Annual Report on High Pressure Gas Related Accidents (2023 version)

The High Pressure Gas Safety Institute of Japan (KHK)

Table of Contents

1.	Intr	oduction	. 1
2.	Def	inition of high pressure gas accidents	. 1
3.	The	numbers of high pressure gas accidents	. 1
4.	Ana	alysis of high pressure gas accidents by phenomenon	. 2
5.	Ana	lysis of high pressure gas accidents by situation	. 3
5	.1.	The number of high pressure gas accidents by situation	. 3
5	.2.	Accidents at production	. 4
5	.3.	Accidents at consumption	. 5

1. Introduction

This annual report describes high pressure gas related accidents and incidents. These accidents and incidents relate to the High Pressure Gas Safety Act.

Note that this report does not include the accidents and incidents involving general consumers, which relate to the Act on the Securing of Safety and the Optimization of Transaction of Liquefied Petroleum Gas.

2. Definition of high pressure gas accidents

"High pressure gas accidents" are high pressure gas related accidents and incidents such as explosion, fire, leakage, etc. This report does not include loss or theft of high pressure gases or their containers, though this accidents and incidents also relate to the High Pressure Gas Safety Act.

"Accidents resulting in death or injury" refer to accidents and incidents resulting in death, serious injury, or minor injury to a total of one or more people. The definitions of death, serious injury, and minor injury are as follows.

- Death: Persons confirmed dead within five days of the occurrence of the accident.
- Serious injury: Injured persons requiring treatment for more than 30 days after the accident.
- Minor injury: Injured persons requiring treatment for less than 30 days after the accident.

3. The numbers of high pressure gas accidents

Figure 1 shows the numbers of high pressure gas accidents resulting in death or injury over the past 10 years.

In 2023, there were 40 accidents resulting in death or injury, an increase of 10 from the previous year. There were 3 fatalities and 58 injuries in these accidents in 2023.



Figure 1 The numbers of high pressure gas accidents resulting in death or injury

4. Analysis of high pressure gas accidents by phenomenon

Table 1 shows the number of accidents resulting in death or injury by phenomenon over the past 10 years. Note that "Leakage" is cases that only leakage occurs and does not include the cases that explosion or fire caused by leakage.

In 2023, there were 5 explosion accidents, 6 fire accidents, 15 leakage accidents and 7 rupture/failure accidents. There were 3 fatalities in these accidents.

The rupture/failure accidents increase of 7 from previous year.

The explosion and fire accidents result in no fatalities, but there were 3 fatalities caused by other phenomenon, including carbon monoxide poisoning and asphyxiation.

The high pressure gas accidents resulting in death have occurred every years for the past 10 years. In 2021, 6 people died caused by CO2 gas leakage at the storage facility for fire extinguishing equipment (2 accidents).

		2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Explosion	Α	8	15	6	9	9	5	2	7	3	5
	В	0	1	0	1	0	0	0	1	1	0
	С	14	21	8	10	11	8	6	7	4	10
Fire	Α	11	15	13	11	9	17	15	9	11	6
	В	2	1	1	0	0	1	0	0	0	0
	С	10	16	15	16	9	18	16	10	13	6
Leakage	Α	9	13	13	14	20	15	14	16	13	15
	В	0	0	0	0	0	1	1	6	0	0
	С	38	13	20	16	32	25	24	38	14	18
Rupture / Failure	Α	1	4	6	2	2	3	5	3	0	7
	В	0	0	1	0	0	0	1	0	0	0
	С	3	8	8	2	2	4	5	6	0	8
Other	Α	2	3	2	1	5	4	2	1	3	7
	В	1	0	2	0	0	0	1	1	1	3
	С	8	10	0	2	12	7	2	0	2	16
Total	Α	31	50	40	37	45	44	38	36	30	40
	В	3	2	4	1	0	2	3	8	2	3
	С	73	68	51	46	66	62	53	61	33	58

 Table 1
 The number of accidents resulting in death or injury by phenomenon

Note:

- A The number of accidents resulting death or injury

- B The number of fatalities

- C The number of injuries

5. Analysis of high pressure gas accidents by situation

5.1. The number of high pressure gas accidents by situation

Figure 2 shows the number of accidents resulting in death or injury by situation from Figure 1. Looking by situation, accidents at production and consumption account for large proposition.



Figure 2 The numbers of high pressure gas accidents resulting in death or injury by situation

5.2. Accidents at production

Figure 3 shows the numbers of accidents resulting in death or injury at production over the past 10 years.

In 2023, there were 18 accidents resulting in death or injury at production, an increase of 5 from previous year. There were 1 fatality and 20 injuries in these accidents.

Figure 4 shows the number of accidents resulting in death or injury at production by industry. Looking by industry, the number of accidents in the "Other" and "General chemical" fields together account for about 70% to 100% of all accidents resulting in death or injury. "Other" field includes filling stations, ironworks, food manufacturing, etc.



Figure 3 The numbers of accidents resulting in death or injury at production



Figure 4 The number of accidents resulting in death or injury at production by industry

5.3. Accidents at consumption

Figure 5 shows the number of accidents resulting in death or injury at consumption over the past 10 years.

In 2023, there were 15 accidents resulting in death or injury at consumption, an increase of 2 from previous year. There were 2 fatalities and 26 injuries in these accidents.

Figure 6 shows the number of accidents resulting in death or injury at consumption by gas.

Looking by gas, liquefied petroleum gas (LPG) accidents, acetylene accidents and oxygen accidents at consumption account for large proposition. These gases are mainly used for gas burners, gas cutting, etc. The main causes of accidents at consumption include human error such as improper operation and maintenance.





Figure 5 The number of accidents resulting in death or injury at consumption

Figure 6 The number of accidents in death or injury at consumption by gas

Contact for inquiries related to this document

