



ISC Issue Brief

What is an Industrial Skills Council (ISC)?

ISC is an organization that supports the workforce development that meets industry demand through establishing training and qualifications standards in skills with high demand

The Need to Develop and Train Safety Management Specialists to Prevent Industrial Accidents

- 2022 1Q Issue Brief discusses the need to develop safety management specialists and improve the skill level of on-site workers in response to the implementation of the *Serious Accidents Punishment Act*.
- ISCs in industries with high exposure to serious accidents (construction, machinery, materials, and electricity, energy, and resources) provided implications on safety management specialist development and skills enhancement of on-site workers from the perspective of industrial accident prevention.
 - Considering that work sites differ by industry and there are currently many small businesses and enterprises,
 - Safety management specialists must be trained to understand the different workplace considerations by industry, and consideration is needed for separate support measures for small-scale businesses and enterprises that have limited capacity for additional hires.

Outline of Serious Accidents Punishment Act

***Serious Accidents Punishment Act*, enacted on January 27, 2022, has its main purpose in preventing accidents by stipulating the duties of business owners or management and strict sanctions associated with serious accidents.**

- According to Article 2 Paragraph 1 of the *Occupational Safety and Health Act*, serious industrial accidents are defined as industrial accidents resulting in one of the following death, injury, or illness.
 - an accident that results in 1 or more deaths
 - an accident that results in 2 or more injured individuals requiring treatment of 6 months or longer
 - an accident that results in 10 or more injured individuals requiring treatment of 3 months or longer

- **Serious Accidents Punishment Act** has its main purpose in preventing industrial accidents by defining the business owners' or managements' duties to secure safety and welfare, and strict sanctioning when serious industrial accidents occur due to violation of such duties.

- Ministry of Employment and Labor has been committed in reducing industrial accidents through various measures, including the announcement of "Enforcement of 2022 Serious Accidents Punishment Act and Initiatives to Reduce Industrial Accident Deaths" on January 10, 2022.
- In addition to industry's and government's efforts, safety management specialist development and on-site laborer skill set improvement are critical from a preventive and mid-to-long-term perspective.

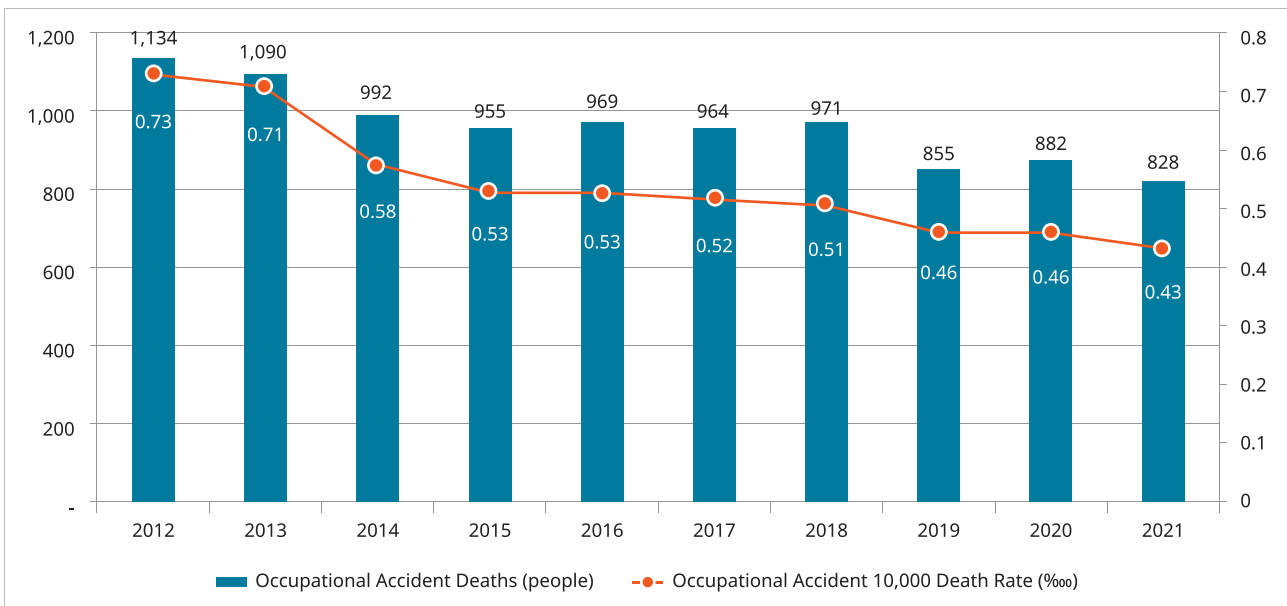
Current State and Characteristics of Industrial Accidents

Whilst the number of deaths from industrial accidents shows a stabilized downward trend, there is a high ratio of industrial accident deaths by falling and jamming in small-sized construction and manufacturing work sites.

- Although the total number of occupational accident deaths and occupational accident 10,000 death rate in industrial accidents (official statistics based on recognized industrial accidents) have shown some minor volatility, the overall trend shows stabilized downward direction.

- Occupational accident deaths and 10,000 death rates during the past decade (2012-2021) have shown a decreasing trend from 1,134 deaths, 0.73‰ in 2012 to 828 deaths, 0.43‰ in 2021.

Figure. Industrial Accidents Trend (2012-2021)



Note: 1. Occupational accident deaths include deaths immediately following the accident as well as deaths that took place during recovery
 2. Occupational accident 10,000 death rate=Occupational accident deaths÷laborers×10,000

Source: Ministry of Employment and Labor, *Industrial Accident Trend Analysis*, annual

- **Distinct characteristics can be observed by examining 2021 industrial accident trends by industry, size, and accident type.**

- Industrial accident trends by industry show the greatest number of deaths in the construction industry (417 deaths), followed by manufacturing (184 deaths) and other industries (123 deaths).
- Occupational accident 10,000 death rate was the highest in mining (8.77‰), followed by fishing (4.04‰), and construction (1.75‰).
- Industrial accidents are concentrated in small-sized work sites with 352 deaths in operations with 5-49 employees and 318 deaths in operations with less than 5 employees; occupational accidents 10,000 death rates were 0.99‰ in operations with less than 5 employees and 0.42‰ in operations with 5-49 employees.

- In terms of accident types, of 828 occupational accident deaths, 351 deaths (42.4%) were the result of falling, followed by 95 deaths (11.5%) from jamming, and 72 deaths (8.7%) from collisions.

Table. Industrial Accident Trends by Industry and Size (2021)

	Type	Accident Rate (%)	Occupational Accident Deaths (people)	Occupational Accident 10,000 Death Rate(‰)
Industry	Mining	1.30	3	8.77
	Manufacturing	0.61	184	0.46
	Construction	1.13	417	1.75
	Electricity, Gas, Steam and Water Supply	0.13	0	0.00
	Transportation, Storage, and Communications	0.92	72	0.72
	Forestry	0.83	12	1.09
	Other Industries	0.36	123	0.11
	Fishing	1.35	2	4.04
	Agriculture	0.80	9	1.14
	Financial Services and Insurance	0.04	0	0.00
Size	Less than 5 Employees	1.06	318	0.99
	5-49 Employees	0.53	352	0.42
	50-99 Employees	0.38	54	0.27
	100-299 Employees	0.33	56	0.22
	300-999 Employees	0.22	30	0.18
	1,000 or more Employees	0.23	18	0.21
	Total	0.53	828	0.43

Source: Ministry of Employment and Labor, *December 2021 Industrial Accident Trends*

● **The characteristics of serious accidents by industry are as follows.**

- **(Construction ISC)** Due to the nature of structures in construction, production methods are labor intensive and a large number of serious accidents take place. Moreover, the industry employees a large number of older laborers with deteriorating physical capacity and novice laborers, resulting in serious accidents concentrated among these workers.
- **(Machinery ISC)** Assembly process centered SME machinery industry has poor working conditions and is associated with all 7 serious accident risk factors (elevated work, substandard facility management, electricity and wire work, lifting machinery such as excavators and forklifts, access control process, chemical materials, and confined space).
- **(Materials ISC)** Serious accident risk is constantly present in the metals manufacturing industry due to its capex-heavy nature with numerous large machinery operating non-stop, and handling of heavy materials which increase the exposure to accidents from jamming, falling, swinging objects, explosion, rupture, and fire.
- **(Electricity, Energy, and Natural Resources ISC)** Serious accident risks have increased with electricity occupations due to structural challenges such as outdated facilities, weak safety systems, outsourcing of risk as well as lack of trained laborers and increasing number of novice or foreign laborers to reduce costs.

The Need to Develop Safety Management Specialists and Improve Skill Levels of On-site Laborers

Meticulously serving the responsibility to secure safety and welfare through developing safety management specialists and safely performing tasks through skills development of on-site laborers are the most critical measures to prevent serious accidents.

- **The complexions of serious accidents by industries stipulate the need for developing safety management specialists and improving the skill levels of on-site laborers.**

- Namely, the main problems are the insufficient supply of safety management specialists to perform preventive measures on the work site and insufficient skill levels of on-site laborers, which limit the ability to avoid danger preemptively.

● **ISCs from main industries outline the following impacts and responses to the *Severe Accidents Punishment Act*.**

• **(Construction ISC)** The fundamental solutions are to devise measures to attract younger laborers and increase the overall skill level of laborers.

- Although the demand for safety managers is expected to increase, the supply and demand mismatch is challenging to address because construction technicians require certain certifications and experience to be appointed safety manager.

• **(Machinery ISC)** Priority task is to revamp substandard working environments through initiatives such as assessing adverse risk factors in machinery industry work sites, analyzing risk factors, and constantly establishing preventive and improvement measures.

- Adopt musculoskeletal illness diagnosis program to prevent serious accidents; reduce work process load through design and installation/operation of Man-Machine System (MMS), which is an aggregation of man and machine to perform certain tasks.

• **(Materials ISC)** Anticipating reduction of industrial accidents by adopting artificial intelligence safety management system integrated with smart technology, which allows machination and automation of dangerous tasks, provides real-time monitoring of adverse risk factors through threat prediction technology, and suggests disaster prevention solutions.

- Serious accidents result from complex factors such as safety ignorance and sub-standard preventive measures by laborers in addition to challenges in risk management problems on the worksite. Therefore, developing safety management specialists to address various accidents is needed.

• **(Electricity, Energy, and Resource ISC)** Addressing serious accidents through measures to improve the overall skills of laborers, which are facing challenges from aging of skilled workforce and decreasing influx of new laborers, as well as falling wages from subcontracting.

- Improve working conditions, as well as encourage safety education participation through new pedagogical methods such as virtual reality.

Developing Safety Management Specialists as On-site Specialists by Industry

Reflecting unique industry characteristics and clearly establishing the identity as on-site specialist are key to safety management specialist development and on-site laborer skill enhancement for reduction of serious accidents.

● **Distinguish the response to *Serious Accidents Punishment Act* between safety management specialist development and worksite laborer skills improvement.**

- The demand for safety management specialists is expected to increase due to statutory requirements. However, supply and demand imbalance is expected to persist without simultaneously improving the working conditions of safety managers.

- It is important to consider providing supplemental supporting measures for small-scale operations that cannot hire additional safety managers.

- Safety management specialist development and on-site laborer skill set improvement are tasks that the industry and government must address together. Contemplating solutions linked to macro-level policies, such as improving the labor market structure, are needed.

● **Safety management specialists must be cultivated as on-site industry specialists for the purpose of preventing serious accidents.**

- On-site specialist with sufficient understanding of industry characteristics and challenges that focus on prevention of serious accidents in the workplace.