

Applications in Fumigation Market and
Introduction to Gas Detectors and Alarms for
Safety and Security

Document contents

- **About Riken Keiki**
- **Why do we need gas detectors?**
Risks associated with toxic gases
- **Applications in fumigation market**
- **Major examples of accidents**
- **Product information**
- **International agents**

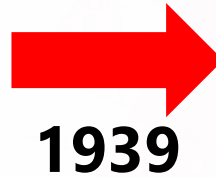


About Riken Keiki

About Riken Keiki



RIKEN



1939

Riken Keiki



Headquarters

**To be completed in September
2018 (conceptual drawing)**

Riken Keiki was originally established to commercialize and sell detectors for preventing explosions in coal mines and on oil tankers.



About Riken Keiki



**Methane gas measurements
in coal mine**



**Optical Gas
Indicator Model
3 (1939)**



Company profile



Company name	Riken Keiki Co., Ltd.	
Established	March 15, 1939	
Location	Headquarters:	2-7-6 Azusawa Itabashi-Ku, Tokyo
	Development Center:	2-3 Minamisakae-cho, Kasukabe-shi, Saitama
Factories	Hakodate-shi, Hokkaido; Sakurai-shi, Nara (affiliated company)	

Headquarters



**To be completed in September 2018
(conceptual drawing)**

Development Center



About Riken Keiki



Headquarters (Itabashi-Ku, Tokyo)

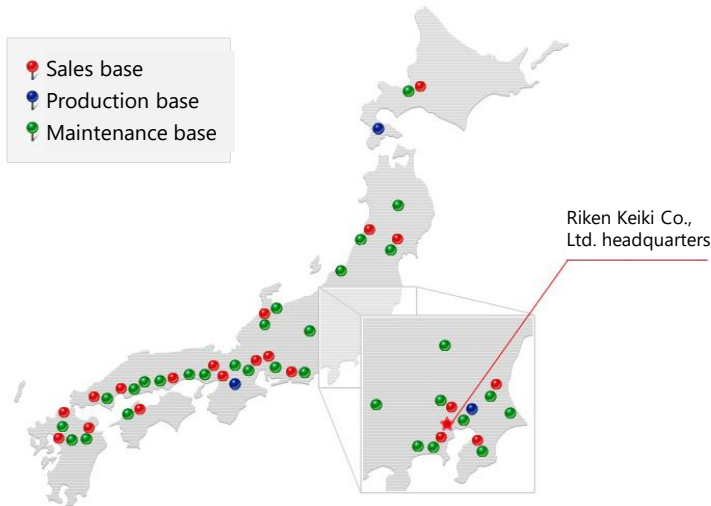


To be completed in September 2018
(conceptual drawing)

Development Center (Kasukabe-shi, Saitama)



Locations of sales offices ◆ Domestic ◆



◆ Global ◆



Company profile



Various bases	Domestic sales and branch offices: 20 locations Service stations: 32 locations Global bases: 7 locations
Major sales items	Combustible gas detectors and alarms Gas detectors and alarms designed to prevent oxygen deficiency accidents Toxic gas detectors and alarms Combined gas detectors and alarms Various measuring instruments for environmental measurements and other instruments
Capital	2,565.5 million yen
Number of employees	965 (non-consolidated), 1,127 (consolidated) * As of September 30, 2017

Hakodate Factory
(Hakodate-shi, Hokkaido)



Nara Factory
(Sakurai-shi, Nara)



Company history



1939	Riken Keiki Co., Ltd. established to produce and sell optical gas detectors, photoelasticity apparatuses, and other precision instruments invented and developed by RIKEN
1959	Start production and sale of combustible gas alarms and detectors (catalytic combustion type).
1967	Start production and sale of oxygen measuring instruments (OX-1).
1970	Start production and sale of monitoring tape type measuring instruments (FP-200).
1972	Start production and sale of non-dispersive infrared measuring instruments (RI-550).
1975	Start production and sale of electrochemical type measuring instruments (EC-231).
1986	Start production and sale of photoemission yield spectrometers (AC-1).
2009	70th anniversary of founding
2014	Start production and sale of portable X-ray diffractometers equipped with XRF (DF-01).
2015	Start production and sale of portable multi gas detectors (GX-6000), first product of its kind in Japan capable of housing photoionization detectors (PID).



RIKEN KEIKI

Why Do We Need Gas Detectors? Risks Associated with Toxic Gases

Need for gas detectors (combustible gases)

- **Criteria set by United Nations' Globally Harmonized System of Classification and Labelling of Chemicals (GHS)**

According to the United Nations' Globally Harmonized System of Classification and Labelling of Chemicals (GHS), a combustible gas (or flammable gas) is defined as follows:

A combustible or flammable gas is a gas having an explosive (flammable) range when mixed with air under atmospheric conditions of 20°C and standard pressure of 101.3 kPa.

Gases falling under this definition are further subdivided into the following two categories based on the severity of the associated risk:

Category 1 (Danger: Extremely flammable gas)

Gases capable of igniting at 20°C and standard pressure of 101.3 kPa when occurring in a mixture of 13% or less by volume with air or having an explosive (flammable) range of at least 12% when mixed with air regardless of the lower explosion (flammable) limit

Category 2 (Warning: Flammable gas)

Gases, other than those in Category 1, which are gaseous at 20°C and a standard pressure of 101.3 kPa and have an explosive (flammable) range when mixed with air



We need gas detectors because flammable gas leaks can lead to explosions.

Need for gas detectors (definition of permissible concentration)

● Definition of permissible concentration

Even when workers are exposed to hazardous substances at work sites, no adverse health effects should emerge as long as the airborne concentration of the **hazardous** substance remains below the permissible concentration.

Recommended permissible concentrations have been set by the American Conference of Governmental Industrial Hygienists (ACGIH) and the Japan Society for Occupational Health. We use the **ACGIH** permissible concentrations.

● Types of permissible concentrations

• TWA (Time Weighted Average)

Time Weighted Average refers to time-weighted average concentrations over an 8-hour workday and 40-hour workweek of routine work to which workers may be repeatedly exposed without adverse health effects.

• STEL (Short Term Exposure Limit)

Short Term Exposure Limit refers to exposure that does not lead to adverse health effects if each exposure does not exceed 15 minutes, the number of daily exposures does not exceed four, and the exposures are separated by at least one hour.

• C (Ceiling value)

Ceiling Value refers to the upper limit that can never be exceeded.



We need gas detectors because leaks exceeding permissible concentrations can lead to accidents.

How human body reacts to oxygen-deficiency

O2 Concentration
21%



Symptoms
Natural air

O2 Concentration
18%



Symptoms
Limit level for not causing serious health problems. Continuous ventilation is required



O2 Concentration
16% - 12%

Symptoms
Rapid breathing,
Increase in pulse rate,
Loss of concentration,
Headache, Nausea,
Ear ringing



O2 Concentration
14% - 9%



Symptoms
Stupor, Headache,
Nausea, Cyanosis,
Faintness on the entire
body

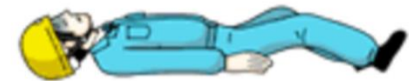
O2 Concentration
10% - 6%

Symptoms
Comatose, Loss of consciousness,
Muscle spasm on the entire body



O2 Concentration
6% or less

Symptoms
Unconsciousness, Comatose,
Cessation of breathing,
Cardiac arrest, Die in 6 minutes



Effects of hydrogen sulfide (H₂S) on human body

Concentration (ppm)	Effects and Toxicity
0.025	Smell vaguely. (It varies according to the individual.)
0.3	Smell clearly.
3 - 5	Smell moderate degree of objectionable odor.
10	Lower-level to irritate eyes' mucus membranes.
20 - 40	A strong odor. Lower-level to irritate lungs' mucous membranes.
100	Sense of smell is impaired in 2 - 15 minutes. Eyes and respiratory tract are irritated in 1 hour. 8 - 48 hours continuous exposure can lead to death.
170 - 300	1 hour exposure is the limit for not causing serious health problems.
400 - 700	Life-threatening exposure in 0.5 - 1 hour.
800 - 900	Bring on loss of consciousness, cessation of breathing and death.
1000	Bring on immediate loss of consciousness and death.

Effects of carbon monoxide (CO) on human body

Concentration (ppm)	Effects and Toxicity
100	No noticeable effects even after breathing for a few hours.
200	A mild headache in around 1.5 hours.
400 - 500	Headache, nausea and ear ringing in around 1 hour.
600 - 1000	Loss of consciousness in around 1 - 1.5 hours.
1500 - 2000	Headache, vertigo and disabling nausea in around 0.5 - 1 hour, and losing consciousness.
3000 - 6000	Headache, vertigo, disabling nausea...etc. in a few minutes. 10 - 30 minutes exposure can lead to death.
10000	Bring on immediate loss of consciousness and death.

Applications in Fumigation Market

- 1. Major chemical substances used for fumigation**

- 2. Major applications**
 - 2-1: Fumigating agricultural products (1)**
 - 2-2: Fumigating agricultural products (2)**
 - 2-3: Fumigating agricultural products (3)**
 - 2-4: Fumigating farmland soil**
 - 2-5: Fumigating wood, packaging materials, and building materials**
 - 2-6: Fumigating cultural assets and art objects**
 - 2-7: Fumigation for medical applications**

1. Major chemical substances used for fumigation

The table below indicates whether the chemical substances used in fumigation are detectable by PID. Other substances used include CO₂ and N₂. (The substances in red are subject to mandatory risk assessment.)

Chemical substance	Major applications	Acceptable concentration (ppm)	Products [Detection range]
Phosphine (Hydrogen phosphide)	• Fumigating agricultural products (silos, warehouses, freight containers)	0.3 ^(*1)	FI-8000 [0 to 50 g/m ³], FP-300 [0 to 500/900 ppb], GD-70D [0 to 1 ppm], GX-6000 [0 to 50,000 ppb/6,000 ppm], SC-01 [0 to 1.00 ppm], SC-8000 [0 to 1.00 ppm], SP-220 (TYPE FUM), etc.
Dichloropropene (1,3-dichloropropene)	• Soil fumigation	1 ^(*1)	-
Chloropicrin	• Soil fumigation	0.1 ^(*2)	-
MITC (methyl isocyanate)	• Soil fumigation	0.02 ^(*1)	GX-6000 [0 to 50,000 ppb/6,000 ppm]
Hydrogen cyanide	• Fumigating agricultural products (silos, warehouses, freight containers)	5 ^(*1)	FI-8000 [0 to 200 g/m ³], GD-70 D [0.9 to 15/30 ppm], GX-6000 [0 to 15.0 ppm], SC-01 [0 to 15.0 ppm], SC-8000 [0 to 15.0 ppm]
Sulfuryl fluoride	• Fumigating agricultural products (silos, warehouses, freight containers) • Fumigating farmland soil • Fumigating wood (used in Japan)	5 ^(*1)	FI-8000 [0 to 200 g/m ³]
Formaldehyde	• Fumigation for medical applications	0.1 ^(*2)	FP-31 [0 to 0.4/1 ppm], FP-330 [0 to 0.5/1/5 ppm], etc.
Iodoform (methyl iodide)	• Fumigating fresh chestnuts • Soil fumigation	2 ^(*1)	GX-6000 [0 to 50,000 ppb/6,000 ppm]
Ethylene oxide	• Fumigation for medical applications • Fumigating cultural assets and art objects	1 ^(*1)	GD-A80V, GX-6000 [0 to 50,000 ppb/6,000 ppm], etc.
Propylene oxide	• Fumigating cultural assets and art objects	2 ^(*1)	FI-8000 [0 to 10 vol%], GD-A80V, GX-6000 [0 to 50,000 ppb/6,000 ppm], etc.
Aluminum phosphide	• Fumigating agricultural products (silos, warehouses, freight containers)	-	-
Methyl bromide ^(*3)	• Fumigating farmland soil • Fumigating wood, packaging materials, and building materials	1 ^(*1)	GD-A80V, GX-6000 [0 to 50,000 ppb/6,000 ppm], SP-220 (TYPE FUM), etc.
Ethyl formate	• Fumigating fruits and vegetables (used in Korea)	100 ^(*1)	GX-6000 [0 to 50,000 ppb/6,000 ppm]

*1 TWA or STEL value recommended by ACGIH (American Industrial Hygienist Conference)

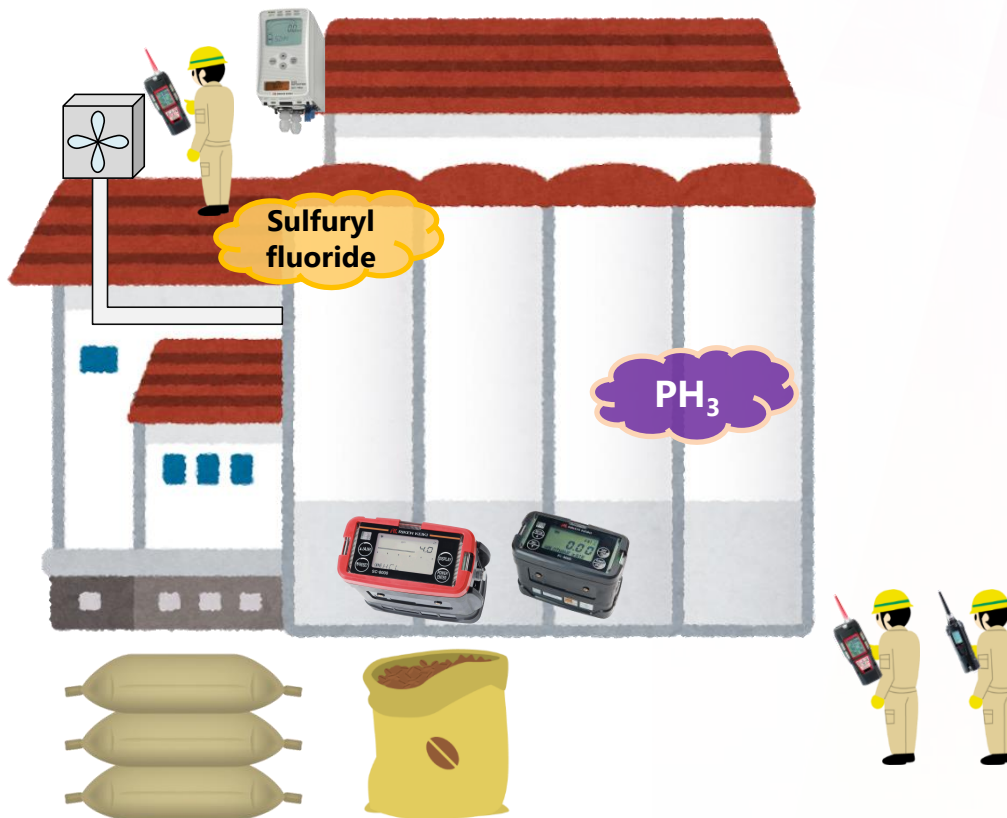
*2 Value recommended by the Japan Society for Occupational Health

*3 The Montreal Protocol provides for the phase-out of all use except in cases where no replacement is available.

2-1: Fumigating agricultural products (1)

Description: Living creatures in bagged or bulked agricultural products (e.g., grain, coffee, and pulses) stored in silos or warehouses damage the quality of agricultural products. Thus, these products are fumigated using substances such as hydrogen phosphide (PH₃: produced by the reaction of aluminum phosphide and airborne moisture) and sulfuryl fluoride. The airtightness of silos is checked by filling with CO₂.
 * Use of methyl iodide and methyl formate is also being considered for the fumigation of silos and warehouses in the future.

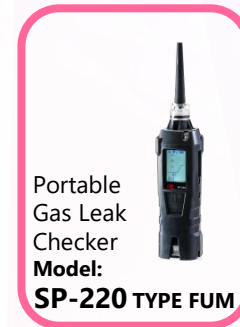
Hazardous risks: PH₃ and sulfuryl fluoride may cause poisoning. ⇒ Detecting PH₃ and sulfuryl fluoride to prevent poisoning
 Leaks of CO₂ used to check the airtightness of silos may cause poisoning. ⇒ Detecting CO₂ to prevent poisoning



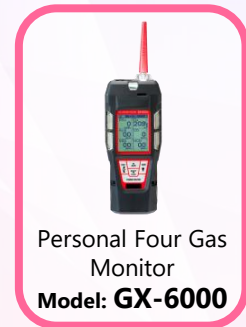
To check for leaks in pipelines



To check for leaks of residual gases



To check for leaks of exhaust ducts and residual gases



To control concentrations



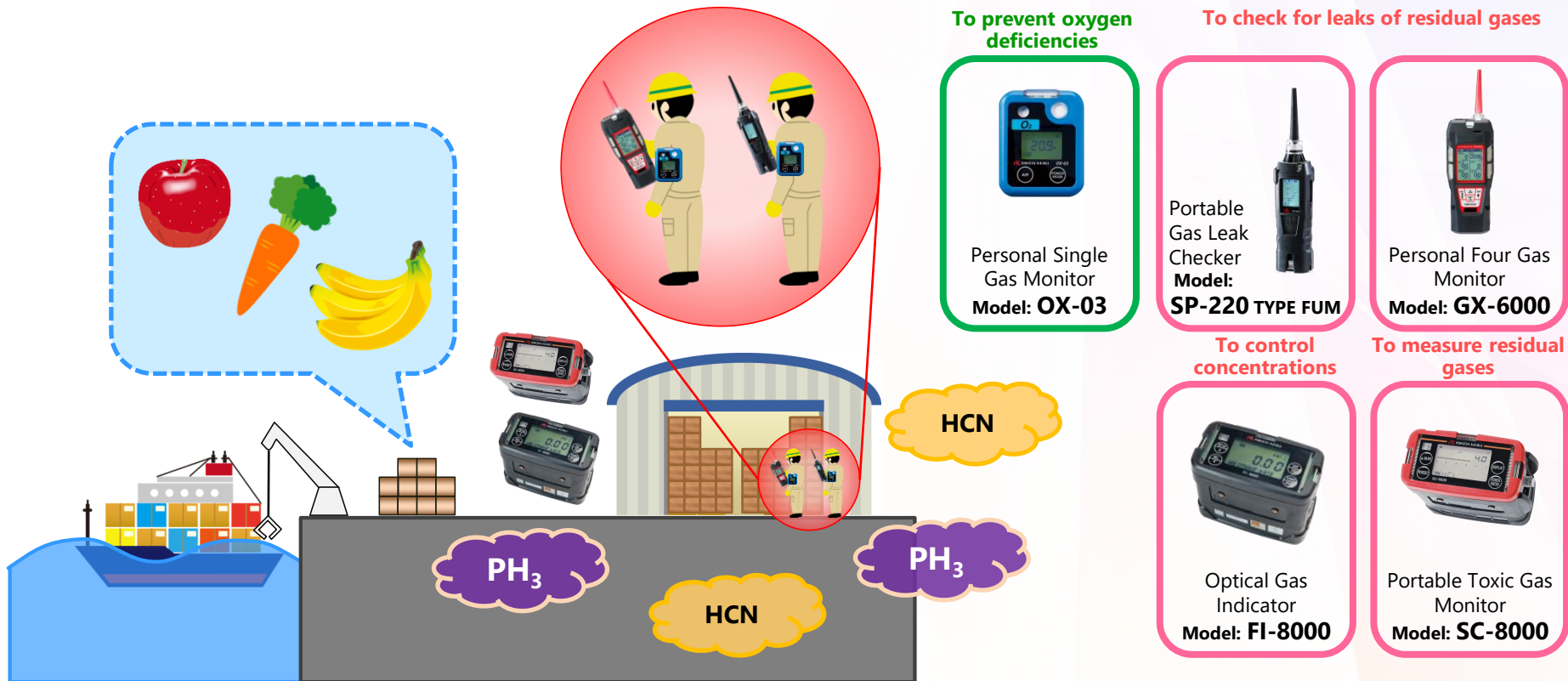
To measure residual gases



2-2: Fumigating agricultural products (2)

Description: Food (fruits and vegetables), grain, and similar goods transported as cargo (e.g., freight containers) on board cargo ships are quarantined when they are landed. If the quarantine identifies the presence of pest organisms, the cargo is disinfected by fumigating the landed cargo in warehouses, silos, or freight containers. Typically, HCN is used to fumigate fruits and vegetables in warehouses, while hydrogen phosphide (PH_3 ; generated by the reaction of aluminum phosphide and airborne moisture) is used to fumigate grain on board cargo ships.

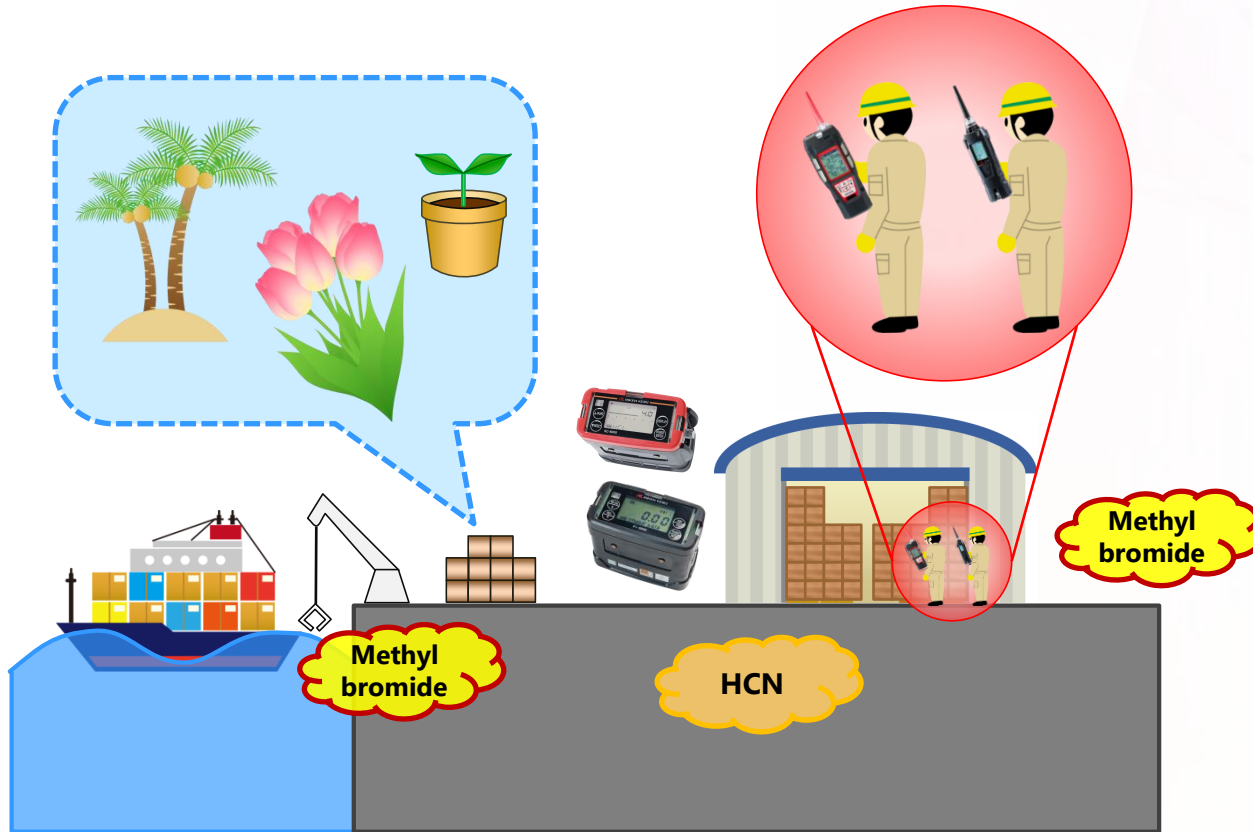
- Hazardous risks:**
- PH_3 remaining in freight containers or silos may cause poisoning. \Rightarrow Checking residual concentrations of PH_3 in freight containers or silos to prevent PH_3 poisoning
 - HCN remaining in warehouses may cause poisoning. \Rightarrow Checking residual concentrations of HCN in warehouses to prevent HCN poisoning
 - Rotting grain may cause oxygen deficiencies. \Rightarrow Measuring oxygen concentrations to prevent oxygen deficiencies



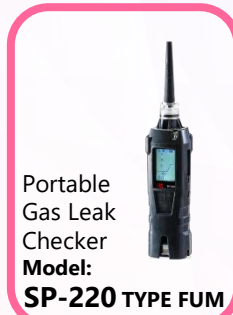
2-3: Fumigating agricultural products (3)

Description: Plants (trees, flowers, and seedlings), fruits, vegetables, and similar goods in cargo holds (e.g., freight containers) on board cargo ships are quarantined when they are landed. If pest organisms are found during the quarantine period, they are typically disinfected by fumigating the landed cargo in warehouses, silos, or freight containers. Typically, hydrogen cyanide (HCN) and methyl bromide (CH₃Br) are used to fumigate such agricultural products.
* Wood is fumigated with methyl bromide while on board the cargo ship with the hatch closed.

Hazardous risks: HCN and CH₃Br may cause poisoning. ⇒ Detecting HCN and CH₃Br to prevent poisoning



To check for leaks of residual gases



To control concentrations



To measure residual gases



2-4: Fumigating farmland soil

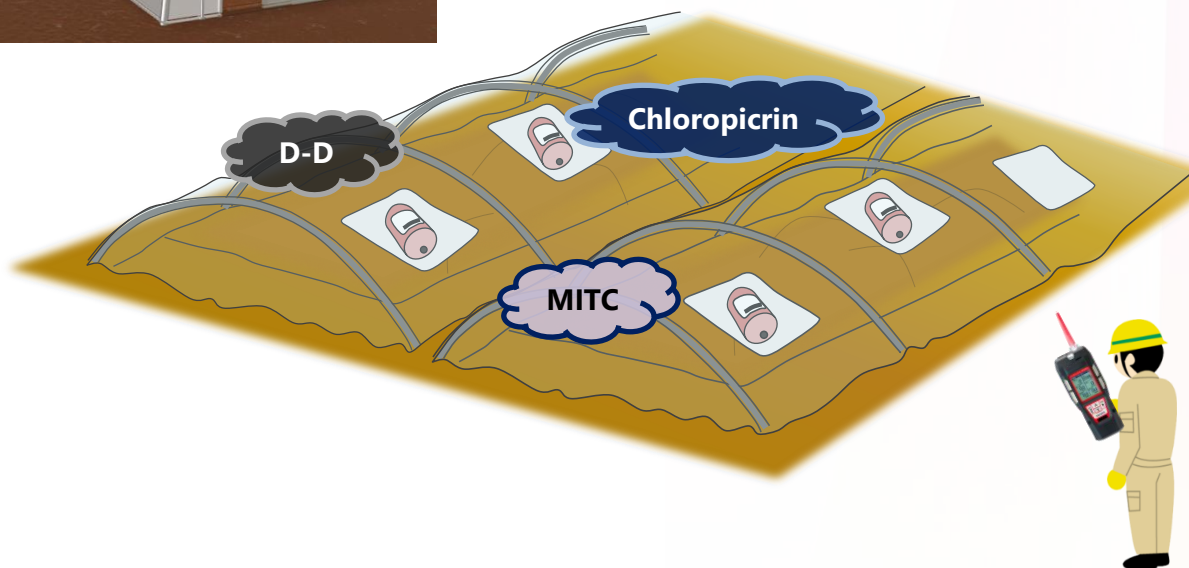
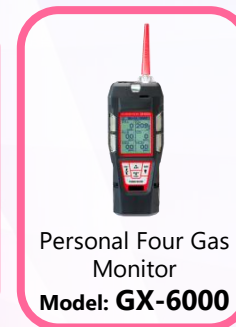
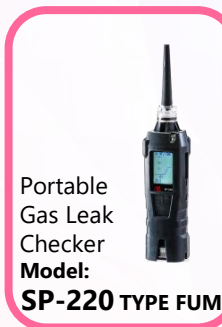
Description: Continuous cropping of the same farmland enhances the propagation of pathogenic bacteria, nematodes, and viruses that can damage crops. The land needs to be treated by fumigation. Chloropicrin, dichloropropene (D-D), and MITC (methyl isocyanate) are typically used for soil fumigation.

Hazardous risks: Chloropicrin, D-D, and MITC may cause poisoning.

⇒ Detecting chloropicrin, D-D, and MITC to prevent poisoning



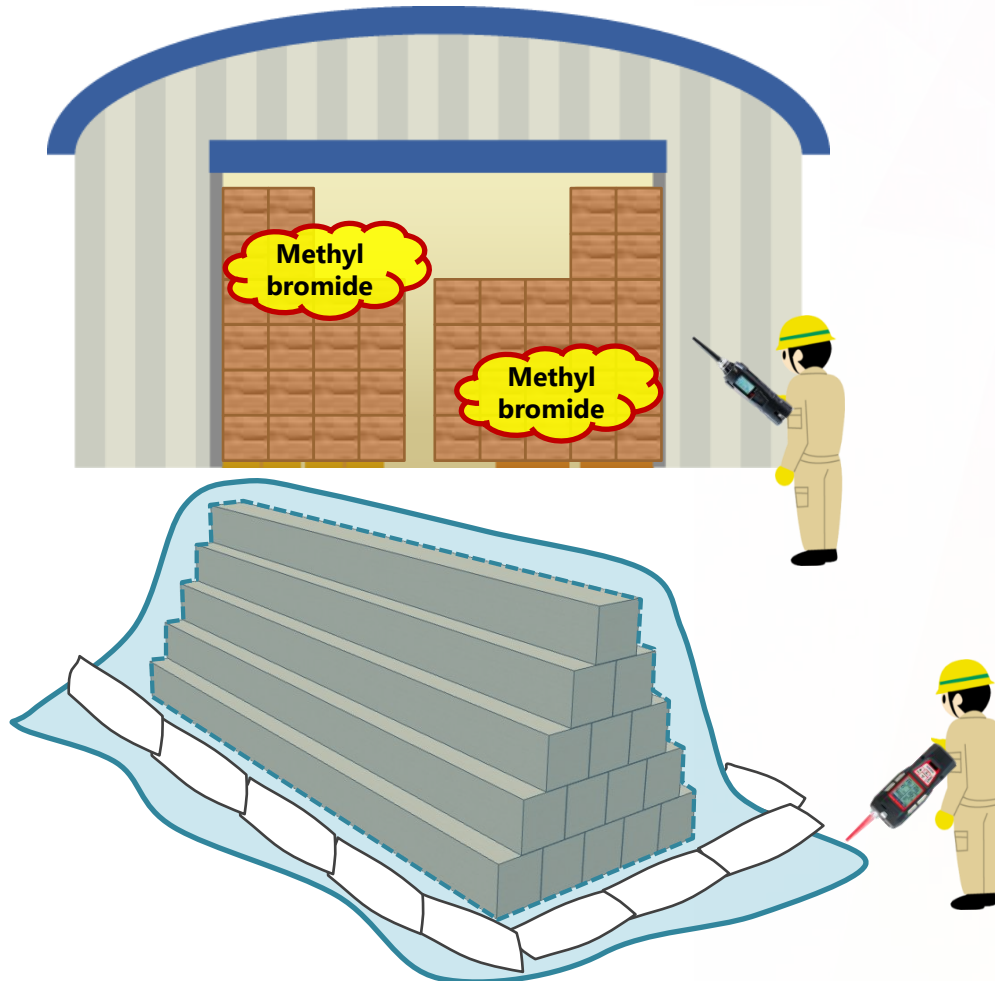
To check for leaks of residual gases



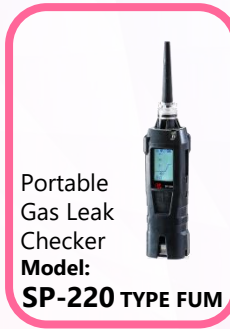
2-5: Fumigating wood, packaging materials, and building materials

Description: Widely used as packaging or building materials, unprocessed wood can be infected by pest organisms. Any pest organisms found during the plant quarantine period are treated, typically by fumigation. Methyl bromide is often used for wood fumigation.
* Use of methyl bromide is prohibited for wood produced, distributed, or used in Japan.

Hazardous risks: Methyl bromide may cause poisoning. ⇒ Detecting methyl bromide to prevent poisoning



To check for leaks of residual gases



To control concentrations

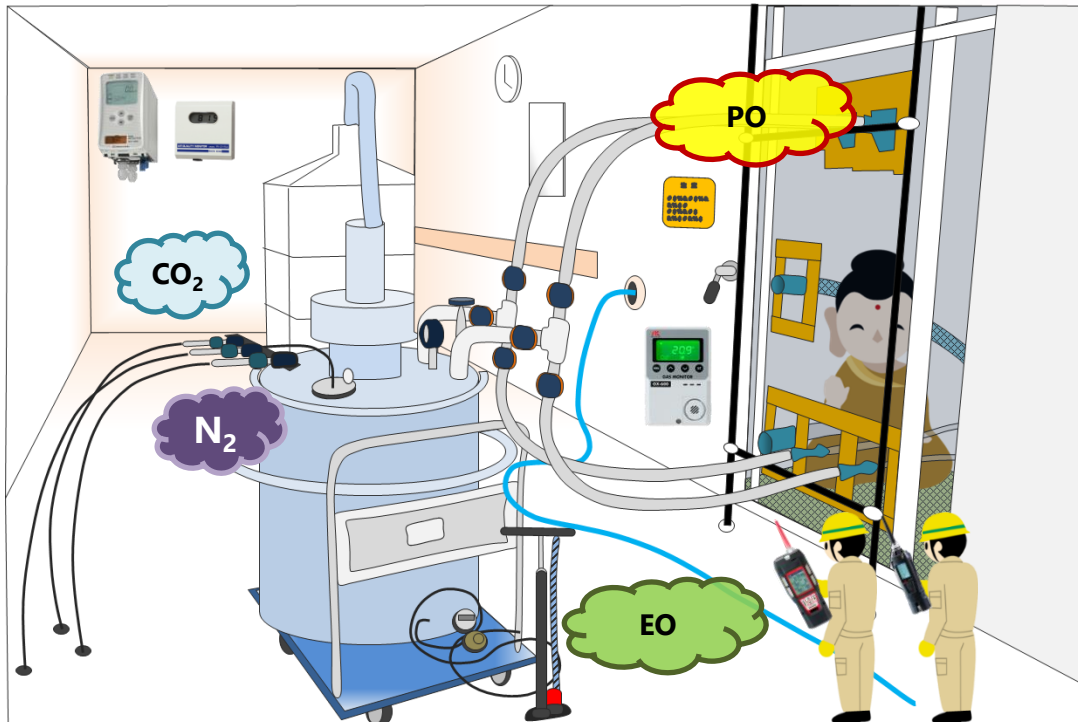


2-6: Fumigating cultural assets and art objects

Description: Cultural assets and art objects are often exposed to daily changes in the environment and can degrade or sustain damage due to mold or pest organisms. As a countermeasure, they are often subjected to fumigation with propylene oxide (PO) or ethylene oxide (EO). In growing numbers of cases, fumigation with carbon dioxide or nitrogen is replacing fumigation with chemicals.

Hazardous risks: PO and EO may cause poisoning. Carbon dioxide and nitrogen may cause poisoning or oxygen deficiencies.

⇒ Detecting PO, EO, and carbon dioxide to prevent poisoning
Measuring oxygen concentrations to prevent oxygen deficiencies



To check for leaks



Smart Transmitter/
Gas Detector
Model: **GD-70D**



CO₂ Monitor
Model: **RI-600**



Infrared CO₂ Gas
Monitor
Model: **RI-215A**

To prevent oxygen deficiencies

For portable personal protection



Indoor Oxygen
Monitor
Model: **OX-600**



Four Gas Personal
Monitor
Model: **GX-2009**



Personal Single Gas
Monitors
Model: **O3 series**

To check for leaks of residual gases



Portable
Gas Leak
Checker
Model:
SP-220 TYPE FUM



Personal Four Gas
Monitor
Model: **GX-6000**

2-7: Fumigation for medical applications

Description: In facilities used to breed laboratory animals, biotechnology clean rooms, and laboratories that handle pathogens and pathogenic microorganisms, indoor sterilization is generally performed by formaldehyde (HCHO) fumigation.

Hazardous risks: Formaldehyde may cause poisoning.

⇒ Detecting formaldehyde to prevent poisoning



To control concentrations



Highly Sensitive
Toxic Gas Monitor
Model: FP-330

To control concentrations



Formaldehyde Gas
Detector
Model: FP-31

Major Examples of Accidents

Prepared by extracting and processing materials from the Safety at Work Site (Ministry of Health, Labour and Welfare: <http://anzeninfo.mhlw.go.jp/index.html>)

Oxygen deficiency resulted in a death when hatches were opened following wood fumigation of cargo holds.

[Location of accident]

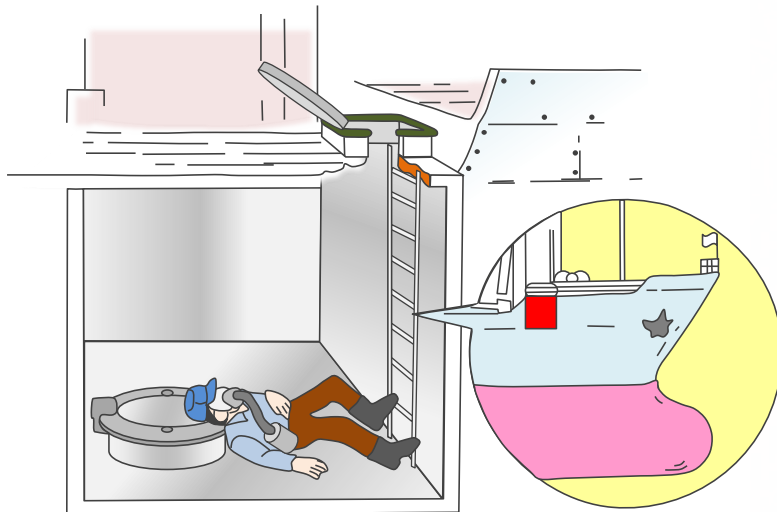
While exhausting fumigant gas after wood fumigation on board a vessel

[Cause of accident]

Gas concentrations in holds in which fumigation had been carried out the previous day were measured in the presence of a quarantine officer and the effects of fumigation confirmed. At that point, workers began opening the hatches and other openings for each hold. Workers began searching when one individual failed to return; they eventually found a companionway with the hatch open on the deck. Peering down into the companionway, they found the victim on his back, wearing a gas mask. While the fumigant gas had been measured, oxygen concentrations had not been checked, and the worker had fallen victim to an oxygen deficiency.

[Damage/injuries]

The victim died due to oxygen deficiency.



It is important to recognize the risk of oxygen deficiencies as well as the risk of highly toxic fumigant gases. Wearing detectors that can measure both toxic gases and oxygen deficiencies ensures work safety.



Product Information



Smart Transmitter/Gas Detector

Model: GD-70D

Features

- Adopts universal design independent of detection principle to allow shared use of the main unit.
- Reusable parts
- Allows recycling of constituent materials to reduce environmental impact.
- Design complies with various international regulations.
- Complies with CE requirements under RoHS Directive.
- Supports a range of communication methods.

DC method using analog 4 mA to 20 mA general instrumentation signal

(Detector head used: GD-70D)

DC power line carrier method using the same line for power supply and communication

(Detector head used: GD-70D-NT)

Ethernet method using PoE HUB

(Detector head used: GD-70D-EA)



Combustible/Toxic Gas Detector Head

Model: GD-A80V

Features

- Explosion-proof rating Exd II CT4 allows use in hydrogen and acetylene atmospheres.
- Provides support for suction and aspirator suction operations.
(* Requires a separate pump unit and power supply.)



Features

- Excellent selectivity for resistance to interference from other gases
- Rapid detection of slight environmental changes (Detectable at ppb level)
- Cassette insertion method for easy tape replacement (Using microcassette)

Highly Sensitive Toxic Gas Monitor
(Gas to be detected: Phosphine)

Model: FP-300

Highly Sensitive Toxic Gas Monitor
(Gas to be detected: Formaldehyde)

Model: FP-330



Formaldehyde Gas Detector

Model: FP-31

Features

- Formaldehyde detector designated by the Ministry of Health, Labour and Welfare [Designation number: 2701]
- Simply set the detection TAB on the main unit to begin measurement.
- Distinctive, large, easy-to-read digital display allows direct reading of concentrations.
- Incorporates reliable self-diagnosis function that indicates when the battery needs to be replaced or poor pump connections via buzzer and visual display.
- Precise and highly resistant to electromagnetic interference



Portable Gas Leak Checker

Model: SP-220

TYPE FUM

Features

- Tough, stylish, compact, lightweight unit
- Rapidly and reliably detects low concentrations of semiconductor material gases.
- Direct reading of concentrations and 40 types of gases selectable by button operation
- Features data logger function (logs up to 256 datum points for date, time, gas detected, and gas concentrations.)
- Incorporates LED lighting for accurate measurements even in dark places.

Gases supported by TYPE FUM

Gas to be detected	Display	Concentration display 1 (ppm)	Concentration display 2 (ppm)	Concentration display 3 (ppm)
Phosphine	PH3	0.1	2	4.5
Methyl bromide	CH3Br	1	20	100
Carbon disulfide*	CS2	0.1	-	-
Methyl iodide	CH3I	1	10	30
Hydrogen cyanide	HCN	1	-	-
Sulfuryl fluoride	SO2F2	-	-	800
Ethylene dibromide*	C2H4Br2	1	10	30

* Gases whose use is prohibited in Japan

Portable
Multi Gas Detector

Model: GX-6000



Features

- A single unit can simultaneously display up to six types of gases, including VOCs. This is the first product of its kind from a Japanese manufacturer.
- The PID sensor enables measurements of more than 200 types of chemical substances subject to regulation.
- Ideal for checking the risks and hazards of chemical substances as required under the Industrial Safety and Health Act
- Support for multilingual display (Japanese, English, French, Spanish, etc.)
- Equipped with convenient new functions, including panic alarm and LED flashlight



Portable Toxic
Gas Monitor

Model: SC-8000

Features

- Intrinsically safe explosion-proof enclosure
- Product line supporting diverse gases
- Dustproof, waterproof enclosure for use in any environment
- Adjustable buzzer volume
- Two types of easy to read displays (digital/analog)
- Allows switching of target gas.



Optical
Gas Indicator

Model: FI-8000

Features

- A single unit measures up to eight types of gases.
- Two types of suction methods are selectable. Automatic suction with built-in pump or manual suction with a hand aspirator
- Equipped with intermittent measurement mode (automatic suction only) Records concentration and time; allows confirmation of changes in gas concentrations on main unit.
- Large, easy to read LCD screen The display clearly shows measured gas type, gas concentrations, unit of measurement, and remaining battery capacity.

Gases supported as part of standard fumigation gas specifications

Gas to be detected	Base gas	Measurement range
Sulfuryl fluoride	Air	0 to 200 g/m ³
Propylene oxide	Air	0 to 10 vol%
Methyl bromide	Air	0 to 200 g/m ³
	Air	0 to 5 vol%
Methyl iodide	Air	0 to 200 g/m ³
Phosphine	Air	0 to 50 g/m ³
Hydrogen cyanide	Air	0 to 200 g/m ³



Four Gas Personal Monitor

Model: GX-2009

Features

- Suitable for use as an explosion-proof product, even in a hydrogen/acetylene atmosphere
- IP 67 equivalent protection for safe use in outdoor work
- Three-direction alarm lamps and two-direction alarm buzzers to alert both the carrier and those in surrounding areas
- Buzzer volume of 95 dB or more can be heard even in noisy factory environments.
- Simultaneous display of gas concentrations of four components on large LCD screen
- Also equipped with clock display and data logger functions



RIKEN KEIKI



GP-03

(For combustible gases)

OX-03

(For oxygen)

HS-03

(For hydrogen sulfide)

CO-03

(For carbon monoxide)

Personal Single Gas Monitors

Model: 03 series

Features

- Models for use with rechargeable batteries have been added to the product line.
- Standard protective covers protect the main unit from scratches, dirt, and shock.
- Compact, lightweight design doesn't interfere with work.
- Inherently safe and explosion-proof enclosure is ideal for use in hazardous locations.



Indoor Oxygen Monitor

Model: OX-600

Features

- Large, easy-to-read three-color LCD screen display
- Equipped with pressure correction function to prevent fluctuating readings due to atmospheric pressure
- The product line offers three types of power supply specifications (AC power supply, DC power supply, and dry battery) to suit the power supply available at the installation location.
- Continuous operation for approximately one year on two AA alkaline batteries
 - * No alarm; backlight switched off
- Remote measurement at distances of up to 20 m with the remote sensor (sold separately)



CO₂ Monitor

Model: RI-600

Features

- For CO₂ measurements required under the Act on Maintenance of Sanitation in Buildings and Ordinance on Health Standards in the Office
- For monitoring air in locations where people gather, such as offices, classrooms, and conference rooms
- For air conditioning in buildings and for air supply and exhaust control in underground parking lots
- For monitoring carbon dioxide concentration in plant cultivation factories and facilities



Infrared CO₂ Gas Monitor

Model: RI-215A

Features

- Compact, lightweight, easy to install
- Equipped with an external output (4-20 mA) and control contact output



International Agents

International Agents



North America

South America

Asia and Pacific

Russia and Central Asia

Europe

Middle East

Africa

International agents (table of contents)

North America	U.S.A.				
South America	Brazil	Argentina	Peru	Chile	Uruguay
Asia and Pacific	China	South Korea	Taiwan	Singapore	Malaysia
	Indonesia	Thailand	India	Vietnam	Philippines
	Australia				
Europe	Germany	Greece	THE NETHERLANDS	Norway	Turkey
	U.K.				
Middle East	U.A.E.	Israel			
Africa	South Africa	Russia and Central Asia	Russia		



International agents (U.S.A.)

RKI INSTRUMENTS, INC.

ADDRESS : 33248 CENTRAL AVENUE, UNION CITY, CA94587-2010 U.S.A.

TEL : +1-510-441-5656

FAX : +1-510-441-5650

E-MAIL : bob@rkiinstruments.com, sandra@rkiinstruments.com

PERSON : MR. BOB PELLISSIER (PRESIDENT)
MRS. SANDRA GALLAGHER (VICE PRESIDENT)

WEBSITE : <http://www.rkiinstruments.com/>

International agents (BRAZIL)

HIDEO NAKAYAMA IMP. EXP. COM. E INDUSTRIA LTDA

ADDRESS : RUA SANTA AMÉLIA, 33 PRACA DA BANDEIRA
RIO DE JANEIRO RJ CEP: 20.260-030 BRAZIL

TEL : +55-21-2590-3496

FAX : +55-21-2270-6390

E-MAIL : hideko@nakayama.com.br

PERSON : MR. HIDEO NAKAYAMA (PRESIDENT)
MS. HIDEKO NAKAYAMA

WEBSITE : <http://www.nakayama.com.br/>



International agents (ARGENTINA)

Prevent Gas SA

ADDRESS : INCLAN 4185 (C1258ABK) CIUDAD DE BUENOS AIRES, ARGENTINA
TEL : +54-11-4925-6342
FAX : +54-11-4925-6342
E-MAIL : ventas@preventgas.com.ar
PERSON : Mr. German Rosas
WEBSITE : <http://preventgas.com.ar/>

HUBERG SUDAMÉRICA S.A.

ADDRESS : ERASMO (CALLE 79) 1047 (B1650HOE) VILLA PIAGGIO
SAN MARTÍN, BUENOS AIRES, ARGENTINA
TEL : +54-11-4713-6068
FAX : +54-11-4713-6072
E-MAIL : arguello.juan@huberg.com
PERSON : MR. JUAN IGNACIO ARGUELLO
WEBSITE : <http://www.huberg.com.ar>



International agents (PERU)

RESET ELECTRONICA Y SISTEMAS S.R.L.

ADDRESS : Calle Martin de Murua 150 Of. 1004 - 1005
Edificio Plexus San Miguel Business Center
San Miguel - Lima 32, PERU

TEL : +51-1-6367303

FAX :

E-MAIL : enquiries@resetnaval.com

PERSON : Mr. Max Muñoz Moran

WEBSITE : <http://www.resetnaval.com/>

International agents (CHILE)

Electronic Marine Ltd

ADDRESS : Uruguay 556 of 404 Valparaiso, CHILE
TEL : 56-32-2220050
FAX : 56-32-2593135
E-MAIL : marketing@electronicmarine.cl
PERSON : Alejandra Palominos (Marketing Manager)
WEBSITE : <http://www.electronicmarine.cl>

International agents (URUGUAY)

microsur

ADDRESS : Carlos María Morales 934, 11200 Montevideo, Uruguay

TEL : 598-2410-1128

FAX : 598-2410-1128

E-MAIL : microsur@microsur.org

PERSON : Dra.Nermys Hernandez

WEBSITE : <http://www.microsur.org>

International agents (CHINA)

RIKEN KEIKI COMMERCIAL(SHANGHAI) CO., LTD.

ADDRESS : HEAD OFFICE : ROOM4A SHANGHAI WATANABE INTERNATIONAL
COMMERCIAL BUILDING NO.55, LINPING N.ROAD, HONGKOU DISTRICT,
SHANGHAI, 200086 CHINA

SALES DEPARTMENT OFFICE : ROOM1106 DALIAN LEE WAN HOTEL NO.8,
MINZHU SQUARE, ZHONGSHAN DISTRICT, DALIAN, LIAONING, 116001
CHINA

TEL : 86-411-8212-3832

FAX : 86-411-8212-3833

E-MAIL : dl@rkkc.net (Ms. Sun Jun)
dl101@rkkc.net (Ms. Qu shuai)
dl102@rkkc.net (Ms. Xu fei)

WEBSITE : <http://www.rikenkeiki.asia>

International agents (KOREA)

RIKEN KEIKI KOREA CO., LTD.

ADDRESS : 23, HWAJEONSANDAN 2-RO 134,
GANGSEO-GU, BUSAN, 46741 KOREA
TEL : 82-51-712-9900 FAX: 82-51-518-7736
E-MAIL : master@rikenkeiki.co.kr PERSON: MR.SUN-GU,LEE
WEBSITE :
(KOREAN) <http://rikenkeiki.co.kr/bn/>
(ENGLISH) <http://rikenkeiki.co.kr/bn/english/>

HIGH INTEGRATED TECHNOLOGY, INC.

ADDRESS : 72, SEGYOSANDAN-RO, PYEONGTAEK-SI,
GYEONGGI-DO, 17843, KOREA
TEL : 82-31-650-7000 FAX: 82-31-650-7007
E-MAIL : info@hitinc.co.kr PERSON: MR.HYUNG-SIL, KIM
WEBSITE :
(KOREAN) <http://www.hitinc.co.kr/>
(ENGLISH) http://www.hitinc.co.kr/?strMode=company_e/company



International agents (TAIWAN)

RIKEN KEIKI TAIWAN CO., LTD. HEAD OFFICE

ADDRESS : NO.87, YANGMING RD., SHANHUA JEN, TAINAN, 741, TAIWAN
TEL : 886-6-581-1224
FAX : 886-6-581-1250
E-MAIL : episys@ms22.hinet.net
PERSON : MR. SEITARO TAKAHASHI (PRESIDENT)
WEBSITE : <http://www.rikenkeiki.com.tw/admin/news/front/news.php>

RIKEN KEIKI TAIWAN CO., LTD. TAICHUNG BRANCH

ADDRESS : NO.2, ALY.14, LN.150-30, SEC.3, XITUN RD., XITUN DIST., TAICHUNG CITY 407, TAIWAN
TEL : 886-4-2462-5386
FAX : 886-4-2462-5508
E-MAIL : johnny@rikenkeiki.com.tw
PERSON : MR. WU WEN CHENG

International agents (SINGAPORE)

R K INSTRUMENTS (S) PTE LTD

ADDRESS : 102F PASIR PANJANG ROAD #03-11, CITILINK WAREHOUSE COMPLEX
SINGAPORE 118530

TEL : 65-6275-3398

FAX : 65-6275-3387

E-MAIL : rk@rkinstruments.com.sg

PERSON : MR. BERNARD QUEK (PRESIDENT)

WEBSITE : <http://www.rkinstruments.com.sg/>



International agents (MALAYSIA)

KINETICS SYSTEMS MALAYSIA SDN. BHD.

ADDRESS : 12A, JALAN RINGGIT 23/11 , SECTION 23, 40300 SHAH ALAM, SELANGOR
DARUL EHSAN MALAYSIA

TEL : 603-5542-2288

FAX : 603-5542-2289

E-MAIL : ck.chooi@kinetics.net

PERSON : MR. CHOOI CHOON KEET
(GENERAL MANAGER)

WEBSITE : <http://www.kinetics.net/>



International agents (INDONESIA)

PT. PRATAMA GRAHA SEMESTA

ADDRESS : KOMPLEKS LODAN CENTER BLOK H-11 JL. LODAN RAYA NO.2 ANCOL - PADEMANGAN
JAKARTA UTARA 14430 INDONESIA

TEL : 62-21-6900656

FAX : 62-21-6900657

E-MAIL : sales@ptpgs.co.id

PERSON : MR. FRENGKY TOMBOKAN



PT. CENTRADINDO UNITRAS (FOR PERTAMINA & MARINE SECTOR)

ADDRESS : COMPLEX PERKANTORAN DUTA HARAPAN INDAH JL. KAPUK MUARA RAYA BLOK SS
NO.3 JAKARTA UTARA 14460 INDONESIA

TEL : 62-21-6624347

FAX : 62-21-6623594

E-MAIL : centradindo.unitras@gmail.com

PERSON : MR. DJOHAN DAHLIAN (MANAGING DIRECTOR)

International agents (THAILAND)

TAIYO GASES CO., LTD.

ADDRESS : 17TH FLOOR SERM-MIT TOWER, 159 SUKHUMVIT 21 ROAD, NORTH
KLONGTOEY, WATTANA, BANGKOK 10110 THAILAND

TEL : 66-2-260-2691

FAX : 66-2-260-2690

E-MAIL : hato@taiyogases.th.com

PERSON : MR. KAZUNARI HATO

WEBSITE : <http://www.taiyogases.th.com/>

International agents (INDIA)

TRITECH

ADDRESS : 121,VEENA INDUSTRIAL ESTATE, OPP.FITWELL HOUSE, L.B.S.MARG,
VIKHROLI(W) MUMBAI-400 083 INDIA

TEL : 91-22-2577-7288, 6796-9990

FAX : 91-22-6796-9991

E-MAIL : tritec@vsnl.com

PERSON : MR. NARESH SHARMA MR. JIGNESH SHAH

WEBSITE : <http://www.tritech.in/>



International agents (VIETNAM)

VIETNAM GAS DETECTOR ONE MEMBER CO., LTD.

ADDRESS : 79 Ly Chinh Thang St, ward 8, Dist 3, HCMC, Vietnam

TEL : +84-(0)28-35262986 / 35262987

FAX : +84-(0)28-35262980

E-MAIL : info@vina-gasdetector.vn

PERSON : MR. CAO MINH LOI (Director)

WEBSITE : <http://vina-gasdetector.vn/>



International agents (PHILIPPINES)

PILIPINAS TRADE GAS, INC. (PTGI)

ADDRESS : 23RD FLOOR ONE CORPORATE CENTER DONA JULIA VARGAS AVE.,
CORNER MERALCO AVENUE, ORTIGAS CENTER PASING CITY,
PHILIPPINES

TEL : 632-635-7320

FAX : 632-635-7322

E-MAIL : gerry.gueco@yahoo.com.ph

PERSON : MR. S. HARA (PRESIDENT)
MR. GERRY C. GUECO (IN CHARGE)



International agents (AUSTRALIA)

CONTROL EQUIPMENT PTY. LTD.

ADDRESS : UNIT 1/3 DEAKIN STREET, BRENDAL QLD 4500, AUSTRALIA

TEL : 61-7-3481-9000

FAX : 61-7-3481-9088

E-MAIL : sales@controlequipment.com.au

PERSON : MR. GREG LOVE (GENERAL MANAGER)

WEBSITE : <http://www.controlequipment.com.au/>



International agents (GERMANY)

RIKEN KEIKI GmbH

ADDRESS : Theodor-Heuss-Allee 112, 60486 Frankfurt am Main, Germany

TEL : +49-6966-7741-460, 461

E-MAIL : s-ono@rikenkeikigmbh.de

PERSON : MR. SHINTARO ONO(Managing Director)

WEBSITE : <http://www.rikenkeiki.com/de/>



International agents (GREECE)

ZERVOUDAKIS MARINE SUPPLIES LTD.

ADDRESS : 31, MILOU STREET, PIRAEUS 18545, GREECE

TEL : +30-210-4623700

FAX : +30-210-4627900

E-MAIL : zerv@otenet.gr

PERSON : MR. JOHN ZERVOUDAKIS

WEBSITE : <http://www.zervoudakis.gr/>



International agents (THE NETHERLANDS)

GMS Instruments B.V.

ADDRESS : Driemanssteeweg 190, 3084 CB, Rotterdam, The Netherlands

TEL : +31102938860

E-MAIL : sales@gms-instruments.nl

PERSON : MR. SEBASTIAN KELDERMAN AND MR. MARKUS FRANK

WEBSITE : <http://gms-instruments.nl/>

International agents (NORWAY)

MARTIN BRUUSGAARD & CO. AS.

ADDRESS : LOKKETANGEN 20A, 1337 SANDVIKA NORWAY
P.O. BOX 3, 1301 SANDVIKA NORWAY

TEL : +47-6754-9330

FAX : +47-6754-9331

E-MAIL : dag@bruusgaard.no

PERSON : MR. DAG MAARTMANN

WEBSITE : <http://www.bruusgaard.no/>



International agents (TURKEY)

DOGANAK COLL. CO.

ADDRESS : KARAKOY, OKCUMUSA CADDESİ, IPEK CIKMAZI,
BOGAZICI HAN NO:6 KAT:2
34420 ISTANBUL, TURKEY

TEL : +90-212-244-5318 / 245-2512

FAX : +90-212-243-5704

E-MAIL : doganak@doganak.com

PERSON : MR. MEHMET ALI AKYUZ

WEBSITE : <http://www.doganak.com/>



International agents (U.K.)

WEATHERALL EQUIPMENT & INSTRUMENTS LTD.

ADDRESS : UNIT 1 STATION APPROACH, WENDOVER AYLESBURY,
BUCKS HP22 6BN ENGLAND

TEL : +44 1296 622180

FAX : +44 1296 624955

E-MAIL : sales@weatherall-uk.com

PERSON : MR. R.H.C. WORTHINGTON

WEBSITE : <http://weatherall-uk.com/>



International agents (U.A.E.)

METRO MAC

ADDRESS : WS 104, DUBAI MARITIME CITY (DMC), DUBAI, U.A.E.
P.O.BOX: 13485 DUBAI U.A.E.

TEL : +971-4-5636100

FAX : +971-4-5519973

E-MAIL : sales@metromac.com

PERSON : MR. K.K. KUTTY
(MANAGING DIRECTOR)

WEBSITE : <http://www.metromac.com/>



International agents (ISRAEL)

MODCON SYSTEMS LTD.

ADDRESS : MODCON HOUSE M. BORNSHTEIN ST.,
SOUTH AKKO INDUSTRIAL PARK, 24222 ISRAEL

TEL : +972-4-9553955

FAX : +972-4-9553956

E-MAIL : gregorys@modcon.co.il

PERSON : MR. GREGORY SHAHNOVSKY

WEBSITE : <http://www.modcon-systems.com/>



International agents (SOUTH AFRICA)

I.S.L. ENTERPRISES (PTY) LTD.

ADDRESS : 29 KLOSSER STREET PAROW 7500 SOUTH AFRICA
P.O.BOX 72 PAROW 7499 SOUTH AFRICA

TEL : +27-21-930-2354

FAX : +27-21-930-2043

E-MAIL : istvanisl@xsinet.co.za

PERSON : MR. I.S. LADANYI



International agents (RUSSIA) **TAIRIKU TRADING CO., LTD.**

ADDRESS : Head office in Tokyo, Japan KAJITANI DAIICHI BUILDING, 21-10,
SHINKAWA 2-CHOME, CHUO-KU, TOKYO 104-0033, JAPAN

TEL : +81-3-6222-0194 FAX: +81-3-6222-0201

E-MAIL : tairiku@tairiku-trading.co.jp

PERSON : MR. MORITA

WEBSITE : <http://www.tairiku-trading.co.jp/?lang=en>

OOO"TAIRIKU MOSCOW LTD."

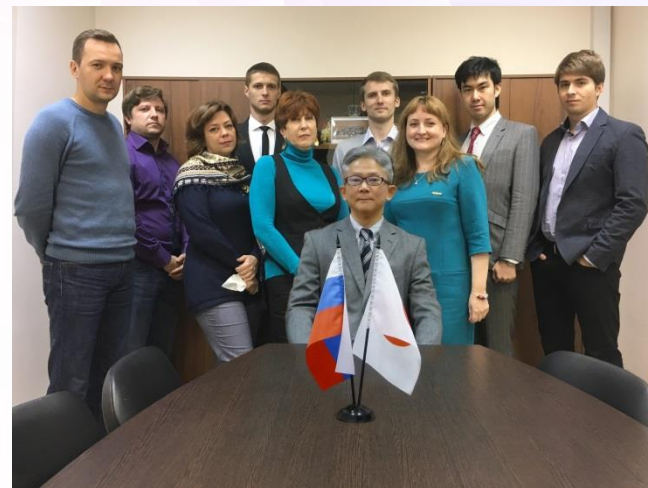
ADDRESS : RUSSIAN FEDERATION, 119049,
MOSCOW, KOROVY VAL STREET,7,
BUILDING 1, FLOOR 2,OFFICE 12

TEL : +7-495-237-18-82 +7-495-237-19-26

FAX : +7-495-931-99-47

E-MAIL : tairiku.alpeev@co.ru, ofistrk@online.ru

PERSON : MR. ALPEEV M.A., (MANAGER)





*We are a **pioneer** in creating **safe working** environments for workers.*