch out for slips and trips, falls, collisions and so on. Also, the information sheet gives guidance on the safe handling of heavy loads, and the importance of observing safe speed.
- KOSHA is set to distribute information sheets that help workers to easily understand occupational hazards and safety, helping them to be safer in workplaces.
- The information sheets to be released through the website of Korea Occupational Safety and Health Agency (KOSHA; President: Min-Ki Noh) are “Accident Prevention Information by Occupations.” Each information sheet provides common accident types and prevention measures of 50 occupations including welders, forklift operators, cleaners, parcel deliverymen, and many more.
- To be released under the title OPL (One Point Lesson), the one-page information sheet will give details about key hazards and essential safety measures for each occupation. In addition, accident cases for each occupation are to be made into a cartoon to help identify common hazards in workplaces.
- KOSHA plans to release information sheets on 50 occupations for the time being, and develop 100 additional information sheets by 2012. Therefore, by the end of 2012, KOSHA will become the provider of safety information on 150 occupations.
- Director Dong-Ki Park of Training and Media Department in KOSHA said “The emphasis of safety information sheets to be released this time is helping workers to understand accident prevention measures on their own. KOSHA will expand the scope of such services so that workers can voluntarily take part in observing safety in their workplaces.”



"KOSHA's Commitments to Clean Culture and Credible Governance Recognized"

KOSHA wins PM's Commendation in "National Sinmungo Award"

February 25, 2011

- At the National Sinmungo¹⁾ Award, organized by Anti-Corruption & Civil Rights Commission, Korea Occupational Safety and Health Agency (KOSHA; President: Min-Ki Noh) received the Prime Minister's Commendation in recognition of promoting the culture of clean governance and integrity.
- The award ceremony was held on February 25 at the Korea Press Foundation, located in Jung-gu, Seoul. KOSHA's efforts to root out corruption and policy improvements to spread clean culture were well recognized through the award.
- So far, KOSHA has been making agency-wide endeavors to stave off corruption, including: establishment of ethical management system; operation of hot line that enable workers to report any corrupt behaviors directly to the auditor; introduction of clean ombudsman system that helps to prevent social irregularities; operation of cyber audit department; and the introduction of employee's clean mileage system.
- After the evaluation of agencies conducted by the Anti-Corruption & Civil Rights Commission, KOSHA was rated "excellent" in 2009 and 2010 under anti-corruption category, and rated "outstanding" in cleanliness category.
- The awards given out during the ceremony went to 85 individuals and 11 organizations under three categories including anti-corruption, ombudsman, and public service.
- As an individual awardee, Deputy Director Se-Hyun Kwon of the Audit Department at KOSHA received the President's Commendation for his efforts to keep the operations in KOSHA transparent.
- The National Sinmungo Award started in 2009 and this year's event marks its third year. The awards are given to acknowledge organizations and individuals of their hard work in easing people's grievances and spreading clean culture.
- President Min-Ki Noh of KOSHA said, "Integrity and ethical management are the pre-requisites for an organization trusted by customers. KOSHA will continue accident prevention efforts together with activities that make the operations in KOSHA transparent and corruption-free."

1) Sinmungo

Direct translation of the Korean word Sinmungo is a drum that tells and listens to stories. The drum was hung outside the King's palace during the early Joseon Dynasty (early 15th century) to ease the sufferings of common people. Anyone who had been unfairly victimized or suffered injustice could sound the drum and make a plea.

“Liquified Petroleum Gas Explosion during H-Beam cutting operation”

On August 26, 2010 (Thursday), 1 worker was killed and 5 workers were injured in Liquified Petroleum Gas explosion at Incheon city under remodeling work of building. On the ground floor of the building under remodeling works, workers were installing air conditioners and interiors. Using cutting torch, one of the workers was making a hole to the web plate of an H-Beam located in the ceiling. As he was descending from type-A ladder, oxygen pressure vessel and gas (LPG) cylinder exploded killing one worker and injuring five others.



■ General Information

- The two-story building was undergoing remodeling works in its interior, to be used as a restaurant.
- One day prior to the accident, partition walls were installed in the interior. On the day of the accident, partitions surrounding windows were dismantled and door frames were set up. The accident occurred when installing pipes for the air conditioner.

■ Description of the accident

- On the day of the accident at around 8 a.m., five carpenters and flooring workers started working in the partition wall molding and door installation works on the ground floor and second floor.
 - ☞ Under the command of supervisor, two of the workers took position on the ground floor and two others worked on the second floor.
- At around 10:30 a.m. three workers arrived at the site to install air conditioner. Two of them were dispatched to the second floor to change piping and install drains. One worker worked on the ground floor for perforation work of the walls.



- After lunch at around 1:10 p.m., three air conditioner installation workers were dispatched to the ground floor. One of them was completing perforation works of the walls, one other worker was cutting H-Beam using oxygen-LPG torch, and the third worker was assisting.

☞ Cutting of H-Beam (400x200x8x13mm) involved making an oval-shaped hole (140x100mm) on the web plate of the H-Beam.



◁Accident scene▷



◁Oval-shaped hole▷

- At around 1:30 p.m., the pressure of low volume, high-pressure oxygen cylinder started to decrease, which was being used by a worker cutting H-beam. As the decrease of oxygen pressure made the work difficult, he asked his co-worker to lend him an oxygen pressure vessel. The worker replaced the oxygen cylinder he borrowed and connected the hose.

☞ The worker initially worked with low-volume oxygen cylinder (length: 98cm, outer diameter: 14cm, volume: 10.2L) and small gas (LPG) cylinder (volume: approx. 1L).

The borrowed oxygen pressure vessel is a high-volume (volume 40.2L), with the filling pressure 120 kgf/cm² (about 12MPa). Before replacing the oxygen cylinder, the cutting work was almost complete, leaving only 5cm of cutting hole.

- At around 3:25 p.m., the worker completed cutting the H-Beam using the replaced oxygen in pressure vessel and was about to descend from type-A ladder.

As oxygen in pressure vessel and gas (LPG) in cylinder exploded, one worker operating on the ground floor was struck by the dispersed broken pieces and killed. Five other workers (two carpentry and floor workers and three air conditioner installing workers) were injured.

☞ The worker operating near gas (LPG) cylinder on the ground floor later said that he didn't smell any gas leak. Also, at the time of the accident, he did not feel the flame heat caused by flammable gas explosion.



◁Inflicted damage on the floor and ceiling of ground floor due to the explosion▷

■ Root cause analysis

〈The specification of Oxygen pressure vessel〉

Type of gas	Gauge pressure (kgf/cm ²)	Test pressure (kgf/cm ²)	Volume (L)	Weight (kg)	Outside diameter (mm)	Length (mm)	Material
Oxygen	120	250	40.2	52.20	232	1,310	Mn Steel

〈The specification of gas (LPG) cylinder (manufacturer: UNIWELD, USA)〉

	Specific gravity (at 15.6°C)		Vapor pressure (kgf/cm ² at 20°C)	Explosion limit in air (vol. %)		Explosion limit in Oxygen (vol. %)		Minimum ignition energy (mj)
	Liquid	Vapor						
LPG	0.5~0.51	1.4~0.55	9	2.1	9.5	-	-	0.26
Propane	-	1.52	8.4	2.1	9.5	2.3	55	0.26
Butane	-	3.12	2.1	1.9	8.5	1.8	49	0.25

- The cylinder is too severely damaged to identify. However, it can be estimated that it was a disposable cylinder, which should be inspected at the time of importation but doesn't receive regular safety inspection for reuse.
- Property (key ingredient: propane, butane)

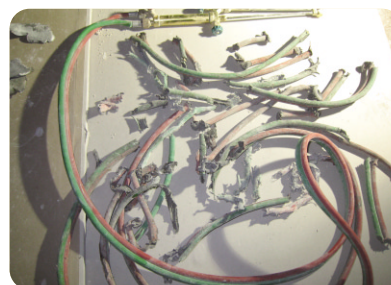
- The state of destroyed pressure vessel/cylinder (based on the results released by National Institute of Scientific Investigation: NISI)

1. Considering the size and shape of the exploded pressure vessel/cylinder' broken pieces (oxygen in pressure vessel and gas (LPG) cylinder), the pressure vessel was destroyed in an instant due to chemical reaction within it. On the other hand, gas (LPG) cylinder seems to have destroyed due to outside physical force.

- ☞ Upper cover of oxygen pressure vessel was bent outwards while the pieces of gas (LPG) cylinder were bent inwards.



〈Recovered oxygen and LPG tanks and parts〉

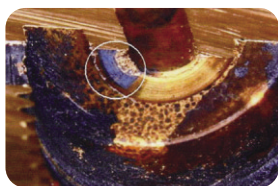


〈Recovered oxygen and LPG hoses〉

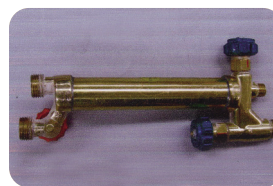
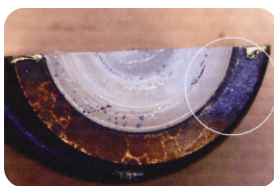


2. There were traces of carbonization on the valve and valve seat of oxygen pressure vessel. Also, soot on the connection fitting of the vessel hose as well as carbonization within the hose were witnessed. Considering these factors, the backflow of LPG into oxygen pressure vessel composed the physical conditions for a flammable gas mixture. The flames flowing into the vessel were supplied with the necessary energy for an explosion.

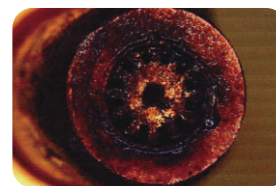
☞ No irregularities were found on the connection fitting of gas (LPG) hose and inside of the gas (LPG) hose.



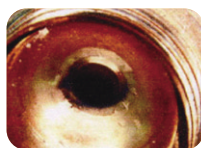
〈Signs of carbonization on oxygen tank valve seat and valve〉



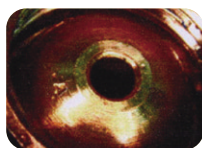
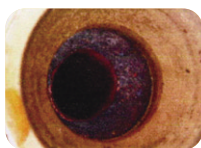
〈torch handle(valve was locked)〉



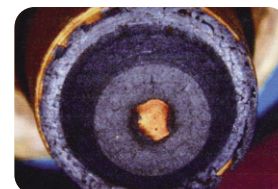
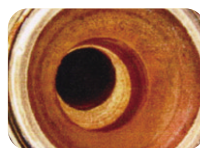
〈tip of the torch〉



〈torch's connection fitting to oxygen hose〉



〈torch's connection fitting to LPG hose〉



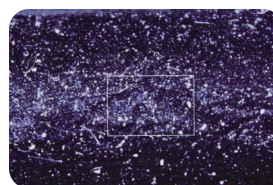
〈torch's preheat oxygen valve〉



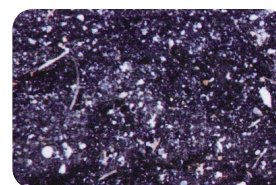
〈LPG valve of the torch〉



〈oxygen valve of the torch〉



〈Carbonization of inner surface of oxygen hose〉



3. Gas (LPG) valve, preheat oxygen valve, and cutting oxygen valve of the torch seemed locked. The tip of the torch was wet with oil. Pressure regulators of oxygen and gas (LPG) cylinders were too severely damaged to identify their original state before the explosion.



〈Damaged LPG tank〉

4. Analysis of the torch revealed that rubber part of the valve was already worn out. Although gas (LPG) valve and preheat oxygen valve seemed to have been locked, there is a possibility of gas backflow into oxygen in pressure vessel due to improper locking or worn out rubber casing.
5. The flame arrester was not installed between the pressure regulator and outlet of the vessel/cylinder
6. The gas (LPG) cylinder is an imported product. Ever since it was imported to Korea, it did not receive any regular testing for safety required by High-Pressure Gas Safety Control Act.
 - ☞ Although it is a disposable cylinder/pressure vessel, it can be refilled and reused.
7. Investigation of the upper cover of the oxygen pressure vessel recovered from the accident site revealed that the effective date of the safety testing conducted under High-Pressure Gas Safety Control Act did not lapse.
 - ☞ The inscription on the exploded oxygen pressure vessel: (검) 00Y8-3: which means the vessel was tested and qualified in March, 2008.



〈Inscription indicating the date of oxygen gas tank [(검) 00Y8-3]〉

〈Testing criteria of pressure vessel (seamless vessel) under High-Pressure Gas Safety Control Act〉

Type of pressure vessel		Retest cycle
Seamless vessel or composite cylinders	500 liters or larger	Every 5 years
	Less than 500 liters	- Every 5 years for vessels that lapsed 10 or less years since the initial testing. - Every 3 years for vessels that lapsed more than 10 years since the initial testing.

■ Predicted causes of the explosion

At the completing moment of H-Beam cutting works, residual oil or the beam spattered and some of the molten metal blocked the tip of torch, which made the outflow of gas from the torch difficult.

Although gas (LPG) valve and preheat oxygen valve seemed to be locked, the deterioration of rubber casing created a space through which gas can flow. This caused the inflow of LPG into oxygen tank.

※ Normally, when cutting 8mm-thick H-Beam web plate, LPG is discharged through pressure regulator at the pressure of 1~1.5 kgf/cm², while the discharge pressure of oxygen is set at around 4~5 kgf/cm². Considering that, the following predictions can be made.



- The pressure regulator of LPG was already damaged, and the pressure inside the LPG cylinder rose above that of oxygen pressure vessel, triggering the explosion.
- The normal gauge pressure inside the oxygen pressure vessel is 120 kgf/cm², which is filled in high pressure. However, due to lacking residual oxygen in the vessel, the pressure of the vessel is thought to have gotten lower than that of LPG discharge pressure.

The flame caused by metal spark entered into oxygen in pressure vessel, which was within the explosion limits of flammable mixed gas (oxygen + LPG). As a result, oxygen pressure vessel exploded first, and the blast of gas (LPG) cylinder followed due to the shock.

■ the guide of accident prevention

When there are risks of gas or flame backflow due to pressure differences in the cylinders, a flame arrester should be installed between the pressure regulator and the hose. Also, defects (damage, wear, etc.) of the hose and torch valve should be checked prior to work to eliminate risks of gas leak. If there are any safety risks, necessary fixes and replacements must be taken.

- ※ The guide includes all the necessary technical methods to prevent future accidents of the same or similar types. Therefore, details of this report may differ from that of the actual accident.