

KOSHA
ANNUAL REPORT
2018



KOSHA



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KOSHA 

KOSHA is...

Founded in 1987, Korea Occupational Safety and Health Agency (KOSHA) has since grown to be a world-class professional organization in occupational accident prevention through its pioneering and innovative work. With a single-minded devotion to make every workplace safe and every worker healthy, KOSHA's focus has always been on workplace.



MESSAGE FROM THE PRESIDENT

*Contribution to promoting workplaces
where all workers can
work safely free from any accidents*

Changes in our daily lives ignited by the Industry 4.0 have delivered colossal impacts on the safety and health environments throughout all workplaces. Newly emerging occupations, business platform and subsequently arising new harmful and risk factors are forcing us to deal with new challenges.

In the year of 2018, KOSHA faced the biggest changes since its inauguration.

Last year, the Korean government declared to halve occupational accidents with fatalities by the year 2022 and announced upcoming changes in policy paradigms.

To swiftly respond to the government policies, KOSHA also implemented extensive reorganization in last May upon its existing occupational accident prevention programs by shifting its focus to the prevention of fatal accidents. Based on our analysis of ongoing occupational accidents, KOSHA selected three major fields in desperate need of immediate responsive measures and has exhausted all resources of KOSHA to address those needs.

In addition, KOSHA engage in a massive reorganization, the biggest since its foundation, in order to provide people-oriented safety and health services. We reformed our system from existing functional system to a tailored system for each region designed to aggressively respond to local demands for occupational accident prevention in each region.

Moreover, KOSHA launched an in-house organization dedicated to responding to ever-changing technology and social environment, aiming to enhance expertise and future-oriented responsive competence.

Despite all the efforts above, I believe we still have a long road ahead for us to travel. It is because accidents do not decrease overnight even if we work so hard to ensure safety for everyone. And it is quite difficult to change bad old habits and long-standing practices in a short period of time. KOSHA will never be satisfied with short-term successes; instead, we are determined to continue making efforts to bring fundamental improvements throughout general practices and awareness concerning safety.

Accordingly, KOSHA has prepared this annual report describing all the projects and programs we have implemented as well as our performances to prevent occupational accidents for the past year. I sincerely hope this report to make another contribution to fostering workplaces where all workers can work safely free from any accidents.

Thank you.

Do Yong Park

President

Korea Occupational Safety and Health Agency

INTRODUCTION

Aim & Direction for Accident Prevention

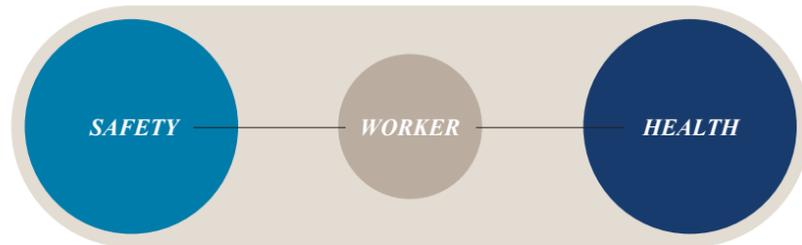
Focal Activities in Occupational
Accident Prevention Projects



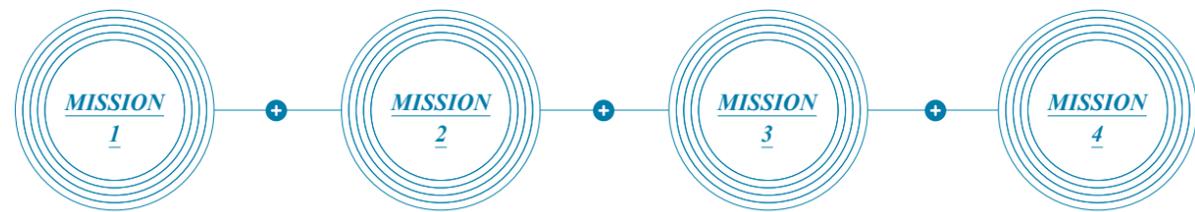
Aim & Direction for Accident Prevention

VISION

Encourage every working person to seek KOSHA for all matters concerning safety and health at anytime and anywhere



MISSION



We are to achieve policy objectives concerning safety and health by mobilizing all means.

We ensure taking care of vulnerable workers on safety and health who are in need of our help but cannot afford seeking assistances.

We aggressively seek and respond to issues by paying close attention to all safety and health issues. at worksites.

We maintain the best professional competence by acquiring the latest technology and knowledge at all times in order to provide the highest quality services on safety and health for all people in need of the KOSHA.

MANAGEMENT PRINCIPLES

Enhancement of Inherent Functions

fulfilling its given duties bestowed by the public and solidify its presence by realizing the purpose of establishment as an institution guaranteeing the public's right for safety

Preemptive Response to the Future

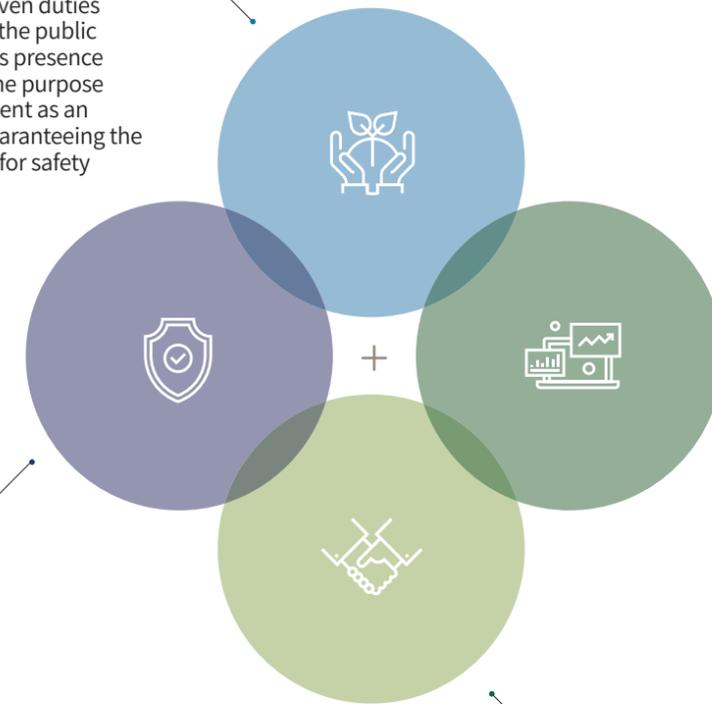
securing professional competence addressing the environmental changes in business management and discovering future prospects in the field of OSH

Implementation of Safety & Health Social Safety Net

- strengthening protection of the vulnerables to occupational accidents and provide non-discriminatory occupational accident prevention services
- enhancing its function as a hub of OSH service provider by comprehensive cooperation throughout the nation

Realization of Social Value

- completing its social responsibilities by expanding the spectrum of cooperation and communication with the public
- enhancing competency and realizing cooperative and progressive organizational culture



Focal Activities in Occupational Accident Prevention Projects

01



Building response system to focus on fatal accident reduction

- Reshuffle business organization to prevent 3 major fatal accidents, which are falls, collisions and suffocations, including safety management of forklift and intensive guidance provision to eradicate defective use on worksites
- Set a goal for fatal accidents reduction targeting 100 biggest constructions companies, support the safety management of business owners, and intensively manage the accident-prone businesses for strengthening prevention activities throughout construction industry
- Perform in-depth investigations into direct and systematic causes for serious accidents, including management and business designs, in addition to violations of laws and regulations

02



Reinforcement of statutory-political projects

- Evaluate and confirm process safety management reports to strengthen prevention of chemical accidents, continue examining facilities handling harmful chemicals and conduct new safety diagnosis
- Focus more on core improvements of fatal accidents by designating the subjects for risk assessment consultation to high-risk workplaces by regions and to reinforce the recognized fields
- Expand the candidates for cooperative programs in order to establish self-regulatory safety and health management system led by parent companies and to enhance supports from principal contractors

03



Response to changes in industrial environment, such as Industry 4.0, and procurement of professional engineering fields

- Procure a system pursuing professional-engineering-based specialized projects and enhance public roles in order to address safety & health issues carrying substantial social ramifications, such as electronic, chemical, construction and service industries
- Identify potential risk factors caused by the changes in industrial sites arising from proliferation of the Industry 4.0, including introduction of smart factories, and to help establishing future national prevention policies through analysis and utilization of big data

04



Extensive Investment of resources into accident prevention for vulnerable groups

- Engage in on-site health protection campaigns for CS workers, especially targeting wholesale and small consumable repair businesses, industries with emotionally high-risk
- Support expenses required for measurement of working environment and special medical examination targeting small businesses and to assist vulnerable business sites with patient managements
- Secure and manage work safety and remove blind spots through intensive monitoring of the worksites lack of safety assessments on disposal and removal of asbestos

05



Vitalization of worksite-oriented regional characterization

- Engage in projects specialized in fatal accident reduction and prevention of accidents causing serious injuries by local characteristics based on each region through choice and concentration with regard to regional risk factors
- Pursue construction safety projects for the purpose of comprehensive management of construction machinery·equipment as well as high-risk constructions, such as area-specific SOC construction sites
- Encourage voluntary inspections on causes for fatalities by business sites based on self-regulatory programs for hazardous works in the service industry and to inspect high-altitude operations, such as installation of outdoor device of air conditioner, cable TV and internet

06



Proliferation of social consensus upon responsibility for safety

- Procure educational contents with the latest ICT applied and to expand empirical training facilities in order to help familiarizing safety & health knowledge
- Promote responsibility enhancement and awareness improvement through expansion of training courses for senior and middle managements and to restructure support training programs for workers to focus more on vulnerable groups
- Implement year-round promotions on new paradigm asserting that enhanced corporate responsibility for safety & health and safety is fundamental right for workers

07



Promotion of R&D on Safety & Health and international cooperative projects

- Perform preemptive research projects, including assessment of safety & health impacts from future risk factors and researches on subsequent policies and systems, by establishing mid-to-long-term research agendas KORA (KOSHA OSHRI Research Agenda)
- Promote technical assistance and cooperative projects for prevention of occupational accidents in order to respond to the demands from developing countries

Key Achievements in 2018 & Focal Activities in 2019

Accident Prevention for Manufacturing Industry
Occupational Safety-related Projects, Occupational Health-related Projects

Accident Prevention for Construction Industry

Accident Prevention for Service Industry

Professional Engineering

Future Forecasting & Preparation

Accident Investigation

Education & Media Distribution Project

Safety Culture & Promotion

Prevention Network & Cooperation

International Cooperation

Occupational Safety & Health Research

Occupational Safety & Health Training

Occupational Safety & Health Certification



01

Accident Prevention for Manufacturing Industry

Occupational Safety-related Projects

Key Achievements in 2018

1_ Reinforcement of programs to prevent accidents and fatalities

- Intensified efforts to prevent fatal accidents by developing consensus with interested parties and encouraging removal of key risk factors within accident·fatality-prone operations based on occupational accident analysis and factual survey
- Evaluated and confirmed harm and hazard prevention plans for major hazardous facilities and high-risk occupations as well as opened discussions in order to prevent serious accidents
- Monitored accident occurrence to improve effectiveness of accident prevention programs and provided on-site technical consulting to increase safety awareness and to prepare measures to prevent re-occurrence of accidents

2_ Enhanced consumer-oriented voluntary participation

- Help employers to voluntarily establish OSH management system by utilizing risk assessment as a means to manage risk factors prone to occur at workplace
- Supported to develop safe employment environment through comprehensive financial assistance programs in conjunction with other systems, including self-regulatory activities

3_ Reinforcement of responsibility for employers concerning serious accident prevention

- Expanded the boundary of and put more emphasis on responsibilities for safety and health between principal contractors and subcontractors throughout entire worksites and workers, to respond to increasing risk of accident from outsourcing
- Built a foundation for worksites in order to review safety in advance during the processes of design, operation and review when constructing a smart factory for preemptively responding to new risk factors arising from the Industry 4.0

Focal Activities in 2019

1_ Advancement of project to eliminate major risk factors from forklift operation

- Implement distinctive projects based on factual survey and occupational accident prevention system through database of on-site risk information

2_ Troubleshooting project for maintenance of machinery equipment

- Examine current status of informal works by machineries·facilities and develop of accident prevention techniques in order to prevent fatalities by caught in/between

3_ Reorganization of financial aid project designed to elevate effectiveness of fatality reduction

- Enlarge financial resources for construction businesses accounting for high ratio of fatalities and restructure financial support items to reduce fatalities

4_ Projects to verify compliance with safety standards at smart factories

- Improve systems and create measures for official projects for the purpose of preemptive response against future risk factors through verification of compliance and factual surveys

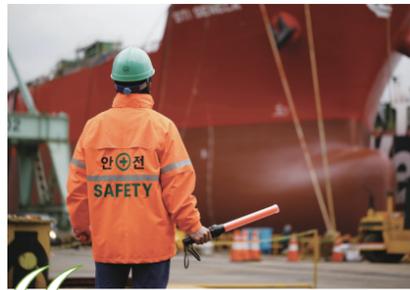
5_ Implementation of effective OSH cooperative programs between parent company and subcontractors

- Encourage extensive participations by subcontractors carrying social issues or high risks
- Newly reflect permit systems on safety operations and mitigation rate of OSH discrepancy between principal contractors and subcontractors upon program level evaluation indexes in order to strengthen safety & health supports from original contractors

6_ Improvement of accident prevention programs throughout shipbuilding industry with high ratio of subcontracts

- Expanded theme-based technical training* concerning fatal-accident-prone operations in shipbuilding industry and promote self-regulatory prevention activities by having worksite to select a theme of 'one safety for one principal contractor'

* Safety & health management systems for LPG ships and subcontractors, and accident prevention of crane, confined workplaces, painting, firearm operations and falls



*Halve fatal accidents
by the year 2022*



02

Accident Prevention for Manufacturing Industry

Occupational Health-related Projects

Goal and Performance in 2018



*Free from health risks,
secure healthy labor*



1_ Harmful substance management for pleasant working environment

- Provided technical supports to 1,076 workplaces with high level of chemical exposures in order to improve working environment and exposure level and to 39,574 workplaces to escalate awareness on the toxicity of harmful chemicals
- Enhanced the quality of working environment monitoring and special health examination and conducted 810 comprehensive assessments for reliability improvement
- Reduced number of suffocation fatalities through intensive management for 3 major high-risk areas for suffocations* (18 deaths in 2017 → 14 deaths in 2018)
- * Local governments (public wastewater treatment facilities, constructions ordered by local governments), swine farms, construction sites curing concrete
- Conducted safety assessment* on 2,214 sites and provided consulting·training to 4,869 sites in order to secure safety for asbestos disposal·removal* assessment to verify the compliance of site to follow safe work procedures over the whole course of construction

2_ Vitalization of health improvement programs for workers

- Provided occupational health services (used by 179,315 workers) tailored for workers at the industrial complexes concentrated with small-scale businesses or at the regions without private professional facilities through workers' health centers (21 facilities) and branch offices (21 branch offices)
- Evaluated workplaces and presented directions for health promotion activities by each level through Enterprise Health Promotion (EHP) Index developed in 2016 in order to motivate business enterprises to voluntarily participate in health promotion activities
- * Evaluated health management entrusted facilities (7,200 facilities) and presented evaluation criteria by sizes of EHP index and business types
- Operated occupational trauma consultation centers offering mental health programs for workers and witnesses at the workplaces prone for fatal accidents·suicides to occur (419 workers from 26 workplaces)
- Carried out surveys and consultation to protect the health of emotional workers and implemented on·offline campaigns to enhance nationwide awareness of the above
- * Survey on 966 call centers, consulting services for 1,032 sites, PR through radio stations·subway advertisements·micro-sties (www.andyoukosha.com), etc.

Focal Activities in 2019

1_ Enhancement of managing harmful working environment

- Tailored technical supports based on risk levels after evaluating risks for health hazards by characteristics of chemical, physical and ergonomic harmful factors (8,000 sites)
- Guide 1,500 workplaces handling chemicals for improving drawback by conducting working environment assessments such as exposure evaluation, etc.
- Provide on-site technical consulting to 2,000 workplaces with high risk of suffocation fatal accidents - Create and disseminate videos, VR, OPL about suffocations prevention with field-oriented educational training

2_ Activating workers' health promotion activities

- Operate of 21 Workers' Health Centers and 21 branch offices to provide health counseling and basic occupational health services to workers at the business with less than 50 employees
- Extensive support for follow-up management of workplaces with a number of workers at health risks (500 sites); provide 100 sites with consulting on prevention of deaths from overwork; identify and distribute best practices of health promotion

3_ Strengthening implementation of basic occupational health system

- Financial supports (about \$37.7 million) for small-size workplaces with limited health management to execute working environment monitoring and special health examination
- Safety assessments on 1,200 businesses engaging in asbestos disposal·removal and carry out on-site monitoring against 5,000 sites to manage small-size workplaces conducting disposal and removal of asbestos
- * Elevated monitoring for compliance with the standards on asbestos disposal·removal at schools during vacation and large-scale reconstruction sites

4_ Enhanced responses to new health risks

- Carry out consulting for 1,000 sites on health protection for emotional workers and campaigns to promote a culture of protecting emotional workers
- Keep operating a psychiatric consultation center on occupational traumas for workers at the sites where major labor incidents* occurred
- * Serious occupational accidents, workers' suicide incidents, physical assaults, sexual harassment·assault incidents
- Implement 180,000 working environment surveys concerning information on chemicals handled by workplaces around the nation, possession of hazardous machine·equipment·facility and working environments and utilize the result as references for OSH policy



03

Accident Prevention for Construction Industry

Key Achievements in 2018



Preemptive response to fatalities and accidental disasters prevention in the construction industry



1_ Accident prevention programs by scales of construction sites

- Evaluated harm and hazardous prevention plans of 6 high-risk types of construction sites, including tunnel constructions, and regular on-site safety inspections (4,124 evaluations & 13,263 on-site inspections)
- Raised OSH awareness for employers and workers through roving inspections of small-sized construction sites (of which budget is less than about \$12 million) by utilizing retirees with vast on-site experiences and safety-health experts (69,551 inspections)
- Promoted self-regulatory safety activities through partial financial supports for the costs required to improve facilities with risk factors in order to prevent fall accidents at small-scale construction sites worth less than about \$20 million (2,639 sites)
- Contributed to accident prevention through intensive guidance targeting workplaces with ineffective safety facilities, high-risk sites for falls or the sites with limited efforts for improvement (2,249 sites)

2_ Competence enhancement of self-regulatory safety and health management by constructions businesses (sites)

- Contributed to competency improvement of systematic safety and health management by distributing management system for safety and health management system for construction (KOSHA 18001) to public project owners and general and special construction businesses (10 public project owners, and 100 general and special construction businesses)

Focal Activities in 2019

1_ Level management system to review and confirm harm and hazardous prevention plans

- Level the management system such as monitoring system to timely verify major risk types
- Preemptively secure fundamental safety and reduce accidental fatalities by verifying compliance with plans based on frequency of on-site risk levels
- Build a steppingstone for 7/24 risk management functions by making an on-line system ensuring real-time two-way communication between KOSHA and workplaces

2_ Intensive training to eradicate workplaces using defective scaffold

- Intensive step-by-step management to eradicate the use of defective scaffold
- Constantly improve awareness on the risks of fall fatality and core messages
- Make ceaseless efforts on projects to support clean workplaces at construction sites, management of defective scaffold installation by KOSHA offices, and improvement of awareness amongst interested parties

3_ Expansion and improvement of calculation and evaluation of construction safety index

- Unify construction safety index at all public institutions and construction businesses with the fatality rate per 10,000 workers
- Improve evaluation index on occupational accident preventive activities in accordance with prevention of fatal and serious injury accidents

4_ Expansion of financial support to generalize the use of system scaffold

- Expand financial support for generalization of using system scaffold in order to ensure pleasant and safe working environment
 - Budget*: \$23 million in 2018 → \$34 million in 2019 (+ \$11 million)
- * about



04

Accident Prevention for Service Industry

Key Achievements in 2018



*Interaction and cooperation
to protect the vulnerable
and expand foundation
for OSH*



1_ Technical consulting on accidental disaster prevention

- Provided tailored consulting to promote improvements upon materials being able to incurring accidents and unsafe behaviors incurring accidental fatalities and serious injuries (2,800 sites)
- Implemented consulting to prevent occupational (safe behaviors) in order to reduce unsafe behaviors inside kitchens in the food industry which accounts for high ratio of accidents in the service industry (300 sites)

2_ Support for safety management at small service business sites

- Provided intensive technical consulting 100,000 times and basic safety supports (160,000 sites) designed to conduct safety inspection and provide OSH materials targeting service businesses with less than 50 employees and lack of safety management skills accidents through 3SB

3_ Support for OSH activities focused on headquarters·principal contractors

- Set a foundation for passing down OSH technique from headquarters·principal contractors to cooperative companies by ran Safety Companion acknowledgement program (10 times) subject to head offices having many branches and provided OSH win-win program targeting to 300 parent companies with cooperative companies
- Launched campaign about accident prevention in the service industry targeting the general public by reflecting the nature of service industry which are prone to be sensitive to customers' demands or serve customers frequently

- + Labeling safety message on bottles of beverage, radio interviews and contribution of experts' columns to specialized journals

Focal Activities in 2019



1_ Expansion of safety net to prevent fatal accidents in the service industry

- (Prevention of fatalities from high-altitude operations) Spread key message on the compliance of safety through on-site patrol with respect to mobile high-altitude operations with high risks of fatal accidents (500 sites)
- (Protection system for workers with 4 major hazardous operations at local governments) Conduct 900 surveys and 500 times of technical consulting concerning 4 major occupations prone for fatal accidents from the projects either directly conducted or ordered by local governments

2_ Technical consulting for workplaces with high risks of fatalities· serious injury accidents

- (Self-regulatory inspection program for 5 major hazardous operations) Help 10,000 businesses voluntarily check major risk factors of their own workplace in 5 major business types with high fatality rate and workplaces handling materials being able to incurring fatal accidents and provide on-site technical consulting for 1,000 workplaces

05 Professional Engineering

Key Achievements in 2018

1_ Evaluation and Confirmation of Process Safety Reports

- Contributed to prevention of serious occupational accidents through comprehensive and scientific preventive activities, including factual surveys on 7 business types, such as crude oil refineries, and workplaces using 51 types of harmful substances/chemicals, i.e. chlorine and phosgene, over the permitted standards, development of OSH materials, assessments on process safety and risks, establishment of countermeasures, and maintenance of hazardous facility
- + Evaluation and confirmation of process safety reports (2,661 reports)

2_ Establishment and Support of Safety and Health Management System (KOSHA 18001)

- Contribution to industrial accident prevention through supports for introduction and stabilization of safety and health management system at workplaces
- + Number of workplaces certified for KOSHA 18001 since the system was implemented in 1999 (1,701 sites)

3_ OSH Comprehensive Examination

- Contribution to prevention of occupational accidents by identifying harmfulness/risks at the workplaces with high risks for accidents, such as aging petrochemical factories, through examinations ordered by the Ministry of Employment and Labor or requests for self-regulatory examinations made by business owners pursuant outbreak of serious accidents, including major occupational accidents, and by presenting improvement measures
- + OSH examinations at 59 workplaces (ordered examinations at 12 sites & self-regulatory examinations at 47 sites)

4_ Development and Distribution of Safety & Health Technical Guidelines

- A total of 1,377 technical guidelines were established between 1995 and 2018, and a total of 1,301 technical guidelines are currently available as of 2018 following a number of amendments and abolishment



Self-regulatory safety system to prevent large scale accident



Focal Activities in 2019

1_ Evaluate and confirm process safety management reports

- Prevention of serious occupational accidents through evaluation and confirmation of process safety reports for business owners newly establishing, moving or modifying major structure of facilities prone for high risks of serious occupational accidents, including fire, explosion and leakage of toxic substances
- + Number of projects (1,600)

2_ Alert system for chemical accidents

- Implementation of consulting services based on risk levels by collecting and analyzing risk symptoms of workplaces every 3 months and subsequently issuing danger alerts on 3 different levels (attention/beware/alert) in order to eradicate serious chemical accidents prone to occur during repair, maintenance and non-regular operations; consequently, it is to conduct safety management, including on-site inspection upon urgent issues, based on the results from the above
- + Number of projects (2,000)

3_ Establish and support Safety and Health Management System (KOSHA 18001)

- Reformation and operation of the new Safety and Health Management System (KOSHA-MS) from the Korean Safety and Health Management System (KOSHA 18001), which has successfully fulfilled the requirements under the Occupational Safety and Health Act based on the risk assessment system, in order to keep pace with ever-changing international standards (ISO 45001)
- + Number of projects (1,700)

4_ Safety and health examination

- Identification of potential harmful risk factors from the workplaces suffering from major industrial accident or with high risks for occupational accidents, such as falls, explosions and collapses, which are either under the order by a local branch of the Ministry of Employment and Labor or have voluntarily requested for examinations; and presentation of improvement measures to the workplaces above
- + Number of projects (on frequent basis)

5_ Inspection and safety examination on facilities handling harmful chemicals

- A system where any person who installs and operates a facility handling hazardous chemicals, including toxic chemicals, chemicals requiring a permission, restricted chemicals, prohibited chemicals and chemicals requiring preparation for accidents, under the Chemicals Control Act is required to take regular special inspections on installations and safety examinations conducted by an inspection agency and improve hazardous chemical handling facilities
- + Number of projects (3,550)

6_ Technical training for prevention of fire-explosion accidents at small-and-medium-sized workplace

- On-site technical training designed to prevent chemical accidents, including fire, explosion and leakage, targeting small-and-medium-scale workplaces handling harmful hazardous chemicals
- + Number of projects (2,000)

7_ Develop and distribute safety & health technical guideline

- Development and distribution of safety & health technical guidelines in order to contribute to fostering environment for self-regulatory safety & health activities at workplaces by responding to the changes in technical standards in Korea and overseas
- + Number of projects (100)

<Accident rates of certified workplaces compared to entire manufacturing industry> (Unit: %)

Type	'14	'15	'16	'17	'18
Accident rate of certified workplaces (A)	0.26	0.24	0.30	0.30	0.31
Accident rate of manufacturing industry (B)	0.72	0.65	0.62	0.61	0.66
Accident rate of certified workplaces compared to entire manufacturing facility (A / B)	36.1	36.9	48.4	49.2	47.0

06 *Future Forecasting & Preparation*

Focal Activities in 2019

1_ Directing design of future OSH infrastructure

- The Future Response Bureau was newly established (January 1, 2019) in order to identify ever-changing industrial trends in Korea and overseas and also to build a foundation of KOSHA's systems for the purpose of responding to the new and future OSH issues, ones related to platform workers and industries to be further advanced, bigger and complicated
 - + Develop advanced OSH management model that is systematized and specialized for 4 major industries (electronics, construction, service and chemical)
 - + Build stepping stone to analyze and operate standards for big data of OSH
- It is to build a system where the safety and health is able to lead scientific technologies by applying the 4th industrial technologies (ICT, A.I., etc.) to the OSH field, and it is then to lead active changes in OSH preventive system by proposing future visions under the consideration of public concerns and public interests

2_ Establishing safety & health center for 4 major hazardous industries

- We make a construction plan for the safety & health center, including its size and composition; and develop accident prevention contents under the consideration of distinct characteristics(core risk factors) by each industry
 - + **Electronics:** Expansion of occupational cancer and acute poisoning due to increasing use of chemicals → Build a systematic management system for chemicals, including improvement of information delivery system on the risks of chemicals to subcontractors
 - + **Construction:** Excessive use of new techniques of which risks are yet to be verified → Improve construction safety system through development of applicable OSH management model concerning new techniques
 - + **Service:** Vague identity of principal agent responsible for safety due to changes in forms of employment, such as platform workers → Organize comprehensive protection system for safety-and-health vulnerable working groups within service industry
 - + **Chemical:** Increasing risks for massive explosion accidents due to aging chemical facilities → Build protective systems through development of OSH management model tailored to repair and maintenance workers at chemical plants

3_ Build a big data analysis and utilization system

- It is to improve operational systems for occupational disaster prevention by KOSHA through procurement of quality data by building a system capable of collecting, analyzing and utilizing OSH big data
 - + Prepare a foothold to establish the big data center for occupational accident prevention by understanding technological trends and improving competence of KOSHA staff



Building Future Occupational Safety & Health Infrastructure



07 Accident Investigation

Plans for promoting major projects in 2019

1. Accident Investigation Board (newly established)

- Establish prevention measures against reoccurrence and improvement of systems through identification of fundamental causes upon outbreaks of serious accidents
 - * Serious Accident : an incident involving 2 or more fatalities or an accident with 3 or more casualties (including fatalities)
- Enhanced timely response through real-time monitoring of accidents
- Operate a public-participating investigation committee to conduct fact-finding on accidents with massive casualty and rippling social issues

2. Support for in-depth investigation of serious accidents

- Investigation of fundamental causes for serious accidents
 - + Analysis and feedback of fundamental causes and contributing factors for serious accidents
 - + Promotion of legal and systematic improvements concerning facilities attributable to repeated accidents
 - + Training for employees' competence in advanced accident investigation technique

3. Operation of public-participating accident investigation committee

- Investigations participated by the general public into accidents with massive casualties and rippling social issues
 - + Operation of a support group for the public-participating accident investigation committee assisted by experts from various fields in order to identify and improve structural and systematic problems within employment·labor environment based on in-depth analysis into causes of accidents

4. Enhancement of accident monitoring & response system

- Enhanced timely responses through real-time accident surveillance and monitoring
 - + Construction of systematic and prompt response system concerning disaster and crisis situations as a competent authority of disaster management
 - + 7/24 monitoring and real-time situation notices in order to promptly respond to and notify situations
 - + Distribution of monitoring outcomes to be utilized for timely technical training



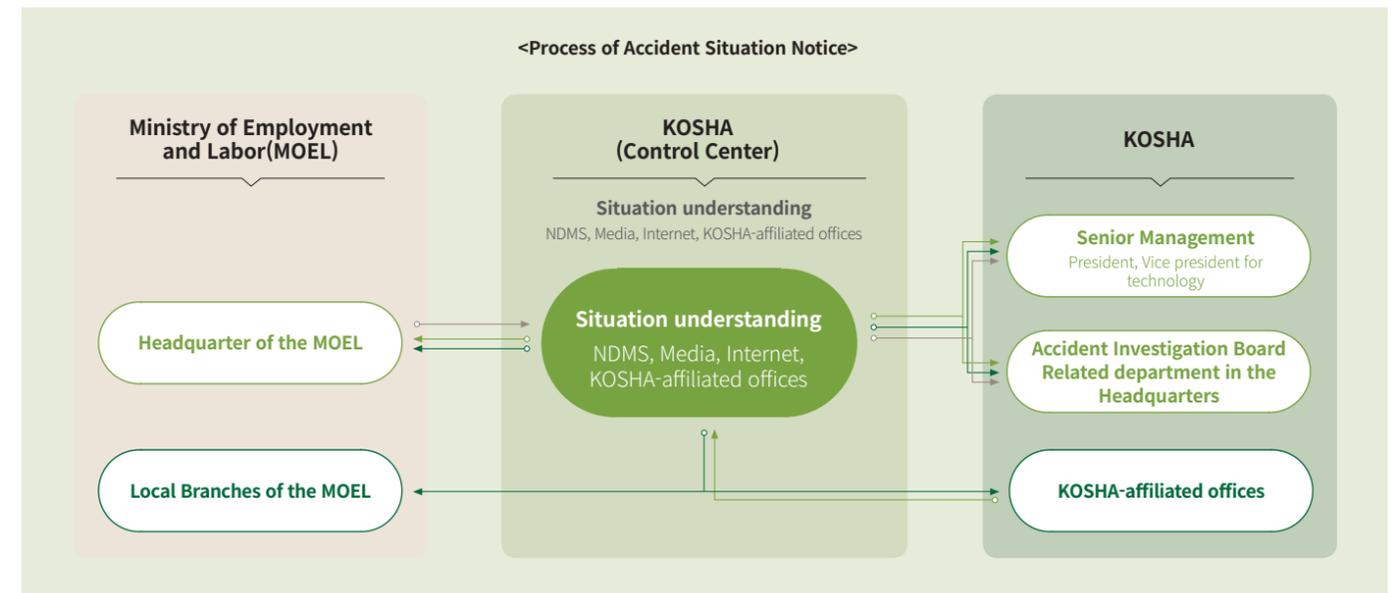
Support for Investigation into fundamental causes to prevent fatal accident



- In-depth on-site investigation of serious accidents and supports
- Examination and application of advanced accident investigation techniques
- Organization and operation of an expert pool to investigate serious accidents
- Investigation of serious disaster and establishment of countermeasures
- Operation of executive office for government-led accident investigation committee
- Establishment and implementation of management & response plans for national disaster



- Real-time monitoring and distribution of situations concerning accidents
- Immediate reporting the progress of accidents
- Comprehensive execution and verification of emergency response tasks
- General security duties
- Resource management and education · training of reserve forces and civil defense corps



08

Education & Media Distribution Project



“
Safety-first education & media for workers
”

Key Achievements in 2018

1_ Development-operation of tailored education based on demands to improve safety awareness

- Training for top · mid level management
 - + Opened and managed curriculums to reduce 3 malignant occupational accidents as well as to put emphasis on the responsibility and raise awareness of those who have authority (employers, plant · on-site managers, supervisory managers) so as to secure safety, the root of corporate competitiveness
- Training for workers
 - + (General workers) Expanded and operate group training catered to characteristics of each region and workplace and on-site · hands-on training courses, including 10-minute safety training, VR contents and hands-on training, by taking a step further from previous training focusing on lectures
 - + (The vulnerable to accident) Contributed to elevated safety awareness of workers at vulnerable groups by implementing ‘Tailored Safety & Health Training’ focusing on accident cases and preventive measures designed to reduce occupational accidents for accident-vulnerable groups, such as migrant, elderly and female workers and industrial reserve manpower

2_ Development-distribution of various OSH educational contents by business and occupational type

- Development of OSH media contents reflecting social issues, workplaces and workers’ characteristics
 - + in order to support self-regulatory safety and health management at small businesses
 - + for enhanced awareness to prevent occupational accidents targeting the general public and vulnerable workers, such as migrant, elderly and female workers
- Distribution through various media to strengthen communicability and usability of OSH media contents
 - + for contribution to industrial accident prevention via various channels, including internet (OSH archives, Youtube, Apps), offline distribution (KOSHA, relevant authorities) and field delivery service system



Focal Activities in 2019

1_ Safety and health training for each group focusing on fatal accidents

- Expansion of safety & health training for top · mid level management
 - + (Top management) Enhance sense of responsibility for safety and health and promote investment to secure safety for workers targeting ‘those who have authority and responsibility*’ through expanded training for top management including training for core managers of worksites prone for serious accidents and training for business owners on accident preventive rating system
 - * Principal agents under obligations to guarantee environments and rights for workers to work safely (business owners, local governments, etc.)
 - + (Mid-level management) Build self-regulatory accident prevention system and promote OSH activities at worksites by cultivating safety and health officers at the workplaces into professional workforce through OSH training for mid-level management personnel upon practical matters

Expansion of empirical · practical training courses for vulnerable workers

- + Expand empirical OSH training centers to encourage empirical · practical training with excellent educational effects and update of educational contents to the latest
- + Elevate safety awareness for workers through ‘Tailored Safety & Health Training’ targeting vulnerable workers’ group, including migrant, elderly and female workers and industrial reserve manpower

2_ Development of media contents fit for future environment and strengthened communicability to worksites

- Development of OSH contents tailored to each business and job type for the purpose of education and promotion of industrial accident prevention
 - + Develop leaflet, poster, sticker, booklet and audiovisual materials required to execute the program based on customer demands
- Development of OSH contents which are realistic yet carry strong educational impacts based on ICT
 - + Develop VR-based contents to further improve engagement and power of information delivery
 - + Converse current contents into mobile ones regarding the topics highly effective for industrial accident prevention
- Improvement of on · offline delivery system by strengthening communicability and enhancement of PR
 - + Operate distribution network for OSH media via various routes in order to support self-regulatory safety management for small businesses, including expansion of smart phone and on-site delivery services

<Performances of educational projects in 2018>

Total: 698,380 workers

Subject	Top management	Mid-level management	Workers
Number of Trainees	100,899	87,723	509,758

* Training support for 307,527 workers vulnerable to occupational accidents (elderly, female and migrant workers and industrial reserve manpower)

09 Safety Culture & Promotion



*Proliferation of prevention-oriented
OSH culture*



Key Achievements in 2018

1_ Building foundation to spread measures of reducing accidents and fatalities

- Delivered distinct PR messages by topics through triple media strategy and media mix in order for intensive promotion to prevent 3 major malignant fatal accidents (falls, suffocations, defective forklift)
- Year-round · extensive campaign for each medium based on a theme to reduce fatal falls by half
 - + TV campaign (474), radio campaign (2,098), feature articles and contributions (19), press advertisements (58), PR via common medium in our daily lives (7,653), PR through internet media (231)
- Improvement of effectiveness of events by delivering social messages to reduce fatalities during public events, such as 'Safety Inspection Day,' and promotion of public consensus to join countermeasures to reduce fatal accidents
 - + Concurrent nationwide implication of the above through joint efforts between headquarters · regional · area offices based on identical themes during central events (quarterly)

2_ Enthusiastic response to social issues, including protecting workers vulnerable to occupational accidents

- Enhanced responsibility of principal contractors for safety management due to frequent fatalities of subcontracted workers, and elevated safety awareness on worksite through cooperation between principal contractors and subcontractors



- Built and implemented short-term special PR measures targeting the areas with increasing fatalities of migrant workers
 - + targeting 7 major regions, TV and radio campaigns were produced and broadcasted, provided PR materials on migrant workers supporting center, distributed PR materials offline, and cooperated with affiliated agencies and regional broadcasting stations for migrant people
- Increased safety awareness to protect middle-aged construction workers by analysing type of accident occurrences, physical ability and lifestyle

3_ Contribution to proliferation of pan-national safety culture by successfully hosting the 51st National OSH Week

- Offered a nation-wide festival of OSH through Ceremonial event, Korea Industrial Safety and Health Show (KISS), OSH seminars, presentation of best practices and various events
- Attracted social discussions by linking the theme with fatalities reduction

Focal Activities in 2019

1_ Field-oriented promotion to reduce the top 5 fatal accidents

- Improve awareness and expanded practice to prevent fatal accidents through common point promotions based on statistics on occupational accidents
- Select 'Top 5' targets under the consideration of types of frequent fatal accidents and rippling social effects, develop PR medium in common, deliver key messages on safe behavior
 - * 'Top 5' prevention targets in 2019: Prevention of falls, caught in · between, collision, mass chemical and suffocation accidents
- In order to directly contribute to accomplishing the goal of fatal accidents reduction, select 'construction falls prevention' as a year-round PR theme, implement all-round promotions and form pan-national consensus

2_ Switching PR strategy for industrial accident prevention policies and projects

- Select major media by targets and delivered specialized messages via media mix considering the life cycle of targets in order to maximize optimal effect of promotion
 - * Business owners · OSH officials: TV & newspaperworkers: radio · media in life, general public: new media, etc.
- Expand the coverage of on-site distribution of PR materials and cooperate with affiliated bodies through networks among regional · area offices of KOSHA, OSH commissions by industry type, private entrusted agencies

3_ Active communication via online channels such as Youtube

- As the social media market is being swiftly reorganized into 'V-log (Video+log),' reflect the online environment changes and lead the expansion of safety-first culture via Youtube
- Produce video contents about fatalities prevention, enhance viral marketing, and cooperate with famous Youtubers and channels in order to provide real-time contents tailored to consumers
- Create timely information deliver system via mobile newsletter on fatal accident reduction targeting key OSH officials including local government offices, OSH commissions and OSH managers

4_ Enhancement of PR performance management system

- Systematically analyze on the evaluation of PR performances by utilizing private agencies, expanded monitoring of media trends, and improve reliability of PR on occupational accident prevention through year-round management of media risks based on the above
- Provide quality contents and improve PR efficiency through social media by creating contents verification systems including enhanced monitoring of portal sites
- Operate a group of opinion leaders to collect their insights for preoccupying OSH issues and conduct preemptive PR activities

10 Prevention Network & Cooperation



Protect the vulnerable to industrial accident and expand safety-infrastructure through communication and collaboration



Key Achievements in 2018

1_ Focusing on fatal accident reduction, reshuffled the all contracting-out projects which boiled down to successful reduction of fatal accident among the recipient businesses

* Total budget of 2018 : 31.3 million USD, provided 356,000 technical assistances via 234 contracting-out agencies

2_ Activated public projects for the proliferation of safety culture in order to protect workers vulnerable to occupational accidents, such as migrant and delivery workers and teen workers from meister schools

3_ Put more importance on the indicator, fatal accident reduction, for the evaluation in order to encouraging private accident prevention agencies to participate in government policies

* Conducted evaluations on 696 agencies in 11 industries and encouraged 110 agencies to improve their service

Focal Activities in 2019

1_ Focus on capabilities of small businesses for fatal accident ·serious accident prevention

- **(Reshuffle target businesses and industry)** Adjust target businesses to response to working environment changes and to secure timely action for fatal · serious accident prevention by implementing 'a system of designating person in charge of OSH', expanding the subjects of workers compensation insurance in construction sector, and so on
- **(Adjust key target by industry)** Give priority to industries with high-risky work process (manufacturing), high fatalities rate per 10,000 workers (forestry), farming, high risk of falls (construction), high risk of suffocation, etc.
- **(Management in grades and intensification support)** Manage businesses in grade through actual practice evaluation and intensify technical support on identifying critical factors in fatal · serious accident

2_ Eliminate safety & health blind spot and increase OSH awareness by inspiring private bodies in taking part in KOSHA activities

- **(PR for safety culture proliferation and settlement)** PR to general public through special report, campaign, quiz show and event
- **(Spread safety culture for fatal accident prevention)** Set a goal to prevent fatal accidents in the industries using forklift, ladder and harmful chemicals
- **(Protect workers vulnerable to occupational accidents)** Provide education and training to sales, delivery, CS and migrant workers and teen workers from the vocational high schools

3_ Strengthened Private Sector-Led Accident Prevention Activities

- Amend the Occupational Safety and Health Act by adding basis of evaluating private accident prevention agencies and establish rules for the procedure and management of the evaluation as the main agent has shifted from the MOEL to KOSHA
- Adopt an indicator of target management system within the evaluation of private accident prevention agencies for fatal accident reduction

11 *International Cooperation*

Key Achievements in 2018

1_ Technical agreements and cooperation with overseas OSH organizations

- Expanded spectrum of international cooperation through continued agreements on technical cooperation and improved expertise and international competency of KOSHA from technical and information exchanges
- Agencies under agreements: 51 organizations in 28 countries
- Core elements of the agreements: experts exchange programs, sharing technical information, conducting joint research, exchange of material resources (KOSHA's mobile OSH training bus, equipment, apparatus, and materials for education, etc.)

2_ Supports to elevate the OSH level of developing countries in the Asian region

- (ILO Fellowship Program) Dispatch of KOSHA's experts to International Labour Organization (ILO) and provision of technical advisory
 - Dispatched KOSHA experts to Asia Pacific Regional Office of the ILO (2014~2018)
 - Conducted fellowship training by inviting government officials in charge of OSH from the ASEAN countries (9 officials)
 - Sent KOSHA experts to Vietnam, Mongolia and so on for on-site technical consultation to build win-win growth on OSH (11 times)

- (WHO Fellowship Program) Technical support to improve occupational health standards in the Asian Pacific regions
 - Analytic theories and technical practice upon harmfulness to human bodies and atmospheric particles of asbestos and silica (6 persons)
 - 6 government officials in charge of occupational health from Cambodia, Lao, Philippines, Vietnam, Mongolia and Fiji

- (International cooperation) Support for competence enhancement of human resources in developing countries subject to intensive assistance
 - Roundtable on OSH policies of ASEAN nations (20 people); Fellowship training on OSH policy system establishment (6 from Myanmar); Joint-research on assessment of exposure to harmful chemicals (Malaysia, Indonesia, Cambodia)
 - Provided informative OSH materials (posters, stickers) to Mongolia and Vietnam

3_ Information exchange on OSH in Korea and overseas

- Operated 「International OSH Solution」 in order to actively meet the needs of domestic businesses or OSH related persons on the requests for a variety of information
 - Responses were made to 81 requests.
 - Operation of official website in English; Publication and international operation of information on OSH overseas
 - Provided 58 updated information, 12 Global OSH trends, 5 Issue Reports, 6 KOSHA News, etc.

- Collect overseas OSH policies and systems, best practices on accident prevention and spread within Korea
 - Provided 51 overseas OSH materials after translating them into Korean in 2018



4_ Global dissemination of prevention culture through network

- International cooperation as the chair organization for a Culture of Prevention Section and vice-chair institution for the Special Commission on Prevention of ISSA
 - Ran the Culture of Prevention Section of ISSA, worked with Education & Training Section of ISSA for hosting a symposium at the 2020 World Congress, published CoP Newsletter
 - Awarded 「Certificate of Merits with Special Mention」 from the ISSA Asian-Pacific Regional Awards
 - Hosted symposia to proliferate culture of prevention in collaboration with International Committee of Occupational Health (ICOH)

Focal Activities in 2019

1_ Agreements and technical cooperation with OSH organizations in advanced nations

- Exchange of techniques and information on accident prevention through execution of technical cooperation agreements with OSH organizations in advanced nations, such as the U.S., Germany and Japan
 - Sustainable agreements with 51 professional institutions in 28 countries, including the National Institute of Occupational Safety and Health in the U.S.
 - By Regions: Europe (27 institutions in 13 nations), Asia-Pacific (20 institutions in 13 nations), America (4 institutions in 2 nations)
 - By Sectors: Technical exchange (14 institutions), technical supports for developing countries (13 institutions), mutual certification (21 institutions)
 - Reinforcement of technical support agreements with international organizations and institutions specialized in accident prevention
 - Enhanced technical cooperation with institutions under agreements; Strengthened responses to new harmful hazards and emergency disasters · accidents

2_ Expansion of cooperative programs for mutual growth of OSH with developing countries

- Enhanced cooperative system with developing countries in the Asia-Pacific region to help elevating the level of OSH
 - Technical supports for accident prevention accommodating the industrial environments of developing countries under the consideration of extent of industrialization, capability to adopt and progressive stage of recipient countries
 - Implementation of joint research · fellowship workshop, Dispatch KOSHA experts to ILO (Feb. 2017 thru Dec. 2019)
- Widen the spectrum of OSH cooperation with ASEAN countries in response to the New-southern policy of Korean government



*Prevention by all
prevention for all
through international cooperation*



3_ OSH information and knowledge exchange in Korea and overseas

- Collection and distribution of latest OSH information around the world, such as good practices of accident prevention
 - Discovery of policies · strategies · trends of OSH in overseas as well as good practices of accident prevention by nations
 - Prompt provision of information and materials by running a people-oriented system, 「Global ISSUE Solution」

4_ Implementation and dissemination of preventive culture in Korea and Overseas through Cooperation with Global Networks;

- Leading the global network cooperation in order to co-develop, utilize and spread the Preventive Culture Index (PCI)
 - Joint cooperative projects with international organizations to spread preventive culture
 - Enhanced cooperation with Special Commission on Prevention and other sub-committees under ISSA
 - Implementation and dissemination of Seoul Statement through cooperation with ICOH
- Contribution to accident prevention through development of preventive culture index to be universally used throughout the global community
 - Plan to co-develop PCI with DGUV*, the German occupational insurance union (2018~2020)
 - DGUV: Deutsche Gesetzliche Unfallversicherung

12

Occupational Safety & Health Research

Key Achievements in 2018



A leading occupational safety and health research institution for industrial accident prevention policies



1_ Researches responding to government policies and social issues, including 'Halving Occupational fatalities'

- Researches conducted by OSHRI in 2018 : 79 researches
 - Researches on reduction of occupational fatal accidents (5 projects), practical researches for immediate on-site application (5 projects), researches to resolve social and current issues (10 projects), and researches on enhanced supports for establishment of occupational accident prevention policies (10 projects)

2_ Enhanced internal-external reflux of research outcome and improvement of performance

- Increased rate of applying research outcomes to improve policies and systems through reinforcement of researches on policy and practice

+ 40 projects (50.0%) out of 79 research projects were applied to improve the policies and systems in 2018

* Applying rate for policies and systems improvement: 18.3% in 2012 → 50.0% in 2018;

- Publication of academic journals based on elevated level of OSH studies

* Number of published SCI-level journals and academic journals: 31 journals in 2018;

- Information exchanges concerning important and current OSH issues amongst government, labors, managements, academic community and private sectors

+ Hosted a total of 17 policy forums, including one on political responses to reduce fatal accidents in construction industry

- Support for 'Safety for Army' by OSHRI pursuant to the MoU between KOSHA and Korean Army

+ Improvement of the army's competence in safety and health management, and development of accident prevention system within military forces

3_ Procurement of international stature of the international academic journal (SH@W) by OSHRI

- Enlisting at SCIE (Science Citation Index Expanded) and SSCI (Social Science Citation Index) of Web of Science, a database of academic journals, based on improvement of world-wide submission rate and citation rate of the journals

- Source: Elsevier B.V. Online System for Paper Submission, No. of SCOPUS Citations

4_ Qualitative-quantitative improvement and provision of OSH information on chemicals

- Update of Material Safety Data Sheet (MSDS) on chemicals information and assessment of reliability

+ Additional provision and application of latest MSDS information; implementation of reliability assessment on distribution MSDS

- Accumulated number of MSDS information supplied: 20,346 types

- Presentation of safety & health measures for workers through examination of investigation reports on harmfulness · risks of new chemicals submitted by business owners, and presentation of outcomes of harmfulness · risk classification based on GHS standards

- Accumulated number of reviews on investigation reports of harmfulness · risks of new chemicals: 9,032

Year	Submission rate				Citation rate	
	No. of journals submitted	No. of journals published	Rejection rate	Growth rate of journals submitted	No. of citations	Growth rate of citations
2015	282	51	72%	84%	281	65%
2016	358	56	84%	27%	364	30%
2017	416	60	77%	16%	490	35%
2018	471	68	86%	13%	822	41%

* Source: Elsevier B.V. Online System for Paper Submission, No. of SCOPUS Citations

5_ Construction of foundation to improve chemicals management system under Occupational Safety and Health Act

- Proposal of 'Amendment to Rules on Safety and Health Standards for Chemicals Management (draft)' effectively managing all harmful chemicals

- Proposal of new establishment of Regulations restricting the use of industrial chemical products (draft)

- Proposal of Criteria on selection of harmful substances subject to prohibition and permission for production (draft)

- Development of Sub-ordinances upon closed MSDS screening, submission and disclosure, and projects (draft) delegated by KOSHA

6_ Reorganization of exposure standards for chemicals and related information

- Development of grounds for establishment of exposure standards on inhalational particles and subsequent amendments (draft)

- Proposal of amendments on exposure standards for 1-bromopropane (25 → 0.1 ppm) and amendments on exposure standards for cyanide



<Researches conducted by OSHRI in 2018 : 79 researches>

Subject	Total	2013	2014	2015	2016	2017	2018
Total	463	79	70	76	80	79	79
Policies & systems	125	30	16	24	20	18	17
Occupational safety	64	12	13	9	10	11	9
Occupational health	82	13	12	13	15	14	15
Working environment	78	9	12	13	15	14	15
Industrial chemicals	114	15	17	17	20	22	23

7_ Enhanced reliability of assessment system on harmfulness-risk of chemicals

- Sustained certification of Good Laboratory Practice (GLP) (Ministry of Environment, Ministry of Food and Drug Safety)
 - + Completion of regular assessment on GLP in the field of acute, subacute and subchronic inhalation toxicology tests (November, 2018)
 - + Completion of regular assessment on GLP in the field of genetic toxicity tests (November, 2018)
- Acquisition of international evaluation and certification (AAALAC-I) on test animal management (March, 2018)
- Sustained recognition from the Korea Laboratory Accreditation Scheme (KOLAS) upon 19 test items, including the field of fire· explosion

8_ Identification of harmfulness of toxicity-unconfirmed chemicals and provision of toxicity information

- Execution of acute, subacute, subchronic and carcinogenic inhalation toxicology tests (21 tests) and genetic toxicity tests (4 tests) in order to identify toxicity of toxicity-unconfirmed chemicals
- Response to social issues through identification of health hazard of BKC, sterilizer for humidifier
- Results from inhalation toxicology tests: Posted at the official website of KOSHA on MSDS information

9_ Performance of epidemiological survey and improvement of competency specialized in quality Assurance by occupational health service institutions

- Execution of 75 epidemiological surveys concerning correlation between workers' diseases and exposure to harmful factors at workplaces
- Strengthened preventive function through enhanced preventive epidemiological survey (3 surveys)
- Implementation of quality assurance activities throughout special and pneumoconiosis health examination agencies, working environment inspection institutions and asbestos investigation bodies (7 times)

10_ Implementation of the 9th Survey on OSH Trends and Enhancement of Monitoring Function on Social Changes

- Implementation of the 9th survey on OSH trends (targeting 5,000 workplaces nationwide every 3 years)
 - + Monitoring of OSH conditions by worksites and technical changes in order to assist exploration and establishment of OSH policies and mid-to-long term policies
- Approval on preparation of State-authorized statistics by the National Statistical Office (Approval No.: 380004)
 - + Distribution and provision of statistics through production and declaration of State-authorized statistical data with public confidence

- Procurement of foundation to provide basic statistical data for establishment of preventive policy against occupational accidents and improvement of project execution practice according to changes within the systems

- + Timely provision of statistical data on occupational accidents in order to establish a foundation to produce statistics on reports (business interruptions) of industrial accident investigation, pursue analysis projects and support industrial accident prevention projects
- + Formation of basis to calculate comprehensive statistics on occupational accidents of principal contractors/subcontractors and improvement of statistics calculation system to respond to increasing occupational accidents due to expanded scope of recognition for commutes as industrial accident

11_ Improved On-Site Applicability through Commercialization of Research Outcome from Industrial Accident Prevention

- Discovery of 7 cases of industrialization and commercialization, including development of 'automatic injector for desorption solvent' and 'program for automated device analysis', to build automated system to prevent and analyze acute toxicity incidents
- Expanded uses of research findings through free-of-charge permits for industrial property rights (utility model) held by the OSHRI



- Free permits for the "detection device for workers' safe activities using smart phones," Utility Model No.0480269 granted for 3 years (July, 2018 thru July, 2021)

12_ Construction of Safety and Health Preventive System for Preemptive Response to Future Hazardous Fields

- Completed development of KORA (KOSHA OSHRI Research Agenda), mid-to-long-term research agendas by the OSHRI, designed to study and realize social values
 - + Comprised of execution strategy for 3 major researches, 7 strategic assignments and 27 executive issues
- Research on procurement of workers' right to be healthy through OSH fact-finding survey on electronics and service industries (2 studies), and researches to identify the fields to apply ICT convergence safety and health technology and utilizations (1 study)

Focal Activities in 2019

1_ Supports for establishment of policies to realize government's paradigm to prevent occupational accidents

- Development of sub-regulations focusing on newly added provisions under the amended Occupational Safety and Health Act
- Study on analysis of serious accidents by types
- Research on measures to impose responsibilities on project owners in order to prevent accidents at construction sites

2_ Realization of research values contributing to reduce fatal accidents through commercialization of researches

- Establishment of direction for occupational accident prevention projects based on causal analysis of worksites where serious injury accidents have occurred
- Application of program predicting harmfulness of acute toxicity chemicals
- Research and development of device measuring harmful gas at confined workplace by using cutting-edge sensor technology

3_ Response to social issues and resolution of current issues with safety and health

- Development of health management measures for live-wire operation workers and guideline on health management for subways
- Assessment of exposure to harmful factors and development of working environment management measures for cleaning crew for airplanes
- Workers' mental health protection through preventive health measures against workplace harassments
- OSH factual survey on on-site staff members for broadcasting and movie productions

4_ Preemptive response with epidemiological survey to prevent occupational disease

- Expansion of preventive epidemiological survey to prevent occupational disease in advance
- Execution of epidemiological survey based on big data applicable to preventive measures for future occupational disease
- Selection of subjects based on collection of diverse inputs from the labor, management and academic community

Schedule	Description
Preparation stage for project (2018)	Construction of automated analysis system on acute toxic substances, such as TCE, by using sample collectors currently available in the market;
1st phase of project implementation (2019~)	Construction of chamber to develop a manual sample collector to distribute in Korea (2019), production of prototype and evaluation of sample collection rate (2020~)

5_ Support for self-measurement system on working environment

- Prevention of acute poisoning accidents by building an automated sample analysis system to support self-measurement system on working environment and promptly providing the analysis outcomes

6_ Improvement of information delivery system for chemicals and management system

- Submission of MSDS pursuant to amended Occupational Safety and Health Act, and development of foundation to operate the MSDS closed information screening system
- Qualitative · quantitative improvement of OSH information on chemicals based on preparation of new MSDS and updates
- Development of improvement measures for management system concerning harmful substances and reproductive toxic substances subject to management

7_ Operation of consumer-oriented chemicals toxicity tests and information system

- Execution of inhalation toxicology tests by reflecting increasing demands for identification of society-wide harmfulness
 - + Selection of candidate substances for GLP tests mainly focusing on materials used by each process, i.e. semiconductor
- Execution of genetic toxicity tests as a Good Laboratory Practice (GLP) certification institution
 - + Selection of GLP test substances mainly focusing on new chemicals related to electronics industry, i.e. semiconductor
- Improved reliability of harmfulness · risk investigations for new chemicals
 - + Forecast of toxicity of new chemicals based on the advancements of future new technologies

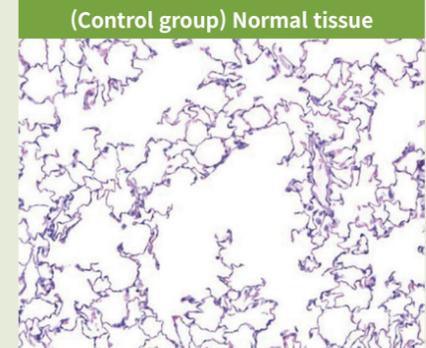
8_ Enhancement of on-site applicability of physical risk test · assessment on chemicals

- Provision of test materials on physical risks concerning fire · explosion of materials causing accidents in order to identify causes for chemical accidents
- Identification of fundamental causes for chemical accidents, such as fire and explosion, and production of outcomes from physical risk test · assessment with enhanced on-site applicability for the purpose of preventing similar accidents

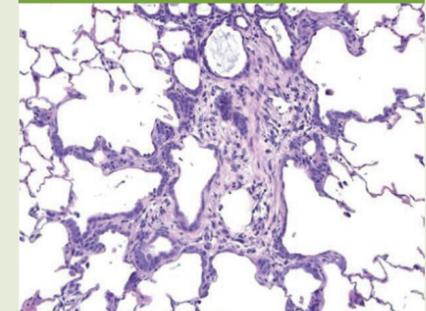
9_ Identification of harmfulness concerning inhalation toxicity of chemicals and production · provision of information

- Research to select test materials capable of maximizing preventive effects for workers' health hazard and determination of their priority
- Execution of acute and carcinogenic inhalation toxicology tests and researches by using laboratory animals for the purpose of evaluating impacts from respiratory exposure to chemicals of which toxicity is yet to be determined
- Provision of findings from researches and GLP tests for establishment · amendment of MSDS, worksites and relevant authorities

<Mimetic diagram on outbreak and exposure>



(Exposed Group) Detection of legion caused by exposure to chemicals



- 1) GLP: Good Laboratory Practice
- 2) AAALAC-I: Association for Assessment and Accreditation of Laboratory Animal Care International
- 3) QA: Quality Assurance
- 4) MSDS: Material Safety Data Sheet
- 5) LC50: Lethal Concentration 50%
- 6) NOAEL: No Observable Adverse Effect Level

Inhalation Toxicology Research Center

GLP (Good Laboratory Practice) Certified Institution

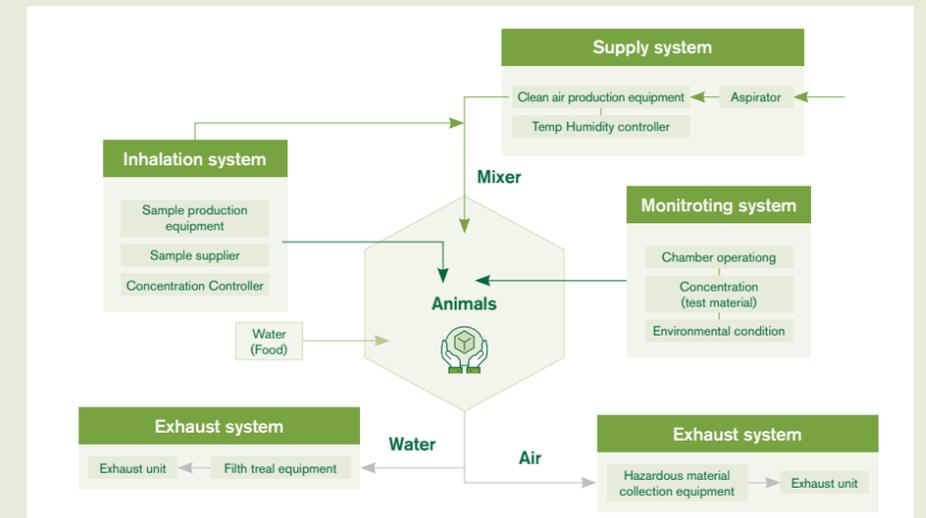
1_ A professional institution specialized in inhalation toxicology research on industrial chemicals;

- The center generates findings from inhalation toxicology tests based on GLP and AAALAC-I standards in order to identify toxicity of chemicals which workers use and are exposed to at their working environments. The test results are being produced through automated toxicity test facility and data management system based carcinogenic (2 years), chronic (13 weeks or longer) and acute (1 or more) tests through lab animals. And the center, as an institution specialized in inhalation toxicology research, meticulously manages such test findings through a quality assurance (QA) management system.

2_ Research institution conducting assessment on long-term low-concentration exposure to chemicals;

- The center offers basic data to generate exposure standards and material safety data sheets (MSDS) to manage working environment by verifying carcinogenicity, half lethal concentration (LC50) and no observable adverse effect level (NOAEL) caused by chemicals.
- Moreover, the center scientifically evaluates dose-response relations of chemicals by using lab animals in order to assess health impacts of workers experiencing long-term low-concentration exposure to chemicals.

<Mimetic diagram on outbreak and exposure>



Key Achievements in 2018

1_ Run and stabilize training courses focusing on enhancement of professional competency

- Progressive reorganization of training courses from previous short-term courses (2 to 5 days) to specialized educational system that runs at least for 1 month or longer
 - + Short-term professional training course currently available shall be gradually transferred to regional offices and private sector
- Enhanced management of the course in order to improve educational performances, including operation and thorough management of discussion-based training courses by securing top-of-the-line lecturers and through blended learning*, for the purpose of developing OSH experts
 - * Mixture of various learning methods, such as online and offline courses, just like cocktails, in order to maximize learning effects

2_ Heightened training courses on the core types of fatal accidents and expanded coverage of training

- Heightened training courses concerning the core types of fatal accidents in order to accommodate ‘Measures to halve occupational fatalities’ declared by the government, stating that the government aims to reduce the death rate in occupational accidents per ten thousand workers by half (0.53→0.27‰) by the year 2022 in order to address public concerns for occupational accidents
 - + Reflux to reform training courses by measuring the changes in the level of awareness within those who with authority and responsibility

3_ Prepare for opening of new training courses due to complete amendment of Occupational Safety and Health Act

- Development and support of training courses capable of strengthening responsibilities of principal contractors and project owners in accordance with ‘Complete Amendments to Occupational Safety and Health Act’ and the government’s policies enhancing safety management for project owners
- Opening of 11 new training courses, including on-the-job training for employees of professional institutions (safety inspection institute/self-regulatory safety inspection institute), of which statutory obligation is newly established pursuant to amendments made to applicable statutes, including the Occupational Safety and Health Act



4_ Establish and manage infrastructure for training courses focusing on practice and experience

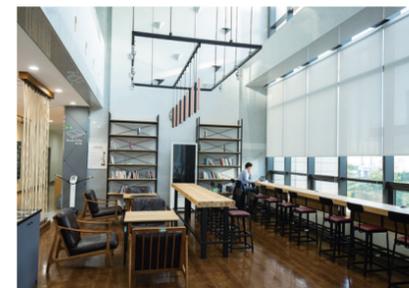
- Construct a hands-on training center dedicated to tower crane installation and disassembly (scheduled to complete in December, 2019)
 - + Construction of ‘Practical Training Facility for Step-by-step Installation/Disassembly of Tower Crane’ in order for trainees to be able to learn how to install and disassemble tower cranes by working on practical structures installed nearby the ground level;
- Expanded operation of training courses from existing theory-based 36-hour training to practice-oriented 144-hour training in order for trainees to be capable of engaging in safety operations at the sites following the training, and addition of supplementary training every 5 years

5_ Promote to establishing “Cyber Safety and Health Training Center” to elevate training through internet

- (Roadmap establishment) Clear establishment of roadmap, systems and roles by each principal agents for the cyber safety and health training center through analysis of internal/external business environment and external examination upon entire existing internet training service system
- (MOOC Brand) Reinforced stature of ‘Safety and Health MOOC’ as a signature brand for internet training in the field of occupational safety and health through benchmarking from the cases in Korea and overseas as well as expanded contents;
- (Credit recognition) Elevated cooperation with OSH-related colleges and universities in Korea (63 schools) to earn credit recognition following pilot operation of accredited online course (3 credit course) on OSH education with a contracted institution (Kyonggi University) in 2019

6_ System to strengthen quality management of internet training service

- (Development platform) Procurement of independent development platform** optimizing a process development model (ADDIE model), which used to be applied only to collective training, into online training courses;
 - *Analysis (A) → ② Conclusive reorganization plan (A+) → ③ Design of training courses (D) → ④ Opening of pilot courses (D+) → ⑤ Formative evaluation (D++) → ⑥ Deliberation and development of curriculum (D) → ⑦ Operation of training (I) → ⑧ Performance evaluation/reflux (E)
- (Quality control) Quality assessment by lifespan of e-learning contents until extinction (4th year) after being serviced to trainees since development;
- (Expert pool expansion) Expansion of expert pool, which includes experts in contents development, system construction and educational research in addition to experts on contents;



7_ Collaborative training

- Expanded operation of safety and health courses for CEOs (30 candidates per course)
 - + Improve of safety awareness for senior managements and reinforced corporate competitiveness by offering the training on safety management strategy for senior managements of business enterprises and executives of public institutions
- 1 course at Chung-Ang University (2018) → 2 courses at Catholic University and Ulsan University (2019)
- Financial aids on tuitions to help employees of SMEs obtaining master’s degree (50 candidates)
 - + Open OSH-related master’s course at 4 regular graduate schools*, and financial aids for tuitions;
 - * Graduate School Offering the Course: 4 schools, including Kyunghee University, Korea University of Technology and Education, Korea National University of Transportation and Hankyong National University
- Expanded open campus course, “Safety + Consensus” (25 people per campus)
 - + The “Safety Plus Consensus” course aiming to develop local talents in Ulsan is to be expanded from existing 1 semester (second half) to 2 semesters (first & second half) through full utilization of superb educational infrastructure owned by OSHTI

14

Occupational Safety & Health Certification



“
Specialized in certification & inspection of safety
”

Key Achievements in 2018

- 1_ Procurement of complete safety through safety certification and inspection of Machines, protective guards and PPEs
 - Procurement of ultimate safety through regular inspection, assessment and certification of safety for harmful factors, hazardous machine and equipment and protective guards and PPEs prone to occupational accidents
- 2_ Establish and improve safety inspection system on mobile crane and aerial work platform
 - Expanded operation of authorized inspection centers (32 sites→36 sites) and implemented number of prevention activities to reduce fatal accidents through cooperation with private inspection bodies
 - Worked in cooperation with the Ministry of Land, Infrastructure and Transport and Korea Transportation Safety Authority to verify the level of again of crane by indicating the manufacturing year of the main body of cranes to the vehicle registration card

- 3_ Reinforced on-site applicability through improvement of safety certification and inspection systems
 - Amended safety rules in order to enable protective measures to industrial robots and conveyers be applied in actual practice by collecting insights from the industry
 - Planned to readjust items subject to safety certification and inspection in preparation of environmental changes in the industry
- 4_ Technical and financial support for manufacturing of protective guards and PPEs with superb quality
 - Develop and distributed light-weight dummy for static load tests of safety belt, and provided technical support to improve quality of PPEs through roving comparative tests with safety helmet manufacturers
 - Encouraged production of protective guards and PPEs with outstanding quality by hosting quality contests and noticing winning products

Focal Activities in 2019

- 1_ Fulfilling the role of leader on safety certification and inspection
 - Fundamental prevention of accidental disasters caused by hazardous machines and equipments by developing safety standards through construction and operation of work performance systems as a global safety certification and institution institute
- 2_ Enhancing surveillance system for the protective guards and PPEs market in order to implement effective safety certification system
 - Protection of Korean OSH markets by enhancing market surveillance function against defective·uncertified products through implementation of safety certification, self-declaration of conformity system and product performance test systems
- 3_ Prevention of fatal accidents through safety inspection on conveyers
 - Intensive verification upon compliance with protective measures and normal operating conditions, and improvement of systems by reflecting discovered problems upon safety certification·inspection standards
- 4_ Development of measures to secure safety for mobile crane and aerial work platform
 - Reinforcement of safety standards in order to essentially secure safety of facility structures for the purpose of preventing workers operating the facility from engaging in unsafe behaviors
- 5_ Promoting and supporting the industry related to safety of protective guards and PPEs
 - Support to develop new products including financial aids for research and development; enhancement of MOU activities with overseas certification institutions, and help businesses to have competitiveness for export by servicing certification test based on international standards;
- 6_ Manufacturing and expanded use of safety-certified sling products
 - Improvement of safety for use and contribution to export businesses by encouraging acquisition of re-certification and new certification conforming to the latest international certification standards
- 7_ Operation of mobile app system to provide information on safety-certified products
 - Operation of mobile Apps to ensure users to promptly verify information on certified products and manufacturers at the site



<Performance of Safety certification, Self-declaration of conformity system and Safety Inspection in 2018> (Unit: Case)

Safety certification			Self-declaration of conformity system		Safety Inspection
Hazardous Machine/Equipment	Protective guards and PPEs	S Mark	Hazardous Machine/Equipment	Protective guards and PPEs*	
41,351	4,743	1,823	11,165	825	55,924

* PPEs : Personal Protective Equipments

APPENDIX

Status of Occupational Accidents in 2018

Organization & Staff

Financial Report

History

Contact Address



Status of Occupational Accidents in 2018

OVERVIEW

- Of 19,073,438 workers working at 2,654,107 workplace that are eligible for occupational accidents compensation insurance in 2018, 102,305 workers required 4 or more days of nursing and accident rate was 0.54%.
- The Number of workers increased by 2.8% compared to 2017 and occupational accident victims increased by 13.9% and accidents rate increased by 0.06%p year on year.
- From July 2000, the coverage of occupational accidents insurance has expanded from workplace with 5 workers or more to 1 person or more which resulted in sudden increase of accidents rate until 2003 but from then on until 2017 it has showed continued downward trend followed by a slight increase in 2018.

STATUS ON OCCUPATIONAL DEATHS

- Occupational deaths were 2,142 persons and of those, work-related accidents were 971 and death from occupational disease were 1,171.
- The fatality rate per 10,000 workers were 1.12‰ , increasing by 0.07‰ p comparing to 1.05‰ in 2017. Work-related accident rate per 10,000 workers was 0.51‰ , 0.01‰ p decrease from 0.52‰ in 2017. The type of fatal accidents were 457 work-related diseases (cerebrovascular disease etc.), 455 pneumoconiosis, 376 falls and etc. in order.
- The number of fatalities was on downward trend from 2004 to 2012. From 2012, it increased slightly until 2014 when it started to decrease again. It showed slight increase from 2017. Fatality rate per 10,000 workers showed continued decrease until 2013 which showed sudden and slight increase. It again showed decrease from 2014 until 2017 which started to increase.

Figure 1 <Number of injuries & accident rate by year>

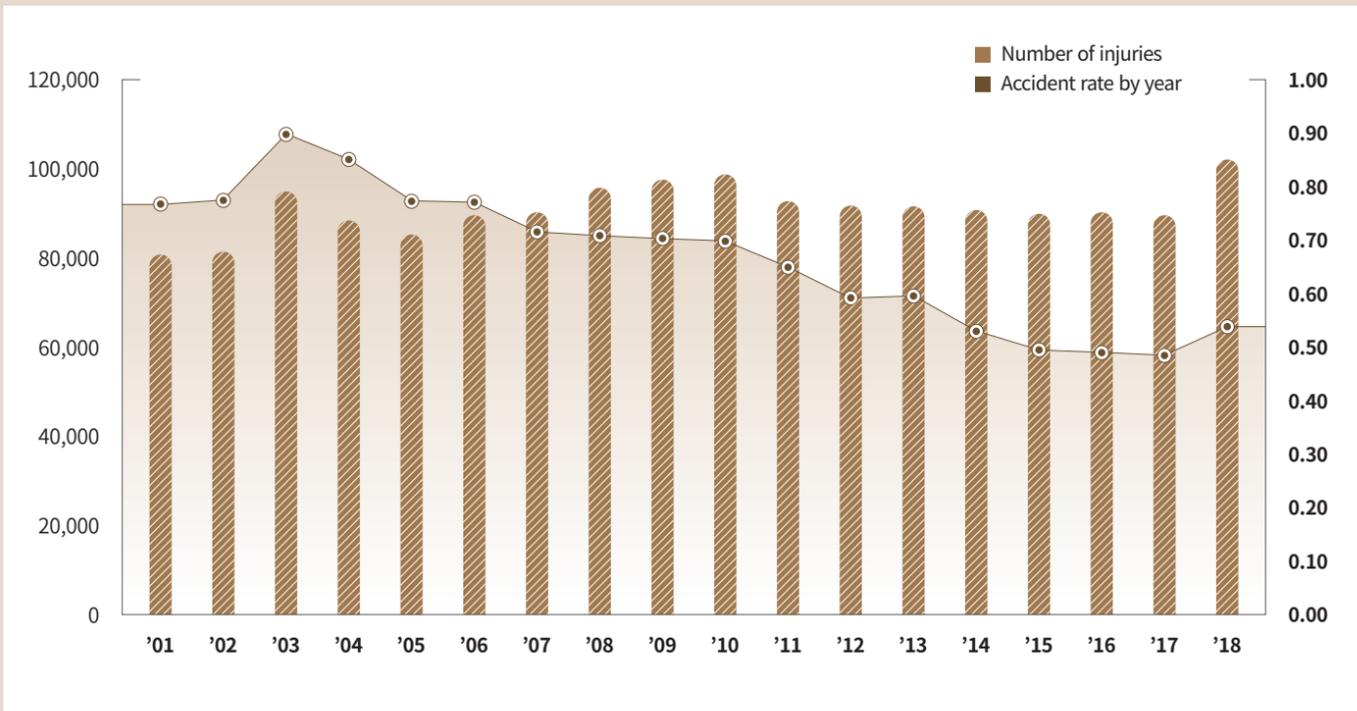
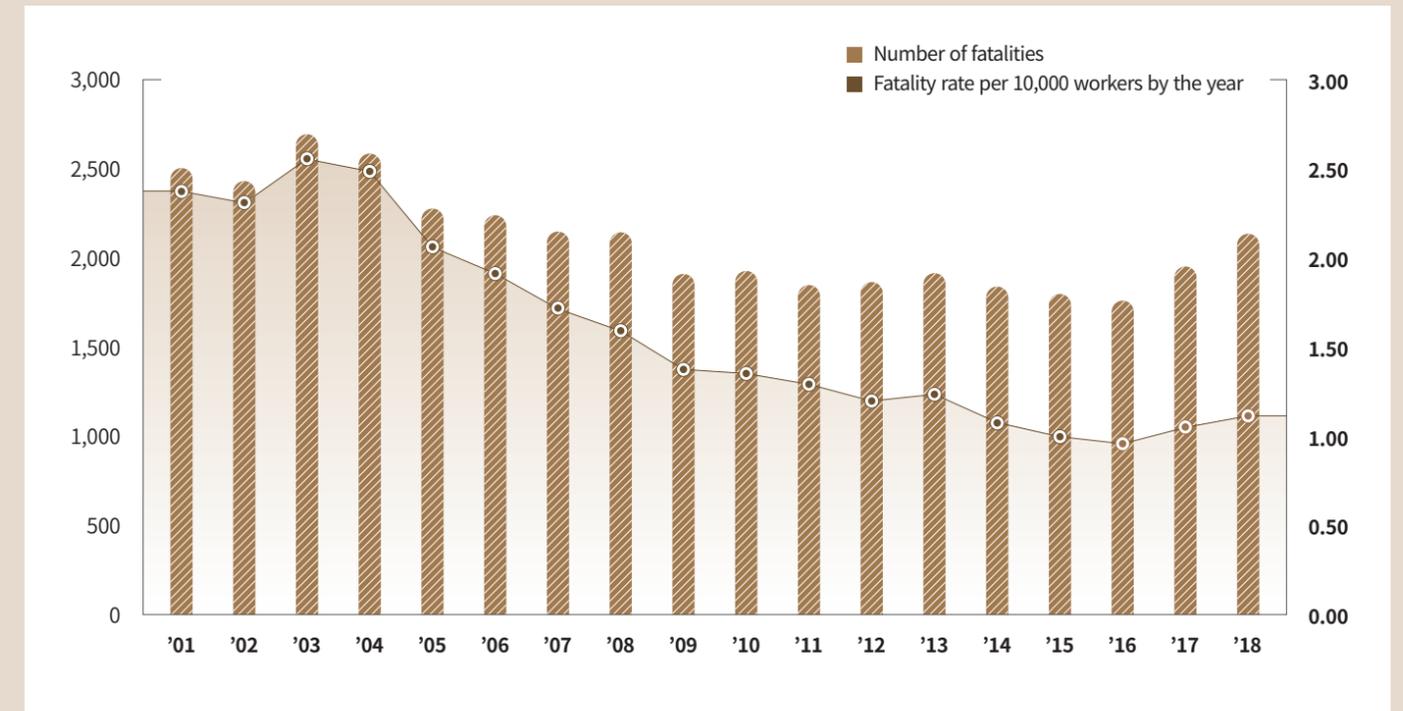


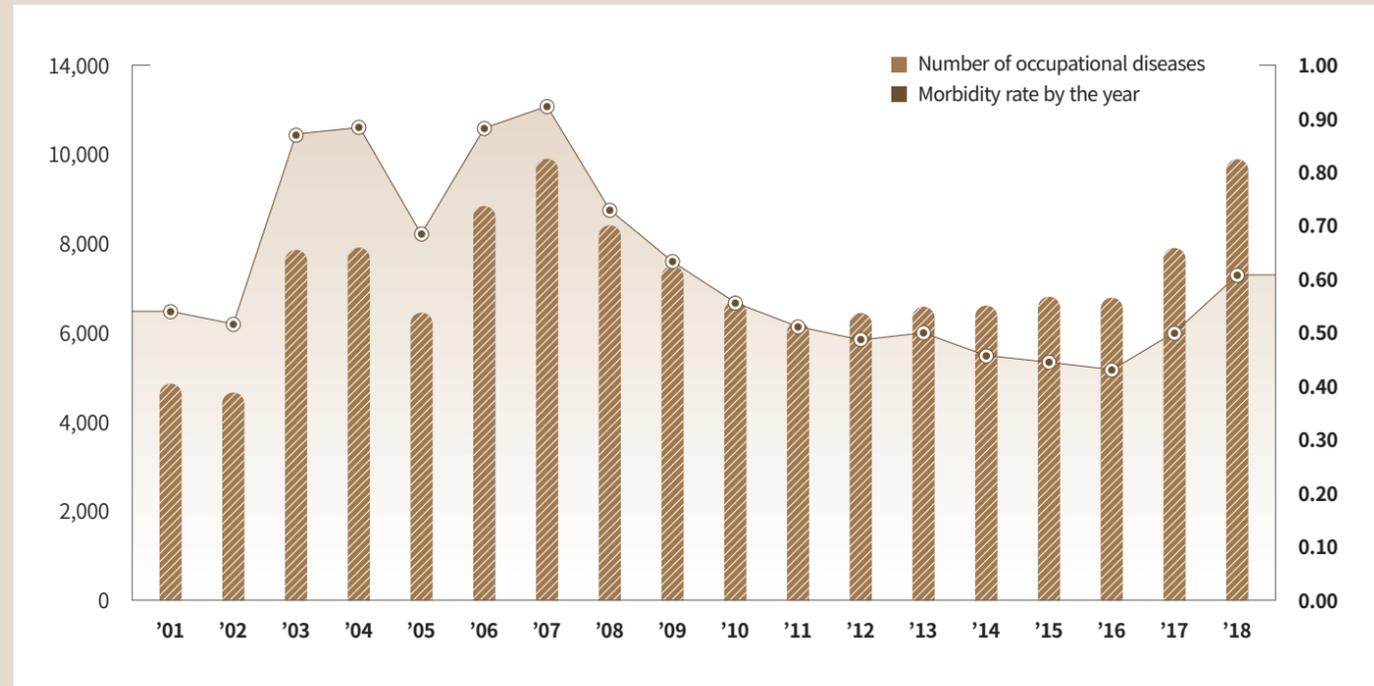
Figure 2 <Number of fatalities and fatality rate per 10,000 workers by the year>



STATUS OF OCCUPATIONAL DISEASE

- The number of workers suffered from occupational disease in 2018 (including deaths) was 11,473, increased by 2,290 (24.9%) from 9,183 the year before.
- Of these, the number of occupational diseases was 3,368 in 2018 increasing by 314 (10.3%) from 3,054 the year before and the number of work-related diseases was 8,105, 1,979 (32.2%) increase from 6,129 in 2017.

Figure 3 <Number of occupational diseases and morbidity rate by the year>



ACCIDENT INDEX

Accident Rate
 Number of injuries /
 Number of workers eligible for
 occupational accidents insurance
 × 100

Fatality rate per 10,000 workers
 Number of fatality /
 Number of workers eligible for
 occupational accidents insurance
 × 10,000

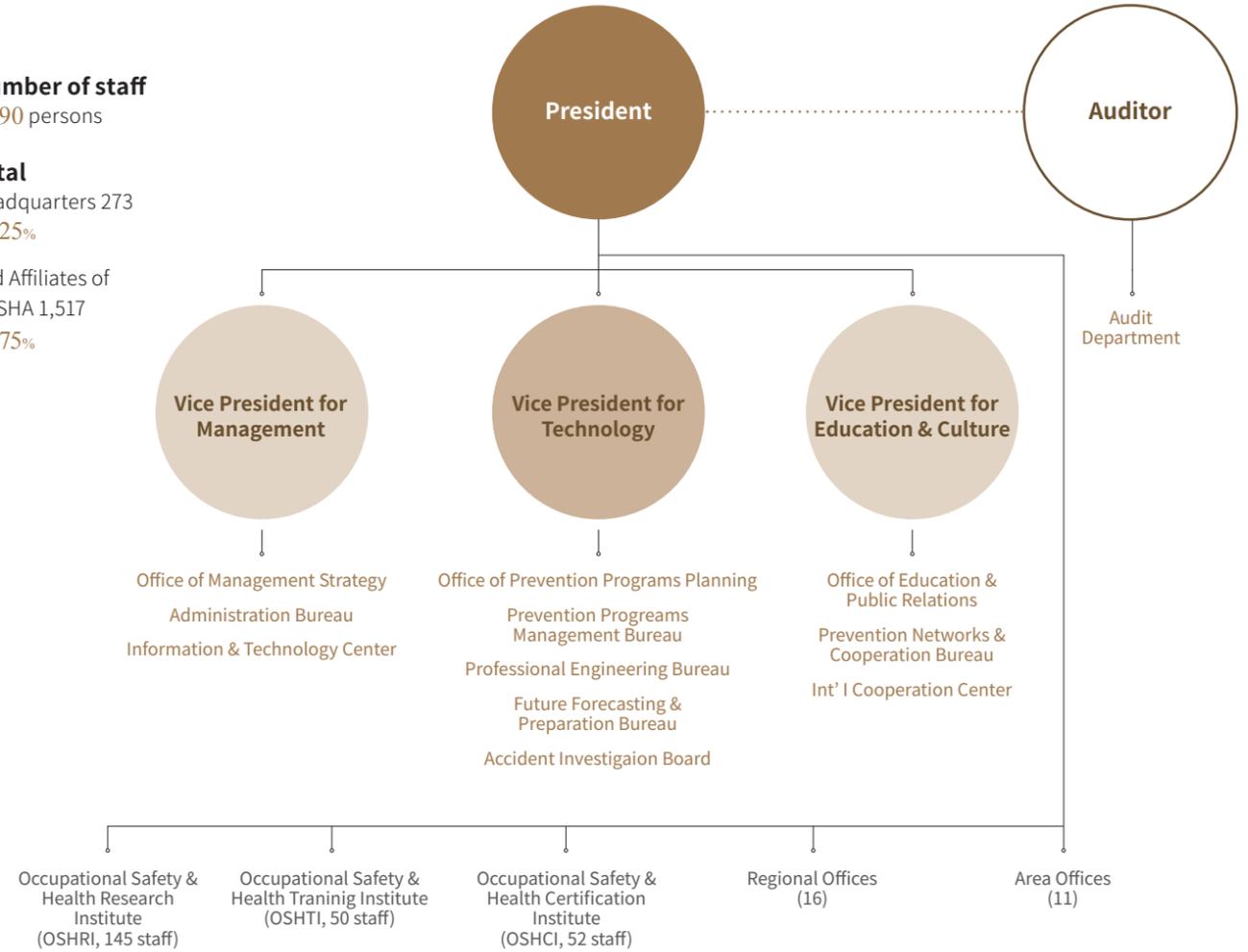
Morbidity rate
 Number of victims for
 work related diseases /
 Number of workers eligible
 for occupational accident insurance
 × 1,000

Organization & Staff

ORGANIZATION STRUCTURE

Number of staff
1,790 persons

Total
 Headquarters 273
 15.25%
 and Affiliates of
 KOSHA 1,517
 84.75%



STAFF

Body	Total	Top Managements	Directors	Deputy Directors	Senior Managers	Managers	Assistant Managers	Staff and Others
Total	1,790	5	61	197	404	525	439	159
Headquarters	273	5	13	44	89	97	13	17
Affiliates	1,517	-	48	153	315	428	426	142

*330 Professional engineers, 819 certified engineers, 72 Phds, 438 masters degree holders, 5 MDs

Financial Report



MAIN RESOURCE

Industrial accident compensation insurance and contributions for the prevention fund pursuant to Article 96 (Use of Fund) of the Industrial Accident Compensation Insurance Act

REVENUE

(Unit : Million KRW)

Budget type	2019 (A)		2018 (B)		Increase·decrease (A-B)	
		%				%
Total	501,878	100.0	490,236	11,642	2.4	
Industrial accident compensation insurance and contributions for the prevention fund	499,378	99.5	487,736	11,642	2.4	
- Contributions	316,817	63.1	297,301	19,516	6.6	
- Subsidies	74,970	14.9	66,640	8,330	12.5	
- Intangible assets	937	0.2	1,001	-64	-6.4	
- Loan	106,654	21.3	122,794	-16,140	-13.1	
Earned income	2,500	0.5	2,500	0	0.0	

EXPENDITURE

(Unit : Million KRW)

Sort	2019 (A)	2018 (B)	Increase·decrease (A-B)	
				%
Total	501,878	490,236	11,642	2.4
Financial aid for 'clean workplace'	76,855	68,525	8,330	12.2
Loan for accident prevention facilities	106,654	122,794	-16,140	-13.1
Accident prevention by industrial classification	47,955	47,121	834	1.8
Safety accreditation or certification	6,011	6,009	2	0.0
Hazardous working environment improvement	54,916	49,026	5,890	12.0
Workers' health protection	22,743	22,736	7	0.0
Safety and health culture establishment	29,124	29,094	30	0.1
Accident prevention facilities construction	8,873	700	8,173	1,167.6
Operation of OSH information system	5,019	5,686	-667	-11.7
OSH R&D and international cooperation	6,065	6,470	-405	-6.3
Personnel, operating expenses, etc.	137,663	132,075	5,588	4.2

History



1987-1990

Foundation

December 1987
Established Korea Industrial Safety Corporation

July 1989
Established Occupational Safety and Health Research Institute

1991~1994

Take-off

October 1991
Held a Korea-Germany occupational safety cooperation meeting

February 1992
Held a Korea-Japan joint meeting on occupational disease prevention

August 1992
Held a tripartite meeting for realizing low-cost & high-efficient workplace with zero accidents

August 1992
10,097,600 people participated in the Zero Accident Signature Campaign

November 1993
Held the 1st OSH awards

1995~1998

Acceleration

1995
· The occupational accident rate of Korea decreased to below 1%
· Headquarters moved to the present location in Bupyeong, Incheon.

December 1995
Completed the construction of Safety and Health Research Center

September 1997
Completed the construction of Industrial Chemicals Research Center

April 1998
Held the 14th APOSHO Annual General Meeting in Seoul, Korea Research Center

1999~2009

Growth and Development

December 1999
Celebrated its 12th anniversary and declared new CI

November 2000
Mutually acknowledged the SH management system between KOSHA-BVQI

September 2004
Received 'Grand Prize' at the National Productivity Award

December 2004
Completed the construction of Chemicals Safety and Health Center

August 2006
Sponsored 'No. 1 Escape from crisis' a TV program on Korea Broadcasting Station

October 2007
Issued the 5,000th safety certification mark (S-mark)

December 2007
Celebrated its 20th anniversary

June 2008
Hosted the 18th World Congress on Safety and Health at Work and adopted the Seoul Declaration on Safety and Health at Work

January 2009
Changed name to the Korea Occupational Safety and Health Agency

2010~2018

Second Take-off

February 2010
Organized Service Industry Department

December 2011
Declared the new CI and Vision on the occasion of the 24th anniversary

January 2013
Organized Major Accident Prevention Department

January 2014
Organized Partnership Program Department

March 2014
Held the opening ceremony of the new headquarters of KOSHA in Ulsan

Year of 2015
· Got A grade on public institutions' customer satisfaction evaluation
· Declared new vision

December 2015
Completed the construction of chronic inhalation toxicity test facility

November 2016
Opened the Central Training Center of OSHTI

January 2017
Opened the Occupational Safety and Health Certification Institute

December 2018
Expanded KOSHA's regional offices from 6 offices to 16 offices



Contact Address

Office	Tel. (+82)	Location	Postal Code
Headquarters	52)703-0500	400 Jongga-ro, Jung-gu, Ulsan, Korea	44429
OSHRI	52)703-0500	400 Jongga-ro, Jung-gu, Ulsan, Korea	44429
Chemical Substances OSH Center	42)869-0300	30, 339 gil, Expo-ro, Yuseong-gu, Daejeon, Korea	34122
OSHTI	52)703-0500	400 Jongga-ro, Jung-gu, Ulsan, Korea	44429
OSHCI	52)703-0500	400 Jongga-ro, Jung-gu, Ulsan, Korea	44429
Seoul Regional Office	2)6711-2800	8, Beodeunaru-ro 2-gil, Yeongdeungpo-gu, Seoul, Korea	07254
Gangwon Regional Office	33)815-1004	2F, Korean Teacher's Credit Union Building, 2370 Gyeonchun-ro, Chuncheon, Gangwon-do, Korea	24436
Northern Seoul Area Office	2)3783-8300	7F, Woori Building, 42 Chilpae-gil, Jung-gu, Seoul, Korea	04512
Eastern Gangwon Area Office	33)820-2580	3F, 182, Haseulla-ro, Gangneung-si, Gangwon-do, Korea	25512
Busan Regional Office	51)520-0510	26, 1763 Beon-gil, Jungang-daero, Geumjeong-gu, Busan, Korea	46274
Ulsan Regional Office	52)226-0510	83 Jeongdong-ro, Nam-gu, Ulsan, Korea	46690
Gyeongnam Regional Office	55)269-0510	259 Jungang-daero, Uichang-dong, Changwon, Gyeongsangbuk-do, Korea	51430
Eastern Gyeongnam Area Office	55)371-7500	4F, Yangsan Labor Complex Building, 51 Namyangsan 2-gil, Dong-myeon, Yangsan, Korea	50635
Gwangju Regional Office	62)949-8700	8F, Trade Hall Building, 282 Mujin-daero, Usan-dong, Gwangsan-gu, Gwangju, Korea	62364
Jeonbuk Regional Office	63)240-8500	4F, Ministry of Employment and Labor Complex Building, 251 Geonsan-ro, Deokjin-gu, Jeonju, Jeonbuk, Korea	55014
Jeonnam Regional Office	61)288-8700	242, Hugwang-daero, Samhyang-eup, Muan-gun, Jeollanam-do, Korea	58566
Jeju Regional Office	64)797-7500	4F, Small & Medium Business Center, 473 Yeonsam-ro, Jeju, Jeju-do, Korea	63217
Western Jeonbuk Area Office	63)460-3600	2F, 482 Jayu-ro, Gunsan, Jeonbuk, Korea	54001
Eastern Jeonnam Area Office	61)689-4900	35 Museonjungang-ro, Yeosu, Jeollanam-do, Korea	59640
Incheon Regional Office	32)5100-500	478 Munemi-ro, Bupyeong-gu, Incheon, Korea	21417
Gyeonggi Regional Office	31)259-7149	10F, Gyeonggi Small & Medium Business Center, 107 Gwanggyo-ro, Yeongtong-gu, Suwon, Gyeonggi-do, Korea	16229

Office	Tel. (+82)	Location	Postal Code
Northern Gyeonggi Area Office	31)841-4900	140, Chudong-ro, Uijeongbu-si, Gyeonggi-do, Korea	11780
Western Gyeonggi Area Office	31)481-7599	230, Gwangdeok 4-ro, Danwon-gu, Ansan-si, Gyeonggi-do, Korea	15464
Eastern Gyeonggi Area Office	31)785-3300	2F, Sogok Hall Building, 3, 17 Beon-gil, Swetgol-ro, Bundang-gu, Seongnam, Gyeonggi-do, Korea	13551
Central Gyeonggi Area Office	32)680-6500	3F, Daeshin Plaza, 19, 265 Beon-gil, Songnae-daero, Wonmi-gu, Bucheon, Gyeonggi-do, Korea	14542
Daegu Regional Office	53)609-0500	19F, Hosu Building, 648 Gukchaebosang-ro, Junggu, Daegu, Korea	41939
Geongbuk Regional Office	54)478-8000	3 Gongdan 1-ro, Gumi-si, Gyeongbuk, Korea	39390
Western Daegu Area Office	53)650-6812	5F, 1834 Dalgubeol-daero, Dalseo-gu, Daegu, Korea	42661
Eastern Gyeongbuk Area Office	54)271-2014	402 POSCO-daero, Nam-gu, Pohang, Gyeongsangbuk-do, Korea	37822
Daejeon-Sejong Regional Office	42)620-5600	60, 339 Beon-gil, Expo-ro, Yuseong-gu, Daejeon, Korea	34122
Chungbuk Regional Office	43)230-7111	3F, KT Building, 20, 161 Beon-gil, Gagyeong-ro, Heungdeok-gu, Chungju, Chungbuk, Korea	28393
Chungnam Regional Office	41)570-3400	3F, Chungnam Economy Service Centre, 215Gwangjang-ro, Seobuk-gu, Cheonan, Chungnam, Korea	31169

KOSHA

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The "VISION ZERO" logo graphic consists of three overlapping circles. The leftmost circle is red, the middle one is blue, and the rightmost one is green.

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