

# **Annual Report for Fiscal 2019**

**(April 1, 2019 - March 31, 2020)**

The High Pressure Gas Safety Institute of Japan (KHK)

## 1. Business Environment and Overview of Operations

Japan's economy is in a difficult situation as being deeply depressed by the effects of Covid-19 infection. And also, this severe situation is expected to continue in the future. It is required to pay attention to the risk of further decline of the internal and external economics and the effects of the volatility of financial and capital markets, caused by this infection. Moreover, just as last year, intensifying natural disasters such as torrential rain in Kyushu area and typhoon No.15 and No.19 have occurred, requiring persistent response.

In the field of high pressure gas safety, as a part of the smartification of high pressure gas safety promoted by the Ministry of Economy, Trade and Industry, a system was established in November 2019, which enables designated accreditation executors for completion or safety inspection to extend the overhaul inspection intervals by incorporating CBM(condition based maintenance) (up to 12 years→up to the residual life×0.5 years). And also, a guideline for setting an explosion proof area in a plant was established in April 2019, and a guideline related to the effort to utilize drones in a plant had been revised in March 2020.

KHK strengthened governance such as compliance and information security measures in view of its highly public responsibility. In view of its future business management, KHK conducted the preparation for restructuring the institutional organization planning to implement from April 2021 (※) and the consideration for improving the institutional system to suit restructuring the organization. Regarding the latter, KHK paid due attention to adapt a cloud service with an appropriate level of security while promoting business improvement and efficiency.

※the exact date of restructuring the organization is reconsidered now because of Covid-19.

Looking at KHK's business in fiscal 2019, we were able to increase the number of customers for ISO management systems because some of customers transferred to KHK from other certification bodies and KHK conducted proactive and detailed sales development. And also, our inspections business achieved solid incomes from inspections. Meanwhile, a part of training courses, examinations, seminars and inspections had to be postponed or canceled because of the Covid-19 infection around the end of fiscal year in Japan and abroad. However, a reasonable income and expenditure situation was secured in the end by reducing expenditures.

## 2. Overview of Financial Statements for Fiscal 2019

### (1) Balance Sheet

	(As of March 31, 2020)	
	2019	2018
	Million Yen	Million Yen
<b>Assets</b>		
Current assets	1,974	1,812
Fixed assets	6,009	5,968
Tangible fixed assets	1,035	1,104
Intangible fixed assets	205	94
Investments	4,767	4,768
Total	7,983	7,780
<b>Liabilities/Capital</b>		
	2019	2018
	Million Yen	Million Yen
Current liabilities	830	804
Fixed liabilities	2,181	2,168
Reserve	4,807	4,878
Profit for the term	163	-70
Total	7,983	7,780

### (2) Statement of Profit and Loss

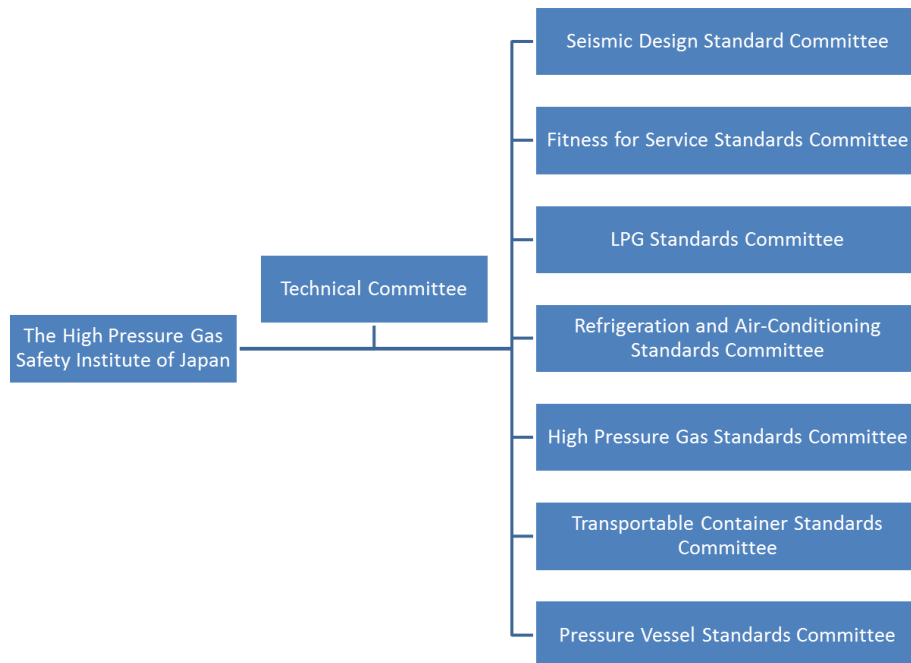
	(from April 1, 2019 to March 31, 2020)	
	2019	2018
	Million Yen	Million Yen
<b>Expenditure</b>		
Ordinary expenditure	4,442	4,739
Operating expenditure	4,442	4,739
Extraordinary loss	5	2
Corporate taxes, etc.	1	1
Profit for the term	163	-70
Total	4,612	4,671
<b>Income</b>		
	2019	2018
	Million Yen	Million Yen
Ordinary income	4,594	4,671
Operating income	4,504	4,576
Non-operating income	90	94
Extraordinary income	17	390
Total	4,612	4,671

### 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 2019, the following standards were established, reviewed or abolished.

##### (a) Newly Established Technical Standards

- Periodical Self-inspection Guidelines for Compressed Hydrogen Filling Station (KHK/JPEC S 1850-9)

##### (b) Revised Technical Standards

- Standard for Design and Manufacturing of High-Pressure Gas Container Valve (KHKS 0124)
- High Pressure Gas Tank Trailer Re-inspection Standard (KHKS 0150)
- Standard for Designated Equipment with Safety Factor 2.4 (KHKS 0224)
- 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)

##### (c) Abolished Technical Standards

- Technical Standard for 70 MPa Compressed Hydrogen Storage Containers for Vehicle Fuel Systems (KHKS 0128)

### 3-2. Inspection, Examination and Accreditation

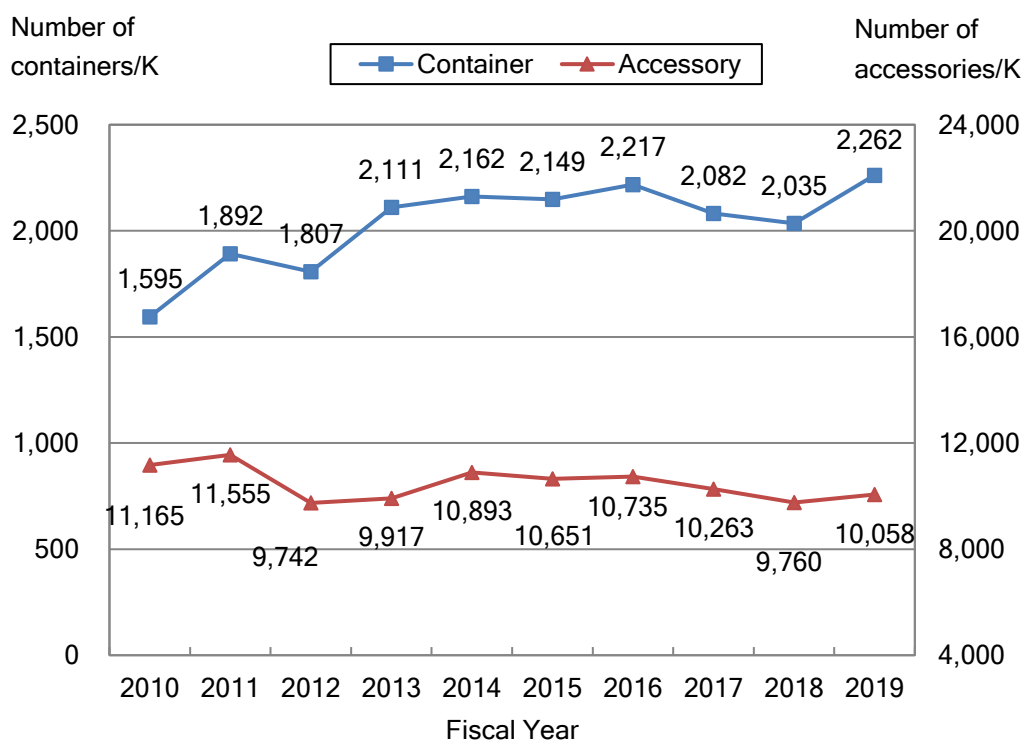
#### (a) Inspections for Pressure Equipment

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.

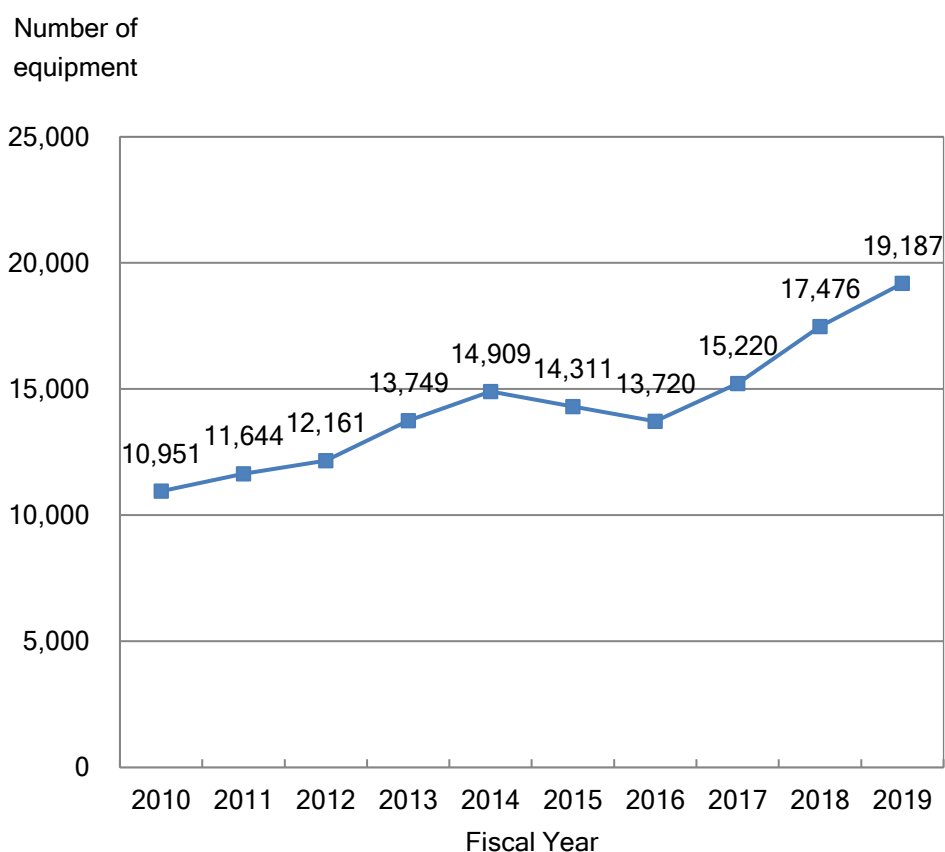
In addition, for preventing explosions or other accidents, the act defines "equipment for high pressure gas production (including storage tanks) "which particularly requires "inspections of its design, material quality, and the process of its manufacturing", as "Designated Equipment." KHK undertakes 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 2019, the number of application for inspection of containers increased by 11.2% and that of accessory equipment increased by 3.1% compared to the previous fiscal year respectively. And the number of application for inspection of designated equipment increased by 9.8% 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

	2019	2018
Accredited completion inspection executor	14	15
Accredited safety inspection executor	15	16

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

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

	2019	2018
Completion inspection of refrigeration and air-conditioning facilities	34	36
Safety inspection of refrigeration and air-conditioning facilities	1,592	1,803

Approval of specified equipment (refrigeration equipment)	130	188
Transfer of specified equipment (refrigeration equipment)	1	2
Testing of refrigeration apparatus	382	307
Design strength verification test, etc.	239	150

### 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**

	2019	2018
Qualification Training	38,790	44,616
Re-training (Compulsory training)	43,341	46,544
Statutory training	85,020	91,160

Among the statutory training, while there was a decrease in the number of the qualification training from 44,616 in fiscal 2019 to 38,790, that of the re-training (compulsory training) decreased from 46,544 to 43,341 in fiscal 2019. The total number of applicants of the statutory training decreased from 91,160 to 82,131.

#### (b) Other Training

During fiscal 2019, 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.

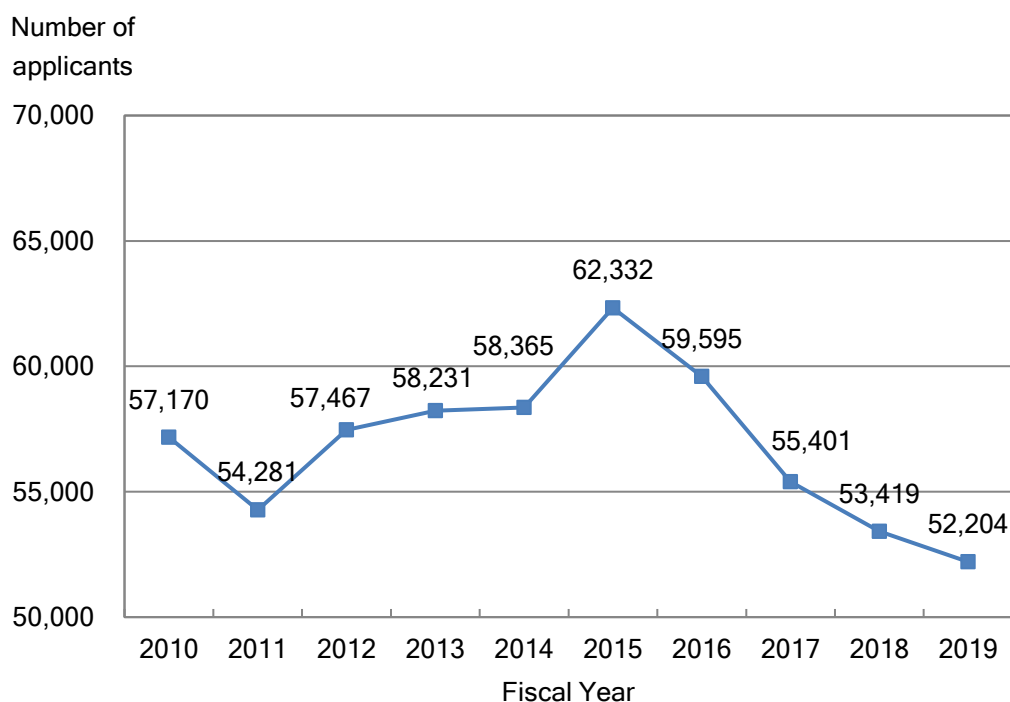
#### (c) Publications

KHK publishes books related to high pressure gas safety such as high pressure gas safety act, technical standards, and textbooks for training. During fiscal 2019, KHK published 143 types of books, accounting for a total of 182,275.

### 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 2019 was 52,204, which was a decrease of 2.3% compared to 53,419 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 2019, KHK conducted six 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 2019.

- 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 2019, the following examination activities were undertaken.

##### Examination activities

	2019	2018
LPG leak alarm examination and gas leak sensor	2,683,431	2,716,640
LPG incomplete combustion alarm examination	25,700	26,320
LPG sensor examination	2,080	1,890

### 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 2019 include the following:

- Grand Conference of National Association of General High Pressure Gas Safety Organizations (Tokyo, July 2019)

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

- ◆ Part of Safety Management Technology (Tokyo, August 2019 and Osaka, August 2019)

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, August 2019 and Osaka, August 2019)

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 2019)

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 (Osaka, October 2019)

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 (Tokyo, December 2019)

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 sends a delegate to the boiler and pressure vessel standards committee and the post-construction standards committee of 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 the R.O.C.

### 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 2019, it performs registration in 31 out of the 39 JAB-accredited classes (classes 1-39). As of the end of fiscal 2019, the number of registrations stands at 823.

#### (b) Assessment and Registration of Environmental Management Systems

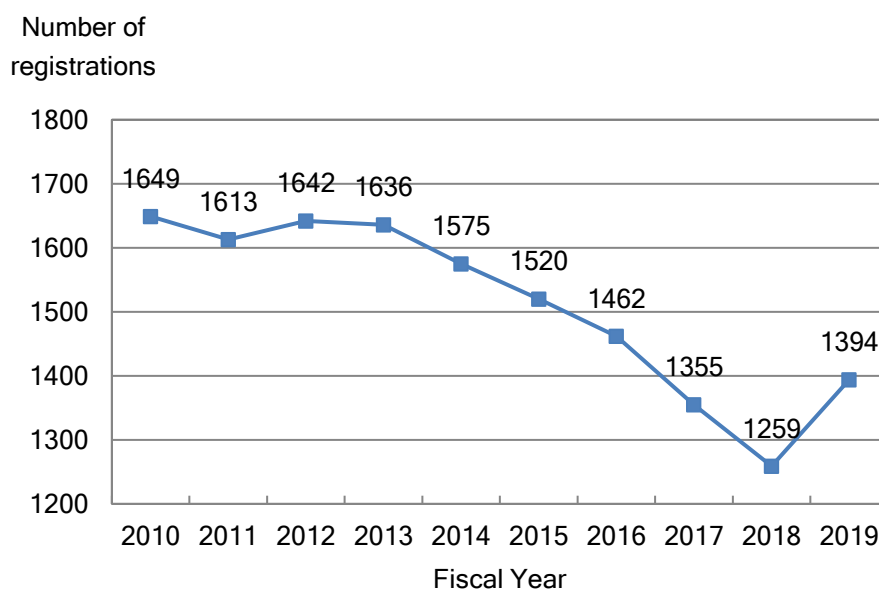
For assessment and registration of environmental management systems (ISO14001), the Center became a JAB- accredited certification body in 1996. As of the end of fiscal 2019, it operates registration screenings in 34 out of the 39 JAB-accredited classes (classes 1-39). As of the end of fiscal 2019, the number of registrations stands at 527.

#### (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 OSHA180001. In July 2019, the Center initiated management based on newly established ISO 45001. As of the end of fiscal 2019, the number of registrations stands at 30.

#### (d) Assessment and Registration of Food Safety Management Systems

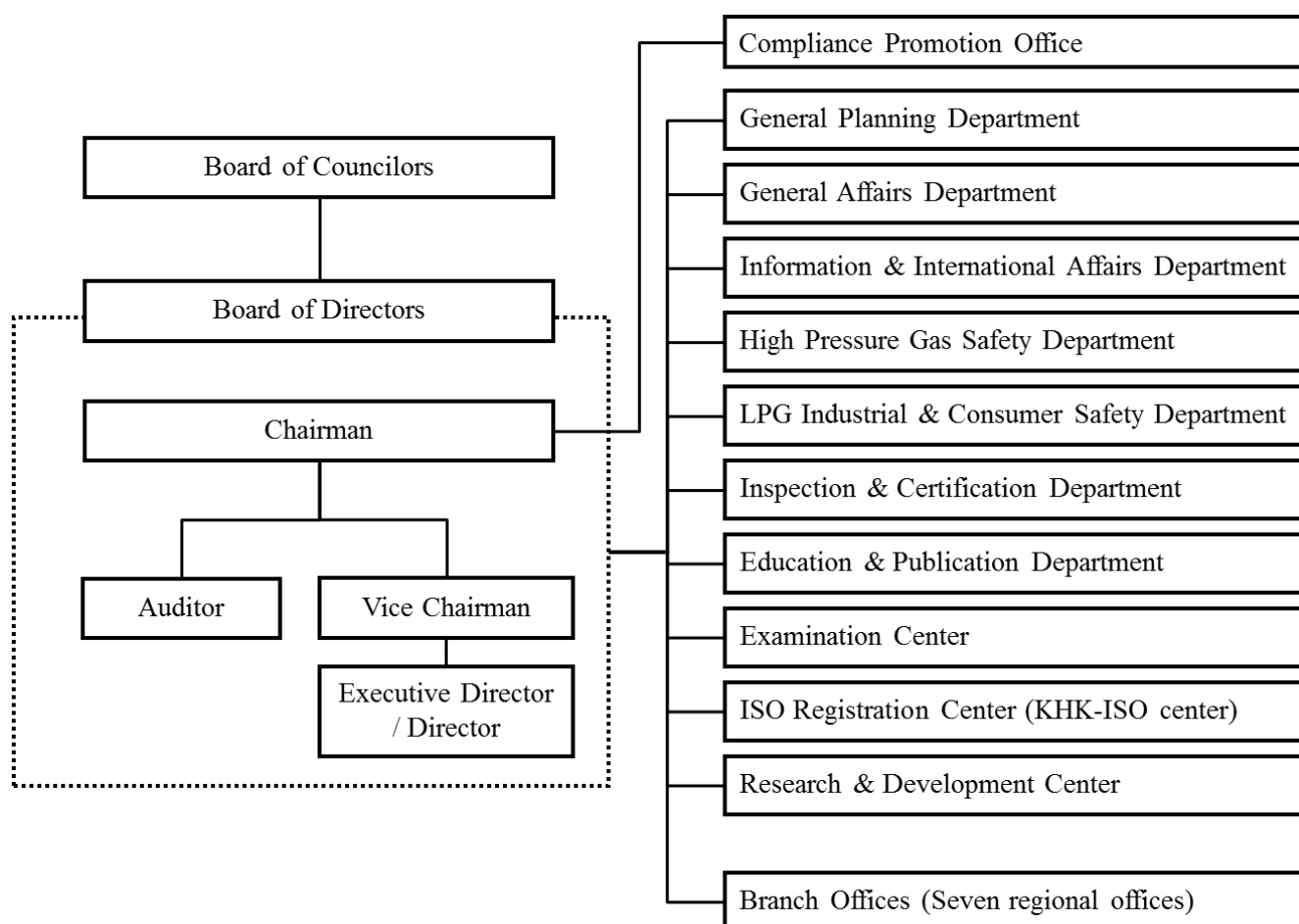
Taking advantage of the framework of quality management, environmental management, and occupational and health management systems, in 2011 the Center started managing registration and publication of registers of organizations based on ISO22000 series as a JAB-accredited body. As of the end of fiscal 2019, the number of registrations based on ISO 22000 stands at 7 and that based on FSSC22000 series stands at 7.



**Change in the total number of registrations**

#### 4. Organization

##### 4-1. Organization Chart



##### 4-2. Membership Status

Types	March 31, 2020	March 31, 2019
Companies	846	854
Organizations	191	191
Individuals	82	85
Supporters	33	32

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 2010 and 2019 classified as human damages. Note that among the HPG accidents, the figure excludes those involving general consumers, which pertains to LPG Act.

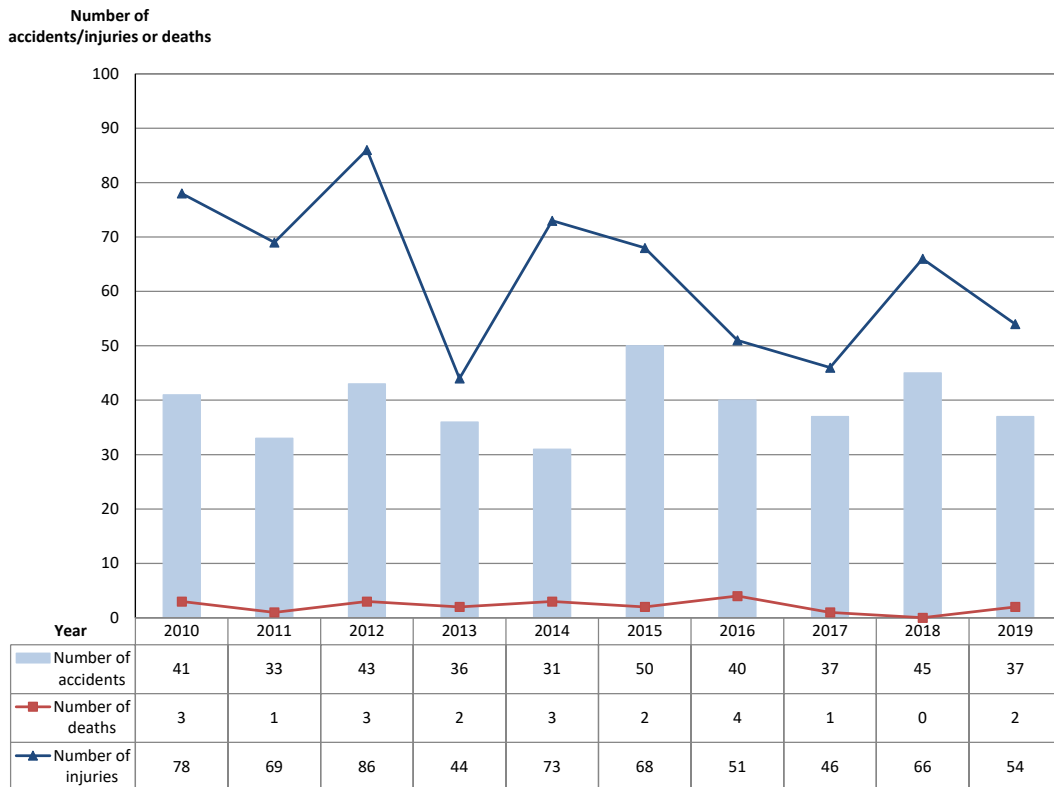


Figure 1: Change in number of HPG Act accidents classified as human damages

Figure 2 shows the LPG Act accidents that occurred between 2010 and 2019 classified as human damages. The total number of the LPG Act accidents classified as human damages is gradually decreasing. In 2019, no accident resulting death has occurred.

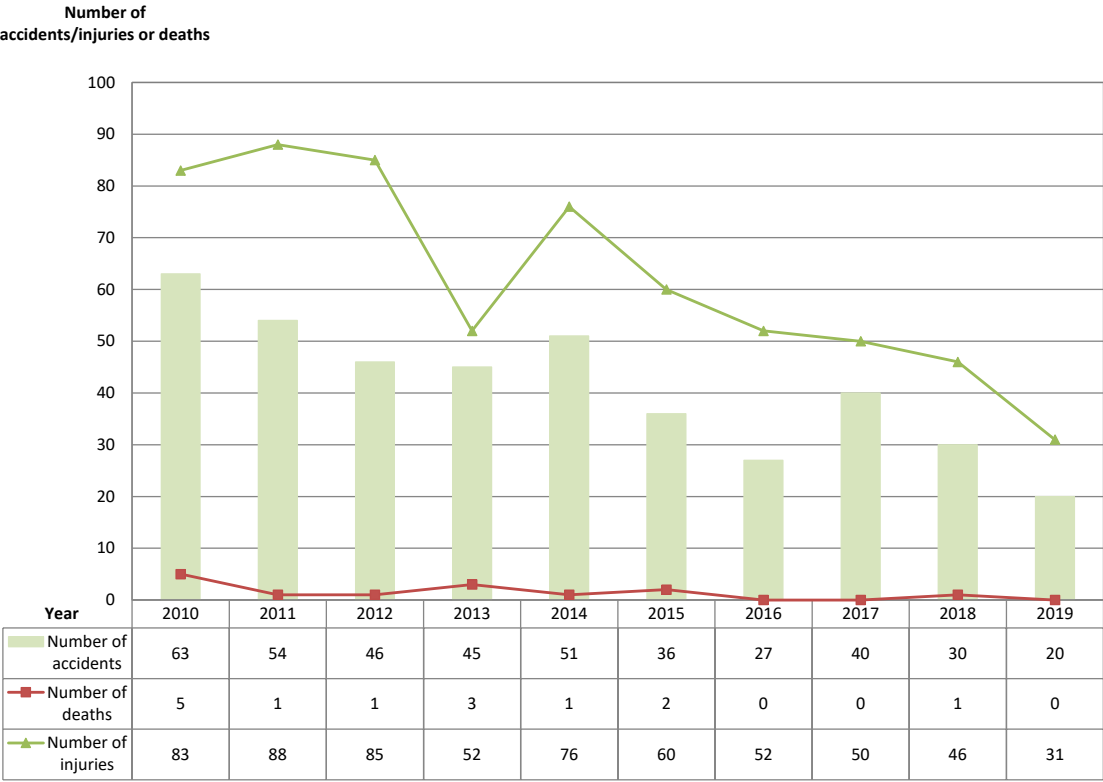


Figure 1: Change in number of the LPG Act accidents classified as human damages

Contact for inquiries related to this document

## The High Pressure Gas Safety Institute of Japan (KHK)



Information & International Affairs Department

International Affairs Division

4-3-13 Toranomom, Minato-ku, Tokyo 105-8447

TEL: +81-3-3436-2201 FAX: +81-3-3438-4163

Web: <http://www.khk.or.jp/english/index.html>

MAIL: [oversea@khk.or.jp](mailto:oversea@khk.or.jp)