

KOSHA
ANNUAL REPORT
2019



Contents

06 MESSAGE FROM THE PRESIDENT

08 INTRODUCTION

Aim & Direction for Accident Prevention

Focal Activities in Occupational Accident Prevention Projects

14 KEY ACHIEVEMENTS IN 2019 & MAJOR ACTIVITIES IN 2020

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

Accident Investigation

Education and Media Distribution

Safety Culture & Promotion

Public Institutions Assessment

Prevention Network & Cooperation

International Cooperation

Occupational Safety & Health Research

Occupational Safety & Health Training

Occupational Safety & Health Certification

Future Forecasting & Preparation

50 APPENDIX

Status of Occupational Accidents in 2019

Organization & Staff

Financial Report

History

Contact Address

For Korea where all working people enjoy
their rights to be safe and healthy whenever, wherever



KOSHA is



Founded in 1987, the Korea Occupational Safety and Health Agency has grown to be a 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 workers.



MESSAGE FROM THE PRESIDENT



I truly hope
this annual report can serve
as a stepping stone in
helping workers maintaining
safety and health
at their respective working
environment.

We all are fully aware that the society we are living in goes through constant changes faster than ever.

Rapidly-changing sociocultural environments demand new paradigms. The same happens with industrial sites. Risks are becoming progressively larger, more complicated, intensified and advanced, and new harmful and risk factors are increasingly discovered. Accordingly, the safety and health environment also witnesses new changes, and the requirements for safety are being escalated.

Under these changing environments, the Occupational Safety and Health Act was entirely amended for the first time in 30 years, and the government focuses its efforts on drastic reduction of fatal accidents as it has set the "project of reducing occupational fatalities by half" as its core policy. Subsequently, the Korea Occupational Safety and Health Agency (KOSHA) has concentrated its resources on diminution of fatal accidents in the workplace since last year. KOSHA converted the existing "patrol-type" checkup practices on industrial sites to "a protocol of extensive checkups upon core risks based on unannounced visits." As a result, KOSHA has successfully decreased the annual number of fatalities by the biggest margin in its history.

Moreover, KOSHA also actively implements responsive measures of building the future foundations for safety and health by transforming its technical assistances, training, research & development and international cooperation projects into consumer-oriented projects in order to address the ongoing fluctuation in accordance with labor environments.

KOSHA is still far from being satisfied with the accomplishments accumulated so far; instead, we are determined to continue making best efforts to achieve the goal to lessen fatal accidents reaching the standard level of the advanced nations. KOSHA aims to further systematize patrol-type projects and expand the target businesses for the relevant project. By adding new approaches to the 30-year-old experiences in occupational accident prevention, we promises to keep protecting life and health of workers.

To show our sincere determination as well as dedication, KOSHA hereby publishes this annual report containing details and accomplishments of activities to prevent occupational accidents during last year. I truly hope this annual report can serve as a stepping stone in helping workers maintaining safety and health at their respective working environment.

Thank you.

President
Korea Occupational Safety and Health Agency





PART. 01

INTRODUCTION



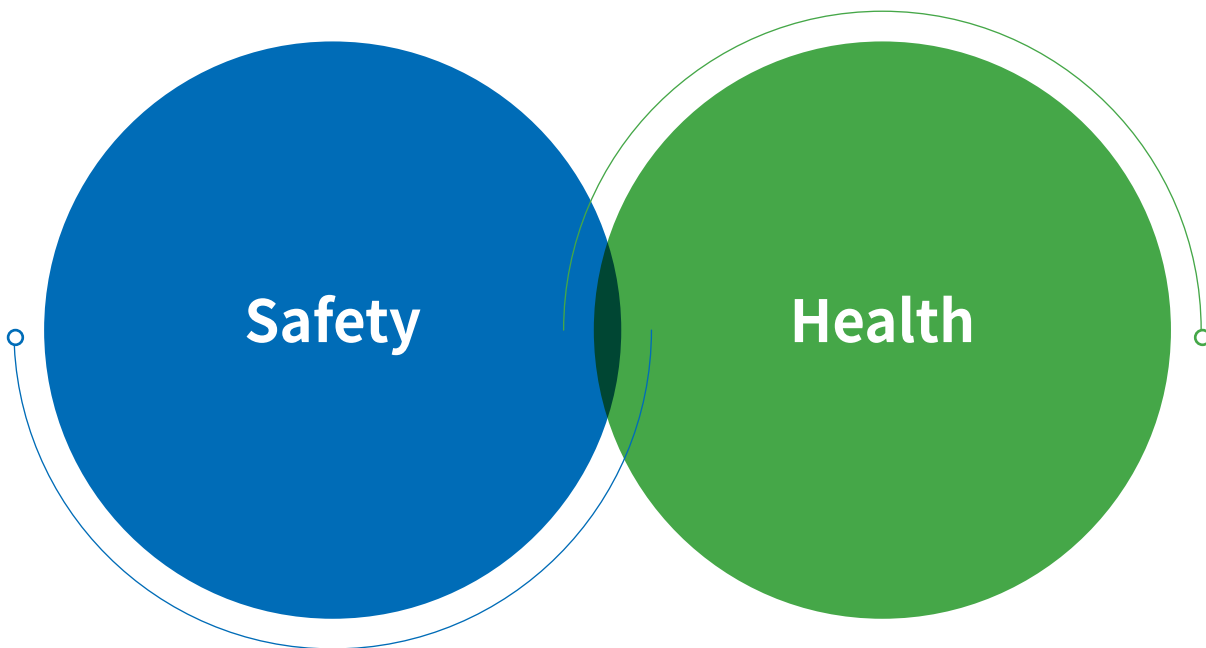
Aim & Direction for Accident Prevention

Focal Activities in Occupational Accident Prevention Projects

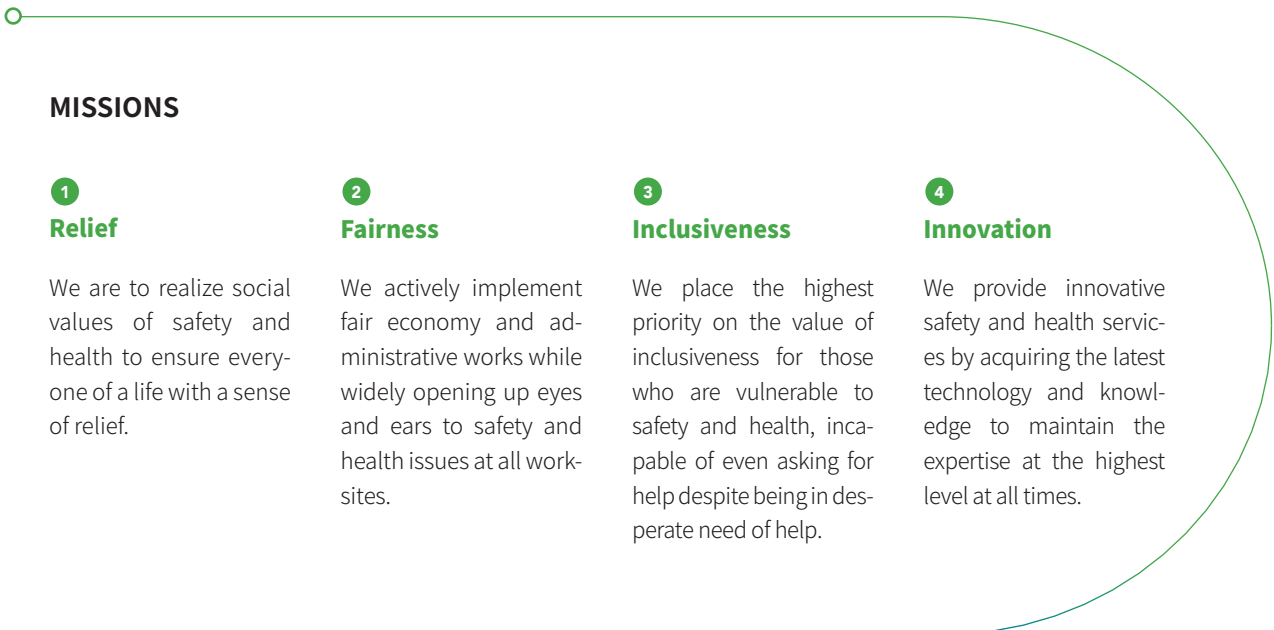
Aim & Direction for Accident Prevention



VISION



**For Korea where all working people
enjoy their rights to be safe and healthy
whenever, wherever**



MISSIONS

1
Relief

We are to realize social values of safety and health to ensure everyone of a life with a sense of relief.

2
Fairness

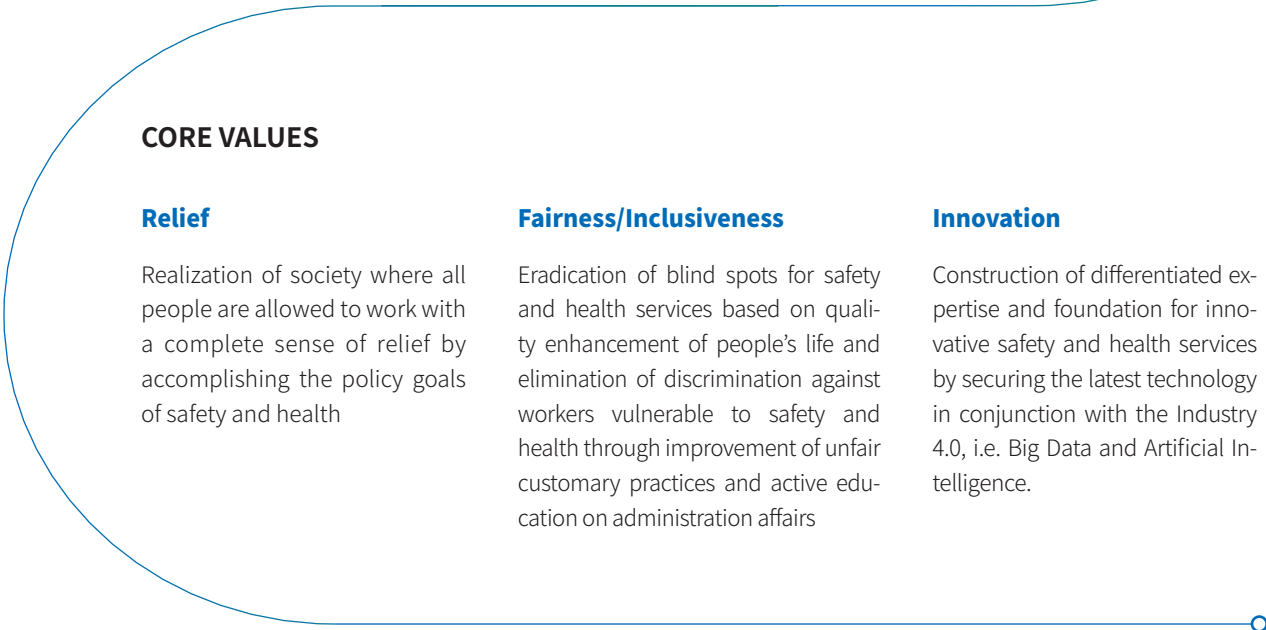
We actively implement fair economy and administrative works while widely opening up eyes and ears to safety and health issues at all work-sites.

3
Inclusiveness

We place the highest priority on the value of inclusiveness for those who are vulnerable to safety and health, incapable of even asking for help despite being in desperate need of help.

4
Innovation

We provide innovative safety and health services by acquiring the latest technology and knowledge to maintain the expertise at the highest level at all times.



CORE VALUES

Relief

Realization of society where all people are allowed to work with a complete sense of relief by accomplishing the policy goals of safety and health

Fairness/Inclusiveness

Eradication of blind spots for safety and health services based on quality enhancement of people's life and elimination of discrimination against workers vulnerable to safety and health through improvement of unfair customary practices and active education on administration affairs

Innovation

Construction of differentiated expertise and foundation for innovative safety and health services by securing the latest technology in conjunction with the Industry 4.0, i.e. Big Data and Artificial Intelligence.

Focal Activities in Occupational Accident Prevention Projects



1

Strengthened Reduction of Fatal Accidents

- Enforcement of specially-planned checkup (patrol) projects by business types intensively focusing on core targets and based on evaluation of safety levels Vision (manufacturing – caught in/between, construction – falls) to cut down fatal accidents.
- Field-oriented checkups of business sites in conjunction with supervision of the Ministry of Employment and Labor (MOEL) in ineffective business sites through cooperation amongst the KOSHA, MOEL and private organizations to strengthen on-site operability and effectiveness.
- Technical development and one-point technical guidance in conjunction with patrol and financial support projects by establishing a multilateral cooperative system to eradicate fundamental risks from hazardous works at the blind spots for fatal accidents.

2

Construction of Preventive/ Responsive Systems against Major Accidents, i.e. Large-scale Chemical Accidents

- Examination/verification/checkup of process safety management (PSM) to enhance preemptive prevention activities for chemical accidents and new introduction of safe management upon integrity of chemical facility to identify and improve harmfulness/risks of deteriorated chemical facility.
- Execution of checkups during the phases of manufacturing/import, examination/certification and usage to secure safety for hazardous machine/equipment/facility and protective shields and new instruction of performance tests to prevent non-certified defective products subject to certification from being distributed.

3

Response to Socially Sensitive Occupational Health Issues

- Expansion of public service infrastructure by extending not only health centers aiming at improving health of workers from small-scale workplaces but also professional consultation centers to provide opportune support for workers with trauma.
- Consultation at workplace regarding emotional labor and high-risk businesses to prevent occupational health hazards and issuance/distribution of masks for outdoor workers at small-scale businesses vulnerable to fine dust.
- Construction of systems for on-site safety evaluation at small-sized worksites for disposal and removal of asbestos and systems for closed screening of material safety data sheets (MSDS) in order to systematically manage and respond to harmful factors in the working environment.

4

Enhanced Support for Small-scale Workplaces

- Supports for establishment/execution of cooperative programs led by parent companies and operation/expansion of evaluation systems for principal contractors and subcontractors in the ship building industry to enhance establishment of the safe management system for subcontractors led by principal contractors.
- Differentiated technical guidance and supports for special medical examination expenses to strengthen safety and health services for the groups vulnerable to occupational accidents, including workers in special types of employment and delivery workers.

5

Improvement of Pan-national Awareness and Infrastructure Taking Responsibility for Safety

- Expanded operation of training support and professional education tailored to each class and e-learning programs and augmentation of training facilities to experience safety through practical training in order to strengthen on-site operability for safety and health training.
- Development/distribution of virtual reality (VR) contents with powerful delivery of information and enhanced on-site usability through safety and health Apps with a view to developing and distributing consumer-oriented media.
- Implementation of weekly events stressing occupational safety and health and safety checkup days on a regular basis and proliferation of practicing safety culture through expanded interactive communication channels through new media aiming at improving nationwide safety awareness.

6

Enhanced Cooperation for Prevention of Occupational Accidents through Relevant Authorities

- Heightened evaluation system on safety activities by public institutions, factual survey on safety and health at local governments and call for fulfillment of responsibility based on evaluation of executive levels to reinforce competence of safety management in public sectors.
- Encouragement of level improvement based on competence evaluation advancement and differential management aiming at effective and viable technical guidance for private agencies in charge of prevention of occupational accidents; Supports in consulting and competence enhancement for quality control of private training institutions.
- Enhanced continuous cooperation through business agreements with relevant authorities to build a cooperative system for safety and health and extension of consensus in prevention of occupational accidents through operation and support for leader groups and regional councils regarding safety and health.

7

Development of Foundation for Transforming Future Paradigms

- Development of foundation for systems to prevent occupational accidents elevating competence in analysis and forecasts by utilizing big data and artificial intelligence to preemptively respond to future environmental changes and construction of infrastructure, including safety and health professional centers, for the purpose of addressing safety and health issues in accordance with each hazardous industry.
- Execution of preemptive research projects and implementation of surveys regarding working environments to intensify research functions and national statistical analysis to respond to constant changes in industrial environments and enhanced monitoring of safety and health issues from social changes, including epidemiological surveys by groups utilizing big data.
- Publishing/distribution of the latest information in overseas to not only distribute international safety and health information but also strengthen global cooperative projects and diffusion of culture to prevent occupational accidents through technical cooperations with overseas professional agencies and supports for improvement of the levels of developing countries.



PART. 02

KEY ACHIEVEMENTS IN 2019 & FOCAL ACTIVITIES IN 2020



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

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Future Forecasting & Preparation



KOSHA
ANNUAL REPORT 2019





1 Accident Prevention for Manufacturing Industry

Occupational Safety-related Projects

Key Achievements in 2019

1. Agency-wide implementation of "specially-planned checkup (patrol) to reduce fatal accidents" through conversion of business methods

- Concentrated KOSHA's capabilities on improving high-risk fields for fatal accidents by encouraging the intensive practices to lessen 'specific risks (falls, caught-in/between, etc.)' at workplace and by lowering key high-risk factors through safety checkups and strengthened the connection with the Ministry of Employment and Labor for inspection enforcement (7,566 cases).
- Created social atmosphere where professional workforce needs to be focused on prevention of fatal accidents, risk factors must be reduced and responsibilities required to be assumed through implementation of field-oriented checkup strategies.

2. Troubleshooting Projects for safety within maintenance of machinery/equipment

- Identified current status of atypical jobs of machinery/equipment and developed accident prevention techniques to prevent caught in/between fatalities (555 sites).

3. Effective OSH cooperative programs between parent company and subcontractors

- Managed cooperative network by newly reflecting permit systems on safety operations and mitigation rate of OSH discrepancy between principal contractors and subcontractors upon program grade evaluation indexes to fortify safety & health supports from original contractors (1,014 sites).
- Encouraged subcontractors, recently getting public attention or possessing high-risk on accident, to actively participate in the program.

4. Protection of the socially disadvantaged by creating safety workplaces for vulnerable small-scale businesses

- By developing communication-type risk assessment techniques capable of easily recognizing risks for accidents, it allows interlinking the techniques with the KRAS system, and preparation for the protective foundation for blind spots of safety and health based on supports for new risk assessment techniques, including presentation of intensity of accident risks by cause materials and accident types (14,409 sites).

Focal Activities in 2020

1. Enforcement of occupational accident prevention projects for caught in/between accidents through specially-planned checkup (patrol) for manufacturing industry

- It is to examine and improve essential safety measures and management methods by identifying the real conditions of risks for fatal accidents within jurisdictions to prevent “caught in/between” accidents accounting for approximately 32% of all fatal accidents in the manufacturing industry.
- It is to raise improvements of safety measures at workplaces through coordination with supervision by the Ministry of Employment and Labor focusing on the

worksites with high risks of caught in/between accidents.

2. Construction of safety system at smart factories and elevation of assessment models

- In accordance with the rapid application of automated smart features in the domestic industry, it is crucial to develop preemptive responsive measures for risk factors, which may be newly generated.
- It is to improve the level of safety at workplaces equipped with smart factories by analyzing the relevance between the levels of smart feature and safety system at worksites with smart factories and upgrading the checklist for safety system assessment.

3. Contribution to reduction of serious accidents in the manufacturing industry through evaluation and confirmation of harm and hazard prevention plans

- It is to secure fundamental safety by improving harmful/risk factors in advance through evaluation and confirmation of harm and hazard prevention plans submitted by workplaces in the event where the entire worksite or major hazardous facility is installed or relocated or where major structures are modified by the high-risk business establishments for occupational accidents.





2

Accident Prevention for Manufacturing Industry

Occupational Health-related Projects

Key Achievements in 2019

1. Enhanced harmful substance management for creating a pleasant working environment

- Improvement of working environment and hazard exposure level through technical support for worksites (13,839 sites) with high-risk exposure to harmful substances and implementation of technical support to strengthen awareness of toxicity of harmful substances at the vulnerable workplaces.
- Encouragement of implementation of adequate monitoring systems and self-regulatory improvement of working environments by business owners through provision of information regarding the level of exposure, including consultation on overall outcomes from working environment monitoring (425 sites)

- Reduced number of suffocation fatalities through intensive management for suffocations-risk areas (14 cases in 2018 ⇔ 13 cases in 2019)
- Implementation of comprehensive assessments (1,141 sites) to improve service quality and reliability of basic occupational health systems, including working environment monitoring and special health examination.
- Support for safety assessment (1,774 sites) and consulting/training at small-scale worksites (3,937 sites) to verify compliance with safety guidelines throughout working processes to secure safety during the process of disposal and removal of asbestos

2. Vitalization of health improvement programs for workers

- Provision of occupational health services (used by 165,939 workers) customized for

workers at the industrial complexes concentrated with small-scale worksites or at the regions without private professional institutions through workers' health centers (21 sites) and branch offices (21 sites);

- Operation of occupational trauma consultation centers providing mental health programs for workers and witnesses at the worksites where fatal accidents/suicides occurred (911 workers from 62 worksites);
 - Evaluation of management levels at workplaces, encouragement of autonomous improvements, and supports for programs of health promotion activities to prevent cerebral-cardiovascular diseases and deaths from overworks to respond to social health issues (10,992 sites).
 - Support of dust-proof masks (3.8 million units) to prevent health hazards for workers vulnerable to exposure to high-concentration fine dust.
 - Implementation of evaluation of risk levels for high-risk occupations, management by each level, and campaigns to promote culture designed to improve awareness protecting emotional laborers.
- * Assessment and management by risk levels (1,376 sites), door-to-door campaigns (20,005 sites), advertisements through portal sites and subway stations, and operation of "And You" campaign (www.andyoukosha.com).

Focal Activities in 2020

1. Enhanced management of harmful work environments

- Customized technical supports based on risk levels after evaluating risks for health hazards by characteristics of chemical, physical and ergonomic harmful factors (11,000 sites).
- Technical training at confined workplaces and high-risk business sites for fatal suffocation accidents (5,000 sites), production and distribution of video/VR/OPL for prevention of suffocation accidents, and site-tailored training supports.
- Implementation of safety assessments on businesses engaged in disposal and removal of asbestos (2,000 businesses) for improvement and intensive management of vulnerable businesses, and support of on-site monitoring to manage small-scale worksites of less than 800m² conducting disposal and removal of asbestos (5,000 sites).
- Construction and operation of the "Information on Alert of Chemicals Exposure" system to ensure workplaces to verify the types and exposure level of working chemicals with autonomy.

2. Vitalization of workers' health promotion activities

- Expanded installation and operation of workers' health centers (21 centers and 21 branch offices) to provide health counseling and basic occupational health services

for workers at the workplaces with less than 50 employees.

- Installation and operation of 8 psychological consultation centers on occupational traumas to prevent workers' trauma from occupational accidents.
- Extensive support for follow-up management of workplaces with a number of workers at health risks (500 sites); consultations on prevention of deaths from overworks; identification and distribution of exemplary cases of health promotion.

3. Strengthened implementation of basic occupational health system

- Financial supports (\$30.7 million¹⁾) for small scale workplaces with less than 20 workers to conduct working environment monitoring and special health examination systems.
- Securement of reliability of system operations by evaluating the adequacy of working environment monitoring on worksites, and promotion of improvement of harmful processes at worksites and the quality of working environment monitoring (650 sites).

4. Enhanced responses to new health risks

- Evaluation and consulting on risk levels of high-risk emotional labor groups (1,000), and implementation of nation-wide campaigns to promote protective culture for emotional workers.
- Prevention of health hazards, such as respiratory diseases from fine dust, by supplying dust-proof masks (4,775,000 units) and encouraging workers to wear the masks at the small-scale workplaces vulnerable to fine dust.



1) To help readers understand better, the unit KRW in this annual report converted to approximate USD.



3

Accident Prevention for Construction Industry

Key Achievements in 2019

1. Accident prevention programs by scales of construction sites

- Evaluation of hazardous prevention plans for high-risk types of construction sites, i.e. structures higher than 31 meters, and secured safety in advance through regular verifications of compliance (3,713 evaluations & 17,125 on-site checkups).
- Raised OSH awareness of business owners and workers through regular patrol activities at small-and-medium-scale construction sites (of which budget is less than ₩12 billion) based on safety-health experts, including retirees with abundant construction field experiences (56,032 patrols by 150 experts).
- Contribution to accident prevention through intensive guidance targeting worksites with ineffective safety facilities, high-risk sites for fall accidents or the sites with inadequate

efforts for improvement (35,794 visits).

- Promotion of self-regulatory safety activities through partial financial supports for the costs required to improve facilities with risk factors to prevent fall accidents at small scale construction sites worth less than \$1.63 million (3,934 sites).

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

- Contribution to competency improvement of systematic safety and health management through promotion of self-regulatory OSH activities by distributing management system for safety and health of construction businesses (KOSHA 18001) to public project owners and general and special constructors (15 public project owners, and 99 general and special constructors).

The Number of Targeted goal 2020

22,500

Enhanced evaluation and confirmation of harm and hazard prevention plans



30,000

Specially-planned checkup (patrol) to prevent fatal accidents



110

Enhanced establishment and support of Safety and Health Management System for construction industry



Focal Activities in 2020

1. Enhanced evaluation and confirmation of harm and hazard prevention plans [Targeted goal : 22,500]

- Intensive management by establishing core targets in accordance with characteristics of fatal accidents by institutions and applying differential individual frequencies of confirmation.
- It is essential to select key original cause materials incurring fatal accidents and recommend improvement of safety measures to later elevate awareness and a sense of wariness by requesting supervision of work-sites upon failure of the recommendations.

2. Specially-planned checkup (Patrol) to prevent fatal accidents [Targeted goal : 30,000]

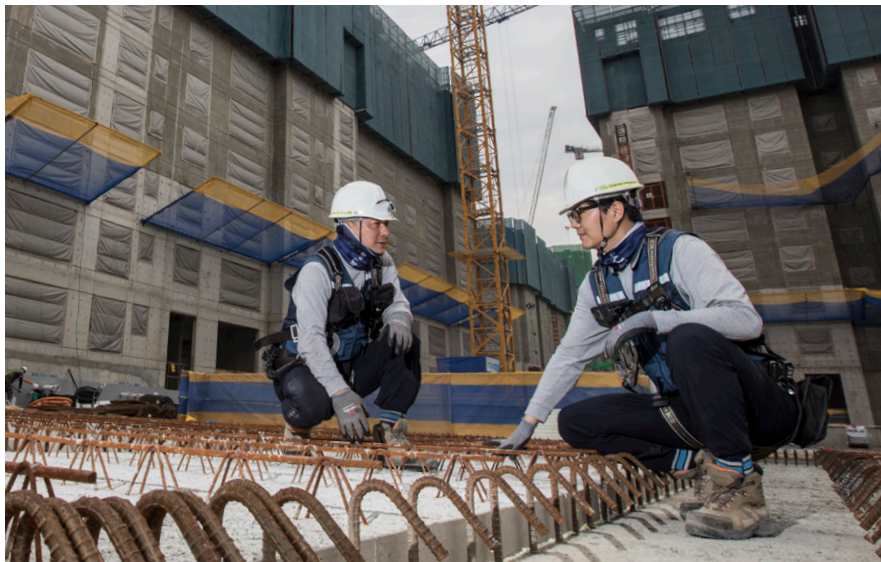
- Improvement of inadequate worksites through continuous management over compliance of safety measures after selecting worksites with high risks of fatal accidents.
- Conduction of assessment on safety levels, including business owners' level of awareness and workers' hazardous behaviors.

3. Expanded financial supports and simplified procedures to encourage universal employment of system scaffold

- Expanded supports (construction sites less than \$1.63 million ⇒ less than \$4.07 million) for safety facility (system scaffold, safety net) to prevent fall accidents in order to ensure pleasant and safe working environment, and simplified administrative procedures through minimized verification steps (11 steps ⇒ 7 steps).
- Budget: \$2.87 million in 2019 ⇒ \$4.52 million in 2020 (\$1.65 million increased).

4. Enhanced establishment and support of Safety and Health Management System for construction industry [Targeted goal : 110]

- Reinforcement of prevention-oriented systems for fatal accidents by improving safety management awareness of the management executives and promoting enhanced self-regulatory safety management system of headquarters.
- Active distribution of certificates for public construction project owners according to implementation of evaluation system on safety activities of public project owners.
- New certification and conversion of KOSHA-MS, differential management by the levels of certificate holders, and enhanced follow-up/renewal screening.





4

Accident Prevention for Service Industry

Key Achievements in 2019

1. Intensive management of key risks to prevent fatal accidents in the service industry

- (Patrol to diminish fatal accidents) Safety checkup in high-risk workplaces in the service industry with frequent fatal accidents of falling and implementation of patrols to reduce fatal accidents in the service sector by delivering critical key messages for preventing fatal accidents (4,199 sites/4,439 patrols).
- (Prevention of fatal accidents from high-altitude operations) Compliance with safety regulations and promotion of key messages by implementing on-site patrols regarding mobile high-altitude operations with high risks of fatal accidents (244 sites).
- Factual surveys (61 cases) and promotion of key messages for prevention of fatal

accidents concerning 4 major hazardous operations vulnerable to fatal accidents among the projects either directly conducted or ordered by local governments.

* Maintenance works on forest and green area (falls, etc.), collection and transportation of household wastes (caught in/betweens, etc.), construction works ordered by local governments (falls), repair/maintenance works of deteriorated sewer pipes (suffocation).

2. Technical training for workplaces with high risks of fatal and serious injury accidents

- Self-regulatory checkup Program for 5 major hazardous operations) On-site technical training for workplaces of 5 major business types with high fatality rates and workplaces handling original cause materials incurring fatal accidents (821 workplaces).

* Wholesale/retail businesses, sanitation and similar service businesses, building management businesses, food service businesses, harbors cargo-working businesses.

3. Support for safety management at small service workplace

- Operation of intensive technical training (101,145) and basic safety supports (160,856 sites) designed to conduct safety checkup and provide materials on safety & health oriented to service business sites with less than 50 employees and low level of safety management skills.

4. Support for OSH activities focused on headquarters and principal contractors

- Preparation of base where OSH technology of headquarters and principal contractors can be delivered to their business partners/ subcontractors by consulting and certifying safety behavior programs (15 programs) targeting franchise headquarters with outstanding safety management and operating OSH cooperative programs targeting parent companies owning business partners (385 parent companies).

Focal Activities in 2020

1. Improved expansion of safety net to prevent fatal accidents for vulnerable occupations, i.e. workers in special types of employment

- (Intensive management for vulnerable group, i.e. workers in special types of employment) Implementation of on-site technical training to protect vulnerable workers with high risks for fatal accidents by providing on-site checkup and promoting the amended Act* for workers in special types of employment and workers affiliated with member stores (2,000 times).

* Article 77 (Safety and Health Measures for Workers in Special Types of Employment): Implementation of safety and health measures and safety and health training.

- (Establishment of protection system for workers with 4 major hazardous operations at local governments) Factual surveys (900 surveys) concerning 4 major industries prone to fatal accidents from the projects either directly conducted or ordered by local governments.

2. Technical training for workplaces with high risks of fatal and serious injury accidents

- (Technical support for on-site accident prevention at small-scale service businesses) Safety checkup and provision of OSH materials for small-scale and high-risk service businesses with facilities and equipment prone to experience fatal and serious injury accidents (100,000).

The Number of Projects 2020

2,000

On-site technical supports to protect worker group vulnerable to fatal accidents



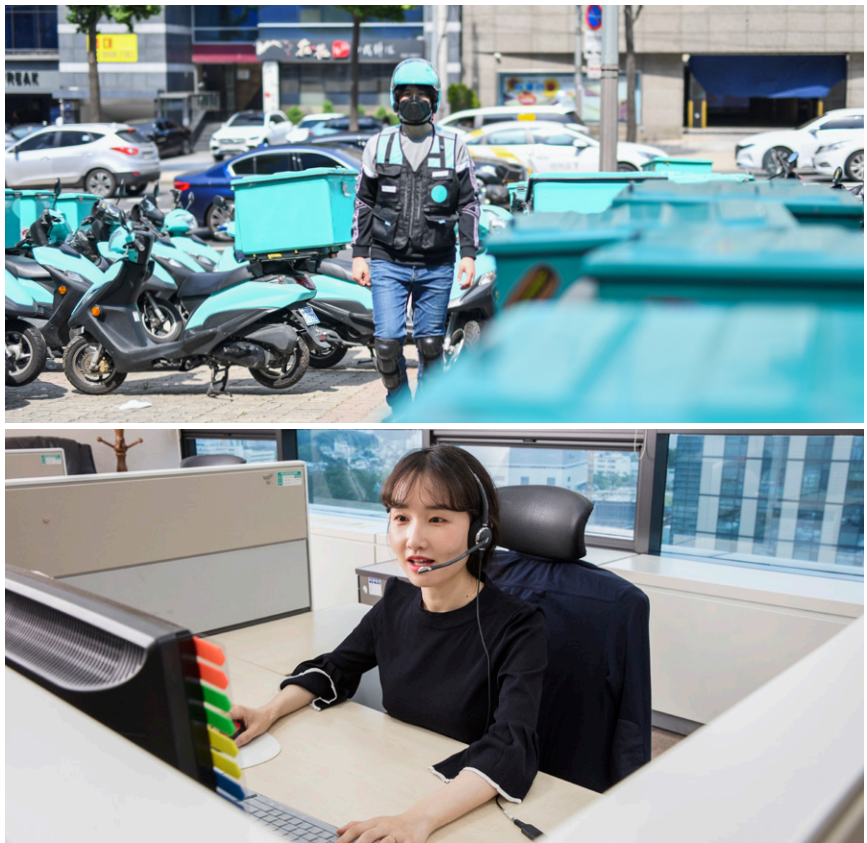
900

Factual surveys on 4 major industries prone to fatal accidents



100,000

Safety checkups and provision of OSH materials for small-scale and high-risk service businesses





5

Professional Engineering

Support for Self-regulatory Safety System to Prevent Major Accident

Key Achievements in 2019

1. Evaluation and confirmation of Process Safety Management reports

- Contribution to prevention of serious industrial accidents through comprehensive and scientific preventive activities, including surveys of current status on 7 business types, such as crude oil refineries, and workplaces using 51 types of harmful substances/chemicals, i.e. chlorine and phosgene, while exceeding the regulatory standards, development of OSH materials, assessments on process safety and risks, establishment of countermeasures, and maintenance of hazardous facilities.

* Evaluation and confirmation of process safety reports (2,226 cases)

2. Establishment and support of OSH Management System (KOSHA 18001&MS)

- Contribution to industrial accident prevention through supports for adoption and settlement of safety and health management system at workplaces - Number of workplaces certified for KOSHA 18001 &MS since the system was implemented in 1999 (1,576 sites).

3. OSH comprehensive examination

- Contribution to prevention of industrial accidents by identifying harmfulness/risks at the workplaces with high risks for accidents, such as deteriorated petrochemical factories, through examinations ordered by the Ministry of Employment and Labor or requests for self-regulatory examinations made by business owners caused by outbreak of serious accidents, including

The Number of Projects 2020

1,600

Evaluation and confirmation of Process Safety Management reports



2,000

Technical supports through the Alert system for chemical accidents



2,500

Supports for establishing OSH Management System



3,550

Checkups and examination for the facilities handling harmful chemicals



100

Development and distribution of safety & health technical guidelines



major industrial accidents, and by presenting improvement measures.

* OSH examinations at 6 workplaces (ordered examinations at 4 sites & self-regulatory examinations at 2 sites)

4. Development and distribution of safety & health technical guideline

• A total of 1,549 technical guidelines were established between 1995 and 2019, and a total of 1,309 technical guidelines are currently available as of 2019 after going through a number of amendments and abolishments.

Focal Activities in 2020

1. Evaluation and confirmation of Process Safety Management reports

• Prevention of serious industrial accidents through evaluation and confirmation of process safety reports for business owners newly establishing, moving or modifying main structures of facilities prone to high risks of serious industrial accidents, including fire, explosion and leakage of toxic substances.

2. Alert system for chemical accidents

• Implementation of consulting services and follow-up technical training based on risk levels by collecting and analyzing risk indications of workplaces every 3 months and subsequently issuing danger alerts on 3 different levels (attention/beware/alert) in order to eradicate fatal accidents and serious chemical accidents occurring during repair, maintenance and non-regular operations.

3. Establishment and support of OSH Management System (KOSHA MS)

• Reformation and operation of the new Safety and Health Management System (KOSHA-MS) in accordance with the international standards (ISO 45001).

4. Safety and health examination

• Identification of potential harmful/risk factors from the workplaces suffering from major industrial accident, which are either under the order by the Ministry of Employment and Labor or have voluntarily requested for examinations; and presentation of improvement measures to the workplaces.

* The Number of Projects (On frequent basis)

5. Checkup and safety examination of facilities handling harmful chemicals

• A system of which 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 checkups regarding installations and safety examinations conducted by an checkup agency and improve facilities handling hazardous chemicals.

6. Development and distribution of safety & health technical guidelines

• Development and distribution of safety & health technical guidelines to contribute to fostering environment for self-regulatory safety & health activities at workplaces by responding to the changes in technical standards of home and abroad.

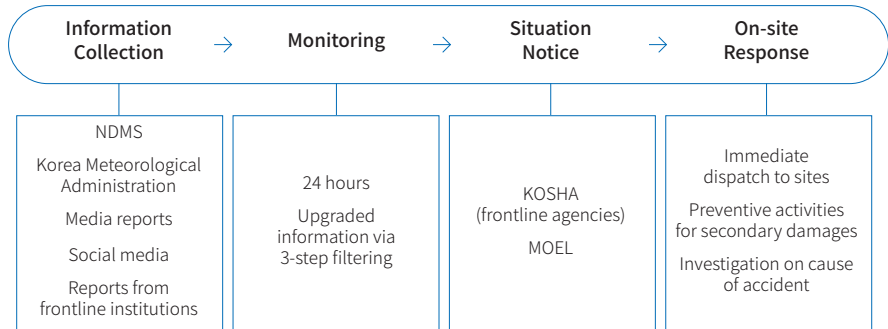
Accident Rates at Certified Workplaces Compared to Entire Manufacturing Facilities (Unit : %)

Division	2015	2016	2017	2018	2019
Accident rate of certified workplaces (A)	0.30	0.31	0.30	0.31	0.38
Accident rate at the manufacturing industry (B)	0.72	0.62	0.61	0.66	0.66
Accident rate of certified workplaces compared to entire manufacturing facility (A/B)	46.2	50.0	49.2	47.0	57.5



6 Accident Investigation

Business Process of Accident Monitoring & Response Center



1. Continuous operation of accident monitoring & response center

[Purpose]

- It aims to promptly respond to accident sites and prevent secondary damages through swift situation notices by monitoring accident situations in real time for 24 hours around the clock in conjunction with the National Disaster Management System (NDMS*).

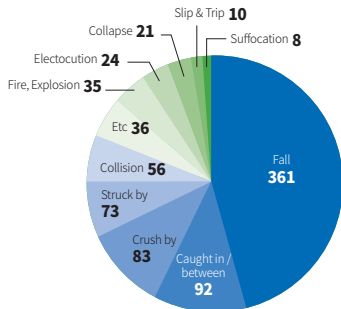
* NDMS : National Disaster Management System

[Operation]

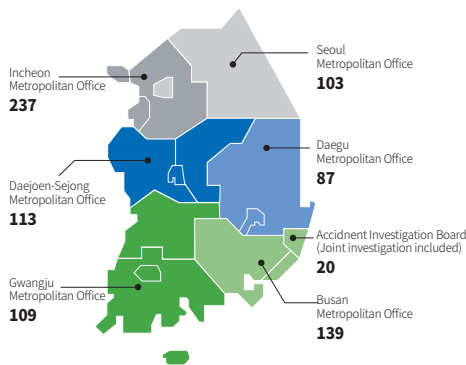
- (Information Collection) Collection of accident-related information from NDMS, media reporting and social media, as an accident monitoring system
- (Monitoring) Verification of information collected by telephone by a person at situation room of Accident Monitoring & Response Center.
- (Situation Notice) Situation notices (text

[Prevent reoccurrence of accident through scientific accident investigation and in-depth causation analysis](#)

Information by types of accidents



Information by regions



messages) upon accidents occurred at industrial sites.

- (On-site Response) Immediate response and prevention of damages from spreading through instant deployments to the sites, especially for the accidents with social issues, such as fatal accidents or death-presumed accidents and fire/explosion.

[Performances]

- Accident situation notices : 7,756 cases in 2018 ⇒ 11,697 cases in 2019 (↑3,941 cases, 50.8% compared with the previous year).

2. Investigations into Causes of Serious Accidents

[Purpose]

- Prevention of reoccurrence of similar accidents through investigations into causes of accidents and establishment of countermeasures when serious accidents, including fatal accidents, occur (frontline institutions).

[Focal Activities in 2020]

- Investigations into Causes of Accidents & Establishment of Countermeasures.
- Notices of serious accident cases and production/distribution of casebooks.
- Constitution/operation of expert workforce for accident investigations.

[Performances : Investigations of 799 cases in 2019]

3. In-depth Investigations of Serious Accidents

[Purpose]

- Enhanced reflux function by identifying fundamental causes of accidents and establishing countermeasures to prevent accidents through systematic analysis on causes of accidents** performed by experts in accident investigations upon occurrence of serious accidents* and accidents with big social issues.

* Serious accidents : Accidents with 2 or more fatalities;3 or more casualties (including 1 death)

** Accident investigation techniques applied

- Application of MTO (Man, Technology and Organization), AcciMap and FRAM through Factual Analysis, Barrier Analysis and Change Analysis.

[Focal Activities in 2020]

- Application of accident investigation techniques, i.e. MTO, RCA, AcciMap and FRAM.
- Enhanced reflux, including improvements of regulations and businesses, through accident investigations.
- Construction of foundation for prompt responses to accidents and scientific investigations of accidents by securing command vehicles for accident investigations.

[Performances : 20 investigations in 2019]

Outcome of in-depth accident investigations : Major reflux performances to prevent identical accidents from reoccurring in 2020

- (Business Improvement) Identification of business subjects and expanded business subjects for fund aids to prevent suffocation accidents at wastewater tanks and fall accidents during installation of solar photovoltaic facility from reoccurrence (2 cases)
- (Regulatory Improvement) Improvement of systems, including the roles of project owners in relation to collapse accidents of deck plate and collapse accidents caused by breakdown of sets/bolts (2 cases)

4. Operation of a Public-Participating Special Investigation Committee

[Purpose]

- Find and improve structural/systemic problems of employment system or labor environment on the issue arousing public concerns by addressing public suspicions and by in-depth analysing causes of accidents.

[Operational Overview]

- Name of Committee : "Special Labor Safety Investigation Committee for Coal Thermal Power Plant" to reveal the truth of the fatality of the late Kim Yong-gyun, a temporary worker at a subcontractor of a power plant, and prevent reoccurrence.

- Period of operation : April 1st - September 30th, 2019 (for 6 months).

- Constitution of the committee : 16 experts* recommended by the government and civil task force.

* From the field of rescue, employment, civil rights, safety and health technology

- Key activities : Fact-finding survey on workers of principal contractors and subcontractors of 13 power plants throughout the nation, data analysis, examination of supervisory systems and comparison of legal systems.

[Performances]

- Identification of recommendations (22 assignments) to practically improve the systems, including transformation of equipment operation and maintenance workers into direct full-time employments.



7

Education and Media Distribution

[Education/Media of Safety-First for Workers](#)

Key Achievements in 2019

1. Development/operation of tailored safety & health education based on demands for improving safety awareness

- Training for executive management/middle management.
- Development and operation of training courses designed to enhance responsibilities and improve awareness for people with authorities, including business owners, plant managers, field supervisors and supervisory managers, to secure safety at workplaces, the root source of corporate competitiveness, and core training courses to lessen accidents and fatal accidents.
- Training for field workers
- (General workers) Expansion and operation of group training provided according to characteristics of each region and workplace and on-site/hands-on train-

ing courses, including 10-minute safety training, VR contents and safety empirical training, by taking a step further from previous training programs focusing on lectures.

- (Vulnerable groups) Contribution to elevated safety awareness of workers from vulnerable groups by implementing "Tailored Safety & Health Training" focusing on disaster cases and preventive measures designed to reduce industrial disasters for accident-vulnerable groups, such as immigrant workers, prime-aged female workers and industrial reserve workforce.

2. Development and distribution of various safety and health educational contents by business and occupational types

- Development of safety and health media reflecting social issues, workplaces and features of workers.

- Development of media reflecting the wholly amended Occupational Safety and Health Act and altered labor patterns.
- Development of media reflecting social issues and characteristics of accidents and worksites to support self-regulatory safety and health management at small-and-medium-sized workplaces.
- Development of safety and health media required for enhanced awareness and training to prevent industrial accidents oriented to the general public and vulnerable workers, such as foreigners, the prime-aged and female workers.
- Distribution through various media to reinforce communicability and usability of safety and health media
- Contribution to prevention of industrial accidents through distribution of safety and health media via diversified channels, such as online platforms (safety & health archives, 360° VR-only theater, Youtube, Apps), offline distribution (KOSHA, relevant authorities) and field delivery service system of media.

Focal Activities in 2020

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

- Expanded safety & health training for executive/middle management
 - (Executive management) Enhanced sense of responsibility for safety and health and promotion of investment to secure safety for workers targeting "those who are with authority and responsibility*" through expanded training for executive management, including training for core managers of worksites prone to serious accidents and training for business owners under the industrial disaster preventive rate system.
 - * Principal agents under obligations to guarantee environments and rights for workers to work safely (business owners, local governments, etc.)
 - (Middle management) Construction of a self-regulatory industrial accident prevention system and promotion of safety and health activities at worksites by fostering safety and health officers at the workplaces into professional workforce through OSH training for middle management personnel upon practical matters.
- Expanded operation of empirical/practical training courses for vulnerable workers
- Expansion of empirical safety training centers to encourage empirical/practical training programs with excellent educational effects and updated educational contents to the latest.
- Elevated safety awareness for workers through expanded "Tailored Safety & Health Training" targeting vulnerable workers' group, including immigrant workers, the prime-aged, female workers and industrial reserve workforce.

2. Development of contents suitable to future environment and strengthened communicability to worksites

- Development of safety and health contents tailored to each business and occupation types designed for education and promotion of industrial accident prevention
 - Development of leaflets, posters, stickers, booklets and audiovisual materials required to execute the program after identifying customer demands.
- Development of ICT-based safety and health contents, which are realistic bringing strong educational effects
 - Development of VR-based contents (experiential/practical and informative) to further improve engagement and power of information delivery.
 - Operation of "Tailored VR Experiences" for OSH training at small-scale workplaces vulnerable to fatal accidents.
 - Conversion into and development/ expansion of mobile contents regarding the topics highly effective for industrial accident prevention.
- Improvement of online/offline delivery systems by strengthening communicability and enhancement of public relations
 - Operation of distribution network for safety and health media through varied routes to support self-regulatory safety management for small-and-medium-sized worksites, including expansion of smart phone Apps and on-site delivery services.
 - Construction of OSH portals accessible through a single website, including ICT distribution networks, on-site delivery and OSH archives.

Performances of OSH Education in 2019

Total : **690,811** persons

39,348

Executive management
Middle management



428,983

General workers



222,480

Locally tailored persons





8

Safety Culture & Promotion

[Proliferation of Society-wide Consensus for Reduction of Fatal Accidents](#)

Key Achievements in 2019

1. Formation of foundation to spread measures to reduce accidents and fatalities

- Contribute to preventing fatal accidents by encouraging safety practices at the sites and business owners' enhanced awareness through promotion of social interests and perceptions in diminishment of fatal accidents.
- Year-round/extensive campaign by each medium under the theme of reducing fatal fall accidents by half, including special features and joint coverage together with socially-influential media outlets.
- TV campaigns (1,427), radio campaigns (3,675), feature articles and contributions (19), advertisements through media outlets (257), media promotion making a direct approach to daily lives (135), promotion through internet media (2,181).

- Improvement of effectiveness of events by delivering social messages to decrease fatal accidents during public events, such as "Safety checkup Day," and promotion of public consensus to join countermeasures to reduce fatal accidents.
- Concurrent nationwide implication of the above through joint efforts between headquarter-frontline offices under the identical themes (quarterly).

2. Secured places for OSH information exchange and employment opportunities through a successful event of the 2019 National OSH Week

- Offered a nation-wide festival of OSH through OSH Day Ceremony, International OSH Exhibition, OSH seminar, presentation of exemplary cases and various cultural events.
- Complied with the governmental policies

of jobs by connecting job seekers and job opportunities and performance of public hub roles within OSH markets by hosting the OSH Job Fair.

- Participated by 23 institutions where 80 people were hired out of 913 candidates.

3. Contributed to addressing the blind spots for occupational accident prevention and promoting OSH awareness by encouraging labor/management and non-profit private organizations to participate in OSH activities

- Implementation of public-wide promotion through feature (planned) reporting, campaigns and quiz contest events in the field of media/broadcasting to secure and spread safety cultures throughout workplaces.
- Safety culture activities focusing on 4 major vicious fatal accidents, including falls, caught in/betweens, collisions and suffocation.
- Conduction of protective projects, i.e. training and public relations, capable of embracing vulnerable groups, such as platform workers, customer-reception workers, workers of foreign nationals and specialized high schools.

Focal Activities in 2020

1. Strategic promotion by themes and analysis of performances

- Year-round promotion for early stabilization of the wholly amended Occupational Safety and Health Act.
 - Improvement of awareness and practice of prevention of fatal accidents through promotions making a direct approach to the work-sites based on occupational accident statistics.
 - Diversification of channels* to deliver OSH information directly to the workers of vulnerable groups at labor blind spots, including workers in special types of employment.
- * Subway route guidance, delivery Apps, elevator TVs, etc.

- Implementation of omni-directional promotions by selecting the prevention of fall accidents in construction industry as a year-round promotion theme to directly contribute to accomplishing the goal of cutting down fatal accidents, and formation of nationwide consensus.
- Systematic analysis on evaluation of promotional performances by utilizing outside professional agencies, expanded monitoring of media trends, and improvement of reliability of promotions regarding occupational accident prevention through year-round management of media risks based on the relevant theme.

2. Expanded communication through online channels, i.e. YouTube

- Expansion of safety-first culture by using the platform of YouTube in accordance with the rapid trends of reorganization of social media market into the form of "V-log (video + log)".
- Production of video contents to prevent fatal accidents, enhancement of viral marketing, and provision of contents tailored to consumers in cooperation with influential YouTubers and channels.
- Building a timely delivery system for information on reduction of fatal accidents oriented to key OSH officials, including local government offices, OSH commissions and OSH managers, by using mobile newsletters.

3. Awareness on the National OSH Week in 2019 offered a stage for exchanges of OSH technology and information from home and abroad

- Continuous delivery of messages for principal agents responsible for prevention of fatal accidents to perform their obligations.
- Delivery of powerful messages to promote active participation in preventive activities by connecting all programs with fatal accidents and providing a stage for exploring multi-dimensional solutions.
- Offering of world-class festivals of OSH

participated by heterogeneous society wide principal agents.

- Creation of consensus concerning prevention of occupational accidents through various events where diverse society-wide principal agents, including OSH Day Ceremony and events for public-wide participations.
- Expanded scales of exhibitions and extended accessibility through diversified public-participating contents.
- Diversification of hands-on programs by expanding the scale of events (650 booths => 830 booths) and offering contents on platform workers (two-wheeled vehicles) and emotional workers.

4. Contributed to expansion of safety culture to protect vulnerable groups, including foreign workers, specialized high schools and delivery workers, through public contests for proliferation of safety culture

- Improvement of effectiveness of projects through clarification of targets for public contests and enhanced management regarding the progresses of projects.
- Implementation of efficiency in selection processes regarding organizations carrying out public contest projects.
- Enhanced supports for media/broadcasting fields to maximize the effects in proliferation of safety culture.



9

Public Institution Assessment

Construction of Management System with Safety-first Principle for Public Institutions



Key Achievements in 2019

1. Continuous decline of public confidence due to fatal accidents occurred at public institutions

- Death of a young worker at a power plant (Dec. 2018), train derailment (Dec. 2018), leakage of heat transfer pipes (Dec. 2018), etc.

2. Construction of fundamental countermeasures to build safety systems for public institutions through concerted efforts with the government

- Countermeasure for safety enhancement at workplaces of public institutions (joint governments; March, 2019), comprehensive countermeasures for safety enhancement for public institutions (Ministry of Economy and Finance; March, 2019).

3. Development of an assessment system on the level of safety activities by public institutions aiming at management practices with safety-first principle

- Reflection of results from "Evaluation of Safety Activities by Public Institutions" by professional safety agencies during governmental management assessments.
- Establishment of public notification concerning assessments on the level of

safety activities by public institutions (Public Notification by MOEL, No. 2019-47, Sep. 2019).

4. Assessments on the level of safety activities by public institutions with KOSHA as an acting body of assessments (128 sites, Jan.-Feb. 2020);

5. Fatal accidents at workplaces of public institutions reduced by 28.8% (↑15/52 ⇒37 people) following the establishment of safety management systems based on safety-first principle for public institutions

Focal Activities in 2020

1. Enhanced assessments on safety activities in order for the safety management system to permeate throughout workers at public institutions and worksites ordered by public institutions

- Evaluation of the level of safety activities at workplaces directly managed by public institutions, supply-demand worksites and construction sites ordered by public project owners.

2. Encouragement of realization of social safety values by public institutions through supports for introduction

of the safety level system to public institutions

- Promotion of continuous improvement of safety levels by supporting government policies to manage the 5-step safety levels of public institutions by reflecting the outcome from the evaluation of the levels of safety activities.

3. Supports for construction of safety management systems for public institutions with inadequate safety management based on the outcomes from the evaluation of the level of safety activities by public institutions

- Supports for public institutions to build safety systems and raise safety management competency through construction of safety management system and development of systems to implement risk assessments.

4. Stabilization of safety culture at workplaces through expanded workers' participations at public institutions to ensure practical and continuous safety activities to be fulfilled by public institutions

- Construction and operation of reporting system for workers' hazardous situations at workplaces directly managed by public institutions and ordered by public project owners.

10

Prevention Network & Cooperation

OSH Services with the Highest Priority on Workers' Safety and Health



Key Achievements in 2019

1. Supplementation of assessment table through reflux of assessment results of private accident prevention institutions

- Promotion of further reduction of accidents/fatal accidents by reflecting evaluation index of the goal-oriented management system to reduce occupational accidents on the assessment of private accident prevention institutions.
- Encouragement of fulfillment of social values for private accident prevention institutions to actively participate in government policies aiming at prevention of occupational accidents.
- Differential managements for outstanding /inadequate institutions based on the outcomes from the assessment of private accident prevention institutions (1,274 institutions).

2. Development of systematic assessment management system for private accident prevention institutions

- Development of computer system (K2B) designed to evaluate job performance competency of private accident preven-

tion institutions and systematically manage these institutions.

Focal Activities in 2020

1. Standardization of evaluation procedures/methods through enactment of the “Rules on Process of Evaluation Works for Private Accident Prevention Institution”

- Enactment of the “Rules on Process of Evaluation Works for Private Accident Prevention Institution” based on new establishment of the grounds for evaluation of private accident prevention institutions in the wholly amended Occupational Safety and Health Act and transfer of the principal actor of evaluation (MOEL ⇒ KOSHA).
- Promotion of improvement of OSH service levels through reflux of results from evaluation of private accident prevention institutions.
- Construction of systematic grounds for discriminative managements through reflection of the results from evaluation of private accident prevention institutions, including provision of incentives for outstanding institutions (S) and checkup/revocation of designation (suspension of

business) for inadequate institutions (D grade);

2. Expanded and advanced evaluation system for private accident prevention institutions

- Expansion and upgrade of "Evaluation System for Private Accident Prevention Institutions" designed to input, manage and give feedbacks on the information of private accident prevention institutions (workforce, facility, equipment, etc.) as well as the information (details of assistance, information on current state of accidents occurred), business performances and evaluation results of technical support businesses.

11

International Cooperation

Creating Win-win Prosperity
through Preemptive
International Activities



Korea Occupational Safety and Health Agency

Key Achievements in 2019


1. Technical agreements and cooperation with overseas OSH organizations

- Expanded cooperative networks through execution of MoU arrangement, and enhanced KOSHA's capabilities and international competency in exchange of technical and informational resources.

Organizations under Agreements in 2019

Organizations under agreements: **54**

3
Newly entered 

13
Agreements renewed 

36
Agreements remain effective 

2
Terminated 

2. Foundation for win-win growth of OSH level in developing countries in the Asian Region

- Supports for building OSH Infrastructure in developing countries.
- Secured diverse external financial resources for projects to build educational training facilities/equipment
 - ※ Approx. 2.5 million USD (MOEL) for establishment of OSH education/training center in Ho Chi Minh City, Vietnam, and about 80.8 thousand USD (Ministry of Economy and Finance) to improve educational training systems in major ASEAN nations.
- Preemptive identification of and extensive supports for the fields requiring OSH competency enhancement in Asian nations.
- Fellowship training for government officials of ASEAN nations in charge of OSH (10 officials).
 - Analytic theories and technical practices regarding harmfulness to human bodies and atmospheric particles of asbestos and silica (6 people).
 - * Government officials in charge of OSH from 6 countries, including Laos, Palau and Solomon Islands.
 - Implementation of on-site training to expand field-oriented communication and educational opportunities (10 ⇔ 50 people).
 - * Effects : Doubled positive effects from localized training, including increased personnel for training (↑400%) and budget savings (↑66%).
- Enhanced and customized supports designed to address OSH issues.
- Efforts made for tailored supports by understanding the unique characteristics of each nation and issues arising from the level and advancements.

Small-scale construction sites

Competency enhancement training on OSH supervision techniques for legal compliances (Laos, Cambodia)

Prohibition of asbestos

Sharing of Korean systems/experiences for the purpose of legislation (Vietnam)

Prevention of occupational diseases

Competency enhancement for government officials to prevent chemicals poisoning (Laos)

3. Information exchange on OSH from home and abroad

- Enhancement of the Korean OSH level and competencies of experts by distributing overseas OSH knowledge/information (Provided overseas OSH information for domestic customers : 90 cases)
- 62 news articles on international trends of OSH, 17 times of distribution of technical regulations on OSH, 5 reports on issues, 6 KOSHA newsletters, 3 publications of ILO newsletters, etc.
- Nationwide distribution by identifying OSH policies and strategies as well as overseas best accident prevention practices by hosting forums with global experts invited (invited 5 experts from various realms, including Dr. David Michaels from the OSHA, U.S.).

4. Global proliferation of preventive culture

- International exchange and cooperation as the chair organization for a Culture of Prevention Section and vice-chair organization for the Special Commission on Prevention of International Social Security Association (ISSA).
- Proceeded to co-develop preventive culture index (PCI), which is universally applicable, with German Social Accident Insurance (DGUV : Deutsche Gesetzliche Unfallversicherung) (Journal on PCI : Selected as the most outstanding journal by the international academic journal <Preventive Science>).
- Being elected as a vice-chairperson of the Special Commission on Prevention of ISSA and operated the board of Culture of Prevention Section.
- Operation of 2 sessions at the seminar hosted by the Institution of Occupational Safety and Health (IOSH) of the U.K., hosting international seminars including one on prevention culture and its best practices, and scheduled joint hosting of symposium in 2020 with the BGHW, Germany.

Focal Activities in 2020

1. Technical agreements and cooperation with overseas OSH organizations

- Exchange of technology and information on accident prevention through new technical cooperation agreements with OSH organizations in advanced nations, such as France and Austria, as well as existing OSH organizations under previous agreements.
- Sustainable agreements with 54 professional institutions from 28 countries, including the National Institute for Occupational Safety and Health in the U.S.
 - ※ By fields : Technical exchanges (15 institutions), technical supports in developing countries (15 institutions), reciprocal certifications (24 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 accompanied growth of occupational safety and health with developing countries

- Enhanced cooperative system with developing countries in the Asia-Pacific region to help elevating the level of OSH.
- Technical/technological supports for tailored accident prevention accommodating the industrial environments of developing countries in consideration of degree of industrialization, capability of adoption and progressive stage of recipient countries.
- Proliferation of OSH exchanges and cooperation with ASEAN nations to actively respond to the New Southern Policy of the government.

3. Exchange of information on OSH from home and abroad

- Rapid collection and distribution of the latest overseas OSH information, such as best practices of accident prevention in countries abroad.
- Discovery of policies/strategies/trends of overseas OSH as well as exemplary cases of accident prevention by nations to actively react to ever-changing industrial environments.
- Prompt provision of international information and materials through operation of customer-oriented "Global Issue Solution".

4. Implementation and proliferation of prevention culture at home and abroad through cooperation with global networks

- Leading the global network cooperation to co-develop, utilize and spread the global preventive culture index.
- Joint cooperative projects with international organizations to diffuse preventive culture.
- Enhanced cooperation with Special Commission on Prevention and other sub-committees under ISSA.
- Plan to co-develop preventive culture index (PCI) with German Occupational Insurance Union (DGUV : Deutsche Gesetzliche Unfallversicherung) (2018-2020).
- Development and commercialization of preventive culture index (PCI) to proliferate global preventive cultures.





12 Occupational Safety & Health Research

Key Achievements in 2019

1. Research responding to government policies and social issues

- A total of 75 research projects were achieved in 2019
- Research on reduction of occupational fatal accidents (9 projects), research to develop improvements measures for ef-

fectiveness of the amended Occupational Safety and Health Act (4 projects), research to resolve social issues (7 projects), and research on health protection for workers of vulnerable groups (3 projects).

2. Performed a leading role as an accident prevention institution through reflux of research outcomes

[A Leading Occupational Safety and Health Research Institution for Occupational Accident Prevention Policies](#)

Research Achievements by Fields for the Past 5 Years

Division	Total	2015	2016	2017	2018	2019
Total	389	76	80	79	79	75
Policies & Systems	91	24	20	18	17	12
Occupational Safety	51	9	10	11	9	12
Occupational Health	71	13	15	14	15	14
Working Environment	71	13	15	14	15	14
Industrial Chemicals	105	17	20	22	23	23

Details of Major Research

- Analysis of impacts of occupational accidents on financial statements, including corporate growth and profitability.
- Study of measures to impose responsibilities on project owners in to prevent accidents at small-scale constructions sites;
- Study of reduction of dust fire/explosion accidents caused by electrostatic ignitions.
- Investigation of awareness of restrictions against violations under Occupational Safety and Health Act.
- Fact-finding survey on OSH field staff members at production sites of broadcasting/motion pictures.
- Aerial harmful substances arising from cooking and their impact on respiratory health.
- Study of impacts of disinfectants during LCD manufacturing process (N-methylformamide) on human body.
- Assessment regarding exposure levels to harmful elements of aircraft cleaning worker and measures for management of working environment.
- Study of toxicity of biocides (Benzalkonium chloride) to the respiratory system.

- Achieved 41 cases of system improvements based on the results from research to secure safety and health for workers, including amendment of Occupational Safety and Health Act.
- New establishment of mandatory provisions concerning safety and health for workers in special types of employment and delivery workers, and development of guidelines to protect emotional workers.
- Published 44 academic journals to accelerate academic accomplishments from research regarding prevention of occupational accidents;
- Five-year survival rate among the elderly adults participating in the national geriatric screening program : A South Korean population-based cohort study (Archives of Gerontology And Geriatrics, Volume 83), etc.

3. Registered in Science Citation Index (SCI) of International Academic Journal (SH@W, Safety and Health at Work) operated by the Research Institution

- Joint enlisting (Jan. 2019) of the occupational accident prevention field of the International Academic Journal (SH@W) operated by the OSHRI at the SCIE (Sci-

ence Citation Index Expanded) and SSCI (Social Science Citation Index) for the first time in our country.

4. Public announcement of results from epidemiological survey regarding manufacturing process of semiconductors to fulfill the public's right to know

- Public announcement of results from epidemiological survey regarding outbreak of hematologic malignancy (blood cancer) and mortality risks of 200,000 workers at semiconductor manufacturing processes for the past 10 years between 2009 and 2019.
- Epidemiological survey conducted to approximately 200,000 workers from 6 semiconductor companies.
- Offering of the grounds to establish policies to prevent cancers for workers at semiconductor manufacturing processes and help those workers acquiring approval for occupational accident through a public briefing.

5. Identification of health hazards of chemicals with unidentified toxicity, i.e. sterilizer for humidifiers, and provision of information on toxicity

Utilization of Research Outcomes for the Past 5 Years

Division	2015	2016	2017	2018	2019
Number of cases of policy/system improvements reflected	27	33	36	40	41
Publication of journals (Total/SCI-level)	41 (17)	41 (20)	29 (25)	31 (20)	44 (19)

Submission Rates of Safety and Health at Work

Year	Submission Rate			
	No. of journals submitted	No. of journals published	Rejection rate (%)	Growth rate of journals submitted (%)
2016	358	56	84	27
2017	416	60	77	16
2018	471	68	86	13
2019	683	69	90	45



- Execution of acute, subacute, subchronic and carcinogenic inhalation toxicology tests (21 tests), genetic toxicity tests (4 tests) and risk assessments of chemicals (3 tests) to identify toxicity of toxicity-unconfirmed chemicals.
- Results from inhalation toxicology tests have been posted on the official website of KOSHA for MSDS information (<http://msds.kosha.or.kr>)
- Delivered explanation on the results from the inhalation toxicology tests on benzalkonium chloride (BKC), raw materials of sterilizer for humidifiers, by attending at the hearing of the special investigation committee on sterilizer for humidifiers (Aug. 2019).
- Utilized as evidentiary materials to amend the law, expanding the scope of victims from sterilizer for humidifiers, based on scientific proof concerning toxicity mechanism with the respiratory system.

6. Improved on-site applicability through commercialization of research outcome from occupational accident prevention

- Development of "Practical Guideline on Safe Scaffold Works," jointly participated by

OSHRI, Busan City Gas Corp., construction companies and scaffold manufacturers.

- Accident cases and concept maps included in order to help better understanding for the field personnel and future industrial workforce.
- Offering of free-of-charge permits for industrial property rights* related to new OSH technologies immediately applicable to industrial sites.
- A total of 3 cases, including detection device for workers' safe activities using smart phones, detector for inflammable gas, and floor cleaning/moisture remover.

7. Efforts to expand social influences of research results for the sake of the vulnerable groups

- Conducted a study regarding health impacts experienced by workers of school lunch programs to address the issues of carbon monoxide poisoning accidents, and presented the study at the discussion meeting hosted by a National Assembly member.
- Conducted a study to develop improvement measures for systems and secure safety management systems by identifying problems with working environments for workers at nursery facilities.

- Presented OSH management measures for production staff members of broadcasting/movie production and cleaning workers for subway/aircraft.

8. Excellence of research infrastructure recognized, i.e. selected to an outstanding organization for safety management of research facilities

- Achieved "Satisfaction" from the assessment on test of skills with inflammation point organized by the Korea Laboratory Accreditation Scheme (KOLAS).
- Excellence of safety management recognized from the outcome of "On-site Examination of Safety Management at LMO* Research Facilities" hosted by the Ministry of Science and ICT (MSIT) (March 8, 2019).
- * LMO : Living Modified Organism
- Awarded with an Appreciation Plaque by the Army Chief of Staff for transferring the expertise of statistical production, such as classification of occupational accidents related to the "Safety for Army Project" of the army (Feb. 2019).
- Registered as an exemplary case of accuracy of investigation of regular quality assessment and improvement of usability by the Statistics Korea.
- Prevention of errors during data input and improvement of accuracy through adoption of "CAPI (Computer Assisted Personal Interviewing)".

Focal Activities in 2020

1. Realization of social values through contribution to reducing fatal accidents

- Research regarding measures to improve industrial and employment structures to reduce occupational accidents in the construction industry.
- Research regarding guidelines and safety models for safe works at elevators
- Research regarding improvement measures for safety certification standards

2. Research regarding the response to social issues and resolution of current issues of safety and health

- Research regarding health protection measures for workers exposed to diesel engine emissions.
- Research regarding DB development by levels of toxicity manifestation routes for chemicals from the semiconductor industry.
- Research regarding systematic cause analysis of fire/explosion accident cases at chemical factories.
- Research regarding measures to improve safety levels of public institutions.

3. Supports for establishment of polices for innovation of the government's OSH governance

- Research regarding measures to build OSH big data and utilize the information disclosure.
- Research regarding measures to build governance for implementation of national OSH policies.
- Research regarding conversion of paradigms in OSH.

4. Basic research for formation of OSH foundation

- Research regarding correlation between structure of construction industry and construction accidents.

- Research regarding DB development by levels of toxicity manifestation routes for chemicals from the semiconductor industry.
- Research regarding application of toxicity test to three-dimensional cell culturing technology (organoid).

5. Construction of implementation systems for MSDS submission and closed information screening

- Preparation for the system of MSDS submission and closed information screening to be enacted on January 16, 2021.
- Construction of project process and preparation of regulations for project operation following adoption of new systems.
- Enhanced competency of the review board on MSDS submission and closed information screening.
- Construction and advancement of the intelligent MSDS management system.

6. Enhancement of preventive functions of epidemiological survey

- Expansion of preventive epidemiological survey to preemptively respond to newly emerging issues of occupational diseases.
- ※ 1 case in 2019 ⇒ 4 cases scheduled to investigate in 2020
- Conversion from individual epidemiological surveys based on the cases approved for medical care into preventive epidemiological surveys, group epidemiological surveys and big data-based epidemiological surveys.

logical surveys, group epidemiological surveys and big data-based epidemiological surveys.

Development of manual sample collectors made in Korea

- Production of manual sample collectors and evaluation of efficiency in sample collection (2020-2021)

※ Production and construction of experiment chamber (2019)

Upgrade of automatic analysis systems and programs

- Supports for construction of systems to help pilot projects for "Alert of Chemicals Exposure Information"

* Supports for construction of analysis chambers and automatic analysis systems scheduled to be installed in 3 metropolitan areas in 2020

※ Construction and on-site application of GC-MS automatic analysis system (2019)

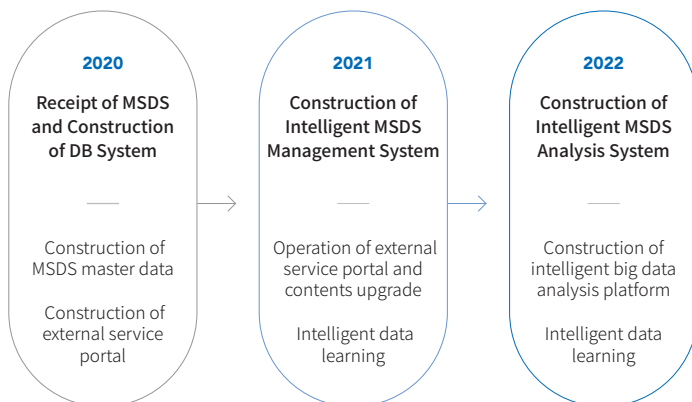
7. Construction of the "Alert of Chemicals Exposure Information" system

- Development of manual sample collectors and construction of automated analysis system in order for workers to respond to working environments in an autonomous and active manner.

8. Implementation of the 6th Korea Working Condition Survey (KWCS)

- Implementation of "Working Conditions Survey (State-approved statistics)" oriented to 50,000 households across the country to monitor the changes in working environments affecting the safety and health of employees.
- Examination of various working conditions, including not only physical/chemical risk factors but also ergonomic/psychological risk factors.

Construction and advancement (3 years) process of the intelligent MSDS management system





13

Occupational Safety & Health Training

A Leading Institution for Development of OSH Capacities for Protection of Everyone's Life

Key Achievements in 2019

1. A total of 1,244,613 people trained by the OSHTI since its foundation

- Since its foundation in 1988, the OSHTI has trained a total of over 1.24 million OSH officers from various workplaces through collective training and online training as of 2020 (437,000 for collective training and 806,000 for e-learning).

※ Achievements in 2019 : 121,977 people (11,985 for collective training and 109,992 for e-learning).

2. Construction of practical training facility for prevention of fatal accidents and operation of core training courses

- Establishment of a practical training center for installation/disassembly of tower crane, reflecting the policies to prevent major fatal accidents.

- Construction of the nation's first practical training facility for installation/disassembly of tower crane in the format of empirical training as a follow-up measure for "Preventive Measures against Major Accidents from Tower Crane," a joint measure by relevant authorities (December 26, 2019).
- Design and development of training programs for the "course for license to install and disassemble tower crane" (training to be offered in 2020).
- Operation of core training courses to reduce fatal accidents.
- Operation of special training courses to reduce tangible and direct causes for accidental fatalities in accordance with the "Measures to Reduce Occupational Fatalities by Half".
- + Operation of training courses based on the core types of fatal accidents, such as falls and suffocations (5 courses).

+ Measurement of improvements in awareness of prevention of fatal accidents, targeting those who are with authority and responsibility (4.71/5 points; highly satisfactory).

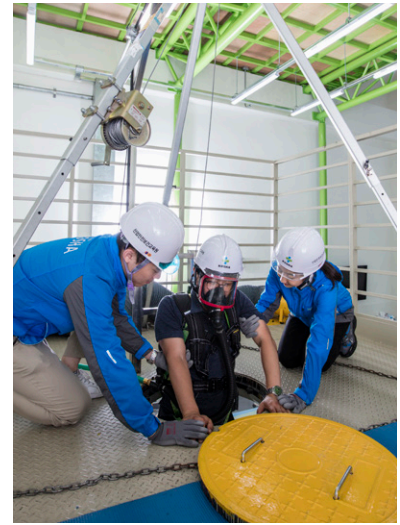
3. Development of training courses reflecting internal/external environmental changes, including government policies and amendments of the Occupational Safety and Health Act

- New development* of legal training courses and professional training courses, including job training for employees at checkup institutions and tower crane works accommodating the wholly amended Occupational Safety and Health Act and measures to enhance safety at workplaces of public institutions.
- * Job training for safety checkup/self-regulatory safety checkup institutions (new/supplementary), courses for operation license of mobile crane and high-alti-

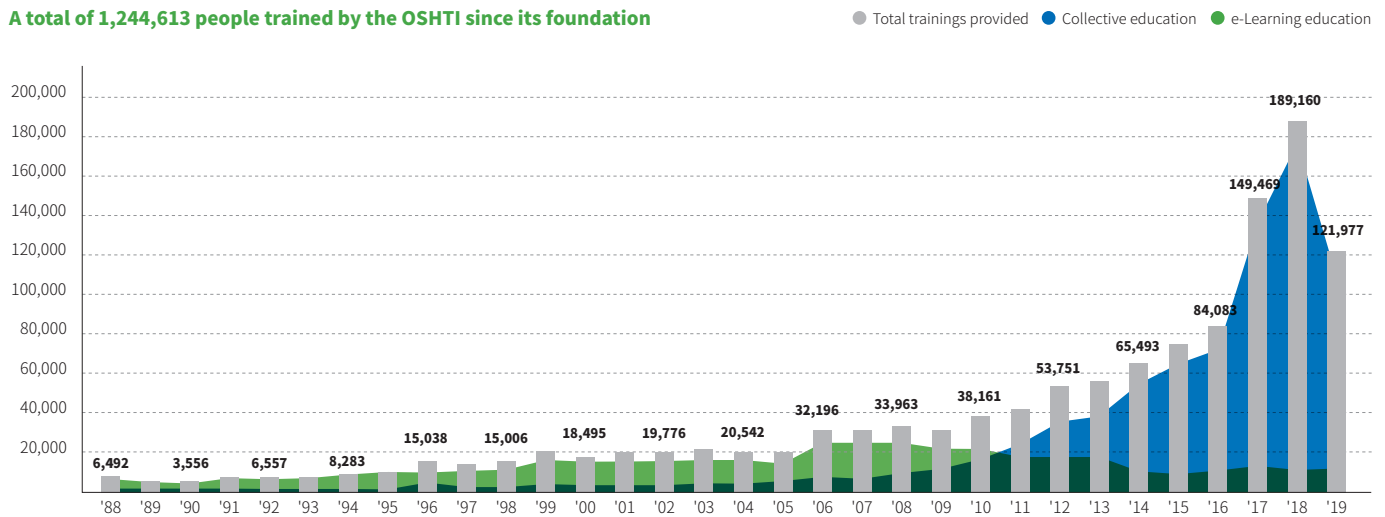
tude work platforms, and courses of OSH responsibilities for project owners of construction businesses (4 courses).

4. Development and distribution of “Safety and Health MOOC*” suggested by the public

- The OSHTI builds channels where the general public can make suggestions any time for training courses that they want to take, develops “Safety and Health MOOC” online training courses after deliberation committee participated by the general public, and offers those courses for free of charge.
- Development of 21 types of public-participating contents familiar to daily lives, including fine dust and stress.
- * MOOC (Massive Open Online Course) : Open online course for a massive number of users.
- ※ Open demonstration and collection of feedbacks (117 feedbacks) from the participating public panels, the first of its kind for the OSHRI.



A total of 1,244,613 people trained by the OSHTI since its foundation



5. Efficient operation based on CQI (Continuous Quality Improvement) and construction of troubleshooting oriented training assessment system

* Please refer to the picture at the bottom of this page

6. Operation of “Safety + Social Consensus” Open Campus designed to help local college students finding jobs

- Support of training programs tailored to assist job-seeking tasks focusing on practical field works to develop local talents from local colleges by building continuous cooperative relationships based on execution of the MOU signed between the OSHTI and University of Ulsan.
- Operation of practical training courses for junior and senior students from local colleges (University of Ulsan) and “Safety + Social Consensus” credit course (2 credits for one semester) focusing on practical field works.

Focal Activities in 2020

1. Opening and operation of new training courses reflecting the enactment of the amended Occupational Safety and Health Act and government policies

- Development and stable operation of professional training courses for the purpose of prompt and efficient implemen-

tation of the "Complete Amendments to Occupational Safety and Health Act" and accomplishing the government’s policy goals to decrease fatal accidents.

- New establishment of intensive courses with respect to the Occupational Safety and Health Act, including precedents and administrative interpretations, to ensure the amended Occupational Safety and Health Act to be fully understood and practically applied.
- Opening and operation of performance checkup training courses concerning a total of 13 different types of hazardous machinery, including 6 types* of hazardous machinery newly added under the statutory obligations pursuant to the amendments to applicable statutes.

* Conveyors, industrial robots, high-altitude work platforms, centrifugal machines, rollers and injection molding machines.

2. Complete implementation of practice/experience-oriented training based on the practical training center for installation/disassembly of tower crane

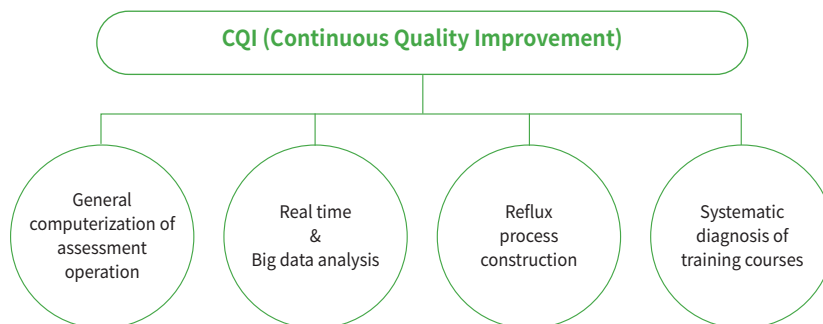
- Implementation of training courses focusing on practices (1 week for theory, 3 weeks for practice) by utilizing the practical training center for installation/disassembly of tower crane.

- Offering of training courses with one professional instructor and one teaching assistant for practice (teaching assistant for safety), utilizing practice structures installed close to the ground by major progress phases during the actual installation/disassembly of tower crane.
- Expanded operation of training courses from existing theory-based 36-hour training to practice-oriented 144-hour training in addition to supplementary training courses every 5 years.

3. Stabilization of practical works/field-oriented training programs for enhancement of professional competency to strategically develop qualified workforce

- Stable operation of strategic talent development training programs for comprehensive OSH capabilities in accordance with the "Conversion Roadmap for Competence Enhancement Training System".
- Development of practical competency through sequential training and OJT based on educational curriculums* by OSH fields, and strengthened feedbacks through weekly comprehensive evaluations.
- * Co-requisite ⇒ requisite for major ⇒ application for major ⇒ common application.
- Enhanced management of courses to improve educational achievements,

Efficient operation based on CQI (Continuous Quality Improvement) and construction of troubleshooting-oriented training assessment system





including establishment of first-class faculties, operation of practice/discussion-oriented training programs and strict supervision of completion of courses, aiming at developing OSH experts.

4. Development of training programs different from the private sector and practice-oriented training

- (Development of training courses) Design/development of training courses* that are not easily accessible by the private sectors, through anticipation of threats to workers' safety from harmful/risk factors arising from proliferation of automated machines/equipment, such as IoT and smart factories, and introduction of new industries.
- * Systematic training courses for core safety systems required to operate smart factories, such as SIL and PL, and health management courses for electronics industry capable of early prevention of occupational diseases and health hazards.
- (Practical/Empirical Training) Practice-oriented training, utilizing the practical training facility for installation/disassembly of tower crane, 13 types of harmful/hazardous machinery/equipment, 24 independent practice chambers and evaluation sheets on practices.

5. Implementation of "Cyber Safety and Health Training Center" to elevate training through internet

- (Implementation of Roadmap) 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 environments and external examinations covering entire existing internet training service system.
- (Development of New Contents) Development of 76 different HTML5-type learning-oriented contents responding to changes in the ICT environment, oriented to OSH officials, future industrial workforce and vulnerable groups (platform workers).
- (MOOC Brand-making) 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 from home and abroad as well as expanded contents.

6. Collaborative Training

- Reinforced investment in human resources through operation of safety and health courses for CEOs (Operation of 2 courses).
- Improvement of safety awareness of senior

- managements and reinforced corporate competitiveness by offering the courses professing the value of "safety," i.e. philosophy of safety management, targeting senior management of business enterprises and executives of public institutions, at one graduate school each in Seoul Metropolitan Area and another one in the region, respectively.
- Financial aids of tuitions to help employees of small-and-medium-sized enterprises obtaining master's degree (50 candidates per event)
- Opening of OSH-related master's course at 4 regular graduate schools*, and financial aids of tuitions.
- * Graduate Schools Offering the Course : 4 universities, including Kyunghee University, Korea University of Technology and Education, Korea National University of Transportation and Hankyong National University.
- Expanded Operation of "Safety + Social Consensus" Open Campus.
- Realization of social values through development of local talents in Ulsan by expanding the "Safety + Social Consensus" course and correspondence to the national policies of balanced growth by fully utilizing outstanding educational infrastructure owned by the OSHTI.



14

Occupational Safety & Health Certification

[Specialized in Certification/ Inspection of Safety - OSHCI](#)

Key Achievements in 2019

- 1. Construction of complete safety through safety certification and safety checkup of machinery, protective device and protective gear**
 - Construction of faultless safety through regular checkup, assessment and certification of safety for harmful factors, hazardous machinery/equipment and protective devices and gear prone to industrial accidents.
 - The number of deaths from fatal accidents due to hazardous machines subject to safety certification/examination was reduced by 19.1% compared to the same period of the previous year.
 - Serious injury accidents were reduced by 8.7% because of multilateral efforts made to prevent accidents from 5 major high-risk machinery/devices.

- 2. Certification standards amended to secure fundamental safety during design/manufacturing phases of hazardous machinery/devices**

- Installation standards were prepared for moment devices* to prevent overload and fall accidents of mobile crane and aerial work platforms embedded on vehicles.
 - * Moment device : A safety device preventing overload and falls based on overall consideration of length, angle and load.
- Test standards were added to strengthen structural stability of the lift ladder for transportation of moving companies.
- Adoption of device preventing excessive rise of scissors-type aerial work platforms and safe operation protocols.

- 3. Preemptive response to new risks from expanded use of industrial robots**

- "Protective devices for industrial robot"



were added to the items subject to safety certification (Article 84 of the Occupational Safety and Health Act) to enhance safety of industrial robots.

4. Licensing system for operation of mobile crane and aerial work platforms (vehicle-mounted) was newly established and enacted

- It is designed to elevate safety awareness during operation of mobile crane and aerial work platforms (vehicle-mounted) and assure safe repair works.

5. Risk awareness of workers handling hazardous machinery has been improved through reinforced delivery of risk information regarding high-risk machinery causing frequent fatal accidents

- Key risk factors (key-message) and safety measures were widely delivered mainly to operators of hazardous machinery (operating staff members, repair workers, etc.) during the safety inspection to prevent fatal accidents caused by hazardous machinery.

6. Safety inspections were conducted at the sites using hazardous machinery

- Special safety inspection was performed at the workplaces equipped with conveyors (extensive verification of operational conditions of protective devices, including protective measures for hazardous regions and emergency suspension devices).
- Joint inspections were executed to eradicate customary practices ignoring safety during the use of mobile crane/aerial work platforms (inspections were made regarding risk factors, such as attachment of illegal riding devices to mobile crane and disassembly of safety rail at aerial work platforms).

7. Safety industry concerning safety device/gear has been promoted and supported

- Supports were provided to secure competitiveness of domestic businesses for exports of protective devices/gear through supports for development of new products by means of financial aids for R&D, enhancement of MOU activities with overseas certification institutions and implementation of certification test services based on international standards.

Performance of Safety Certification, Self-Regulatory Safety Examination Report and Safety inspection in 2019

(Unit : Case)

Safety Certification			Self-Regulatory Safety Examination Report		Safety Examination
Hazardous machine/equipment	Protective Device/Gear	S Mark	Hazardous machine/equipment	Protective Devices/Gear	
40,497	5,489	1,649	10,949	157	44,469

Focal Activities in 2020

1. Fulfilling the role as a leading institution in safety certification/inspection

- Fundamental prevention of accidental disasters caused by hazardous machinery/devices by developing safety standards through construction and operation of work performance systems as an international safety certification/assessment agency.

2. Securing fundamental safety from the process of manufacturing or use of hazardous machinery

- Installation of the moment device is now mandatory to assure prevention of overload and fall accidents of mobile crane and aerial work platforms embedded on vehicles.
- Enhanced safety standards for lift ladders for transportation of moving companies and scissors-type aerial work platforms have been amended and enforced.

3. Placing its focuses on the prevention for fatalities during the use of hazardous machinery

- Key risk factors (key-message) and safety measures have been presented to operators of hazardous machinery (operating staff members, repair workers, etc.) during the safety inspection to prevent fatal accidents caused by hazardous machinery.
- Unannounced inspection were executed to improve effectiveness of safety inspection and secure safety during the use.

4. Activities to improve certification systems have been conducted to address the industry-wide environmental changes

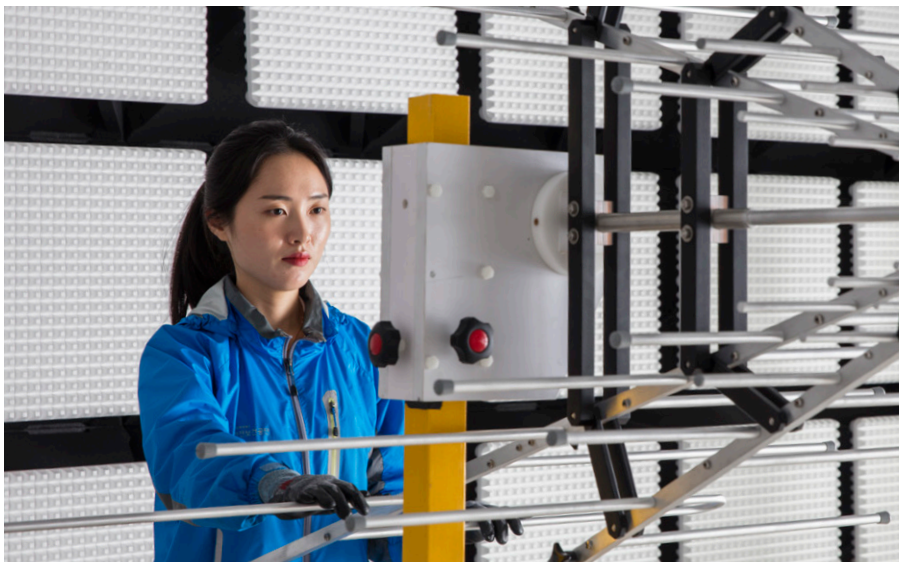
- The foundation of implementing safety certification for protective devices has been built to actively respond to the changes of the industrial environment, including expansion of workplaces using industrial robots.
- The scope of application of protective devices has been expanded to preemptively

respond to future changes of the industrial environment and prevent fatal accidents caused by new risks.

- Efforts were made to improve systems of securing safety during the installation and use of temporary equipment.
- Research services were conducted to elevate the checkup fees to the practical level for the purpose of reinforcing the effectiveness of safety inspection.

5. Enhanced surveillance system for the market of protective devices and gear in order to implement effective safety certification system

- Protection of Korean OSH markets and enhancement of market surveillance function against defective/uncertified products through implementation of investigation into manufacturing process and performance test systems regarding the products subject to safety certification and self-regulatory safety confirmation report.





6. Enhanced cooperative system with relevant authorities in the fields of safety certification and safety inspection

- Business collaboration with relevant authorities of safety certification and MOU institutions was enhanced, and business performances were monitored for the benefit of mutual cooperation.

7. Supports for manufacturers of protective devices/gear were vitalized for mutual cooperation

- Financial aids for R&D and test equipment were widely offered to improve the quality and performance of products of protective devices/gear;
- Supports were made to help manufacturers increase export volumes through assistance for the manufacturers to acquire the CE mark for protective gear.

8. Certification standards were unified to correspond to the national standards (KS)

- Certification standards for the field of explosion-proof electrical products were unified to correspond to the national standards (KS).
- Efforts were made to have the certification standards for protective gear in accordance with the international standards (CE).

9. Job performance capabilities and professional technical skills of certification/inspection officers were enhance

- Operation of programs designed to strengthen professional technical skills/competency of examination/inspection officers.
- Execution of provision of new and supplementary training programs for inspection officers.



15

Future Forecasting & Preparation

Construction of
Future Occupational
Safety & Health
Infrastructure

Key Achievements in 2019

1. The Future Forecasting & Preparation Board was newly established (January 1, 2019) within the KOSHA headquarters to play an exclusive role in building a foundation for a monitoring system regarding core risks of future hazardous industries (electronics, construction and services)

2. Direction and design of infrastructure for OSH of the Future

A. Development of occupational accident prevention models accommodating the characteristics of hazardous industries (electronics, construction and services).

1) Development of a round-the-clock surveillance system for chemicals capable of verifying the information on exposure levels in real time by utilizing communica-

tion networks and sensors detecting high-risk chemicals for occupational diseases, including acute poisoning.

2) Development of models forecasting accident risks by the period of constructions works capable of predicting accidents in advance through calculation of standard construction periods by the types of major constructions at construction sites and analysis of risks for accidents based on harmful/risk factors by processes and periods.

3) Development of danger alert systems for workers at two-wheeled vehicle delivery platform designed to notify risks of accidents by indicating the details of accidents and danger warning through Apps from platform companies upon approach to the regions of previous fatal accidents during the delivery by two-wheeled vehicles.

B. Development of windows to freely communicate with stakeholders by industries, such as the government, labor unions, academic communities and management communities, with regard to future risk factors of OSH and countermeasures for the risks concerned.

3. Foundation for building scientific systems to prevent occupational accidents

- A. It is to build a foundation for future safety in relation to big data and AI by identifying the patterns at workplaces with high possibility of fatal accidents and establish major targets for analyses through analysis on original cause materials (risk factors) of fatal accidents and characteristics of fatal accidents at business sites under the national industrial accident insurances.
- B. It is to develop a foundation for an automated system to identify high-risk workplaces through development of models automatically extracting high-risk workplaces by the types of fatal accidents.
- C. It is to prepare a foundation for an artificial intelligence system designed to predict the types of accidents by workplaces and automatically recommend technical guidance measures accordingly.

Focal Activities in 2020

1. New establishment of Occupational Safety & Health Future Technology Institute to preemptively respond to future harmful risks of OSH arising from industrial changes and expand public services (January 1, 2020)

- A. (Business subjects) Electronics industry, such as semiconductor manufacturing, a core national industry, service industry including platform workers, and construction industry exposed to frequent fatal accidents.
- B. (Key details) It is to lead in the advancement of occupational safety and health field by constructing infrastructure capable of preemptively responding through detection of OSH risks, which fail to be easily foreseen via conventional means, based on accumulation of information of key risk factors by industries and analysis of big data.

2. Construction of OSH infrastructure for future responses

- A. Development of ICT-convergence Occupational Accident Prevention Project.
 - 1) It is to build a system to indicate risk information by utilizing information,

including worksites handling major chemicals and volumes of chemicals, and to prevent occupational cancers and acute poisoning by developing and applying smart sensors detecting chemicals based on 5G communication networks.

2) It is to build a comprehensive information network for real-time monitoring of information on nationwide construction sites based on GIS (Geographic Information System) and prevent fatal accidents from high-rise and complicated construction works and influx of vulnerable workers through a program designed to alert the risks for fatal accidents in advance by seasonal periods of construction works.

3) It is to prevent occupational accidents of workers in newly emerged labor types, including two-wheeled delivery workers, by providing tailored OSH information based on alerts when approaching fatal accident-prone areas and weather conditions after constructing an OSH information delivery system in the format of Open API (Application Programming Interface), which makes the data platform available to the public.

B. It is to develop a prototype of occupational accident prevention system based on big data/artificial intelligence designed to recommend directions of technical guidance by predicting the types of accidents based on the characteristics of worksites and selecting the high-risk worksites for fatal accidents as its business subjects through the utilization of OSH big data.

C. It is to detect future OSH risks by analyzing industrial ecosystem by business types to verify risk-delivery-links and explore future activities required for OSH through various communications with academic community, labor unions, management community and civil organizations.







PART. 03

APPENDIX



Status of Occupational Accidents in 2019

Organization & Staff

Financial Report

History

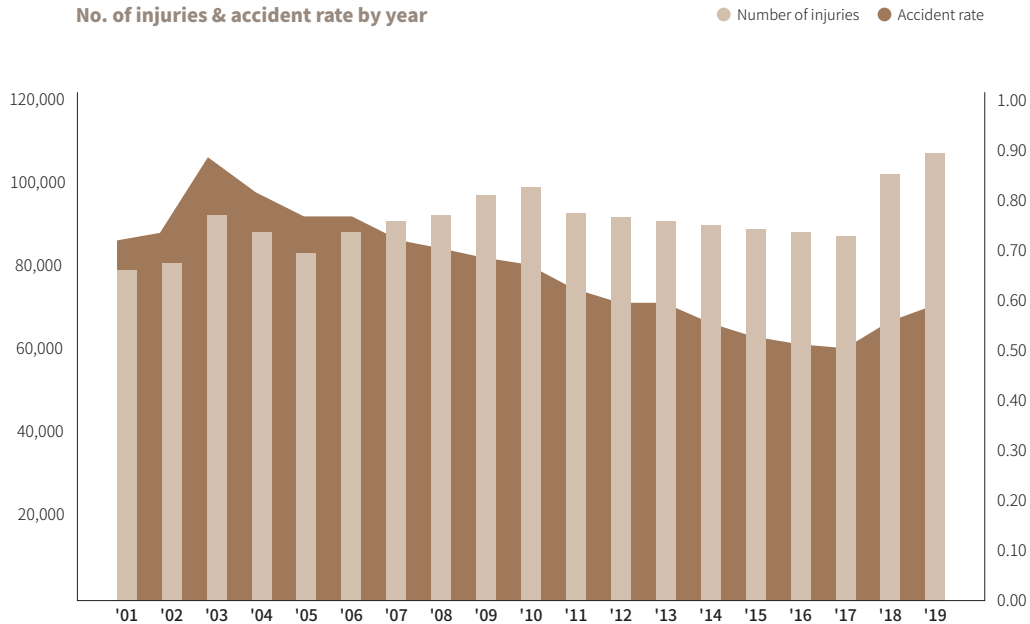
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Status of Occupational Accidents in 2019

Overview

- Of 18,725,160 workers working at 2,680,874 workplace that are eligible for occupational accidents compensation insurance in 2019, 109,242 workers required 4 or more days of nursing and accident rate was 0.58%.
- The Number of workers increased by 1.8% compared to 2018 and occupational accident victims increased by 6.8% and accidents rate increased by 0.04%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 been showing continued downward trend.

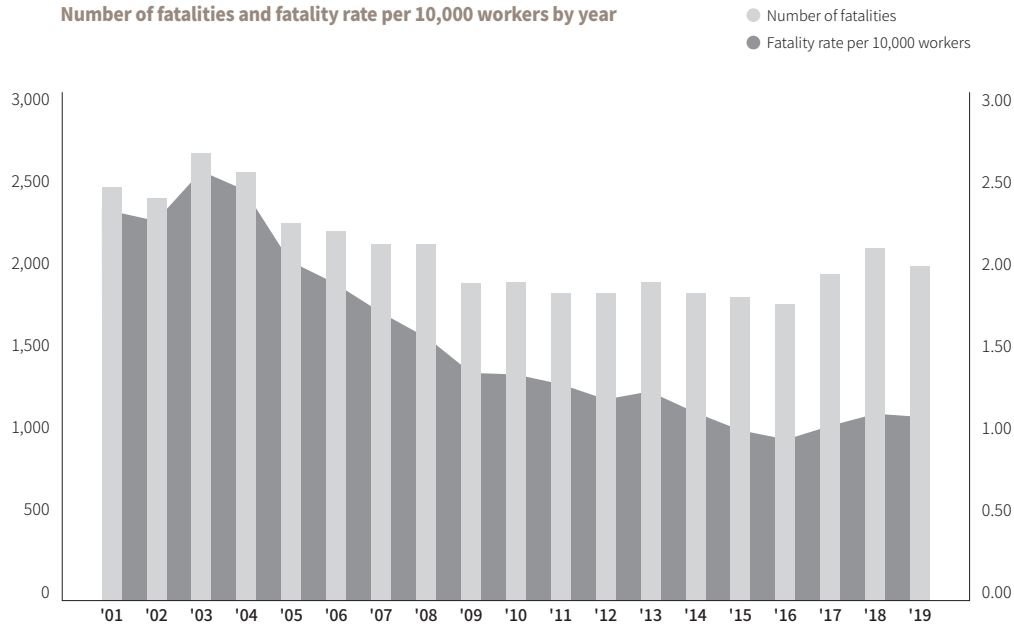
No. of injuries & accident rate by year



Status on occupational deaths

- Occupational deaths were 2,020 persons and of those, work-related accidents were 855 and death from occupational disease were 1,165.
- The fatality rate per 10,000 workers were 1.08‰, increasing by 0.04‰ comparing to 1.12‰ in 2018. Work-related accident rate per 10,000 workers was 0.46‰, 0.05‰ decrease from 0.51‰ in 2018. The type of fatal accidents were work-related diseases (cerebrovascular disease etc.) 558, pneumoconiosis 402, and falls 347 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 but it turned to downward in 2019.

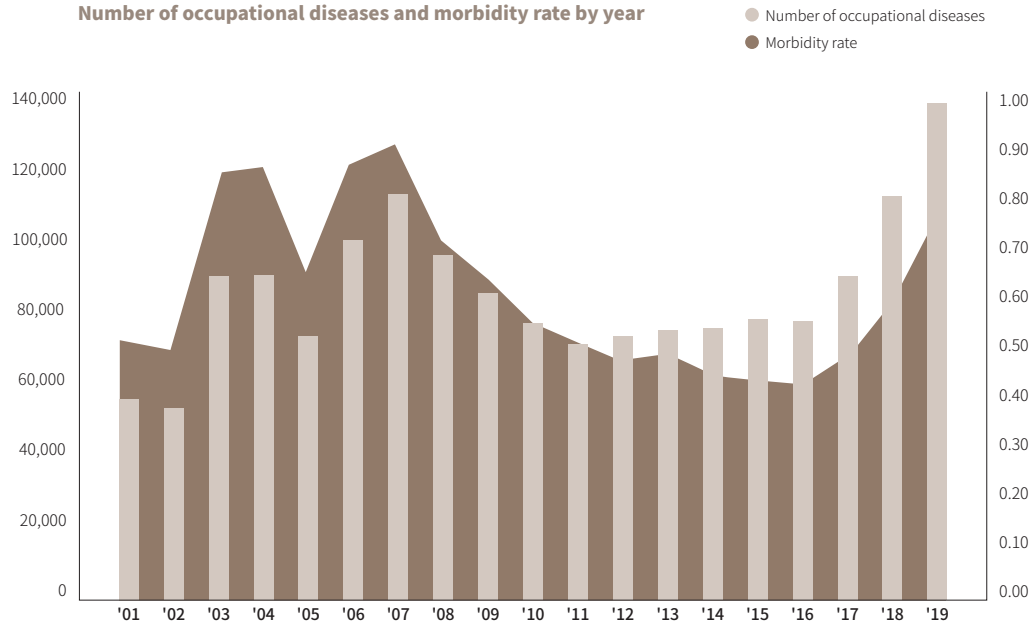
Number of fatalities and fatality rate per 10,000 workers by year



Status of occupational disease

- The number of workers suffered from occupational disease in 2018 (including deaths) was 15,195, increased by 3,722 (32.4%) from 11,473 the year before.
- Of these, the number of occupational diseases was 4,035 in 2019 increasing by 667 (19.8%) from 3,368 the year before and the number of work-related diseases was 11,160, 3,055 (37.7%) increase from 8,105 in 2018.

Number of occupational diseases and morbidity rate by 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

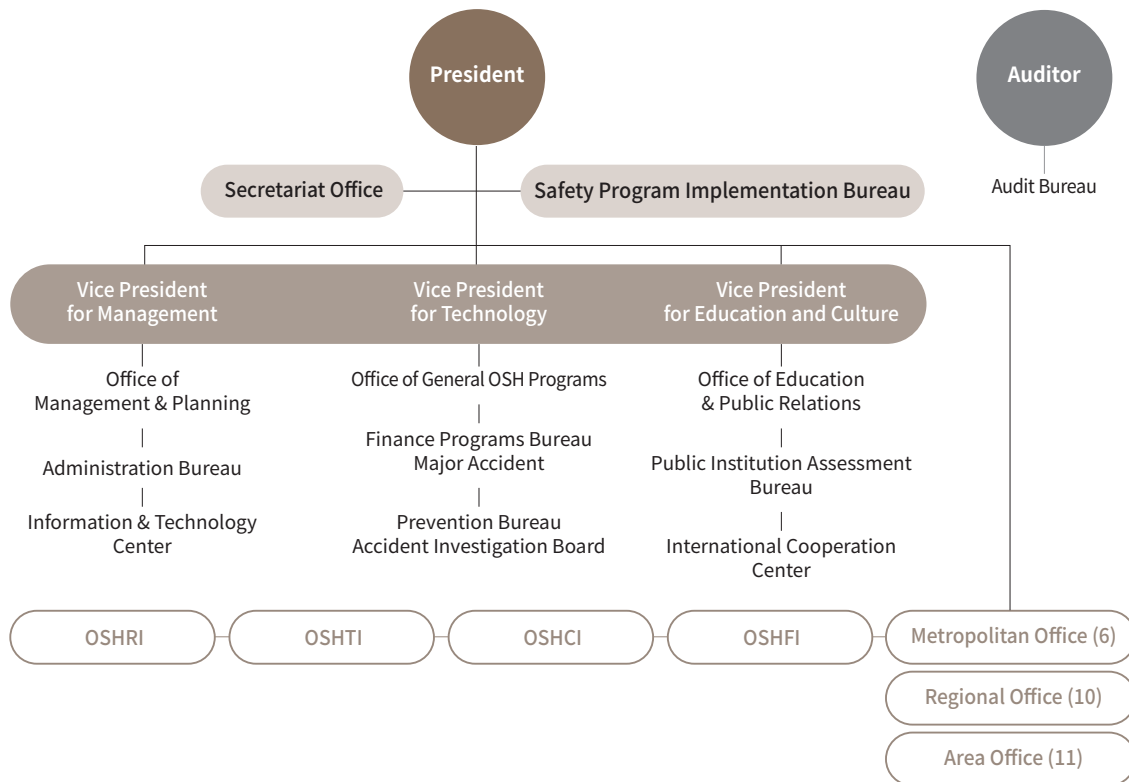
Number of victims for work related diseases/Number of workers eligible for occupational accident insurance × 1,000

Organization & Staff

Organization structure

Headquarters (3 Offices, 6 Bureaus, 1 Board, 2 Centers), OSHRI, OSHTI, OSHCI, OSHFI*,
6 Metropolitan Offices, 10 Regional Offices, 11 Area Offices

* Occupational Safety & Health Future Technology Institute



Number of staff

Total : Headquarters 259 (14.3%) and Affiliates of KOSHA 1,551 (85.7%)

(Unit : Person)

Body	Total	CEOs	Privileged position	Directors	Deputy directors	Senior managers	Managers	Assistant managers	Staff and others
Total	1,810	5	5	61	192	413	531	444	159
Headquarters	259	5	-	13	36	86	93	9	17
Affiliates	1,517	-	5	48	156	327	438	435	142

※ 318 Professional engineers, 967 certified engineers, 64 Phds, 439 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	2020 (A)	%	2019 (B)	Increase· decrease (A-B)	%
Total	565,048	100.0	507,427	57,621	11.4
Industrial accident compensation insurance and contributions for the prevention fund	562,548	91.4	504,927	57,621	11.4
- Contributions	341,533	55.5	322,366	19,167	5.9
- Subsidies	98,257	16.0	74,970	23,287	31.1
- Intangible assets	-	-	937	△ 937	△ 100.0
- Loan	122,758	20.0	106,654	16,104	15.1
Earned income	2,500	0.4	2,500	0	-

Expenditure

(Unit : Million KRW)

Sort	2020 (A)	2019 (B)	Increase· decrease (A-B)	%
Total	565,048	507,427	57,621	11.4
Financial aid for 'clean workplace'	100,192	76,855	23,337	30.4
Loan for accident prevention facilities	122,758	106,654	16,104	15.1
Accident prevention by industrial classification	54,745	47,955	6,790	14.2
Safety accreditation or certification	6,736	6,011	725	12.1
Hazardous working environment improvement	51,095	54,916	△3,821	△7.0
Workers' health protection	33,541	26,565	6,976	26.3
Safety and health culture establishment	30,557	29,124	1,433	4.9
Accident prevention facilities construction	5,489	8,873	△3,384	△38.1
Operation of OSH information system	6,397	5,019	1,378	27.5
OSH R&D and international cooperation	7,432	6,065	1,367	22.5
Personnel, operating expenses, etc.	146,106	139,390	6,716	4.8



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 & highefficient 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

History



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

2010~2019

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

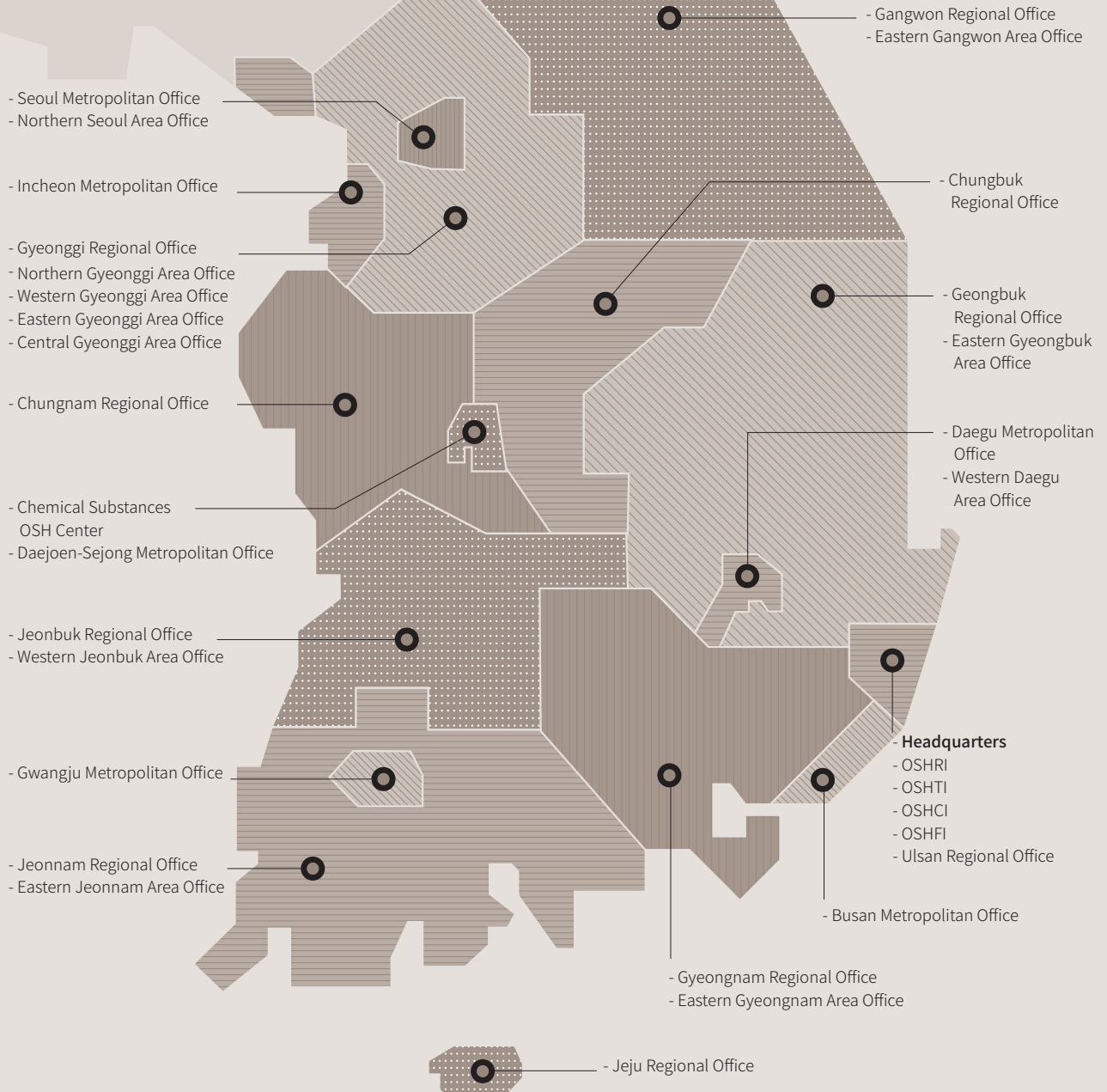
Expanded KOSHA's regional offices from 6 offices to 16 offices

December 2019

Newly establish OSHFI and renamed KOSHA Affiliates(16 Regional Offices ⇔ 6 Metropolitan Offices, 10 Regional Offices)

Contact Address

Korea Occupational Safety and Health Agency





Office		Tel. (+82)	Location
Ulsan	Headquarters	52)703-0500	400 Jongga-ro, Jung-gu, Ulsan, Korea
	OSHRI	52)703-0500	400 Jongga-ro, Jung-gu, Ulsan, Korea
	OSHTI	52)703-0500	400 Jongga-ro, Jung-gu, Ulsan, Korea
	OSHCI	52)703-0500	400 Jongga-ro, Jung-gu, Ulsan, Korea
	OSHFI	52)703-0500	400 Jongga-ro, Jung-gu, Ulsan, Korea
	Ulsan Regional Office	52)226-0510	83 Jeongdong-ro, Nam-gu, Ulsan, Korea
Seoul	Seoul Metropolitan Office	2)6711-2800	8, Beodeunaru-ro 2-gil, Yeongdeungpo-gu, Seoul, Korea
	Northern Seoul Area Office	2)3783-8300	7F. Woori Building, 42 Chilpae-gil, Jung-gu, Seoul, Korea
Gyeonggi	Gyeonggi Regional Office	31)259-7149	10F, Gyeonggi Small & Medium Business Center, 107 Gwanggyo-ro, Yeongtong-gu, Suwon, Gyeonggi-do, Korea
	Northern Gyeonggi Area Office	31)841-4900	140, Chudong-ro, Uijeongbu-si, Gyeonggi-do, Korea
	Western Gyeonggi Area Office	31)481-7599	230, Gwangdeok 4-ro, Danwon-gu, Ansan-si, Gyeonggi-do, Korea
	Eastern Gyeonggi Area Office	31)785-3300	2F, Sogok Hall Building, 3, 17 Beon-gil, Swetgol-ro, Bundang-gu, Seongnam, Gyeonggi-do, Korea
	Central Gyeonggi Area Office	32)680-6500	3F, Daeshin Plaza, 19, 265 Beon-gil, Songnae-daero, Wonmi-gu, Bucheon, Gyeonggi-do, Korea
Incheon	Incheon Metropolitan Office	32)5100-500	478 Munemi-ro, Bupyeong-gu, Incheon, Korea
Gangwon	Gangwon Regional Office	33)815-1004	2F, Korean Teacher's Credit Union Building, 2370 Gyeonchun-ro, Chuncheon, Gangwon-do, Korea
	Eastern Gangwon Area Office	33)820-2580	3F, 182, Haseulla-ro, Gangneung-si, Gangwon-do, Korea
Busan	Busan Metropolitan Office	51)520-0510	26, 1763 Beon-gil, Jungang-daero, Geumjeong-gu, Busan, Korea
Daegu	Daegu Metropolitan Office	53)609-0500	19F, Hosu Building, 648 Gukchaebosang-ro, Junggu, Daegu, Korea
	Western Daegu Area Office	53)650-6812	5F, 1834 Dalgubeol-daero, Dalseo-gu, Daegu, Korea
Geongbuk	Geongbuk Regional Office	54)478-8000	3 Gongdan 1-ro, Gumi-si, Gyeongbuk, Korea
	Eastern Gyeongbuk Area Office	54)271-2014	402 POSCO-daero, Nam-gu, Pohang, Gyeongsangbuk-do, Korea
Gyeongnam	Gyeongnam Regional Office	55)269-0510	259 Jungang-daero, Uichang-dong, Changwon, Gyeongsangbuk-do, Korea
	Eastern Gyeongnam Area Office	55)371-7500	4F, Yangsan Labor Complex Building, 51 Namyangsan 2-gil, Dong-myeon, Yangsan, Korea
Daejeon Sejong	Chemical Substances OSH Center	42)869-0300	30, 339 gil, Expo-ro, Yuseong-gu, Daejeon, Korea
	Daejeon-Sejong Metropolitan Office	42)620-5600	60, 339 Beon-gil, Expo-ro, Yuseong-gu, Daejeon, Korea
Chungbuk	Chungbuk Regional Office	43)230-7111	3F, KT Building, 20, 161 Beon-gil, Gageong-ro, Heungdeok-gu, Chungju, Chungbuk, Korea
Chungnam	Chungnam Regional Office	41)570-3400	3F, Chungnam Economy Service Centre, 215Gwangjang-ro, Seobuk-gu, Cheonan, Chungnam, Korea
Gwangju	Gwangju Metropolitan Office	62)949-8700	8F, Trade Hall Building, 282 Mujin-daero, Usan-dong, Gwangsan-gu, Gwangju, Korea
Jeonbuk	Jeonbuk Regional Office	63)240-8500	4F, Ministry of Employment and Labor Complex Building, 251 Geonsan-ro, Deokjin-gu, Jeonju, Jeonbuk, Korea
	Western Jeonbuk Area Office	63)460-3600	2F, 482 Jayu-ro, Gunsan, Jeonbuk, Korea
Jeonnam	Jeonnam Regional Office	61)288-8700	242, Hugwang-daero, Samhyang-eup, Muan-gun, Jeollanam-do, Korea
	Eastern Jeonnam Area Office	61)689-4900	35 Museonjungang-ro, Yeosu, Jeollanam-do, Korea
Jeju	Jeju Regional Office	64)797-7500	4F, Small & Medium Business Center, 473 Yeonsam-ro, Jeju, Jeju-do, Korea



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