

(Garuda Emblem)  
**Notification of Ministry of Industry**  
**Re: Safety measure for gas business operation**  
**B.E. 2548 (2005)**

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By the virtue of clause 18 and clause 19 of the Ministerial Regulation No. 2 (B.E. 2535 (1992)) issued pursuant to the Factory Act B.E. 2535(1992) which contains some provisions concerning the limitation of the people rights and liberties that is permissible by the provisions of section 29 together with section 35, section 48 and section 50 of the Constitution of the Kingdom of Thailand, the Minister of Industry hereby issues the Ministerial Notification as follows:

**CHAPTER 1**  
**General Part**

Article 1      In this Notification,

“Gas” shall mean every type of gas, excluding acetylene gas dissolving in acetone and liquefied petroleum gas.

“Compressed gas” shall mean gas in pressurized container that is completely gaseous form at 20°C or known as permanent gas.

“Liquefied gas” shall mean gas in pressurized container that at 20°C is partially liquid.

“Cryogenic liquid” shall mean liquefied gas in pressurized container stored at temperature below -150 °C.

“Mixed gas” shall mean mixture of gases of two types up.

“Flammable gas” shall mean gas that is easily ignited at temperature of 20°C and pressure of 101.3 Kpa.

“Toxic gas” shall mean gas that is harmful to human life or health.

“Corrosive gas” shall mean gas having ability to corrode metal.

“Oxidizing gas” shall mean gas which may, generally by providing oxygen, cause or contribute to the combustion of other material more than air does.

“Gas container” shall mean gas cylinder, gas tank, liquefied gas tank, cryogenic gas tank, portable tank, rail tankcars, tube trailer, and motor vehicle cargo tanks.

“Gas cylinder” shall mean a pressure vessel designed for containing pressurized gas and having a circular cross section.

“Gas tank” shall mean storage tank for gases installed in a factory.

“Gas packing facility” shall mean facility designed for gas packing.

“Filling manifold” shall mean manifold for filling or compressing gas from container into cylinder.

“Tube trailer” shall mean cylinder for pressurized gases that are fixed to car.

“Cryogenic liquid tank” shall mean cylinder for packing and distributing cryogenic liquid in liquid form at temperature below 150°C.

“Liquefied gas tank” shall mean cylinder for packing liquefied gas under pressure.

“Non refillable cylinder” shall mean cylinder that are designed for one time use only and not allowed to be reused.

“Portable liquid container” shall mean container for liquefied gas or cryogenic liquid that are portable.

“Cylinder pack” shall mean pack of several gas cylinders for pressurized gases that are fixed on the same base.

“Safety devices” shall mean safety equipment installed at cylinders, manifolds for providing safety in operation; namely safety valve, bursting disc.

## CHAPTER 2

### Gas packing facility

Article 2 Facility used for gas packing purpose shall be a one level building, constructed with non-flammable materials.

Article 3 The floor shall be steady and smooth. The surface floor shall be of material that is resistant to ignition.

Article 4 The floor level shall be above the outside ground level of at least 80 centimeters. Below the surface shall be kept free and opened for good air ventilation and not allowed for storage of any materials.

Article 5 A facility for packing or storing of flammable gases shall equip with electricity system that is explosion proof or suitable for such gas type.

## CHAPTER 3

### Characteristics of gas containers

Article 6 New gas container for storing, packing and transporting gas in a gas operation factory shall be a container that is designed, used of material, and equipped with safety device according to the industrial standard on gas container. If the industrial standard has not been established, it then shall be followed the international standard generally accepted and shall have document endorsing its design, material, installation of safety device and inspection issued by inspection agency approved by Department of Industrial Works for inspection by officials at any time.

Article 7 In case of a new gas cylinder, it shall be in accordance with the industrial standard for pressurized container with seamless type or other international standard generally accepted with an endorsing document as in Article 6 for inspection by officials at any time.

Article 8 For a used gas container, before storing, packing and transporting gas in a gas operation factory it shall undergo and pass inspection in accordance with procedure and schedule prescribed in industrial standard. If the industrial standard has not been established, it then shall be followed the international standard generally accepted with an endorsing document as in Article 6 for inspection by officials at any time.

Article 9 For a used gas container that shall undergo and pass inspection in accordance with procedure and schedule prescribed in industrial standard. Use and maintenance of pressurized container shall be in accordance with industrial standard or international standard generally accepted with an endorsing document as in Article 6 for inspection by officials at any time.

Article 10 Use of a used gas container imported from aboard for storing, packing and transporting gas in a gas operation factory shall have document indicating that its design, material, installation of safety device and inspection has been done in according to international standard generally accepted and shall have endorsing document issued by inspection agency approved by Department of Industrial Works for inspection by officials at any time.

## CHAPTER 4

### Filling system

Article 11 Filling manifold shall be designed, used of material, and equipped with safety device and inspection device according to engineering principles or international

standard generally accepted and shall have endorsing document from professional engineer for inspection by officials at any time.

Article 12 Materials of manifold, measurement device and instrument, and safety device shall be those designed for use with such gas to be filled only.

Article 13 Filling systems shall be equipped with following safety devices.

13.1 Safety valve

13.2 Low temperature switch (for cryogenic liquid)

13.3 Emergency stop button

13.4 Pressure switch

13.5 Pressure gauge

13.6 Stop valve

Installation of these devices shall be in accordance with international standard generally accepted.

Article 14 Gas filling manifold shall be inspected for its function according to this following schedule.

14.1 Safety valve: every three year

14.2 Low temperature switch: every year or as recommended by manufacturer

14.3 Emergency stop button: every year

14.4 Pressure switch: every year or as recommended by manufacturer

14.5 Pressure gauge: every year or as recommended by manufacturer

Article 15 Pressure switch and pressure gauge shall be calibrated at least once a year.

## CHAPTER 5

### Cylinder valves and connections

Article 16 Cylinder valve shall be in accordance with the industrial product standard of cylinder valve. If the industrial standard has not been established, it then shall be followed the international standard such as CGA, BS, DIN, JIS, etc.

Article 17 Valve connections shall be in accordance with the industrial product standard of valve connections. If the industrial standard has not been established, it then shall be followed the international standard such as CGA, etc.

Article 18 Valve connections used for medical purpose shall be in accordance with the industrial product standard of valve connections for medical purpose.

Article 19 Cylinder valve and valve connections for imported or exported special gas and mixed gas shall be in accordance with the international standard generally accepted.

## CHAPTER 6

### Color, Symbol, and Marking of gas container

Article 20 Gas cylinder used in industry shall have color and symbol in accordance with industrial product standard of color and symbol used for industrial gas cylinders.

Article 21 Gas cylinder used for medical purpose shall have color and symbol in accordance with industrial product standard of color and symbol used for medical gas cylinders.

Article 22 Gas cylinder shall have the following marking.

22.1 Name of gas in Thai and chemical formula of gas, using letter in white color on the cylinder.

22.2 Height of marking shall not be less than one eighth of cylinder diameter.

Article 23 Gas tank shall have the following marking.

23.1 Name of gas in Thai and chemical formula of gas, using letter in black color.

23.2 Warning message about hazardous property of such gas.

Article 24 Color, symbol, and marking for imported or exported special gas and mixed gas shall be in accordance with the international standard generally accepted.

## CHAPTER 7

### Shipment of gas cylinder

Article 25 Shipment of gas cylinder using car shall be done in such a way that gas cylinder is in vertical position and shall have safety belt to fix the cylinder in position during the shipment.

Article 26 Transfer of gas cylinder from the car shall be done in a safe manner without crashing the cylinder.

Article 27 Under the provisions of articles 25 and 26, the shipment of cylinder of flammable gas shall be equipped with appropriate and efficient fire extinguisher.

## CHAPTER 8

### Inspection unit

Article 28 Inspection of gas container according to this Ministerial Notification shall be performed by inspection unit approved to be inspection laboratory under the industrial product standard of general rule for qualification of inspection laboratory, or approved by Department of Industrial Works to be an inspection unit.

## CHAPTER 9

### Industrial gas committee

Article 29 There shall be an industrial gas committee consisting of Director General of Department of Industrial Works as the chairman, representative of Department of Internal Trade, representative of Department of Medical Services, representative of Office of Energy Policy and Planning, representative of Vocational Education Commission, representative of Rajamangala Institute of technology; Bangkok campus, representative of gas industry group of Federation of Thai Industries, and representative of Siam Industrial Gas Association appointed by Minister of Industry as members, the Director of Safety Technology Bureau of Department of Industrial Works who shall be a member and the Secretary to the committee and the industrial safety specialist of Safety Technology Bureau of Department of Industrial Works who shall be a member and the Assistant Secretary to the committee.

Article 30 The Committee shall have the following authority and duties.

30.1 Provide outlook to Minister of Industry in issuing of the amendment of the Ministerial Notification concerning the ministerial notification relating to industrial gas that is not suited with economic situation and current technology development.

30.2 Provide outlook to Minister of Industry in establishing inspection unit for gas container.

30.3 Propose viewpoint to Minister of Industry in solving problem of insufficient number of inspection unit for gas container which there are less than 10 private inspection units for more than 1 million gas cylinders all over the country.

30.4 Propose viewpoint to Minister of Industry in disposal of gas cylinders that fail inspection by inspection unit.

30.5 Provide advice to officials with duty in supervising industrial safety of gas operation factory.

30.6 Assure that there shall be a legislation concerning criteria and procedure in disposal of gas cylinders that fail inspection by inspection unit in accordance with industrial product standard that the cylinder must be cut in half corresponding to the enforcement of this Ministerial Notification.

30.7 Carry on other duties as prescribed under this Ministerial Notification.

Article 31 At any meeting of the Committee, attendance of not less than half of the total membership shall be required to constitute a quorum. In the event that the Chairman is absent from the meeting, the members present shall elect one among themselves to be the Chairman of that meeting.

Article 32 Any decision of the meeting taken by a majority of votes. One member one votes. In the event of a tie, the Chairman shall cast one extra vote to reach a decision. A member with conflict of interest in any matter shall have no right to vote in such matter.

Article 33 The committee shall have the authority to appoint a sub-committee to review or act upon the matters assigned by the committee, and to invite any person for his presence to furnish facts, explanation, advice, or opinion.

This Ministerial Notification shall be effective on the expiration of 180 days from the date of its publication in the Government Gazette.

Announced on the 27<sup>th</sup> December B.E. 2548 (2005)

(signed)\_\_\_\_\_

(Mr.Suriya Jungrunreungkij)

Minister of Industry

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