

Annual Report for Fiscal 2020

(April 1, 2020 - March 31, 2021)

The High Pressure Gas Safety Institute of Japan (KHK)

1. Business Environment and Overview of Operations

Though Japan's economy continues to be wary of Covid-19 infections, it is expected to improve at a moderate pace, as the impacts of the infectious disease gradually ease. It is necessary to pay close attention to the risk that the Covid-19 infections will further lower the domestic and foreign economies and to the impact of fluctuations in the financial and capital markets. In addition, Covid-19 infections have spread in Japan and overseas this year, intensifying natural disasters such as heavy rains on July 2nd and typhoon No. 10 have occurred, and continued response to these events has been required.

Turning to the field of high pressure gas safety, as a part of the smart high pressure gas safety policy promoted by the Ministry of Economy, Trade and Industry, AI reliability evaluation guidelines in the field of plant safety (November 2020) were established. The Ministry also clarified that technologies such as drones, robots, sensing, and AI can be used for inspection (February 2021) etc.

In addition, in view of the high public responsibility of KHK, we strengthened governance such as compliance and information security. In consideration of the future management situation, KHK prepared for the internal reorganization scheduled from April 2022, and for the improvement of the information system in line with the reorganization. Consideration was given to adopting cloud services with a secured security level while improving business efficiency.

Regarding the business of the fiscal year 2020 of KHK, the spread of the Covid-19 infection in Japan and overseas had a great impact on the operation. In particular, due to a significant decrease in the number of participants of legal training, examinees of national examinations, and inspections for overseas bulk, etc., sales decreased significantly as a whole. On the other hand, expenditures for securing venues and measures to prevent infection increased. Under these circumstances, efforts were made to significantly reduce expenditures in order to reduce the impact on the KHK's balance of payments. In addition, instead of face-to-face and collective work, we used online technology as much as possible to ensure that the work was carried out without causing stagnation.

2. Overview of Financial Statements for Fiscal 2020

(1) Balance Sheet

Assets	(As of March 31, 2021)	
	2020	2019
	Million Yen	Million Yen
Current assets	2,666	1,974
Fixed assets	5,156	6,009
Tangible fixed assets	983	1,035
Intangible fixed assets	205	205
Investments	3,968	4,767
Total	7,823	7,983

Liabilities/Capital	2020		2019	
	Million Yen	Million Yen	Million Yen	Million Yen
Current liabilities	612	830		
Fixed liabilities	2,268	2,181		
Reserve	4,971	4,807		
Profit for the term	-28	163		
Total	7,823	7,983		

(2) Statement of Profit and Loss

Expenditure	(from April 1, 2020 to March 31, 2021)	
	2020	2019
	Million Yen	Million Yen
Ordinary expenditure	4,233	4,442
Operating expenditure	4,233	4,442
Extraordinary loss	0	5
Corporate taxes, etc.	1	1
Profit for the term	-28	163
Total	4,206	4,612

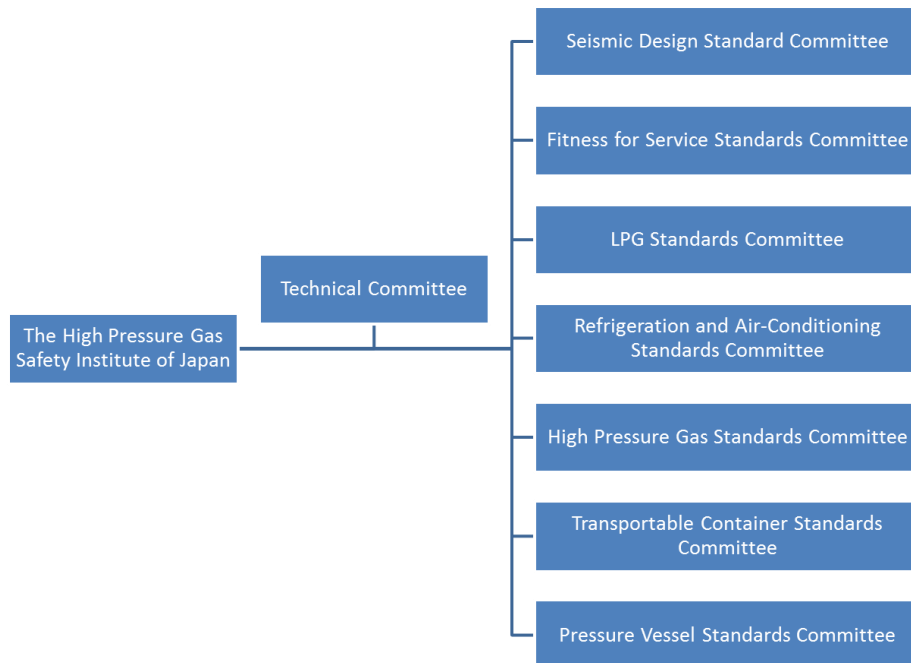
Income	2020		2019	
	Million Yen	Million Yen	Million Yen	Million Yen
Ordinary income	4,024	4,594		
Operating income	3,931	4,504		
Non-operating income	93	90		
Extraordinary income	182	17		
Total	4,206	4,612		

3. Overview of Each Activity

3-1. Development and Issue of Technical Standards

To promote safety in activities involving high pressure gas production, sale, consumption, and transportation, KHK establishes technical standards such as KHK Standards (KHKS) as well as reviews existing standards.

Committee organizations undertaking the preparation of technical standards are as follows:



Each committee consists of committee members appointed from among experts who have relevant knowledge and experience in high pressure gas or LPG safety.

In response to requests from the chairman of KHK, the Technical Committee decides basic policies for establishing the technical standards.

The technical standards are then established by each standards committee section in accordance with the basic policies, and the development and issue procedures maintain fairness and openness as the fundamental rule.

During fiscal 2020, the following standards were established, reviewed or abolished.

(a) Newly Established Technical Standards

- Facility Standard for Refrigerating and Air-Conditioning Equipment [Facilities of specified inert gas] (KHKS 0302-5)

(b) Confirmed Technical Standards

- Registration Criteria for Manufacturers of containers, etc. (KHKS 0102)

(c) Revised Technical Standards

- Technical Standard for Aluminum Alloy Liner / Carbon Fiber General Composite Container (KHKS 0121)
- Standard for Ultra-high Pressure Gas Equipment (KHKS 0220)
- Facility Standard for Refrigerating and Air-conditioning Equipment [Facilities of flammable gas] (KHKS 0302-3)
- Standard for Rubber Cap as Indoor Gas Plug for LPG (KHKS0712)
- Standard for Regulators for LPG (KHKS0735)
- Standard for High Pressure Hoses for LPG (KHKS0736)

- Standard for Security inspection (related to Refrigeration Safety Ordinance) (KHKS 0850-4)
- Guidelines for Hazard Prevention Regulations (for specific business establishments) (KHKS 1800-1)
- Guidelines for Hazard Prevention Regulations (for general business establishments) (KHKS 1800-2)
- Guidelines for Periodic Self-inspection (related to Refrigeration Safety Ordinance) (KHKS 1850-4)
- Guidelines for Hazard Prevention Regulations (For freezing-related business establishments) (KHKS 1301)

(d) Abolished Technical Standards

- Technical Documents related to the Application of Standards for Ultra-high Pressure Gas Equipment to High-pressure Hydrogen Equipment (KHKTD 5201)

3-2. Inspection, Examination and Accreditation

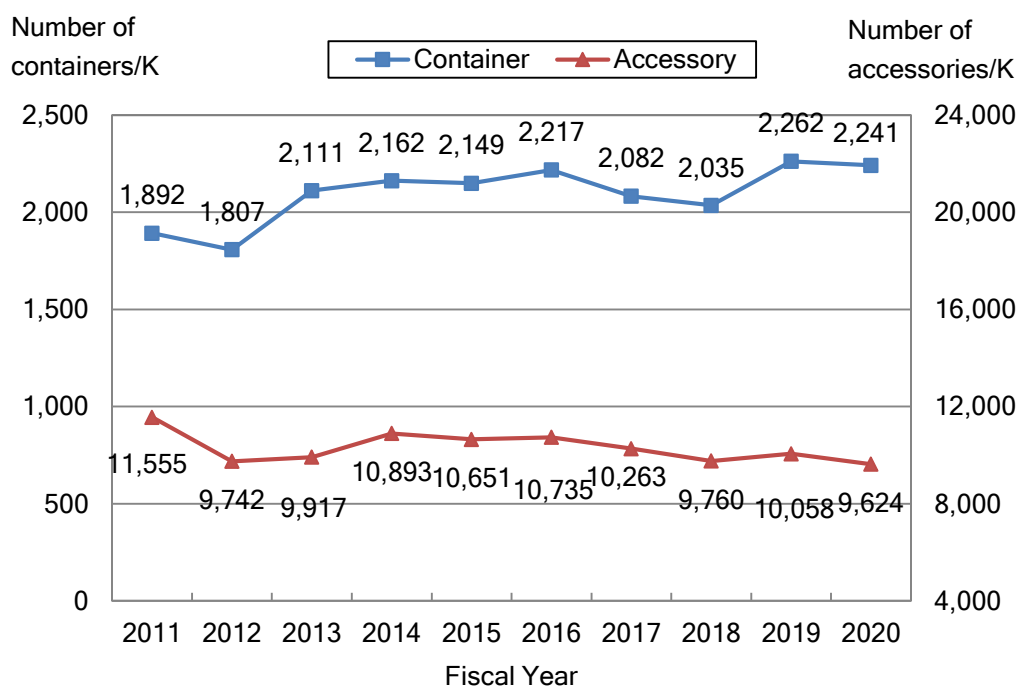
(a) Inspections for Pressure Equipment

The High Pressure Gas Safety Act stipulates that the person who has manufactured/ imported a container or accessory shall apply for the Container/Accessory Inspection. We at KHK conduct these inspections.

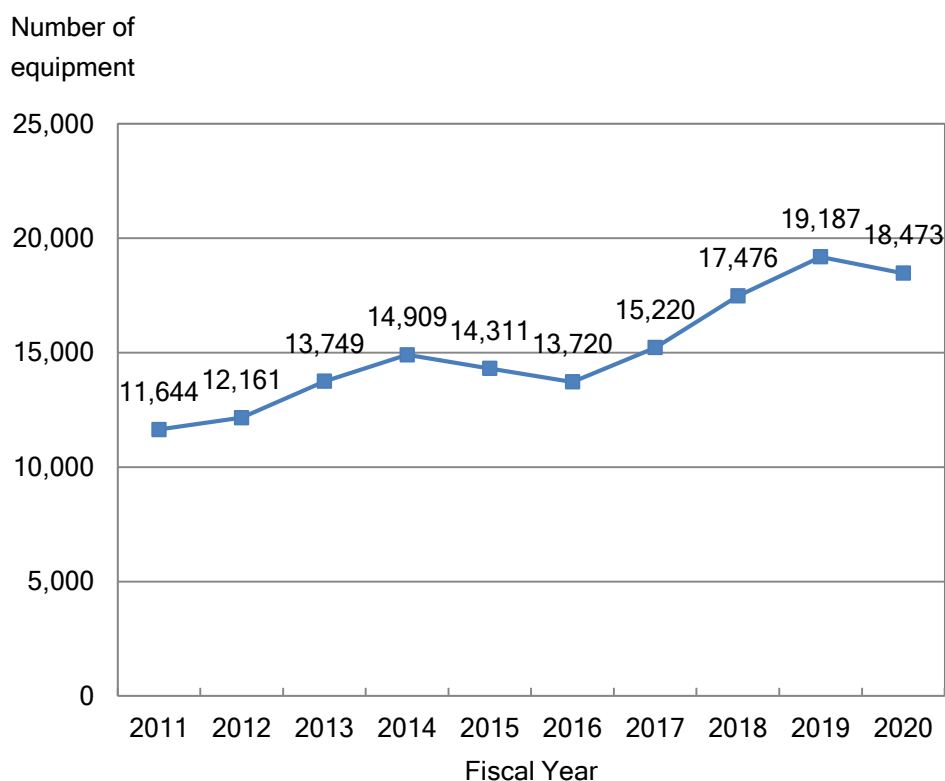
In addition, for preventing explosions or other accidents, the act defines "equipment for high pressure gas production (including storage tanks)" which particularly requires "inspections of its design, material quality, and the process of its manufacturing", as "Designated Equipment." KHK undertakes mandatory inspections of such Designated Equipment at each manufacturing process.

KHK undertakes technical assessments in advance to obtain Ministerial special approval, and also offers services for certification and examination as a part of its optional activities.

In fiscal 2020, the number of application for inspection of containers decreased by 0.9% and that of accessory equipment decreased by 4.3% compared to the previous fiscal year respectively. And the number of application for inspection of Designated Equipment decreased by 3.7% compared to the previous fiscal year.



Number of Container/Accessory inspections



Number of Designated Equipment Inspections

(b) Pre-Assessment of Accredited Completion/ Safety Inspection Executor

This pre-assessment undertaken by KHK is part of the statutory service related to the Ministerial approval of accredited completion inspection executor and safety inspection executor.

Class 1 high pressure gas producers who obtained Ministerial approval as a result of this pre-assessment can replace completion inspections or safety inspections that are conducted by prefectural or municipal governments with self-inspections by the approved producers themselves. When the self-inspections are conducted, the results shall be submitted to jurisdictional prefectural or municipal governments.

Number of pre-assessments

	2020	2019
Accredited completion inspection executor	21	14
Accredited safety inspection executor	21	15

(c) Safety Inspections of Refrigeration and Air-Conditioning Facilities

The number of inspections of refrigeration and air-conditioning facilities undertaken by KHK

	2020	2019
Completion inspection of refrigeration and air-conditioning facilities	39	34
Safety inspection of refrigeration and air-conditioning facilities	1,497	1,592
Approval of specified equipment (refrigeration equipment)	99	130

Transfer of specified equipment (refrigeration equipment)	7	1
Testing of refrigeration apparatus	164	382
Design strength verification test, etc.	195	239

3-3. Education

(a) Statutory Training

By the High Pressure Gas Safety Act, high pressure gas producers are required to establish a safety management team consisting of members with a designated high pressure gas production safety management certificate, depending on the type and scale of processing equipment and the type and volume of gas produced. To train certified personnel, KHK offers lectures on each certificate type, and retraining for existing members of safety management teams.

In addition, KHK also provides training courses for the following certificates: high pressure gas sales safety chiefs required at specified high pressure gas dealers, transportation supervisors required for transportation of specified amount of specified high pressure gas, and specific high pressure gas operation safety chiefs required for storage and consumption of specified high pressure gas beyond the designated capacity.

As for the LPG Law-related activities, KHK offers the following courses: training and retraining of LPG installation engineers for LPG piping facilities used for general consumption, retraining of retail operation chiefs, training and retraining of LPG filling operators, as well as training of safety operators and inspectors of facilities designed to consume LPG.

Number of applicants for statutory training

	2020	2019
Qualification Training	30,242	38,790
Re-training (Compulsory training)	30,697	43,341
Statutory training	62,616	85,020

(b) Other Training

During fiscal 2020, KHK held various seminars related to high pressure gas as below; on-site lectures corresponding to the needs of each business facility, safety seminars (such as basic lectures on high pressure gas and seminars on relevant law and regulations), seminars for high pressure gas safety executors (such as safety inspection seminars), and various seminars corresponding to the local needs.

(c) Publications

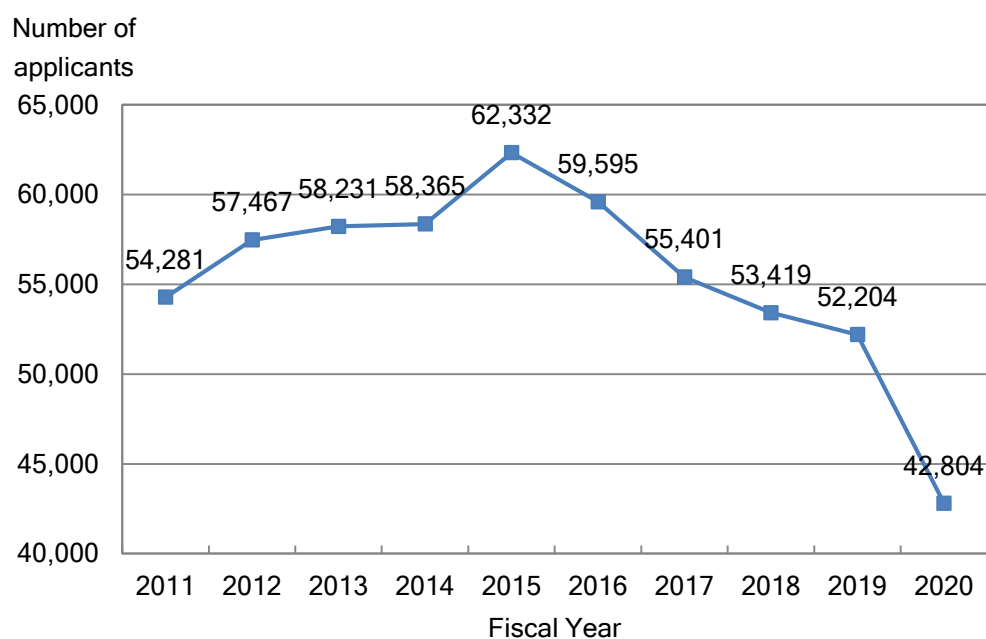
KHK publishes books related to high pressure gas safety such as high pressure gas safety act, technical standards, and textbooks for training. During fiscal 2020, KHK published 143 types of books, accounting for a total of 128,377.

3-4. National Qualification Examination

The High Pressure Gas Safety Act and LPG Law stipulates that the Minister of Economy, Trade and Industry or prefectural governors must be responsible for conducting the high pressure gas production safety management examination, the high pressure gas sales safety chief examination, and the LPG installation engineer examination, depending on the classification of examinations.

However, the actual implementation of such examinations was transferred to KHK from the Minister

of Economy, Trade and Industry and prefectural governors. The total number of applicants for such examinations in fiscal 2020 was 42,804, which was a decrease of 18.0% compared to 52,204 from the previous fiscal year.



Number of applicants for National qualification examinations

3-5. Research and Development

The Research and Development Center at KHK owns testing machines such as tensile/fatigue tests of materials, as well as hydraulic fatigue/explosion tests of pressure equipment including transportable containers, undertaking research and development to enhance high pressure gas safety. In addition, KHK are working on researches commissioned by the government and incorporated administrative agencies.

In fiscal 2020, KHK conducted seven studies commissioned by the Ministry of Economy, Trade and Industry as well as by the New Energy and Industrial Technology Development Organization (NEDO). The following is the overview of the research commissioned by NEDO.

(a) Technology Research and Development Project to Promote the Full-Scale Prevalence of Ultra High Pressure Hydrogen Infrastructure /Technological Development Related to Domestic Regulatory Optimization /Research and Development on the Introduction of New Criteria for Evaluatory Hydrogen Characteristics

Since general-purpose steel — the most common material in hydrogen stations across the city — is expected to be used, the following study was conducted for the purpose of introducing new evaluation standards for hydrogen characteristics; (1) Research and Development on Expansion of Usable Range of Stainless Steel, (2) Research and Development on Cold-Worked Material Stainless Steel, (3) Research and Development on Welding Materials for Stainless Steel, and (4) Research and Development on High Temperature Applications of Low Alloy Steel.

(b) Full-scale diffusion technology research and development project for Ultra-high pressure hydrogen infrastructure /Technological development related to cost reduction of hydrogen stations etc. /Development of evaluation method for composite pressure vessels, and technical development for the preparation of technical standards

The following two studies were conducted with the aim of simplifying the methods of evaluating composite pressure vessels, in order to reduce the cost of composite pressure vessels installed at the hydrogen stations, as well as to develop the technology to extend their service life; (1) Technological development for the establishment of composite pressure vessel design methods based on stress analysis and fatigue analysis, and (2) Technological development for the preparation of technical standards for composite pressure vessels.

3-6. Measures to Promote LPG Consumer Safety

(a) Liquefied Petroleum Gas Safety Commission

The commission operates with contributions from 17 LPG-related organizations and KHK. In partnership with the Gas Safety Office at METI Commerce, Distribution and Industrial Safety Policy Group, the commission performed the following safety campaigns during fiscal 2020.

- LPG Consumer Safety Campaign

Prepared and distributed LPG safety guides and posters, and advertised in magazines, while provided assistance to safety activities undertaken by prefectural LPG associations.

- LPG Consumer Safety Promotion Conference

At the event, the commission offered commendations for LPG retailers and related operators including individuals with the 'METI Minister's Secretariat, Director-General for Commerce, Distribution and Industrial Safety Policy Award,' 'KHK Chairman's Award,' and 'Liquefied Petroleum Gas Safety Commission President's Award,' respectively.

(b) Examination

During fiscal 2020, the following examination activities were undertaken.

Examination activities

	2020	2019
LPG leak alarm examination and gas leak sensor	2,659,937	2,683,431
LPG incomplete combustion alarm examination	24,540	25,700
LPG sensor examination	1,780	2,080

3-7. Collection and Offering of Information, Technical Exchanges

(a) Collection of Accident Information

Acting on a commission by METI, KHK compiles a database of high pressure gas and LPG-related accidents and conduct a statistical analysis. See reference at the end of this brochure.

(b) Organization of Various Conferences and Conventions

The notable conferences and conventions KHK organized during fiscal 2020 include the following:

- Grand Conference of National Association of General High Pressure Gas Safety Organizations (Tokyo, September 2020)

The conference was organized for the purpose of fostering cooperation and discussions among general high pressure gas safety organizations established in prefectures. KHK acted as the administrative department for the conference.

- Seminar on Lessons from Accidents and Safety Management Technology

This seminar is held online as well as at the venues.

- ◆ Part of Safety Management Technology (Tokyo, October 2020 and Osaka, September 2020)

This seminar is for the accredited completion and safety inspection executors and the personnel of three management divisions (equipment, operation, and safety), including those at headquarters management level, of high pressure gas producers at industrial complexes, and it is organized to provide a place of information provision, information exchange, and discussions related to high pressure gas producing equipment, their operations, and safety management

activities.

- ◆ Part of Lessons from Accidents and Safety Measures (Tokyo, October 2020 and Osaka, September 2020)

The high pressure gas producers that actually caused accidents explained their experience and post-accident efforts on safety measures so that seminar participants could make use of the information that would be helpful for their future voluntary safety activities, including lessons from accidents and preventive measures.

- National Conference of High Pressure Gas Safety (Tokyo, October 2020)

The conference, which takes place every October, is organized as a part of the annual high pressure gas safety promotion week, hosted by METI in conjunction with KHK. Each year, top-rated plants of safety, persons who have rendered distinguished safety service and excellent production safety managers are awarded in honor of their continuing hard work, support, and resulting outcomes in preventing high pressure gas-related accidents.

- High Pressure Gas Equipment Manager Meeting (Tokyo, October 2020)

The meeting is organized annually for the purpose of informing high pressure gas equipment personnel (applicants for Designated Equipment Inspection) of question and answers about material, design, welding, and structure-related issues in order to achieve consistent applications across varying issues.

- General Research Presentation (Online, March 2021)

The presentation is hosted annually to disseminate information on the findings from the investigative research undertaken by the Research and Development Center at KHK.

(c) International Technical Exchange

KHK participate as a delegate to online conferences organized by the American Society of Mechanical Engineers (ASME), and also has established good relations with Korea Gas Safety Corporation and Industrial Safety and Health Association of Taiwan.

3-8. Assessment and Registration System

(a) Assessment and Registration of Quality Management System

Since being accredited by the Japan Accreditation Board (JAB) as a quality management system certification body in 1994, the KHK ISO Registration Center (KH-ISO Center) evaluates quality management system for operators in accordance with the ISO 9000 series standards, and manages registration and publication of registered organizations. On June 2000, the Center started evaluating and managing registration and publication of registered organizations of the medical device quality management systems, which requires highly technical knowledge among quality management system based on ISO13485. As of the end of fiscal 2020, it performs registration in 31 out of the 39 JAB-accredited classes (classes 1-39). As of the end of fiscal 2020, the number of registrations stands at 784.

(b) Assessment and Registration of Environmental Management Systems

For assessment and registration of environmental management systems (ISO14001), the Center became a JAB- accredited certification body in 1996. As of the end of fiscal 2020, it operates registration screenings in 34 out of the 39 JAB-accredited classes (classes 1-39). As of the end of fiscal 2020, the number of registrations stands at 499.

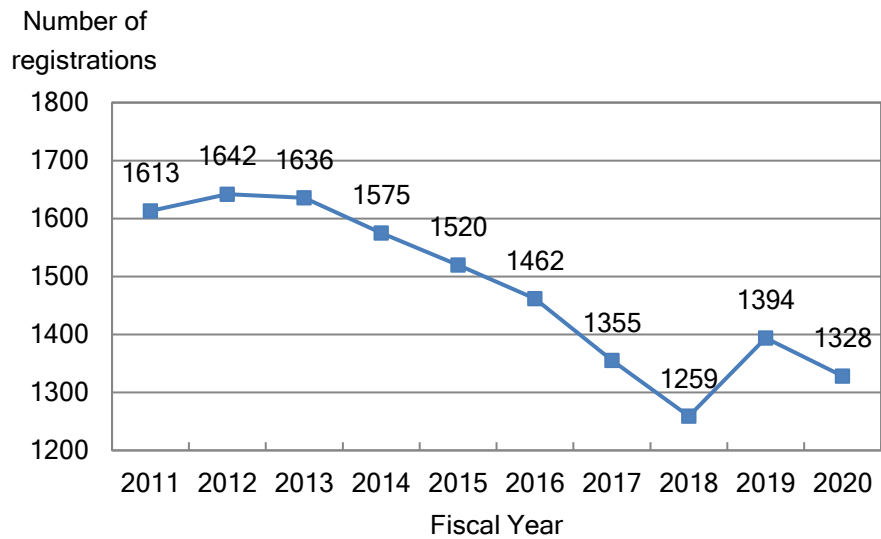
(c) Assessment and Registration of Occupational Health and Safety Management Systems.

On March 2000, the Center began evaluating and managing registration and publication of registers for organizations of occupational health and safety management systems based on OSHA18001. In July 2018, the Center initiated management based on newly established ISO 45001. As of the end of

fiscal 2020, the number of registrations stands at 29.

(d) Assessment and Registration of Food Safety Management Systems

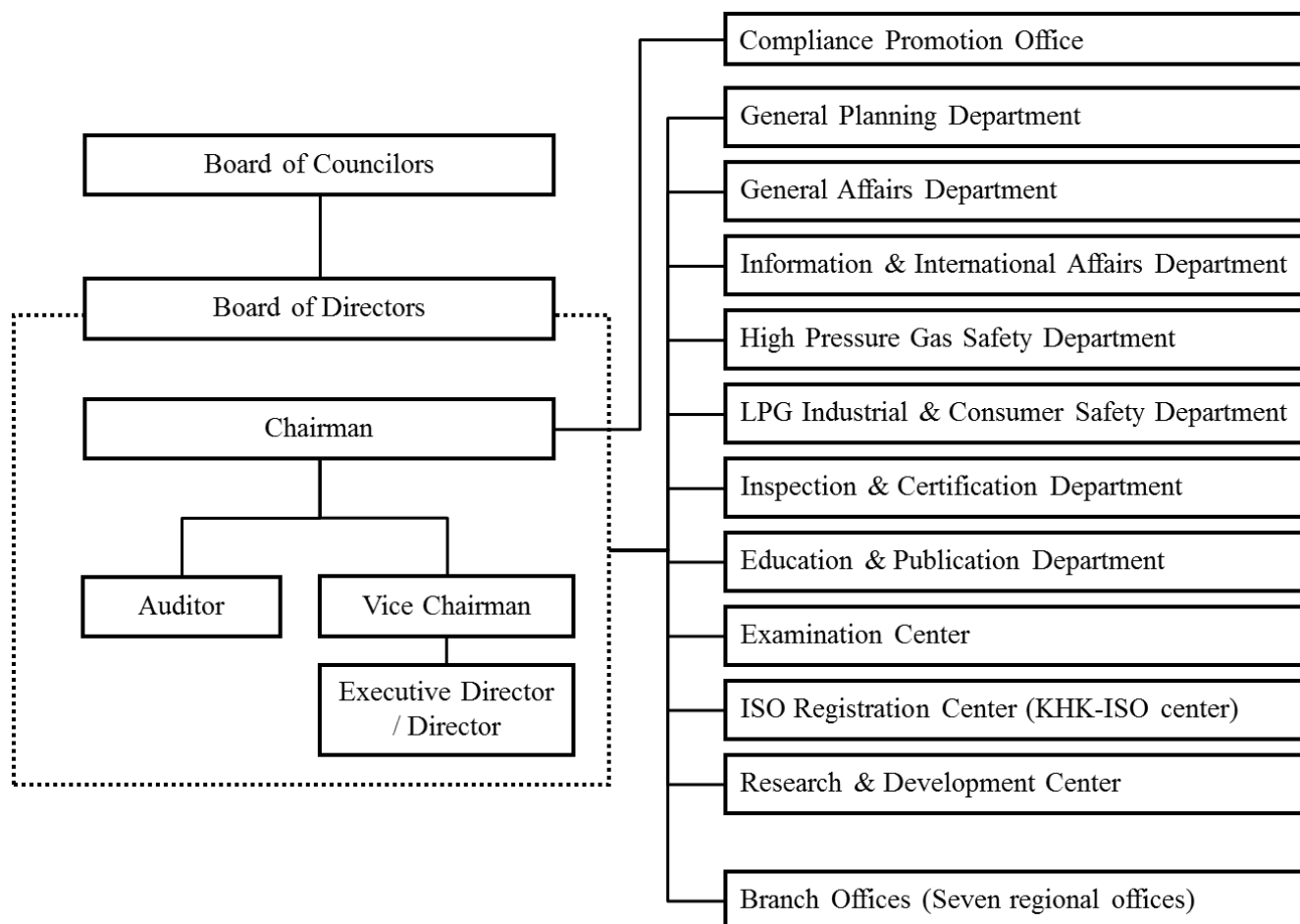
Taking advantage of the framework of quality management, environmental management, and occupational and health management systems, in 2011 the Center started managing registration and publication of registers of organizations based on ISO22000 series as a JAB-accredited body. As of the end of fiscal 2020, the number of registrations based on ISO 22000 stands at 7 and that based on FSSC22000 series stands at 9.



Change in the total number of registrations

4. Organization

4-1. Organization Chart



4-2. Membership Status

Types	March 31, 2021	March 31, 2020
Companies	839	846
Organizations	191	191
Individuals	82	82
Supporters	34	33

Reference: Overview of Accidents in Recent Years

Under the commission of METI, KHK records statistics of high pressure gas- and LPG-related accidents, based on the number of reports submitted in accordance with the regulatory requirements of the High Pressure Gas Safety Act (hereinafter referred to as “HPG Act”) and the Securing of Safety and the Optimization of Transaction of Liquefied Petroleum Gas (hereinafter referred to as “LPG Act”).

Figure 1 shows the number of the HPG Act accidents that occurred between 2011 and 2020 classified as human damages. Note that among the HPG accidents, the figure excludes those involving general consumers, which pertains to LPG Act.

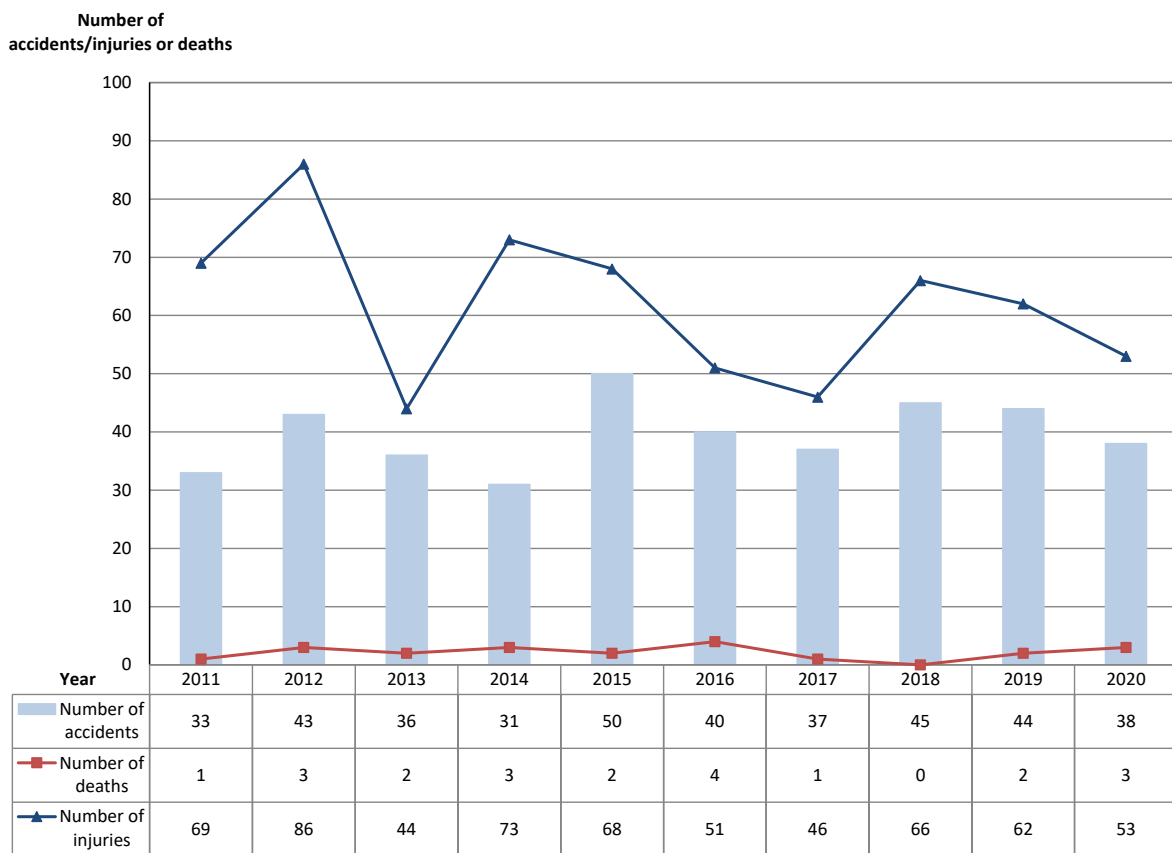


Figure 1: Change in number of HPG Act accidents classified as human damages

Figure 2 shows the LPG Act accidents that occurred between 2011 and 2020 classified as human damages. The total number of the LPG Act accidents classified as human damages is gradually decreasing.

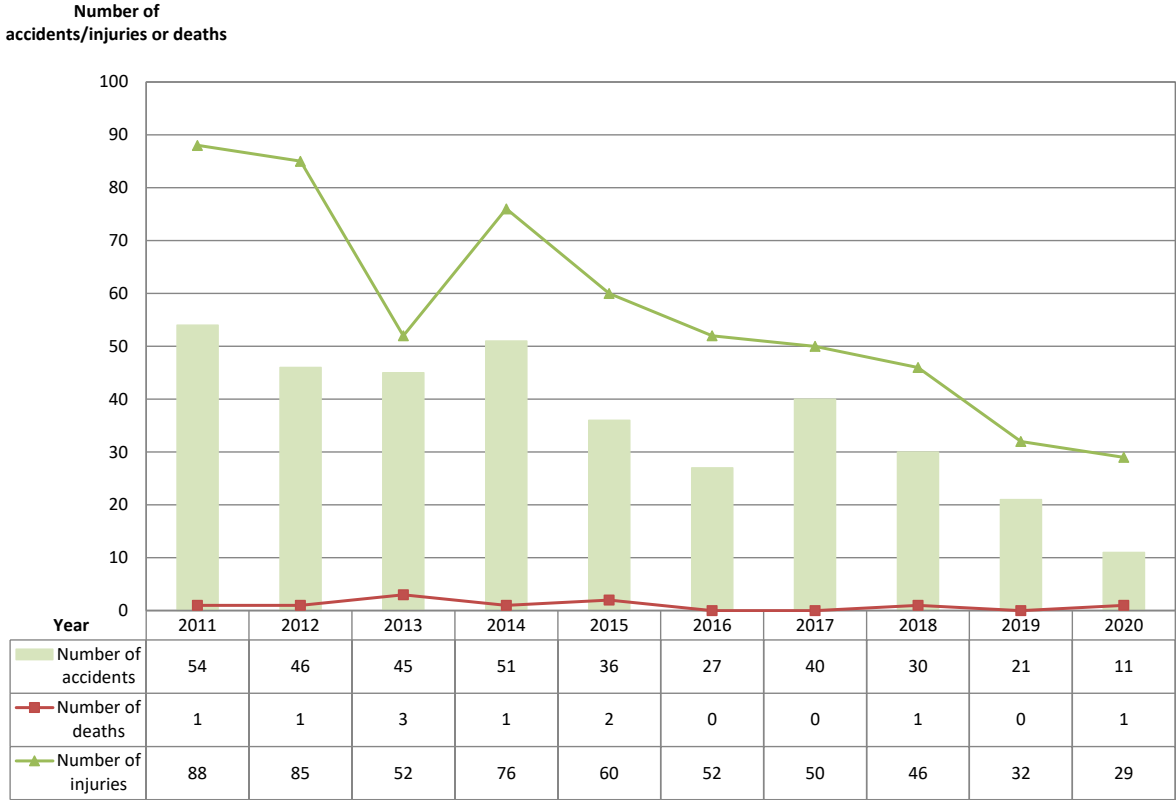


Figure 2: Change in number of the LPG Act accidents classified as human damages

Contact for inquiries related to this document

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