

Annual Report for Fiscal 2015

(April 1, 2015 - March 31, 2016)

The High Pressure Gas Safety Institute of Japan (KHK)

1. Business Environment and Overview of Operations

While the Japanese economy in fiscal 2015 saw continuous improvement in employment and income environments driven by the impact of an oil price decline and the effects of various policies, and there was a gradual trend toward economic recovery, the business downturn in the Asian emerging nations, including China and resource-rich countries, was causing the risk of depressing the Japanese economy.

Enjoying the continuing upward momentum of the national economy from fiscal 2014, the industrial areas of high pressure gas showed a rallying trend of equipment investment. In addition, the provision of hydrogen stations went forward throughout the country, and the actions to realize a hydrogen society progressed steadily. Meanwhile, the field of safety regulations intended evolution of the system capable of taking rapid, flexible actions in an effective and efficient manner to respond to changes in the

situation around industrial safety and technological advances and alterations of market and international tides, holding discussions on smartification of safety regulations in the Industrial Safety Committee of the Industrial Structure Council, and considering establishment of new systems, including the new accredited facility system and the fast track system, about which an intermediate report was compiled in March 2016.

In such circumstances, the business environment of KHK remained strong or turned up with the firm business of equipment inspections the same as in fiscal 2014 and the increase in applicants of the statutory training and the National Examinations associated with the revision of the Fluorocarbons Emission Control Law, accordingly ensuring a good balance in the accounts.

2. Overview of Financial Statements for Fiscal 2015

1) Balance Sheet

(As of March 31, 2016)

Assets	2015	2014
	Million Yen	Million Yen
Current assets	1,639	2,016
Fixed assets	6,275	6,018
Tangible fixed assets	640	445
Intangible fixed assets	171	208
Investments	5,465	5,365
Total	7,914	8,034

Liabilities/Capital	2015	2014
	Million Yen	Million Yen
Current liabilities	1,138	1,024
Fixed liabilities	2,553	3,035
Reserve	4,223	3,974
Profit for the term	248	2
Total	7,914	8,034

2) Statement of Profit and Loss

(April 1, 2015 - March 31, 2016)

Expenditure	2015	2014
	Million Yen	Million Yen
Ordinary expenditure	4,576	4,875
Operating expenditure	4,576	4,875
Extraordinary loss	84	0
Corporate taxes, etc.	0	0
Profit for the term	24	2
Total	4,909	4,877

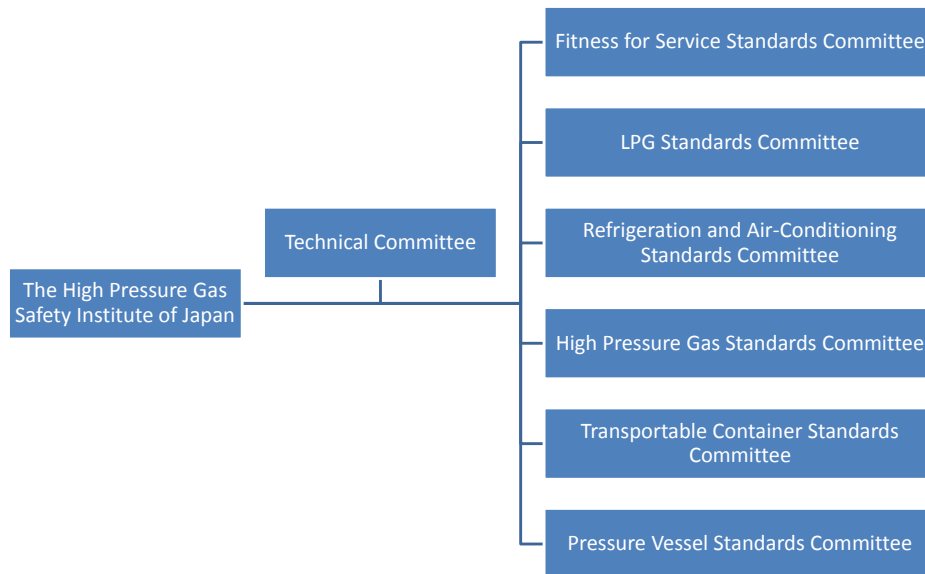
Income	2015	2014
	Million Yen	Million Yen
Ordinary income	4,582	4,875
Operating income	4,466	4,750
Non-operating income	116	125
Extraordinary income	327	2
Total	4,909	4,877

3. Overview of Each Activity

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 president 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 2015, the following standards were revised or abolished.

① Revised Technical Standards

- Standard for Aluminum Alloy Liner/Carbon Fiber General Composite Cylinders (KHKS0121)
- Standard for Rubber Cap as Indoor Gas Plug for LPG (KHKS0712)
- Standard for Pressure Chart Recorders for LPG

(KHKS0713)

- Standard for Regulators for LPG (KHKS0735)
- Standard for High Pressure Hoses for LPG (KHKS0736)
- Standard for Automatic Gas Shutoff Devices (Diaphragm Meters) based on Microcomputer-based Flow Rate Detection for LPG (KHKS0737)
- Standard for Automatic Gas Shutoff Devices (Ultrasonic Meters) based on Microcomputer-based Flow Rate Detection for LPG (KHKS0741)
- Standard for Automatic Gas Shutoff Devices (Ultrasonic Meters) based on Microcomputer-based Flow Rate Detection for LPG (KHKS0743)
- Standard for Bulk Storage Tank Transport of LPG (KHKS0840)

② Abolished Technical Standards

- Standard for Class I Designated Equipment (KHKS0223)

2) Inspection, Examination and Accreditation

① Inspections for Pressure Equipment

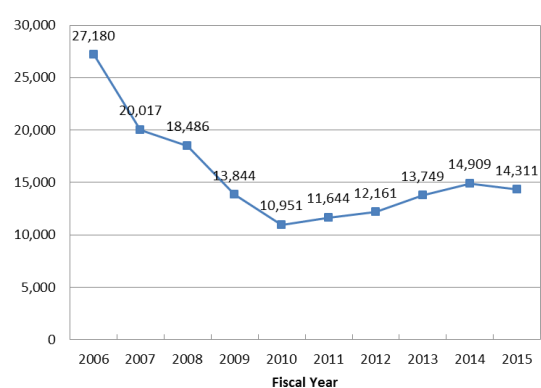
The High Pressure Gas Safety Act stipulates that the person who has manufactured/ imported a container or accessory shall apply for the Container/Accessory Inspection. We at KHK conduct these inspections.

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.

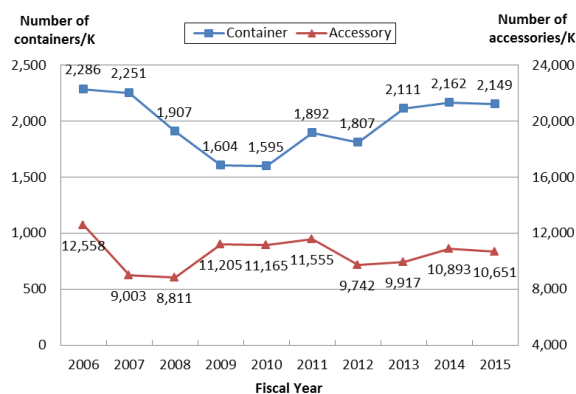
KHK undertakes technical assessments in advance to obtain Ministerial special approval, and also offers services for certification and examination as a part of its optional activities.

In fiscal 2015, the number of application for inspection of containers decreased by 0.6% and that of accessory equipment decreased by 2.2% compared to the previous fiscal year respectively. And the number of application for inspection of designated equipment decreased by 4.0%, while the number of application for high pressure gas equipment test decreased by 6.8%, compared to the previous fiscal year respectively.

Number of equipment applied for inspection



Number of Designated Equipment Inspections



Number of Container/Accessory inspections

② 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

	2015	2014
Accredited completion inspection executor	20	18
Accredited safety inspection executor	26	20

③ Safety Inspections of Refrigeration and Air-Conditioning Facilities

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

	2015	2014
Completion inspection of refrigeration and air-conditioning facilities	80	57
Safety inspection of refrigeration and air-conditioning facilities	2,065	1,877
Approval of specified equipment (refrigeration equipment)	181	150
Transfer of specified equipment (refrigeration equipment)	5	1
Testing of refrigeration apparatus	190	274
Design strength verification test, etc.	186	233

3) Education

① Statutory Training

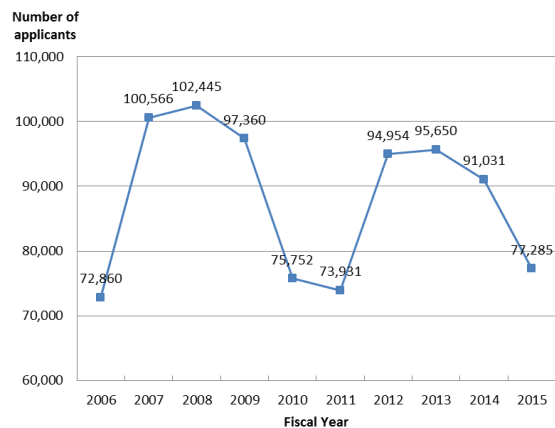
By the High Pressure Gas Safety Act, high pressure gas producers are required to establish a safety management team consisting of members with a designated high pressure gas production safety management certificate, depending on the type and scale of processing equipment and the type and volume of gas 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.

The total number of applicants for such examinations in fiscal 2015 was 62,332, which was an increase of 6.8% compared to 58,365 from the previous fiscal year.



Number of applicants for statutory training

Among the statutory training, while there was an increase in the number of the qualification training from 43,554 in fiscal 2014 to 45,284, the number of applicants for the re-training (compulsory training) decreased from 47,477 to 32,001 in fiscal 2015 and the total number of applicants of the statutory training also decreased from 91,031 to 77,285.

② Other Trainings

During fiscal 2015, KHK held periodical seminars including basic lectures on high pressure gas safety (16 types at 50 locations), and organized 11 on-site lectures on voluntary safety activities depending on the needs of each business facility.

③ Publications

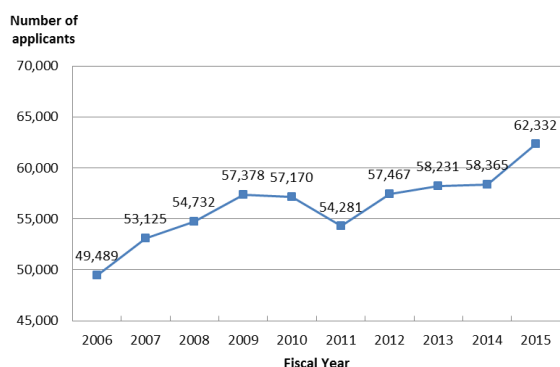
KHK publishes books related to high pressure gas safety such as high pressure gas safety act, technical standards, and textbooks for training. During fiscal 2015, KHK published 138 types of books, accounting for a total of 156,539.

4) Qualifying 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 2015 was 62,332, which was an increase of 6.8% compared to 58,365 from the previous fiscal year.



Number of applicants for qualifying examinations

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 2015, KHK conducted four researches 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.

“Investigation and Research on Fuel Cell Vehicles and the Optimization of Domestic Regulations and International Harmonization and Standardization of Hydrogen Supply Infrastructure”

① Research and Development on the Diversification of the Types of Metal Materials for Hydrogen Fueling Stations

In preparation for the advent of the hydrogen society, it is intended to build up an environment, which will allow the selection of reasonable, easy and convenient materials at temperatures and pressures desired for the construction of a hydrogen station, and gain experience by practice. It is also aimed to study and determine the criteria to evaluate availability of materials in hydrogen stations, including test types, conditions, evaluation methods and the like, and standardize these techniques and widen the range of usable materials.

② Research and Development on the Standardization of Composite Cylinders and Tubes for Stationary Storage

In the testing of composite cylinders and tubes which are used in hydrogen stations, there is a big gap between an ambient temperature pressure cycling test, one of the evaluation methods, and actual use conditions. A further sophistication of the evaluation methods, including the fatigue design of composite cylinders and tubes, is desired. Under the circumstances, it is aimed to improve and sophisticate (1) the evaluation techniques of Composite Cylinders and Tubes for Stationary Storage, (2) the evaluation techniques of CFRP, (3) the fatigue design methods of Composite Cylinders and Tubes for Stationary Storage and (4) the safety inspection techniques of composite cylinders and tubes, in order to contribute to the research and development for the standardization of composite cylinders and tubes for hydrogen stations.

6) Measures to Promote LPG Consumer Safety

① 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 2015.

- 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 President's Award,' and 'Liquefied Petroleum Gas Safety Commission President's Award,' respectively.

② Examination

During fiscal 2015, the following examination activities were undertaken.

Examination activities

	2015	2014
LPG leak alarm examination	2,730,252	2,826,648
LPG incomplete combustion alarm examination	26,183	28,510
LPG sensor examination	2,510	2,130

7) Collection and Offering of Information, Technical Exchanges

① 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.

② Organization of Various Conferences and Conventions

The notable conferences and conventions KHK organized during fiscal 2015 includes the following:

- Grand Conference of National Association of General High Pressure Gas Safety Organizations (Tokyo, July 2015)

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 (Tokyo and Osaka, July and August 2015)

< Part of Safety Management Technology >

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 >

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 2015)

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 2015)

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, November 2015)

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

③ 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.

8) Assessment and Registration System

① Assessment and Registration of Quality Management Systems

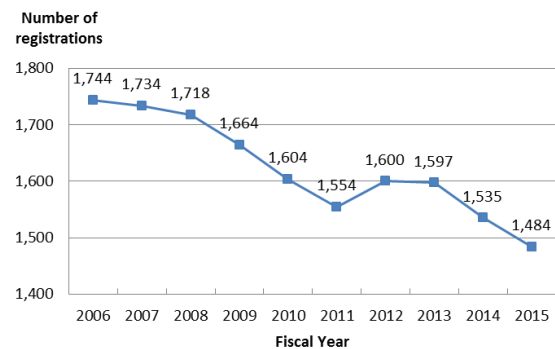
Since being accredited by the Japan Accreditation Board (JAB) as a quality management system certification body in 1994, KHK ISO Registration Center (KHK-ISO Center) handles registration of quality management systems for operators in accordance with the ISO9000 series standards, and manages registration and publication of registered organizations. As of the end of fiscal 2015, it operates registration in 30 out of 39 class JAB accredited (class 1-39).

As of the end of fiscal 2015, the accumulated registered number (including 877 registration withdrawals) stands at 1,794. The number of registrations stands at 917 in fiscal 2015.

② 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, and as of the end of fiscal 2015, it operates registration screenings in 34 out of 39 JAB-accredited classes (class 1-39).

As of the end of fiscal 2015, the accumulated registered number (including 399 registration withdrawals) stands at 966. The number of registrations stands at 567 in fiscal 2015.



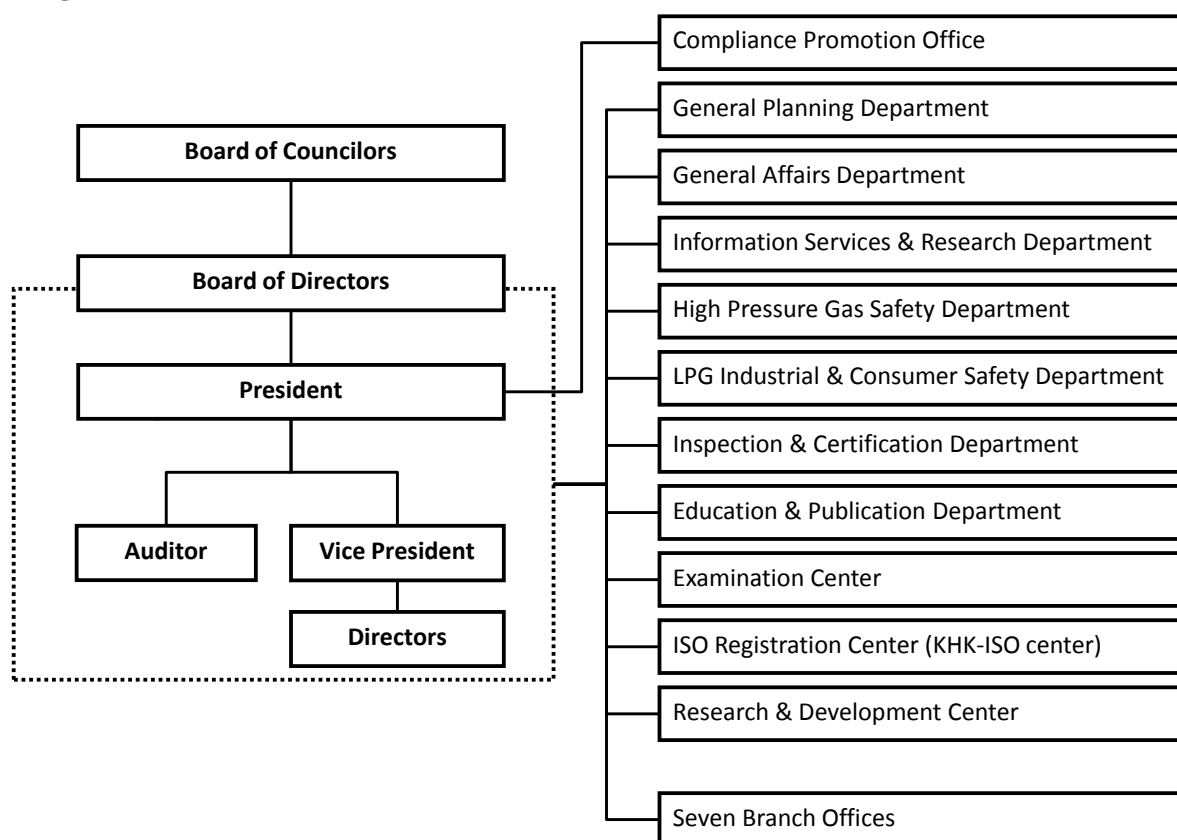
Change in the total number of registrations (Quality and Environment)

③ Other Assessment and Registration

As of the end of fiscal 2015, the total number of occupational health and safety management system (OHSMS) registrations was 43 (including 19 withdrawals). And the total number of food safety management system (ISO22000) registrations was seven (including 2 registration withdrawals), the total number of FSSC22000 series was five.

4. Organization

1) Organization Chart



* Information Service & Research Department was renamed Information & International Affairs Department due to reorganization on April 1, 2016.

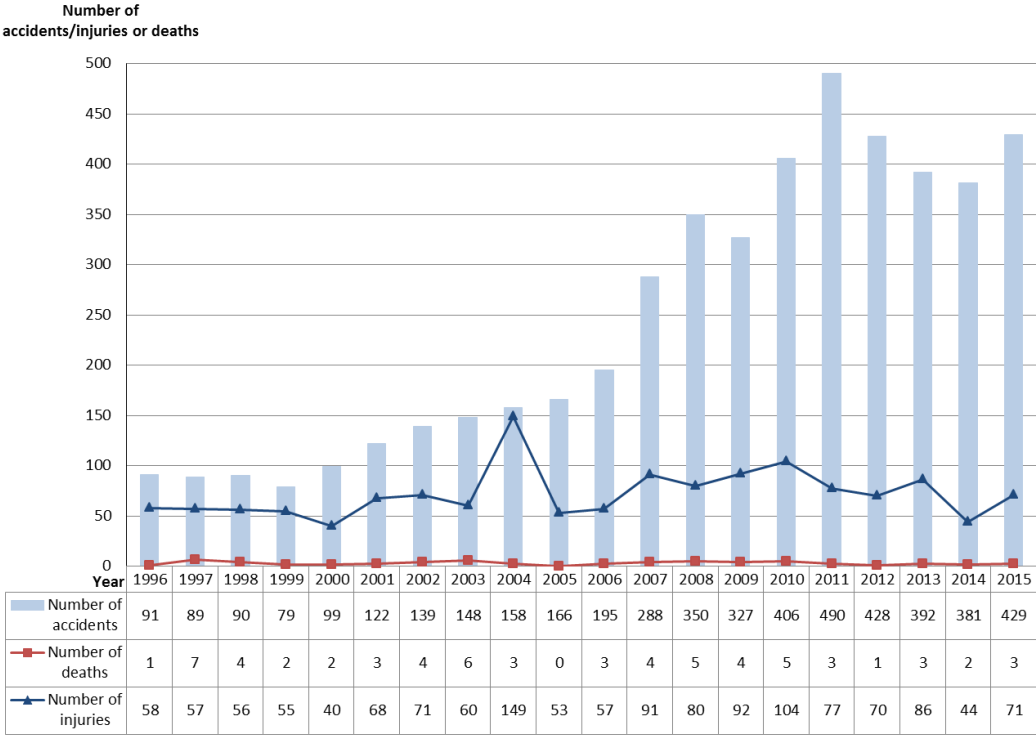
2) Membership Status

Types	March 31, 2016	March 31, 2015
Companies	887	900
Organizations	192	192
Individuals	95	91
Supporters	30	31

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 and the LPG Law.

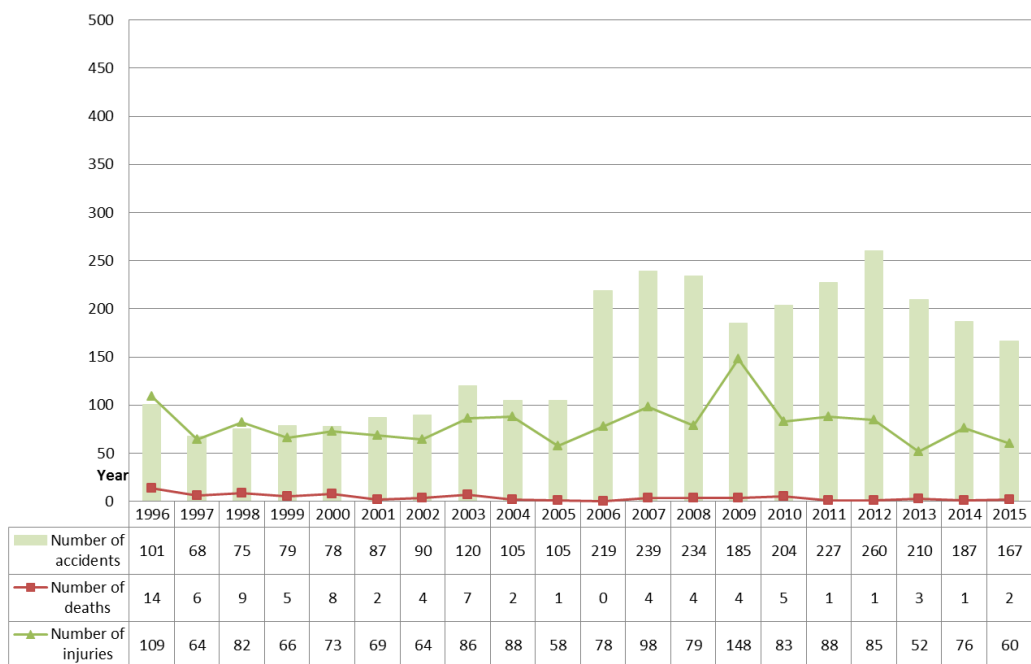
The number of high pressure gas-related accidents has been increasing in recent years, and 2011 in particular saw a sharp rise in the number as a result of the Great East Japan Earthquake. Since the number of accidents in 2015 has increased in comparison to 2014 and remained relatively high, major accidents involving explosions at industrial complexes have occurred in recent years, and further strengthening and revisions of operations are demanded in our aim of eliminating high pressure gas-related accidents.



Number of high pressure gas-related accidents

Similarly, the number of LPG-related accidents has remained high since 2006. Particularly, accidents involving commercial kitchen equipment are showing an increasing trend, and a rise in the number of accidents caused by deterioration due to corrosion or CO poisoning has also been recorded. In order to prevent such accidents from occurring, it is increasingly essential to provide effective information to LPG users, facility owners and possessors.

Number of accidents/injuries or deaths



Number of LPG-related accidents

<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