

# **Annual Report for Fiscal 2012**

**(April 1, 2012 - March 31, 2013)**

The High Pressure Gas Safety Institute of Japan (KHK)

# 1. Business environment and overview of operations

Although still affected by the aftermath of the Great East Japan Earthquake, Japan's economy during the first half of fiscal 2012 saw a gradual upward curve as a result of post-earthquake reconstruction demand. During the latter half of fiscal 2012, despite the continued post-earthquake reconstruction demand, economic recovery appeared to have slowed due to the deteriorating international economy. Under such conditions, although capital investment, a direct influential factor on the operations of KHK, partly saw a degree of recovery due to the post-earthquake reconstruction demand, its overall level remained low.

The number of high pressure gas-related accidents has steadily increased since 2000, and there were a total of 379 incidents in 2012 alone. Major accidents has occurred two years in a row since 2011 involving industrial complexes, and investigations and analyses were undertaken after such incidents. Led by the Industrial Safety Committee of the Industrial Structure Council, the Ministry of Economy, Trade and Industry (METI) organized investigations and coordination for the re-establishment of industrial safety.

Under such business environments in fiscal 2011 and fiscal 2012, KHK participated accident investigation committees, which were held at the sites of industrial complexes where major accidents had occurred, in order to undertake investigations and perform analyses on the causes of the accidents. In addition, KHK investigated causes of major accidents in industrial complexes that

occurred during fiscal 2011 and fiscal 2012, and considered reinforcing assessment measures for pre-assessments by KHK for the METI's approval of accredited completion/safety inspection executors. Then, KHK reported those results to the Industrial Safety Committee of the Industrial Structure Council of METI.

At the Education & Publication Department, KHK has been deploying new ventures including on-site lectures depending on the needs of each clients, seminars, and publishing, and the development of a system for more proactive implementation of such activities was conducted in fiscal 2012.

Furthermore, taking into account the inadequate questions found in Ministerial examinations during fiscal 2011, the Examination Center strictly reinforced its processes of question preparation and verification. As a result, no noticeable problems in examinations occurred despite an increase in the total number of applicants by approximate 3,000 in comparison to the previous fiscal year.

As for the ISO Registration Center, the ISO Promotion Group negotiated with ISO registered companies, which had been certified by the organization withdrawing from ISO certification business, in order to promote the smooth transfer of their ISO registrations to KHK.

## 2. Overview of financial statements for fiscal 2012

### 1) Balance sheet (As of March 31, 2013)

Assets	2012	2011
	Million Yen	Million Yen
Current assets	2,105	2,258
Fixed assets	5,800	5,860
Tangible fixed assets	446	465
Intangible fixed assets	243	283
Investments	5,110	5,110
<b>Total</b>	<b>7,906</b>	<b>8,118</b>
<b>Liabilities/capital</b>		
	2012	2011
	Million Yen	Million Yen
Current liabilities	822	974
Fixed liabilities	3,076	3,105
Reserve	4,039	3,866
Profit for the term	-30	173
<b>Total</b>	<b>7,906</b>	<b>8,118</b>

### 2) Statement of profit and loss (April 1, 2012 - March 31, 2013)

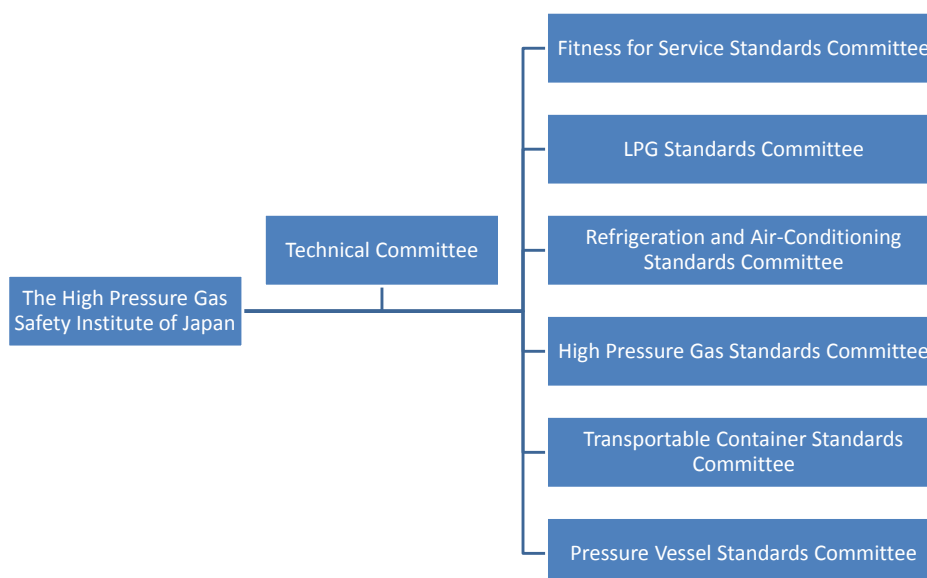
Expenditure	2012	2011
	Million Yen	Million Yen
Ordinary expenditure	4,617	4,500
Operating expenditure	4,617	4,500
Extraordinary loss	-	-
Corporate taxes, etc.	-	-
<b>Profit for the term</b>	<b>-30</b>	<b>173</b>
<b>Total</b>	<b>4,587</b>	<b>4,674</b>
<b>Income</b>		
	2012	2011
	Million Yen	Million Yen
Ordinary income	4,557	4,401
Operating income	4,428	4,266
Non-operating income	128	134
Extraordinary income	30	273
<b>Total</b>	<b>4,587</b>	<b>4,674</b>

## 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 2012, the following standards were established or reviewed.

- ① Newly established technical standards
- Safety inspection standards (related to underground rock cavern tank system for LPG stockpiling base) (KHK/JOGMEC S 0850-8)
  - Periodical self-inspection guidelines (related to underground rock cavern tank system for LPG stockpiling base) (KHK/JOGMEC S 1850-8)

From the point of view of maintaining and improving safety, the above technical standards were prepared for examining effective and desirable inspection methods for equipment relating to underground rock cavern tanks, which are scheduled to come into operation, and also to conform to related laws and regulations.

- ② Revised technical standards
- Standard for low pressure LPG piping for indoor use (KHKS 0708)
  - Safety education guideline for LPG sales operators (KHKS 1701)
  - Standard for automatic gas shutdown device with microcomputer-based LPG flow detector (Type-S) (KHKS 0733)
  - Standard for LPG bulk storage tank transportation (KHKS 0840)
  - Standard for automatic gas shutdown device with microcomputer-based LPG flow detector (Type-S 4) (KHKS 0742)

- Guideline for design of threaded components (KHKS 1222)
- Standard for periodical inspection of seamless containers for air breathing apparatus (KHKS 0151)
- Standard for periodical inspection of seamless aluminum alloy containers for general use (KHKS 0152)
- Standard for test methods of prototype containers (KHKS 0123)

## 2) Inspection, examination and approval

### ① Inspections for pressure equipment

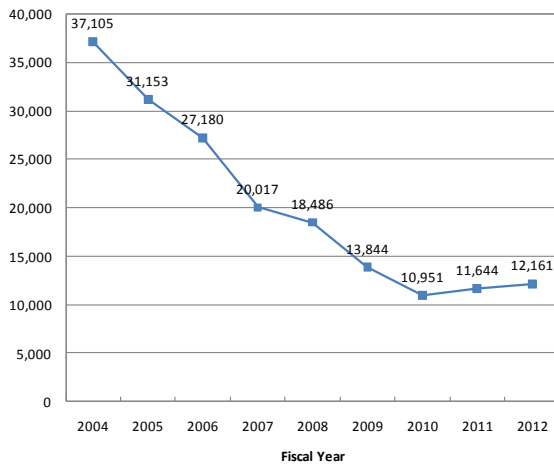
The High Pressure Gas Safety Act stipulates that the person who has manufactured/imported a container or accessory shall apply for the Container/Accessory Inspection. We at KHK conduct these inspections.

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

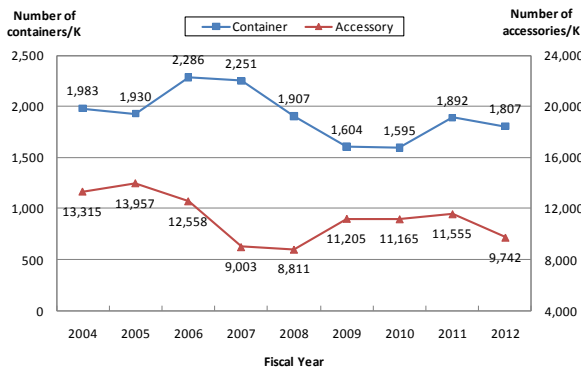
KHK undertakes technical assessments in advance to obtain Ministerial Special approval, and also offers services for certification and examination as a part of its optional activities.

During 2012, the number of equipment applied for the Designated Equipment Inspection increased by 4.4% compared to the previous fiscal year. Meanwhile, the number of containers applied for the Container Inspection and that of equipment applied for the Accessory Inspection decreased by 4.5% and 15.7%, 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 governments with self-inspections by the approved producers themselves. When the self-inspections are conducted, the results shall be submitted to prefectural governments.

Number of pre-assessments

	2012	2011
Accredited completion inspection executor	20	20
Accredited safety inspection executor	22	20

③ Safety inspections of refrigeration and air-conditioning facilities

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

	2012	2011
Completion inspection of refrigeration and air-conditioning facilities	66	52
Safety inspection of refrigeration and air-conditioning facilities	2,202	2,150
Approval of specified equipment (refrigeration equipment)	201	220
Transfer of specified equipment (refrigeration equipment)	2	3
Testing of refrigeration apparatus	281	412
Design strength verification test, etc.	177	135

### 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, which is in accordance with 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.

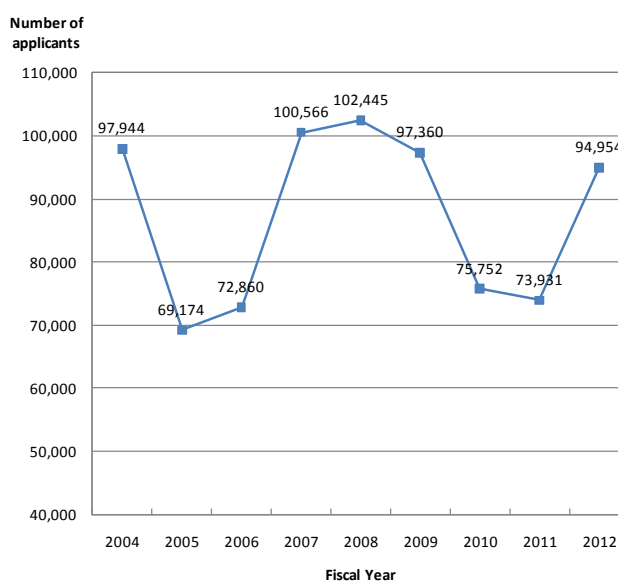
Among the total number of aforementioned statutory training courses, the number of applicants for retraining has been changing periodically, and fiscal 2012 saw an increase to 50,126 from the previous fiscal year's 30,986. This resulted in an increase in the overall number of applicants for statutory training from 73,931 to 94,954.

#### ② Other training

During fiscal 2012, KHK held periodical seminars including basic lectures on high pressure gas safety (6 types at 21 locations), and organized 14 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 2012, KHK published 148 types of books, accounting for a total of 183,234.



Number of applicants for statutory training

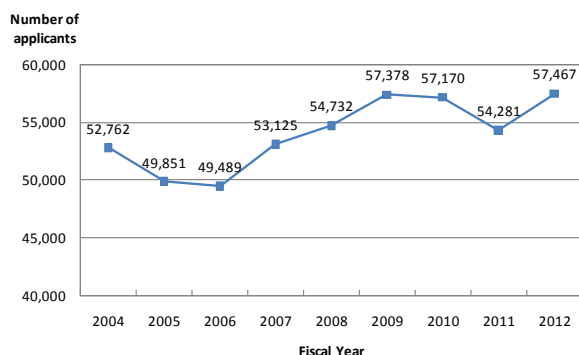
#### 4) Qualifying examination

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.

In fiscal 2012, the total number of applicants for such examinations was 57,467, an increase of 5.9% compared to 54,281 from the previous fiscal year.

Furthermore, based on the lessons from the issue of inadequate questions found in Ministerial examinations during fiscal 2011, KHK greatly improved verification procedures for questions in Ministerial examinations.



Number of applicants for qualifying examinations

#### 5) Research and development

The Research and Development Center at KHK owns equipment for tests 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, and offers consignment tests/research utilizing its

facilities.

During fiscal 2012, the center conducted the following investigations and tests entrusted by the New Energy and Industrial Technology Development Organization (NEDO).

##### ① Research and development on preparing standards for hydrogen infrastructure

As a part of the research and development on preparing standards for hydrogen infrastructure, the investigations and tests of following subjects: expansion of the applicable steel grade for hydrogen stations, preparation of standards for composite containers for vehicle transporting compressed hydrogen (carbon fiber reinforced plastic, CFRP) and CFRP vessels for hydrogen stations, as well as the study on a design coefficient for high pressure gas equipment and its application to hydrogen.

##### ② Study of distances between facilities of hydrogen stations and CNG stands for side-by-side installations

Investigations were conducted to verify safety requirements for distances between equipment in compressed natural gas (CNG) stands and that in hydrogen station to promote parallel establishment of the two facility types, using simulations where necessary. Based on the findings from the investigations, preliminary technical standards were drafted to be submitted to METI for enforcement.

#### 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 2012.

- **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 2012, the following examination activities were undertaken.

Examination activities

	2012	2011
LPG leak alarm examination	2,669,956	2,598,150
LPG incomplete combustion alarm examination	21,730	39,210
LPG sensor examination	2,630	2,350

**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.

② **Organization of various conferences and conventions**

The notable conferences and conventions KHK organized during fiscal 2012 includes the following:

- **Grand conference of national association of general high pressure gas safety organizations (July 12, 2012 in Tokyo)**

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 safety management technology for industrial complexes (July 19, 2012 in Tokyo, August 22, 2012 in Osaka)**

The seminar is organized annually and intended to provide a point of information provision, information exchange and discussions related to high pressure gas producing equipment, their operations, and safety management activities, and is aimed at the personnel of three management divisions (equipment, operation, and safety), including those at headquarters management level, of high pressure gas producers at industrial complexes.

- **High pressure gas equipment manager meeting (October 19, 2012 in Tokyo)**

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.

- **National Conference of High Pressure Gas Safety (October 26, 2012 in Tokyo)**

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.

- General research presentation (November 26, 2012 in Tokyo)

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.

In addition, KHK accepts overseas research groups as a part of its international technology exchange activity. During fiscal 2012, in April a visiting group from Thailand wishing to research high pressure gas-related regulations was welcomed.

## 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 2012, it operates registration in 30 out of 39 class JAB accredited (class 1-39).

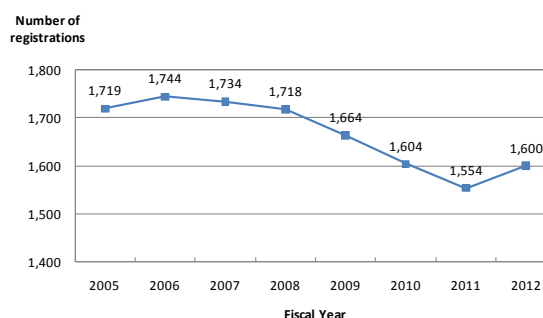
During fiscal 2012, the center accepted a total of 37 transfers of registrations from an

organization withdrawing from the ISO registration operation. Including such transfers, the total number of registrations as of the end of the fiscal year was 1,699 (including 732 withdrawals).

### 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 2012, it operates registration screenings in 34 out of 39 JAB-accredited classes (class 1-39).

During fiscal 2012, the center accepted a total of 51 transfers of registrations from an organization withdrawing from ISO registration operation. Including such transfers, the total number of registrations as of the end of the fiscal year was 948 (including 315 withdrawals).



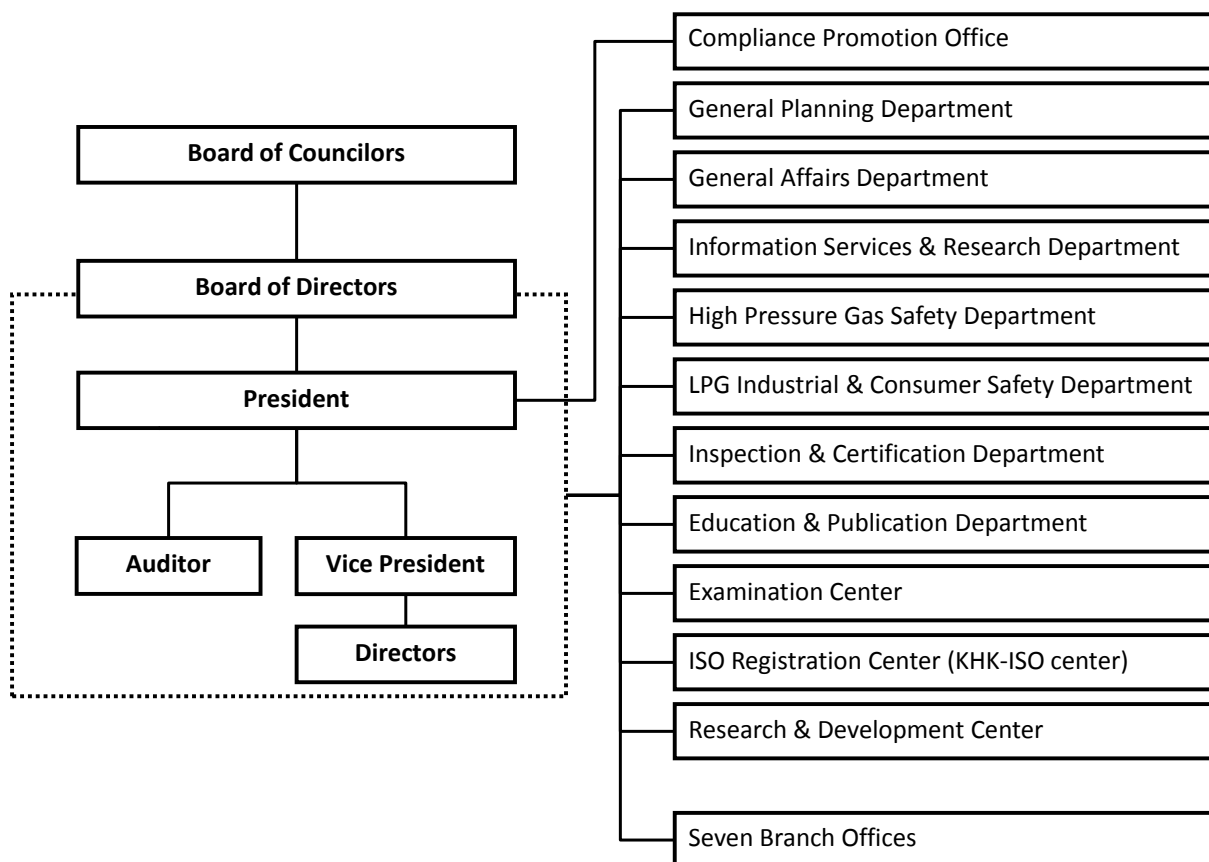
Change in the total number of registrations (Quality and Environment)

### ③ Other assessment and registration

As of the end of fiscal 2012, the total number of occupational health and safety management system (OHSMS) registrations was 39 (including 10 withdrawals). In addition, the total number of food safety management system (ISO22000) registration screenings was 6 (including 2 withdrawals).

## 4. Organization

### 1) Organization chart



### 2) Board of directors (As of March 31, 2013)

President:	Eiji Sakuta
Vice President:	Mitsuo Ohashi
Auditor:	Junichi Izumi
Managing Director:	Yoshinori Suzuki
Managing Director:	Shinichi Yasuda
Managing Director:	Kazuo Kurihara
Managing Director:	Toru Kato
Director:	Yuji Endo
Director:	Momoki Katakura
Director:	Yasuyuki Watanabe
Director:	Masahiro Toyoda
Director:	Sakugoro Matsuda

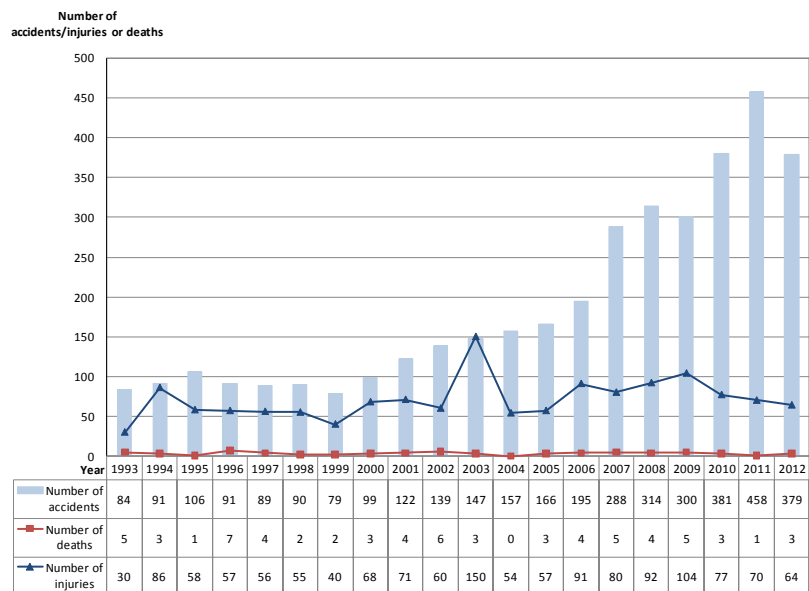
### 3) Membership status

Types	March 31, 2013	March 31, 2012
Companies	925	937
Organizations	192	193
Individuals	104	107
Supporters	33	36

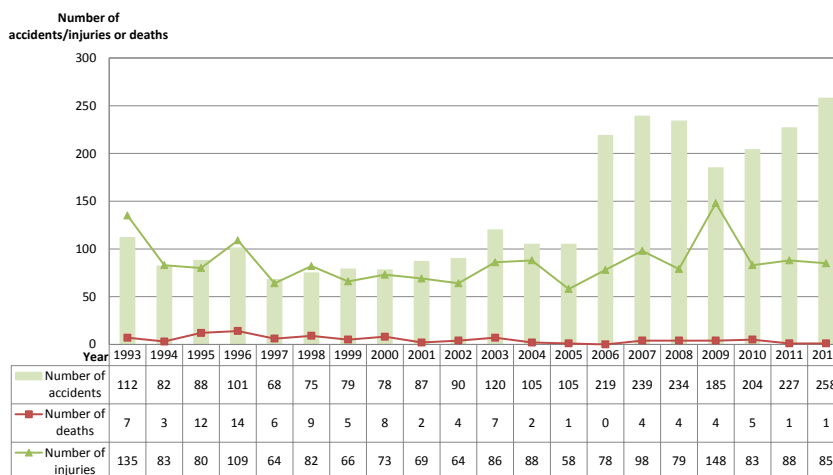
## Reference: Overview of accidents in recent years

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. Although decreased in comparison to 2011, the number of accidents in 2012 has still remained relatively high. Particularly, 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



Number of LPG-related accidents

Similarly, the number of LPG-related accidents has also remained high in recent years, at around 200 per year. 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.

<Contact for inquiries related to this document >

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



Information Services & Research Department

International Affairs Office

Toranomon 4-3-13, 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)