

## 英譯法規內容

法規名稱 Public Hazardous Substances & Flammable Pressurized Gases Establishment Standards & Safety  
(Title) : Control Regulations

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## 法規內文(Content) :

Article 1 The Regulations has been incorporate pursuant to Article 15.2 of Fire Act.

Article 2 Establishment standards governing location, construction and equipment of the places for manufacturing, storage or process of public hazardous materials and flammable pressurized gases; as well as safety control of their storage, process and handling shall be provided according to the Regulations, with the exception that if the applicability of the Regulations is really present certain difficulties, when proved by substantial evidences, in terms of purpose of the place, special construction, or any technology, work method, structure or equipment introduced with efficacy equivalent to or better than that specified in the regulations, and the exemption of this Article has been approved by the central regulating authorities.

Article 3 Classification and scope of public hazardous materials are:

1. Class 1: oxidizing solids;
2. Class 2: flammable solids;
3. Class 3: pyrophoric liquids, pyrophoric solids and hydrophobic materials;

4. Class 4: flammable and combustible liquids;
5. Class 5: self-reactive substances, mixtures and organic peroxides;
6. Class 6: oxidizing liquids;

The classes, grades and control quantity of those public hazardous materials described in the preceding paragraph as Attachment I.

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- Article 4 Flammable pressurized gases refer to that meets one of the following requirements:
1. Hydrogen, ethylene, methane, and ethane contained in the compressed gas with a gage pressure reaching 10kg/cm<sup>2</sup> or 1 MPa or higher at ambient temperature or at 35°C;
  2. Compression acetylene with a gage pressure reaching 2kg/cm<sup>2</sup> or 0.2 MPa or higher at ambient temperature or at 15°C;
  3. Propane, butane and liquefied petroleum gases in liquefied gas with a gage pressure reaching 2kg/cm<sup>2</sup> or 0.2 MPa or higher at ambient temperature or at 35°C; or
  4. Any other gas designated by the central regulating authorities.
- Article 5 A public hazardous materials manufacturing place refer to an operation area for the manufacturing of Classes 1 through 6 materials (Six Materials).  
A flammable pressurized gas manufacturing place refers to an operation area for the manufacturing, compression, liquefaction, or repackaging of flammable pressurized gas and the gas storage tank of supply source.
- Article 6 Storage place of public hazardous materials refers to any of the following places:
1. Outdoor storage place: the place located outside a building for the storage of the Six Materials in any means other than a tank;
  2. Indoor storage place: the place located inside a building for the storage of the Six Materials in any means other than a tank;
  3. Indoor storage tank: the fixed tank in volume greater than 600 liters located inside a building for the storage of the Six Materials;
  4. Outdoor storage tank: the fixed tank in volume greater than 600 liters located on the ground outside a building for the storage of the Six Materials;
  5. Underground storage tank: the tank in a volume greater than 600 liters buried underground for the storage of the Six Materials; and
- The flammable pressurized gas storage place refers to a storage room of containers provided at the manufacturing or process place for the flammable pressurized gases.
- Article 7 A place for the process of public hazardous materials refers to any of the following places:
1. Place for trading:
    - (1) Type 1 Trading Place: the place for trading the Six Materials in containers in a quantity less than 15 folds of the control quantity;
    - (2) Type 2 Trading Place: the place for trading the Six Materials in containers in a quantity greater than 15 folds but less than 40 folds of the control quantity; and

2. General Process Place: any place other than those places as described in the preceding subparagraph for processing the Six Materials at a quantity over the control quantity.

The place for process of flammable pressurized gases refers to any of the following places:

1. The Trading Place: the place for trading flammable pressurized gases in containers; and
2. The Container Inspection Place: the place for inspecting containers of liquefied petroleum gases for domestic use or operating use.
3. The Place for Concatenated Uses of Containers: the place for concatenated using of at least 80 kg of liquefied petroleum gases as a gas source.

Article 8 A material of high flash point referred in the Regulations means a Class 4 public hazardous material of a flashpoint at 100°C or higher.

The barrier mentioned in the Regulations shall comply with the following:

1. A structure that is located 2m or more away from the exterior wall or a structure similar to an exterior of the facility. However, for an indoor storage place used for storage of organic peroxides, Type A and Type B self-reactive substances and mixtures of Class 5 public hazardous materials, whose location, construction and equipment meet those requirements set forth in Article 28, the distance shall not be less than 1/5 of the width of the vacant lot preserved for that facility, and it is taken to be 2m if it is less than 2m.

2. The height shall be sufficient to stop the flame from spreading.

3. Concrete walls of 15cm or more thick that are reinforced with steel bars or steel structures; or hollow brick walls of 20cm or more thick that are reinforced with steel bars or steel structures; or embankment with a slope of 60 degrees or less.

The indoor space referred in the Regulations is a space that has a top cover and is enclosed at 3 sides by wall, or has no top cover and enclosed by walls at all sides.

The open space referred in the preceding paragraph shall be limited to that has been provided with a land titleship or a certificate of the right of land use.

According to the Regulations, a reserved open space with a width of over three meters shall be installed, and those whose reserved open space faces the ocean, lake, weir, or river, shall shorten it to three meters.

Article 9 Fire safety equipment at a place for the manufacturing, storage or process of public hazardous materials and flammable pressurized gases shall be provided pursuant to Fire Safety Equipment Establishment Standards(the Equipment Standards) and other applicable laws and regulations depending on the class of such material or gas.

Article 10 Location, construction and equipment drawings of a place for the manufacturing, storage or process of public hazardous materials and flammable pressurized gases shall be completed with the examination by the municipal, or county/city fire department before the date for commencing the constructional work specified in the permit issued by the building regulating authorities. Upon completing the constructional work, the place referred in the preceding paragraph, the municipal, or county/city building regulating authorities shall jointly with the fire department inspect the compliance of the location, construction and equipment before releasing the use license.

Any tank containing liquefied public hazardous materials shall before applying for the work completion inspection contract a professional institute designated by the central regulating authorities to complete inspection of the following items and to issue a certificate of compliance:

1. Full water level or water pressure inspection; and
2. Stratum, foundation and welding inspection for any tank with a capacity of 1,000 k( or larger.

Directions for the inspection specified in the preceding paragraph shall be determined by the central regulating authorities.

Article 11 The business regulating authorities upon approving the registration of any firm or company any engaging in the business of public hazardous materials and flammable pressurized gases shall so notify the local fire department; the same governs any changed business address, changed business item, cancelled and/or revoked registration.

Article 12 Those whose category or classification cannot be determined according to Attachment 1 in Paragraph 2, Article 3 shall be identified in a test laboratory which is accredited by the Taiwan Accreditation Foundation(TAF) or institutions approved by the central regulating authority. However, this does not apply to those that are identifiable with the identification report of a foreign laboratory that is approved by the central regulating authority, the material safety sheets provided by the original manufacturer or other relevant proof.

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#### Chapter Two: Establishment and Safety Control of Public Hazardous Materials

##### Section 1: Establishment and Safety Control of the Place for the Six Materials

Article 13 The safety distance between the exterior wall or the outer side of any facilities equivalent to an exterior wall of the place for the Six Materials and any abutted property outside the said facility shall be as follows:

1. Not less than 50m to any of the following places:
  - (1) Historical relics; and
  - (2) Any place listed in Article 12.2.4 of the Equipment Standards.
2. Not less than 30m to any of the following places:
  - (1) Any place listed in Articles 12.1.1 through 12.1.5, 12.1.7, 12.2.1, 12.2.2, 12.2.5 through 12.2.11 with a capacity to accommodate 300 persons or more of the Equipment Standards; and
  - (2) Any place listed in Articles 12.1.6, 12.2.3, and 12.2.12 with a capacity to accommodate 20 persons or more of the Equipment Standards.
3. Not less than 20m to any place used for the manufacturing, storage or process of public hazardous materials and flammable pressurized gases, gas station, LPG station, natural gas storage tank, flammable high-pressure storage tank and Manufacturer, storage, and retail stores of firecrackers and other similar hazardous places.
4. Not less than 10m to any place other than those specified in the preceding subparagraphs.
5. Not less than 5m to any elevated power line of 35,000V or higher.
6. Not less than 3m to any elevated power line between 7,000V~35,000V.

The safety range defined above may be 50% reduced if a retainer wall or equivalent protection is provided at the manufacturing place.

Article 14 An open space in width of 3m or wider shall be reserved to the peripheral of any place for the manufacturing or the place for general process of the Six Materials; or 5m or wider, in case of the quantity stored is ten folds or more than the control quantity.

If the place referred in the preceding paragraph is provided with a fireproof wall higher than the roof, constructed with non-flammable materials, of two hours or more of fire resistance rating, and separated from adjacent places effectively shall not be subjected to the restrictions of the distance referred in the preceding paragraph if the place falls in any of the following circumstances:

1. Materials of high flash point are manufactured or processed there with an operating temperature of less than 100°C; or
2. Maintaining such distance as required around the place may seriously interfere with the operating procedure as operating processes are closely connected.

Article 15 The construction of the place used for the manufacturing or for the general process of the Six Materials shall meet the following requirements:

1. The construction shall not be located in the basement of the building;
2. All walls, beams, pillars, floors and stairs shall be constructed with non-flammable materials; with the exception of the access, no other opening shall be provided to the exterior wall that presents the risk of extending the fire, and the exterior wall shall be of fireproof structure;
3. The roof of the building shall be of non-flammable materials, and covered with lightweight metal plates or other lightweight non-flammable materials. However, if the arrangement of this building has prevented in some way the concern of possible explosion, the covering of lightweight metal plates or other lightweight non-flammable materials may be omitted;
4. Fireproof doors and windows of 30minutes or more of fireproof efficiency shall be provided to all the windows and the access; any opening in the wall presenting risk of extending fire shall be of constantly closed fireproof doors of an hour or more of fireproof efficiency;
5. In case of glazed window and access, the glass shall be sandwiched with wire mesh or equivalent protection;
6. The floor in the building used for the manufacturing or process of the Six Materials shall be non-permeable, provided with a proper inclination, and a liquid collection facility. However, in those buildings that are installed with proper leak-collecting facilities and leak-detecting equipments that alert the relevant personnel to contain any leak may be exempted from installing proper inclination and liquid collection facility;
7. Any outdoor equipment for the manufacturing or process of the Six Liquid Materials shall be provided with a containing facility in a height not less than 15 cm above the ground in the peripheral or equivalent leakage-preventing facilities; the ground shall be paved with concrete or any non-flammable materials that is not permeable to the Six Materials at a proper inclination, and provided with a liquid collection facility. An oil-water separation device shall be provided in the liquid collection facility to prevent direct influence into the

drainage ditch in the process of those materials not soluble to water in the flammable and combistible liquids.

- Article 16 Equipment provided to the place for the manufacturing or the general process of the Six Materials shall meet the following requirements:
1. Sufficient lighting, admission of natural light and ventilation;
  2. Equipment to effectively discharge vapor or dusts to where above the eave or outdoor at a height not less than 4m above the ground shall be provided for any building that may accumulate flammable vapor or dusts;
  3. Any mechanical tool or other equipment shall be in the construction that prevents overflow, leakage or scattering of the Six Materials unless such equipment has built-in aperture to prevent such overflow, leakage or scattering of the Six Materials;
  4. A temperature measurement device shall provided to any equipment used to heat, cool the Six Materials or any equipment that produces temperature variation in the process of the process of the Six Materials;
  5. Any heating or drying equipment used for the Six Material shall not rely on direct fire for heating unless such heating or drying equipment is provided at a fire safety place or attached with fire prevention equipment;
  6. Any equipment used to pressurize the Six Materials or causing the pressure rise in the process of the Six Materials shall be provided with proper pressure gage and safety device;
  7. Any equipment used to manufacture or treat the Six Materials is found with the risk of accumulation of electrostatic charge shall be provided with a device to effectively eliminate such charge;
  8. The lightning arrestor shall comply with Chinese National Standard (known as CNS hereafter) 12872, or grounding means of equivalent protection may be used unless the environment surrounding the place does not present danger from striking of lightning;
  9. Any motor, and pump, safety valve, and pipe joint attached to the equipment used in the process of the Six Materials shall be located at where not interfering with the fire prevention and rescue; and

- Article 17 Location, construction and equipment of Type 1 Trading Place shall meet the following requirements:
1. The place shall be provided on the ground floor of the building;
  2. Fire control instructions shall be marked at where can be easily seen;
  3. If a building is used, it shall meet the following requirements:
    - (1) he wall shall be a fire structure or non-flammable materials provided that any wall to separate from other portions of the building shall be of fireproof construction;
    - (2) All beams and ceiling shall be constructed with non-flammable materials;
    - (3) The floors of any upper deck shall be of fireproof construction; in the absence of any upper deck in the building, the ceiling shall be of fireproof construction or constructed with non-flammable materials;
    - (4) Fireproof doors and windows of 30minutes or more of fireproof efficiency shall be provided

to the window and the access; and

(5) In case of glazed window and access, the glass shall be sandwiched by mesh wire or provided with equivalent protection.

4. Any room for the preparation of the Six Materials in the building shall meet the following requirements:

(1) The floorage shall be not less than 6 m<sup>2</sup>, and not greater than 10 m<sup>2</sup>;

(2) The room shall be separated by walls;

(3) The floor shall be non-permeable, and provided with a proper inclination and liquid collection facilities;

(4) Fireproof doors of an hour or more of fireproof efficiency shall be provided to the access; and

(5) Equipment to effectively discharge vapor or dusts to where above the eave or outdoor at a height not less than 4m above the ground shall be provided if the room may accumulate flammable vapor or dusts.

Article 18 The location, construction and equipment for any part of the building used for Type 2 Trading Place shall be mutatis mutandis Article 17.1, 17.2, 17.3.5, 17.4 and meet the following requirements:

1. All walls, beams, pillars and floors shall be of fireproof construction; the ceiling, if any, shall be constructed with non-flammable materials;

2. The upper deck shall be of fireproof construction and provided with facilities that prevent the extension of the fire to reach above; in the absence of upper deck, the roof shall be of fireproof construction;

3. Window shall be of fireproof windows of 30minutes or more of fireproof efficiency; however, no such window may be provided if the window presents risk of fire extension; and

4. The access shall be provided with fireproof doors of 30minutes or more of fireproof efficiency; and only the constantly closed fireproof doors of an hour or more of fireproof efficiency can be provided to the access where risk of fire extension presents.

Article 19 A marking board shall be provided to the place used for the manufacturing, storage and process of the Six Materials with the contents, color, size and location to be specified by the central regulating authorities.

Article 20 If the quantity of the Six Materials is greater than the control quantity, a storage shall be provided depending on the nature of the materials.

Article 21 While Articles 22 through 29 shall become applicable, location, construction and equipment of the place used for the storage of the Six Materials shall meet the following requirements:

1. The safety distance between the exterior wall or outer side of equivalent of the exterior wall, and the properties abutted to the storage place shall be mutatis mutandis Article 13.

2. The width of the open space reserved to the peripheral of the building exclusively for the storage of the Six Materials (known as the Warehouse hereafter) shall meet the requirements listed below with the exception of one of the following events:

(1) The width of the open space to be reserved between any indoor storage place with a storage quantity greater than 20 folds of the control quantity may be reduced to one-third(1/3) of the mandatory width provided that it shall never be shorter than 3m.

(2) If more than two storage places are provided on the same building foundation containing Class 1 public hazardous materials including chlorates, perchlorates, and nitrates; Class 2 public hazardous materials including sulfur, ferrous powder, metal powder, and magnesium; Class 5 public hazardous materials including nitrites, nitro-compounds, or materials containing any of such compound, the width of the open space to be reserved may be reduced to 50 cm.

Classification	Width of Open Space Reserved	
	Wall, pillar, and floor of building of fireproof construction	Wall, pillar, and floor of building not of fireproof construction
< control quantity x 5	---	≥ 0.5m
≥ control quantity x 5 < control quantity x 10	≥ 1m	≥ 1.5m
≥ control quantity x 10 < control quantity x 20	≥ 2m	≥ 3m
≥ control quantity x 20 < control quantity x 50	≥ 3m	≥ 5m
≥ control quantity x 50 < control quantity x 200	≥ 5m	≥ 10m
≥ control quantity x 200	≥ 10m	≥ 15m

3. The warehouse shall be of an independent building exclusively constructed for the purpose of storage of the Six Materials.

4. The warehouse shall be of a building with single story in a height not greater than 6m, or 20m in case that the warehouse is for the storage of Class 2 or Class 4 public hazardous materials and meets the following requirements:

(1) Wall, beam, pillar and floor shall be of fireproof construction;

(2) Fireproof doors and windows of an hour or more of fireproof efficiency shall be provided to window and access;

(3) The lightning arrestor shall comply with CNS 12872, or grounding means of equivalent protection may be used unless the environment surrounding the place does not present danger

from striking of lightning.

5. The floorage of each warehouse shall not be greater than 1,000 m<sup>2</sup>.

6. Wall, pillar and floor of the warehouse shall be of fireproof construction and the beam shall be constructed with non-flammable materials; other than the access, no opening shall be provided in the wall if the exterior wall is at risk of fire extension; the wall, pillar and floor may be constructed with non-flammable materials if the warehouse is used for the storage of Class 2 public hazardous materials other than the combustible solids or Class 4 public hazardous materials of a flashpoint not lower than 70°C, and the total quantity of the storage of the Six Materials is less than 10 folds of the control quantity with its exterior wall without the risk of fire extension.

7. The roof of the warehouse shall be constructed with non-flammable materials and covered with lightweight metal plate or other lightweight non-flammable materials. However, if the arrangement of this building has prevented in some way the concern of possible explosion, the covering of lightweight metal plates or other lightweight non-flammable materials may be omitted. No ceiling shall be provided unless the roof made be of fireproof construction if the warehouse is used for the storage of Class 2 public hazardous materials other than powder and combustible solids; and the warehouse for storage of Class 5 public hazardous materials may be provided with a ceiling constructed with flame resisting or non-inflammable materials to maintain a proper temperature in the warehouse.

8. Fireproof doors and windows of 30minutes or more of fireproof efficiency shall provided to the window and access of the warehouse, and fireproof doors of an hour or more of fireproof efficiency shall be provided to the access if the risk of fire extension presents.

9. In case of glazed window/access, the glass shall be sandwiched with mesh wire or the equivalent protection.

10. The floor construction shall be capable of water permeation proof for storage of inorganic peroxides containing alkali composition of Class 1 public hazardous materials; ferrous power, metal powder, and magnesium of Class 2 public hazardous materials; hydrophobic materials of Class 3 public hazardous materials and Class 4 public hazardous materials.

11. The ground of the warehouse used for storage of liquefied Six Materials shall be of concrete construction or paved with non-flammable materials that prevent such Materials from permeating through; shall be made in a certain inclination and provided with liquid collection facilities.

12. Rack or stand when provided in the warehouse shall meet the following requirements:

(1) Shall be constructed with non-flammable materials, and secured to a sound and firm foundation;

(2) Rack or stand and its appurtenant equipment shall be capable of holding the weight of the materials stored and withstand seismic impacts; and

(3) Rack or stand shall be provided with devices to prevent the materials from falling off.

13. The warehouse shall be provided with sufficient sunlight, lighting and ventilation equipment. Equipment to effectively discharge vapor or dusts to where above the eave or outdoor at a height not less than 4m above the ground shall be provided for the warehouse when used for the storage of Class 4 public hazardous materials with a flash point below 70°C, and the concerns of accumulating flammable vapor or dusts presents.

14. If the total quantity of the storage in the warehouse is 10 folds of the control quantity or more, a lightening arrestor complying with CNS 12872, or grounding means of equivalent protection may be used unless the environment surrounding the place does not present danger from striking of lightning.

15. If the risk of disintegration and/or combustion presents to any of Class 5 public hazardous materials stored in the warehouse, ventilation equipment, air conditioning equipment or any device to maintain the materials below its combustion temperature shall be provided to the warehouse.

- Article 22 While the location, construction and equipment of the indoor storage for Class 2 public hazardous materials other than combustible solids, or Class 4 public hazardous materials with a flash point not below 70°C shall meet those requirements set forth in Articles 21.1~21.3, and 21.7 ~ 21.14, the warehouse of the indoor storage may be provided in a building having two or more stories and the building shall meet the following requirements:
- 1.The floor of the lowest story shall be at where higher than the ground and the height of each story shall not be greater than 6m;
  - 2.The total floorage shall not be greater than 1,000 m<sup>2</sup>;
  - 3.Walls, beams, pillars and floors shall be of fireproof construction, stairs shall be constructed with non-flammable materials, and no opening other than the access shall be provided to the exterior wall with the risk of fire extension; and
  - 4.No opening shall be provided to the floor on the second story and above unless the partitioning wall in the stairway is of fireproof construction and is separated with fireproof doors of 30minutes or more of fireproof efficiency.

- Article 23 When the quantity of the storage of the Six Materials is not greater than 20 folds of the control quantity, a part of the building may be used as an indoor storage place with its location, construction and equipment shall meet the following requirements additional to those set forth in Articles 21.10~21.15:
- 1.Such indoor storage place shall be provided on the first or the second story of the building where the walls, pillars and floors are all of fireproof construction;
  - 2.The part of the building used as the indoor storage place shall meet the following requirements:
    - (1) The floor shall be at a level higher than the ground and the height of the story shall not be greater than 6m;
    - (2) The total floorage shall not be greater than 75 m<sup>2</sup>;
    - (3) Walls, beams, pillars and floors shall be of fireproof construction, separated from other places with RC in thickness not less than 7 cm or a floor or a wall having a fireproof efficiency of at least an hour,and no opening other than the access shall be provided to the exterior wall with the risk of fire extension;
    - (4) Constantly closed fireproof doors of an hour or more of fireproof efficiency shall be provided to the access;
    - (5) There shall be no window; and
    - (6) A fireproof gate shall be provided to the ventilation and exhaust equipment. However, this

does not apply to the space in which the piping is of non-flammable materials, or installed with sprinklers, or equipped with the measure that can provide equivalent protection.

(7) The spaces for indoor storage shall not be located adjacent to each other at the same floor.

- Article 24 If the total quantity of the Six Materials in the indoor storage place is not greater than 50 folds of the control quantity, its location, construction and equipment shall meet the following requirements additional to those set forth in Articles 21.3, 21.4, and 21.9~21.15:
- 1.Width of open space to be reserved surrounding the warehouse:
    - (1) Not required in case of short of 5 folds of the control quantity;
    - (2) 1m or wider, if the storage quantity is not less than 5 folds but less than 20 folds of the control quantity; and
    - (3) 2m or wider, if the storage quantity is not less than 20 folds but less than 50 folds of the control quantity
  - 2.The total floorage shall not be greater than 150 m<sup>2</sup>;
  - 3.Walls, beams, pillars and floors shall be of fireproof construction;
  - 4.Constantly closed fireproof doors that have a fireproof efficiency of at least an hour shall be installed to the access of the warehouse; and
  - 5.There shall be no window provided to the warehouse.
- If the height of the indoor storage place referred in the preceding paragraph is not less than 6m and not greater than 20m, its location, construction and equipment shall meet Articles 24.2 through 24.5 additional to those set forth in Articles 21.2 ~ 21.4 and 21.9~21.15.

- Article 25 For the indoor storage used to store materials of high flash point, its location, construction and equipment shall meet the following requirements additional to those set forth in Articles 21.3 ~21.6, 21.8~21.13:
1. Article 13 shall govern the safety distance between the exterior walls and its abutted places unless the quantity of storage falls short of 20 folds of the control quantity.
  2. The width of the open space reserved to the peripheral of warehouse shall be as such specified in the list below:

Classification	Width of Open Space Reserved	
	Wall, pillar, and floor of building of fireproof construction	Wall, pillar, and floor of building not of fireproof construction
< control quantity x 20	Not Required	≥ 0.5m
≥ control quantity x 20 < control quantity x 50	≥ 1m	≥ 1.5m

$\geq$ control quantity x 50 <	$\geq$ 2m	$\geq$ 3m
control quantity x 200		
$\geq$ control quantity x 200	$\geq$ 3m	$\geq$ 5m

3. The roof of the warehouse shall be constructed with non-flammable materials.

- Article 26 For an indoor storage place used to store materials of high flash point has its warehouse being of a building of two or more than two stories, the location, construction and equipment of the indoor storage place shall meet the requirements set forth in Subpara. 3, 8 to 13 of Article 21, Subpara. 1, 2 and 4 of Article 22, and Subpara. 1 to 3 of Article 25. Walls, beams, columns, floor and stair of the warehouse shall be constructed with non-flammable materials; the wall shall be of fireproof structure if the exterior wall is at risk of fire extension; and no opening other than the access shall be provided in the exterior wall.
- Article 27 For the quantity of materials of high flash point in an indoor storage place is not greater than 50 folds of the control quantity, its location, construction and equipment shall meet those requirements set forth in Articles 21.3, 21.4, 21.9~21.13 and Article 24.1.2~21.1.5. The indoor storage place referred in the preceding paragraph shall meet the requirements set forth in Article 24.1 if its height is over 6m but not greater than 20m.
- Article 28 The location, construction and equipment of an indoor storage place used for storage of organic peroxides , Type A and Type B self-reactive substances and mixtures of Class 5 public hazardous materials shall meet the following requirements additional to those set forth in Article 21:
1. The safety distance between its exterior wall and the abutted buildings shall be as specified in Attachment 2, and such range may be shortened to 10m unless the exterior is of reinforcement or steel frame concrete in thickness not less than 30 cm and a retainer wall is provided to the peripheral. However, if the amount of storage does not reach 5 times as much as the control quantity, and the exterior walls with a thickness of 30cm or more are constructed in concrete reinforced with steel bars or steel structure, the safety distance between the storage itself and the properties adjacent to the storage may be determined from the peripheral installed with barriers; the safety distance between the peripheral installed with barriers and the places described in Subpara.s 3 and 4, Para. 1 of Article 13 may be reduced to 10m.
  2. The width of the open space to be reserved surrounding the warehouse shall be as that specified in Table 3.
  3. The warehouse shall be separated into several areas with partitioning walls with each area not greater than 150 m<sup>2</sup>, and the partitioning wall shall be of reinforcement or steel frame concrete in thickness not less than 30 cm, or reinforcement or steel frame hollow blocks in thickness not less than 40 cm; each wall shall protrude from the roof for a height not less than 50 cm, or not less than 1m in case of external walls on both sides.
  4. The external wall of the warehouse shall be of reinforcement or steel frame concrete in thickness not less than 20 cm; or reinforcement or steel frame hollow blocks in thickness not

less than 30 cm.

5. The roof of the warehouse shall meet one of the following requirements:

(1)The wooden members for the structure of the surface of the roof shall have a span not greater than 30 cm;

(2)Grill beam structure made of circular steel or lightweight steel materials shall be provided for the structure below the roof with the length of the side not longer than 45 cm;

(3)A metal mesh shall be provided below the roof and tightly secured to the beams and girdles made of non-flammable materials; or

(4)Wood penal in thickness not less than 5 cm and width not less than 30 cm shall be provided as the foundation for the roof.

6. The access to the warehouse shall be of fireproof doors of an hour or more of fireproof efficiency.

7. The window of the warehouse shall have a clearance not less than 2m from the ground; the total are of the windows provided on the same wall shall not be greater than one-eightieth (1/80) of the area of that wall; and the area of each window shall not be greater than 0.4 m2.

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[Attachment 2.doc](#)

[Attachment 3.doc](#)

Article 29 Articles 22, 23 and 24 shall not applicable to any indoor storage place used for the storage of the following materials:

1. Alkali aluminum, alkali lithium of Class 3 public hazardous materials;

2. Ethanal, propane oxide of Class 4 public hazardous materials;

3. Organic peroxide , Type A and Type B self-reactive substances and mixtures of Class 5 public hazardous materials; or

4. Any other of the Six Materials as published by the central regulating authorities.

Article 30 The Materials when stored in outdoor storage place shall be only limited to sulfur, combustibile solids with a flash point not lower than 21°C under Class 2 public hazardous materials; and Types 2, 3 and 4 oils, or animal/vegetable oil under Class 4 public hazardous materials; and stored in containers. The location, construction and equipment of the outdoor storage place shall meet the following requirements:

1. The safety distance between the exterior wall or outer side of equivalent of the exterior wall, and the place abutted to the storage place shall be mutatis mutandis Article 13, unless the place is used to store the materials with high flash point.

2. The place shall be located at where provided with low humidity and good drainage.

3. The peripheral shall be fenced.

4. The width of the open space reserved to the peripheral of the fence referred in the preceding subparagraph shall be such as listed below: Provided, however, that the width of the open space may be shortened to one-third(1/3) of the mandatory width if the place is used for the storage of sulfur:

Classification	Width of Open Space Reserved

< control quantity x 10	≥3m
≥control quantity x 10 < control quantity x 20	≥6m
≥control quantity x 20 < control quantity x 50	≥10m
≥control quantity x 50 < control quantity x 200	≥20m
≥control quantity x 200	≥30m

5. The width of the open space reserved to the peripheral of the fence surrounding the place used for the storage of sulfur shall be such as listed below:

Classification	Width of Open Space Reserved
< control quantity x 50	≥3m
≥control quantity x 50 < control quantity x 200	≥ 6m
≥control quantity x 200	≥10m

6. If rack or stand is provided, its construction and equipment shall meet the following requirements:

- (1) The rack or the stand shall be constructed with non-flammable materials, and secured to a sound and firm foundation;
- (2) The rack or the stand and its appurtenant equipment shall be capable of holding the weight of the materials stored and withstand wind velocity and seismic impacts;
- (3) The height of the rack or stand shall not be greater than 6m; and
- (4) The rack or stand shall be provided with devices to prevent the materials from falling off.

7. The height of the containers of sulfur and Combustible Solids with a flash point at or above 21°C when stacked up shall not be greater than three meters.

8. The aisle with a width of more than 1.5 meters shall remain inside the place where types 2, 3 and 4 petroleum, or animal and vegetable oils under Class 4 public hazardous materials with a flash point at or above 21°C are stored, and the maximum amount stored in each area separated by aisles and the maximum height of containers when stacked up shall meet the following requirements:

Classification	Maximum amount stored	Maximum height of
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	in each area	containers when stacked up
A flash point at or above 21°C and below 37.8°C	16,800 liters	3.6 meters
A flash point at or above 37.8°C and below 60°C	33,600 liters	3.6 meters
A flash point at or above 60°C	83,600 liters	5.4 meters

- Article 31 If blocks of sulfur are stored on the ground in an outdoor storage place, location, construction and equipment of the place shall meet the following requirements additional to those set forth in Article 30:
1. For every 100 m<sup>2</sup> (including odds) shall be segregated with a fence in a height not greater than 1.5m;
  2. If more than two sets of fence are provided, the total area so enclosed shall not be greater than 1,000 m<sup>2</sup>, and the spacing between any two fences shall not be less than one-third(1/3) of the width of open space to be reserved as provided in Article 30 as illustrated below:  
(Attachment A)
  3. The fence shall be made of non-flammable materials, and built in such a way so to prevent leakage of sulfur.
  4. At least one waterproof film shall be fixed every two meters on the fence to prevent sulfur from overflowing or scattering in the air.
  5. Drainage ditch and separation trough shall be provided to the peripheral of the storage place.
- File:  
[Article 31 : Attachment A.doc](#)

- Article 32 The capacity of the tank containing the Six Materials shall not be greater than the balance of the inner volume of the storage tank less its volume of space.  
The inner volume of the storage tank shall be solved as follows:
1. Oval Storage Tank:  
(Attachment B)
  2. Cylindrical Storage Tank:
    - (1) Horizontal type:  
(Attachment C)
    - (2) For the erected type of cylindrical storage tank, the tank top shall be excluded in solving the inner volume.
    - (3) If the formula fails to solve the inner volume, approximation method may be used.
- The volume of the tank space is 5%~10% of the inner volume: Provided, however, that when a fixed fire extinguisher is provided to the upper part of the tank, the volume of the space of the tank is solved on the upper part of an elevation at where not lower than 30 cm and not

higher than 1m below the exit of the fire extinguishing agent. See the following figure:  
(Attachment D)

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[Article 32 : Attachment B、C、D.doc](#)

- Article 33 Location, construction and equipment of an indoor storage place shall meet the following requirements:
1. It shall be located in a room of a single floor building that is exclusively designated to be used as a storage tank.
  2. The range between the shells of the storage tank in the room and the interior wall shall not be less than 50 cm. When two or more than two storage tanks are provided in the room, the spacing between shells of any two abutted storage tanks shall not be less than 50 cm.
  3. Tank capacity shall not be greater than 40 folds of the control quantity, and the quantity of Type 2 and Type 3 petroleum oil in Class 4 public hazard materials shall not be greater than 20,000L. If two or more than two tanks are provided in the same room, the capacity of each tank shall be put together to be accounted for the purpose of this Paragraph.
  4. Tank Construction:
    - (1)The tank shall be made of steel plate or the equivalent in thickness not less than 3.2 mm;
    - (2)When applied with a pressure equal to 1.5 folds of the normal working pressure, a storage tank with its +/- pressure greater than 500 mm Hg(the Pressurized Tank) shall survive a ten-minute pressure withstanding test without no leakage or deformation with the exception that the tank is used for storage of the Six Materials; in solid status and
    - (3)There shall be no leak or deformation to a non-pressurized tank after the test of full load of water.
  5. The surface of the tank shall be corrosion proofing.
  6. Safety device shall be provided to the pressurized tank; and ventilation pipe, non-pressurized tank.
  7. A device to automatically display the storage capacity shall be provided to the tank.
  8. For the tank containing Class 4 public hazardous materials, its inlet shall meet the following requirements:
    - (1)It shall be not be located at where is vulnerable to ignite fire or interferes with the escape route;
    - (2)It may be connected to a hose or pipe without leakage;
    - (3)It shall be provided with valves or blind plates; and
    - (4)A grounding system that is capable of effectively removing static shall be provided if the contents of the tank can easily attract static;
  9. Tank valve shall be made of cast steel or the equivalent without leakage;
  - 10.Drainage pipe of the tank shall be provided on the tank wall, or at the bottom of the tank when immune from damage in case of earthquake or cave in of lava;
  - 11.Wall, pillar and floor of the room exclusively housing the tank shall be of fireproof construction; beam shall be constructed with non-flammable materials; no opening other than the access shall be provided in the exterior wall if the risk of fire extension presents: Provided, however, that if the tank is used for storage of Class 4 public hazardous materials with a

flash point not lower than 70°C, and without the risk of fire extension, its wall, pillar and floor may be constructed with non-flammable materials.

12.The roof of the room exclusively housing the tank shall be built with non-flammable materials, and there shall be no ceiling panel to be installed.

13.Fireproof doors and windows of 30minutes or more of fireproof efficiency shall be provided to the window and the access of the room exclusively housing the tank; and constantly closed fireproof doors that have a fireproof efficiency of at least an hour shall be installed to the access if the risk of fire extension from the exterior wall presents;

14.If the window and the access referred in the preceding subparagraph is glazed, the glass shall be sandwiched by wire mesh or the equivalent protection;

15.The floor of the tank containing the liquid Six Materials shall be of non-permeable construction, provided with a proper inclination and liquid collection facilities;

16.The access to the room exclusively housing the tank shall be installed with doorsill of 20cm or more of height or leakage-preventing measure of equivalent performance; and

17.The room exclusively housing the tank shall be provided with sufficient natural light, lighting and ventilation equipment. Equipment to effectively discharge vapor or dusts to where above the eave or outdoor at a height not less than 4m above the ground shall be provided for the room when used for the storage of six materials with a flash point below 70°C, and the risk of accumulating flammable vapor or dusts presents.

Article 34 The location, construction and equipment of an indoor tank used for storage of Class 4 public hazardous materials with a flash point not lower than 40°C shall meet the following requirements additional to those set forth in Articles 33.2~33.10, 33.15 and 33.17:

1. The tank shall be located in an exclusively room dedicated for the purpose;
2. A device to automatically display the remaining capacity of the tank shall be provided at where close to the inlet of the tank unless such capacity can be easily observed outside the tank;
3. The room exclusively housing the tank may be provided in a building of more than one story provided that wall, beam, pillar and floor of the building shall be of fireproof construction;
4. The floor on the level above the room exclusively housing the tank shall be of fireproof construction; in the absence of upper floor, the roof of the building shall be built with non-flammable materials, and no ceiling panel shall be accepted;
5. There shall be no window provided to the room exclusively housing the tank;
6. Constantly closed fireproof doors of an hour or more of fireproof efficiency shall be provided to the access to the room exclusively housing the tank;
7. A fireproof gate shall be provided to the ventilation and exhaust equipment to the room exclusively housing the tank. However, this does not apply to the space in which the piping is of non-flammable materials, or installed with sprinklers, or equipped with the measure that can provide at least an equivalent protection; and
8. The room exclusively housing the tank shall be constructed with measure to prevent leakage of the Six Materials.

Article 35 Pumping equipment used in an indoor storage tank shall meet the following requirements:

1. If the indoor storage tank is located on the ground floor in a building, and the pumping equipment is located at a place outside the building containing the room exclusively housing the tank;
  - (1)The pumping equipment shall be secured to a firm and solid foundation;
  - (2)The building or work object (the Pumping Room) used for the pump and its electric motor shall meet the following requirements:
    - i. Wall, beam, pillar and floor shall be built with non-flammable materials;
    - ii. The roof shall be built with non-flammable materials, non-flammable materials, and covered with lightweight metal plates or other lightweight non-flammable materials. However, if the arrangement of this pump room has prevented in some way the concern of possible explosion, the covering of lightweight metal plates or other lightweight non-flammable materials may be omitted;
    - iii. Fireproof doors and windows of 30 minutes or more of fireproof efficiency shall be provided to the access and window;
    - iv. If the window and access is glazed, the glass shall be sandwiched by wire mesh or equivalent protection;
    - v. The floor shall be constructed in such way so to prevent permeation, provided with a certain inclination and liquid collection facilities; and the peripheral of the floor shall be provided with a blocking means at a height not less than 20 cm above the floor;
    - vi. Sufficient natural light admission, lighting and ventilation required for handling the Six Materials shall be designed; and
    - vii.If the risk of stagnation of flammable vapor presents, equipment to effectively discharge such vapor to where above the eave or outdoors at a height not less than 4m above the ground shall be provided.
  - (3)If the pumping equipment is provided at where other than the pumping room, it shall meet the following requirements:
    - i. A blocking means not less than 15 cm above the ground or any other leakage-preventing means of equivalent performance shall be provided to the peripheral of where the pumping equipment is located;
    - ii.The ground shall be paved with concrete or any other non-flammable materials that prevents permeation of the Six Materials, at a certain inclination and with liquid collection facilities; and
    - iii. Oil-water separation device shall be provided if the pump is used to process Class 4 public hazardous materials that are not soluble to water, and those materials shall be prevented from direct effluence into the drainage ditch.
2. If the indoor storage tank is provided on the ground floor of a flat building and the pumping equipment is provided in the building where the room exclusively housing the storage tank is located:
  - (1) If the pumping equipment is located at a place other than the room exclusively housing the storage tank, it shall meet the requirements set forth in (i) and (ii) of the preceding subparagraph 1; or
  - (2) If the pumping equipment is located in the room exclusively housing the storage tank, a containing means or any other leakage-preventing means of equivalent performance built with

non-flammable materials higher than the bottom door frame of the access to the room exclusively housing the storage tank shall be provided to the peripheral of the pumping equipment, or the foundation of the pumping equipment shall be made higher than the bottom door frame of the access to the room exclusively housing the storage tank. However, this does not apply to a leakage that there is no risk of fire or explosion.

3. If the indoor storage tank is provided on the ground outside a flat building and the pumping equipment is provided at a place other than the building where the room exclusively housing the storage tank is located, the pumping equipment shall meet the requirements set forth in Subparagraph 1; and

4. If the indoor storage tank is provided on the ground outside a flat building and the pumping equipment is provided at a place in the building where the room exclusively housing the storage tank is located:

(1) If the pumping equipment is provided at a place other than the room exclusively housing the storage tank, the pumping room shall meet the following conditions additional to those set forth in Subpara 1 (1) and (2)v~ (2)vii:

i. Wall, beam, pillar and floor shall be of fireproof construction;

ii. If a floor is provided above, the floor of the upper story shall be of fireproof construction; if not, the roof shall be built with non-flammable materials, and there shall be no ceiling panel;

iii. There shall be no window provided;

iv. Fireproof doors of an hour or more of fireproof efficiency shall be provided to the access; and

v. A fireproof gate shall be respectively provided to ventilation equipment and exhaust equipment. However, this does not apply to the space in which the piping is of non-flammable materials, or installed with sprinklers, or equipped with the measure that can provide equivalent protection

(2) If the pumping equipment is provided in the room exclusively housing the storage tank:

i. It shall be secured to a firm and solid foundation; and

ii. It shall be provided with a blocking means in a height not less than 20cm built with non-flammable materials to surround the pumping equipment. However, this does not apply to a leakage that there is no risk of fire or explosion.

Article 36 Pipe work for the delivery of the Six Materials at an indoor storage place shall meet the following requirements:

1. The pipe work shall be made of steel or metal. However, if it is possible that steel or metal piping causes contamination of operations, double-layered plastic pipe work may be installed;

2. The pipe work shall survive 10-min pressure withstanding test without leakage or deformation when applied with a pressure 1.5 folds or greater of the maximal normal working pressure.

However, if it is difficult to carry out pressure withstanding test using water pressure, it is allowed to carry out the test using air pressure of 1.5 fold of the maximal working pressure.

For the pipe work that is installed with double-layered plastic piping, the pressure withstanding test is carried out on the inner pipes;

3. If the pipe work is provided on the ground, it shall never contact the ground and shall be corrosion proof;
4. If the pipe work is buried in the ground, its surface shall be corrosion proof; the joint shall be provided with measures for inspection unless the joint is welded; and
5. If heating or refractory equipment is provided, such shall be in construction that is capable of fire prevention.

Article 37 Location, construction and equipment of an outdoor storage tank place shall meet the following requirements:

1. The safety distance between the outer wall of the side plate of the storage tank and its abutted buildings shall be mutatis mutandis Article 13.
2. The range between the outer wall of side plate of the liquid storage tank and the boundary line of the shop area of the storage place shall be such as specified in Table 4 with the exception that
  - (1) the tank is provided with a fireproof wall that has a fireproof efficiency of at least two hours built with non-flammable materials;
  - (2) is flame retarding; and
  - (3) a fireproof water curtain is provided
3. The open space to be reserved surrounding the storage tank shall meet the following requirements:
  - (1) When the storage contains the Six Materials with a flash point not higher than 21°C, 1m+, in volume less than 2 kL; 2m+, greater than 2 kL and less than 4 kL; 3m+, greater than 4 kL but less than 10 kL; 5m+, greater than 10 kL but less than 40 kL; and 10m+, greater than 40 kL.
  - (2) When the storage contains the Six Materials with a flash point higher than 21°C and below 70°C, 1m+, in volume less than 10 kL; 2m+, greater than 10 kL and less than 20 kL; 3m+, greater than 20 kL but less than 50 kL; 5m+, greater than 50 kL but less than 200 kL; and 10m+, greater than 200 kL.
  - (3) When the storage contains the Six Materials with a flash point higher than 70°C, 1m+, in volume less than 20 kL; 2m+, greater than 20 kL and less than 40 kL; 3m+, greater than 40 kL but less than 100 kL; and 5m+, greater than 100 kL.
4. The spacing between the shells of the abutted storage tanks shall meet the following requirements:
  - (1) Storage Six Materials with a flash point less than 60°C:
    - i. In case of a floating top tank in a diameter less than 45m, the spacing shall be one-sixth of the sum of the diameter of two abutted tanks, and in any case, not less than 90cm. In case of a floating top tank in a diameter more than 45 meters, the spacing shall be a quarter of the sum of the diameter of two abutted tanks.
    - ii. In case of a fixed top tank in a diameter less than 45 m, the spacing shall be one-sixth of the sum of the diameter of two abutted tanks, and in any case, not less than 90cm. In case of a fixed top tank in a diameter more than 45m, the spacing shall be one-third of the sum of the diameter of two abutted tanks.
  - (2) Storage Six Materials with a flash point more than 60°C:
    - i. In case of a floating top tank in a diameter less than 45m, the spacing shall be one-sixth

of the sum of the diameter of two abutted tanks, and in any case, not less than 90cm. In case of a floating top tank in a diameter more than 45m, the spacing shall be a quarter of the sum of the diameter of two abutted tanks.

ii. In case of a fixed top tank in a diameter less than 45m, the spacing shall be one-sixth of the sum of the diameter of two abutted tanks, and in any case, not less than 90cm. In case of a fixed top tank in a diameter more than 45m, the spacing shall be a quarter of the sum of the diameter of two abutted tanks.

(3) For the storage tanks inside the dike containing Six Materials with a flash point more than 93°C, the spacing shall be more than 90cm.

5. The tank shall be secured to a firm and solid foundation, and shall avoid where the lava and fault are vulnerable to slide;

6. The construction of the tank shall be mutatis mutandis Article 33.4 and shall be seismic proof and wind pressure withstanding; its pillar shall be built with RC, steel frame concrete or any other materials with equivalent fireproof rating;

7. The tank shall be constructed in such way so to allow gas and vapor to escape from the top of the tank in case of any abnormal rise of pressure inside the tank;

8. The surface of the tank shall be corrosion proof;

9. The surface of the base place of the tank shall be corrosion proof if it direct contacts the ground;

10. Safety device shall be provided to the pressurized tank; or ventilation pipe, non-pressurized tank;

11. The inlet of the tank containing Class 4 public hazardous materials shall be mutatis mutandis Article 33.8;

12. The pumping equipment shall be mutatis mutandis Article 35.1 and shall meet the following requirements:

(1) The width of open space to be reserved in the peripheral shall not be less than 3m, unless a fireproof wall that has a fireproof efficiency of at least two hours retaining is installed or the quantity of the Six Materials stored in the tank is less than 10 folds of the control quantity;

(2) The width of open space to be reserved in the peripheral shall not be less than 1m when the tank contains materials with high flash point; and

(3) The spacing between the pumping equipment and the shells of the storage tank shall not be less than one-third (1/3) of the mandatory width of open space to be reserved for the tank.

13. The tank valve shall be made of cast steel or the equivalent without permitting any leakage;

14. The drainage pipe of the tank shall be provided on the tank wall, or may be provided at the bottom of the tank if the connection between the pipe and the tank is free of the risk of damage in case of earthquake or cave in of lava;

15. Any equipment adapted to the tank wall or the float top in case of a floating top tank shall not cause any damage to the float top or wall panel in case of an earthquake or other hazards unless such equipment is a must for security purpose;

16. The installation of pipe work shall be mutatis mutandis Article 36;

17. The lightning arrester shall comply with CNS 12872, or grounding means of equivalent protection may be used unless the environment surrounding the place does not present danger

from striking of lightning or the quantity of the Six Materials in the tank is less than 10 folds of the control quantity;

18. Liquid bank shall be provided for the tank containing the Six Materials in liquid status with the exception of CS<sub>2</sub>;

19. Awning made of waterproof and non-flammable materials shall be provided over the inlet to the tank containing hydrophobic Class 3 public hazardous materials in solid status; and

20. The tank containing CS<sub>2</sub> shall be buried in a wall that is at least 20 cm, and shall be in a leak-proof RC water trough.

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- Article 38 For the storage place installed with the storage tank containing Class 4 public hazardous materials, its liquid bank shall meet the following requirements:
1. The capacity of the liquid bank provided to the peripheral of a single tank shall not be less than 110% of that of the tank; if two or more than two tanks are erected on the same area; not less than 110% of that of the tank having the greatest capacity;
  2. The height of the liquid bank shall not be less than 50 cm; and 1m, if the total storage capacity is greater than 200,000kL;
  3. The area within the liquid bank shall not be greater than 80,000 m<sup>2</sup>;
  4. Only up to ten (10) tanks are allowed to be erected in the liquid bank; or up to twenty (20) if the tanks containing materials at a flash point  $\geq 70^{\circ}\text{C} < 200^{\circ}\text{C}$ ; or up to any quantity, if the tanks containing materials at a flash point not lower than  $200^{\circ}\text{C}$ ;
  5. Road connecting to that inside the liquid bank shall be provided to the peripheral of the liquid bank, in a width not less than 6m. However, for those in the situations listed in the following subparagraphs, and there is enough room for firefighting vehicles to maneuver, roads may be installed at two sides or more;
    - (1) The volume of each storage tank inside the liquid bank shall all be at most 200kL.
    - (2) The flash point of the contained materials in each storage tank inside the liquid bank shall all be at least  $200^{\circ}\text{C}$ .
    - (3) It is difficult to install road to the peripheral.
  6. The spacing between the liquid bank and the shells of any outdoor storage tank in diameter less than 15m shall not be less than one-third (1/3) of the height of the tank; in diameter not less than 15m, not less than half of the height of the tank; unless the tank containing materials at a flash point not lower than  $200^{\circ}\text{C}$ ;
  7. The liquid bank shall be of RC earth bank or earth bank in construction so to prevent leakage and permeation of the materials in the tank;
  8. An individual separation bank meeting the following requirements shall be provided to the peripheral of each tank with a capacity not less than 10,000 kL:
    - (1) The separation bank shall be at a height not less than 30cm, and shall be at least 20cm lower than that of the liquid bank; and
    - (2) The separation bank shall be of RC earth bank or earth bank.
  9. No pipes other than those required by the tank and fire control shall be permitted to appear inside the liquid bank;

- 10.No pipe shall penetrate the liquid bank unless such penetration does not affect the constructional properties of the liquid bank;
- 11.Drainage equipment shall be provided for the liquid bank to discharge water accumulated inside the liquid bank, with the operation valves to be provided outside the liquid bank and kept constantly closed;
- 12.The switch of the operating valve to the drainage equipment shall allow easy identification for an outdoor storage tank with a capacity not less than 1000 kL;
- 13.Leakage finder shall be provided to the liquid bank of an outdoor storage tank with a capacity not less than 10,000 kL, and an alarm system shall be provided at where disposal is made possible; and
- 14.Stairs or earthen slope to access the liquid bank in a height not less than 1m shall be provided at a spacing of 30m.

The capacity of the liquid bank to the tank containing the Six Materials in liquid status other than that referred in the preceding paragraph shall not be less than that of the tank having the greatest capacity, and shall meet those requirements set forth in Subpara 2, 7-12 and 14 of the preceding paragraph.

Article 39 Location, construction and equipment of an outdoor storage tank contain materials of high flash point shall meet the following requirements:

- 1. It shall be mutatis mutandis Article 37.1, 37.4~37.11, 37.13~37.16;
- 2. Width of open space to be reserved to the peripheral shall be such as specified in the table below:

Tank Capacity	Width of Open Space to be Reserved
Under 2000 x of control quantity	3m+
≥2000 x of control quantity	5m+

- 3. The width of open space to be reserved to the peripheral of the pumping equipment shall not be less than 1m; and
- 4. A liquid bank in a capacity not less than that of the tank having the greatest capacity shall be provided in the peripheral to prevent leakage and permeation of the materials in the tank.

Article 40 Any outdoor storage tank containing alkali aluminum, alkali lithium of Class 3 public hazardous materials; ethanal, propane oxide of Class 4 public hazardous materials, or the Six Materials as published by the central regulating authorities shall meet the following requirements additional to those specified in Article 37:

- 1. An inertia gas-based blocking equipment or equivalent shall be provided;

2. For those storing alkyl aluminum or alkyl lithium shall install an equipment capable of confining any leakage to a specified range to be directed into a safety tank or an apparatus having the equivalent aforementioned performance; and

Article 41 Location, construction and equipment of the place for an underground storage tank shall meet the following requirements:

1. The tank shall be provided in an underground tank room, or forthwith buried underground if the tank contains Class 4 public hazardous materials and meets the following requirements:
  - (1) The horizontal distance from subway, underground tunnel or any place designated by the central regulating authorities shall not be less than 10m;
  - (2) The tank shall be covered with RC in thickness not less than 25 cm, and not less than 60 cm in both of the laterally projected length and width;
  - (3) The weight of the top lid shall not be directly applied to the tank; and
  - (4) The tank shall be secured to a firm and solid foundation.
2. There shall be a spacing not less than 10 cm between the shells of the tank and the wall of the tank room, and the dry sand or means of equivalent performance that prevents accumulation of inflammable gas shall be used to fill up the surrounding of the tank;
3. The top of the tank shall be at least 60 cm away from the ground;
4. The spacing between the shells of any two abutted tanks shall not be less than 1m, or may be reduced to 50 cm or longer if the sum of the capacity of those tanks is not greater than 100 folds of the control quantity;
5. The storage tank shall be air-tightly constructed with steel plate in thickness not less than 3.2 mm. When applied with 0.7 kg/cm<sup>2</sup> pressure in case of a non-pressurized tank, or 1.5 folds of the maximal working pressure in case of a pressurized tank, the storage tank shall survive a 10-minute water pressure test without leakage or deformation;
6. The surface of the tank shall be corrosion proof;
7. A safety device shall be provided to the pressurized tank; or a ventilation pipe in case of a non-pressurized tank;
8. For a tank containing the Six materials in liquid status, a device to automatically display the storage level or a scaling window shall be provided, and the installation of the scaling window shall not cause damage to the tank bottom;
9. The inlet to the tank shall be provided outdoors and shall be mutatis mutandis Article 33.8;
10. If the pumping equipment is provided on the ground, shall be mutatis mutandis Article 35.1; if provided inside the tank, it shall meet the following requirements:
  - (1) The motor for the pumping equipment shall meet the following requirements:
    - i. The stator being a metal container, filled with epoxy not affected by the Six Materials;
    - ii. Being constructed so to cool the stator in operation; and
    - iii. Provided with construction to prevent air stagnation inside the motor.
  - (2) Cable to connect to the motor shall be protected from having direct contact with the Six Materials;
  - (3) The pumping equipment shall be provided with the function to prevent the motor from temperature rise during operation;
  - (4) The motor shall be automatically stopped in either of the following events:

i. drastic temperature rise of the motor, or

ii. exposure of the suction of the pump.

(5) The pumping equipment shall be joined to the flange of the tank;

(6) The pumping equipment shall be provided in protection pipe unless packed with external protection with sufficient strength; and

(7) The part of the pumping equipment provided on the upper portion of the underground tank shall be provided with leakage finder for the Six Materials.

11. The pipe work shall be mutatis mutandis Article 36;

12. Tank pipe work shall be installed on top of the tank;

13. Leak finding pipe or leakage finding equipment of equivalent or better performance shall be provided at four or more different locations surrounding the tank; and

14. Wall and bottom of the tank room shall be built with concrete in thickness not less than 30 cm or with the construction having equivalent strength, and provided with proper water proof measures; the top lid shall be of RC construction in thickness not less than 25 cm.

Article 42 Location, construction and equipment of an underground storage tank with dual walls shall meet the following requirements:

1. Shall comply with requirements set forth in Article 41.3, 41.4, the second half of Article 41.5 and Article 41.7~41.12;

2. Shall further comply with requirements set forth in Article 41.1.2~41.1.4 in case of being directly buried underground;

3. Shall further comply with Article 41.2, 41.14 in case of being located in an underground tank room;

4. A liquid leak finder shall be provided between the walls of the storage tank;

5. Storage tank shall be air-tight and build with either of the following materials:

(1) Steel plate in thickness not less than 3.2 mm or equivalent; or

(2) Any reinforcement plastics designated by the central regulating authorities.

6. The storage tank using the reinforcement plastics shall be provided with the safety construction sufficient to withstand the load; and

7. If steel plate is used, its surface shall be corrosion proof.

Article 43 Location, construction and equipment of the place of an underground storage tank used for the storage of alkali aluminum, alkali lithium of Class 3 public hazardous materials, ethanal, propane oxide of Class 4 public hazardous materials and the Six Materials published by the central regulating authorities shall meet the following requirements additional to those set forth in Article 41.2~41.14:

1. The storage tank shall be provided in an underground tank room; and

2. Article 40.3 may become applicable; however, cooling system or cold retaining device may not be required if the storage tank is of a construction that is capable of maintaining the contents at a proper temperature.

Article 44 Any container published by the central regulating authorities can not be used unless having been approved by inspection; professional laboratories or institute may be contracted to

perform the inspection.

The central regulating authorities shall specify criteria and items of inspection referred in the preceding paragraph herein.

Article 45 The place used for the storage and process of the Six Materials shall comply with the following requirements:

1. Class 1 public hazardous materials shall be avoided to contact or mix with any flammable materials, or expose to any materials that promote disintegration, and shall avoid overheating, iMPacts, and friction. The inorganic peroxide shall be prevented from contacting water.
2. Class 2 public hazardous materials shall be avoided to contact or mix with oxidizer, or to expose to flame, spark, object of high temperature and to get overheated; metal powder shall be avoided to contact water or acid;
3. Hydrophobic materials of Class 3 public hazardous materials shall be prevented from contacting water;
4. Class 4 public hazardous materials shall not be exposed to flame, spark, or object of high temperature, and shall be prevented from producing vapor;
5. Class 5 public hazardous materials shall not be exposed to flame, spark, or object of high temperature; and shall be prevented from overheating, iMPact and friction; and
6. Class 6 public hazardous materials shall be avoided to contact or mix with flammable materials, or expose to any materials that promote disintegration, and shall avoid overheating.

Article 46 The safety control for Type 1 and Type 2 trading places shall comply with the following requirements:

1. The storing or processing of public hazardous materials shall not surpass the amount stipulated in Items 1 or 2, Subparagraph 1, Paragraph 1, Article 7;
2. Fire sources are strictly prohibited;
3. Empty boxes, backing papers, plastic bags, paper boxes, and other packaging materials, or other flammable or explosive materials shall not be laced;
4. Containers for storing or processing public hazardous materials shall not have any damage, corrosion, or cracks, etc.;
5. Containers for storing or processing public hazardous materials shall have a fixed measure to prevent tipping, and shall not be placed upside down or subjected to impact, squeezing, or pulling; and
6. When repairing equipments, mechanical appliances, or containers that may have public hazardous material residues, one shall first completely remove the public hazardous materials at a safe place.

Article 47 The place used for manufacturing, storage or process of the Six Materials at a quantity not less than 30 folds of the control quantity, a security supervisor shall be appointed among the staff of management or the controller level by the Administrator to develop fire prevention plan to seek the approval from the local fire department and to carry out security and monitor operation for the Six Materials according to the plan.

The election of the security supervisor shall be reported within fifteen (15) days to the local

fire department; the same governs in case of any changed security supervisor.

The security supervisor referred in Para. 1 shall take the office only after having been given a 24hr training and issued a qualification certified by a professional institute approved by the fire department of the municipal, county/city or the central regulating authorities; and the security supervisor shall update the training every two years during his/her term of office.

The central regulating authorities shall specify the contents of the fire prevention plan referred in Para. 1 and the training referred in Para. 3.

Section 2: (Delete)

Article 48 (Delete)

Article 49 (Delete)

Article 50 (Delete)

Article 51 (Delete)

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Article 57 (Delete)

Article 58 (Delete)

Article 59 (Delete)

Chapter Three: Establishment and Safety Control of Flammable Pressurized Gases

Article 60 "Storage tank" referred in this Chapter means a storage tank containing flammable pressurized gas that is fixed to the lava.

Article 61 "Container" referred in this Chapter means a mobile pressurized container used exclusively for filling flammable pressurized gas.

Article 62 "Process equipment" referred in this Chapter means the manufacturing equipment to process a flammable pressurized gas by means of compression, liquefaction and other methods.

- Article 63 "Storage capacity" referred in this Chapter means the quantity of a flammable pressurized gas permitted to be stored in a storage equipment, and shall be solved as follows:
1. Compression Gas Storage Tank:  $Q = (10P + 1) \times V1$
  2. Liquefied Gas Storage Tank:  $W = C1 \times w \times V2$
  3. Liquefied Gas Container:  $W = V2 / C2$
- Wherein,
- Q: storage capacity of the storage equipment in unit of m<sup>3</sup>;
- P: The highest filling pressure of the storage tank at temperature of 35°C (or 15°C in case of acetylene) in unit of MPa;
- V1: The inner volume of the storage equipment in unit of m<sup>3</sup>;
- V2: The inner volume of the storage equipment in unit of ?;
- W: The storage capacity of the storage equipment in unit of kg;
- w: The specific weight of the storage equipment at the normal working temperature in unit of kg/?;
- C1: 0.9 (the specific value of the volume liquefied gas that can be stored in corresponding to the inner volume of a hypothermal storage tank); and
- C2: as specified by the central regulating authorities.
- Article 64 Process capacity referred in this Chapter means the volume (when converted, the volume in the status of 0°C of temperature and 0 kg/cm<sup>2</sup>) of the gas that can be processed in one day by the process equipment using compression, liquefaction or other methods.
- Article 65 Class 1 and Class 2 objects under protection referred in this Chapter shall be those as follows:
1. Type 1 Objects under Protection relate to the following places:
    - (1) ancient relics;
    - (2) any place listed under Article 12.2.4 of Equipment Standards;
    - (3) any place listed under Article 12.1.6, 12.2.3 and 12.2.12 of Equipment Standards where accommodating no less than twenty (20) persons;
    - (4) any place listed under Article 12.1.1, 12.2.5 and 12.2.8 of Equipment Standards where accommodating no less than three hundred (300) persons;
    - (5) any place listed under Article 12.2.1 of Equipment Standards with a traffic each day in average not less than twenty thousand (20,000) persons;
    - (6) any place listed under Article 12.1.2~12.1.5 and 12.1.7 of Equipment Standards with a total floorage not less than one thousand(1,000) m<sup>2</sup>;
  2. Class 2 Objects under Protection: relates to any building other than Class 1 Objects under Protection where is occupied or used by people with the exception that the place for manufacturing, process or storage is located on the same building foundation.
- Article 66 The exterior wall or the outer side of facilities equivalent to an exterior wall at the place for manufacturing the flammable pressurized gas shall be kept a safety distance as listed below from Class 1 and Class 2 Objects under Protection located outside the place:
- (Attachment E)

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[Article 66: Attachment E.doc](#)

- Article 67 The exterior wall or the outer side of facilities equivalent to an exterior wall at the place for storing the flammable pressurized gas shall be kept a safety distance as listed below from Class 1 and Class 2 Objects under Protection located outside the place: (Attachment F)
- However, the safety distance from Class 1 and Class 2 Objects under Protection may be reduced to such as specified in the list below if explosion proof wall or a protection equivalent or better than such wall is provided to the storage place referred in the preceding paragraph: (Attachment G)
- The central regulating authorities shall specify the directions for the explosion proof wall as referred in the preceding paragraph.

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[Article 67: Attachment F、G.doc](#)

- Article 68 The exterior wall or the outer side of facilities equivalent to an exterior wall at the place for the manufacturing of liquefied petrol oil shall be kept a safety distance as respectively listed in L1 and L4 of Table 1 below from Class 1 and Class 2 Objects under Protection located outside the place; with the exception that the safety distance between the place and Class 1 and Class 2 Objects under Protection outside the place when falling short of that as specified in L1 or L4, falls within the safety distance listed in Table 2 and that security measures have been provided pursuant to Table 2.
- The security measures referred in the preceding paragraph shall be as follows:
1. The storage tank or the process equipment is buried under the lava;
  2. Sparkling system or the equivalent fire prevention system is provided to the storage tank or process equipment; and
  3. The explosion proof wall or the protection equivalent to or better than such wall is provided at where between the storage tank or the process equipment and Class 1 or Class 2 Objects under Protection.

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[Article 68: table 1-2.doc](#)

- Article 69 Location, construction and equipment of the place for processing flammable pressurized gases shall meet the following requirements:
- I. The Trading Place
    1. It shall be provided on the ground floor in a building;
    2. The portion of the building used for trading the gas shall meet the following requirements:
      - (1) Wall shall be of fireproof construction or built with non-flammable materials: Provided, however, that the partitioning wall used to separate from other portions of the building shall be of fireproof construction.
      - (2) Beam and ceiling shall be built with non-flammable materials; and
      - (3) In case that an upper story presents, the floor of the upper deck shall be of fireproof construction; or in the absence of the upper story, the roof shall be of fireproof construction

or built with non-flammable materials.

3. Electric equipment shall comply with applicable requirements set forth in Rules of Indoor Wiring Installation.

4. Any fire source is forbidden.

II. The Container Inspection Place:

(1) It shall meet the first three rules in the previous paragraph.

(2) If there is any facility with any potential leakage possibility of liquefied petroleum gases, a gas leakage alert shall be provided.

(3) An automatic emergency shutdown device shall be provided in places with gas combustion facilities.

(4) Any fire source is forbidden except for the inspection use.

Article 70 Construction, equipment, and safety management of the storage place for flammable pressurized gases shall meet the following requirements:

1. Warning signs and explosion proof emergency lighting system shall be provided;

2. Air leakage automatic alarm system shall be provided;

3. Ventilation equipment to effectively prevent accumulation of gas shall be provided;

4. For a flat building with floor in construction of non-flammable materials, the roof shall be built with lightweight metal plate or other lightweight non-flammable materials, and the eave shall be at least 2.5m from the ground;

5. The temperature shall be maintained not higher than 40°C, and the container shall be prevented from direct sunshine;

6. Containers respectively for gas filling and residual gas shall be separately stored, and placed in their erected position without stacking up; the container for gas filling shall be provided with means to prevent from impacts or damage to the attached valves due to tilt or fall;

7. The area for passage shall not be less than 20% of the total area of the storage place;

8. Smoking or storage of any flammable materials is strictly prohibited within two meters in the peripheral; unless the wall of the storage place is of RC construction in thickness not less than 9 cm or any other protection wall with the equivalent to or higher strength;

9. The lightning arrestor shall comply with CNS 12872, or grounding means of equivalent protection may be used unless the environment surrounding the place does not present danger from striking of lightning;

10. No person is allowed to carry any mechanical tool or equipment that may produce fire source into the storage place; and

11. A dedicated controller shall be assigned.

12. Places offering gas to more than two trading operators shall provide layouts with marks of landmass, quantity, serial numbers, and trading name on them which shall be hung in the conspicuous places.

13. Those shall be used only for the storage places in which any expired container shall not be stored.

Article 71 A storage place shall be provided at the place for the cylinder filling plant and for the

trading of liquefied petroleum gases, and their respective liquefied petroleum gas storage containers shall, unless otherwise stipulated in the Regulations, shall be at the storage place.

Article 72 The area to be used by only one operator of trading place on the storage place of liquefied petroleum gases shall not be less than 10 m<sup>2</sup>; and the area of storage used by each trading place shall not be less than 6 m<sup>2</sup> if two or more than two operators share the same storage place of liquefied petroleum gases .

The distance between the location of the storage place referred in the preceding paragraph and the trading place shall not be greater than 5 km; or not greater than 20 km if enclosure wall is provided to the storage place to prevent unauthorized entry and the place is 24hr under control by dedicated persons.

Article 72- 1 The management person of the cylinder filling plant, storage, or trading places of liquefied petroleum gases shall apply for the certification of the storage place of liquefied petroleum gases from the municipality, city, and county administration. The content shall include:

1. The name and address of the storage place; and the name of the management person.
2. The name and address of the manufacturing or trading place using the storage place; and the name of the management person.
3. The usage license number of the storage construction.
4. The landmass of the storage place.
5. The serial number of location in the storage place used by the cylinder filling plant and trading places.

Any changes of the above items in certification shall apply for alteration to municipality, city, and county administration by the management person in one month since the day of changes. If the contract between storage and trading places is terminated or dismissed, the management person who terminates or dismisses the contract shall inform the other party and the municipality, city, and county administration before three months, and the management person of the storage place shall apply for the alteration of certification for the storage place according to the previous regulations. The management person of the trading place shall apply for the abrogation of certification of the storage place to the municipality, city, and county administration.

Article 73 The total gas storage of the liquefied petroleum gases stored at the trading place of liquefied petroleum gases shall not be greater than 128 kg.

The stand-by quantity of liquefied petroleum gases strictly for the use by the operator of the place shall not be greater than 80 kg; or not greater than 40 kg for domestic use.

Article 73- 1 The amount of concatenated use at the place for concatenated uses of containers shall not be greater than 1,000kg, and its safety facilities shall comply with the following:

1. When the quantity of use is greater than 80kg and less than 120kg:
  - (1) When the quantity of concatenated use is greater than 80kg and less than 120kg:
  - (2) There shall be warning signs of “No Fire” and fire extinguishers;

(3) The temperature of the said place shall be constantly kept below 40°C, and there shall be means to block direct sunlight; and

(4) The container shall be placed in an upright position and equipped with securing means that prevents overturning.

2. When the quantity of concatenated use is greater than 120kg and less than 300kg, in addition to complying with the above-mentioned requirement, the following shall be observed as well:

(1) There shall be a distance of 2m or more between the container and fire-using equipments; and

(2) A gas leakage alert shall be provided.

3. When the quantity of concatenated use is greater than 300kg and less than 600kg, in addition to complying with the two above-mentioned requirements, the following shall be observed as well:

(1) A written report shall be submitted to local firefighting authority;

(2) An automatic emergency shutdown device shall be provided; and

(3) For containers installed outdoors, barriers or fences shall be provided. On top of the barriers or fences shall be covered with lightweight metal plate or other lightweight non-flammable materials, and the cover shall be at least 2.5m above ground.

4. When the quantity of concatenated use is greater than 600kg and less than 1,000kg, in addition to complying the three above-mentioned requirements, the safety distance between the container and Class 1 protected objects shall be greater than 16.9m, and that between the container and Class 2 protected objects shall be greater than 11.31m. However, this does not apply to those installed with protection barriers.

The written report mentioned in the previous section 1 of Subpara. 3 shall include the following:

1. Name and address of the place;

2. The name of the person in charge of the place and his/her ID number or uniformed invoice number;

3. Quantity of LPG use; and

4. Other items that are required by central regulating authority.

Those whose place mentioned in Paragraph 1 has no openings and has walls and floors that have a fireproof efficiency of at least an hour separating areas, the amount of concatenated use shall be calculated separately for each area.

Article 74 The container of liquefied petrol oil gas can only be used when having been type approved and individually approved by the central regulating authorities, and attached with the approval label.

The central regulating authorities shall specify directions for control of the application and issue of the approval referred in the preceding paragraph, specification of container, container approval labeling and disposal of disqualified container, education and training for the operators and any other compliances.

The central regulating authorities shall specify the directions for the approval referred in the first paragraph herein.

The approval referred in Paragraph 1 may be performed by a professional institute entrusted by the central regulating authorities.

- Article 75 The operator of liquefied petroleum gases cylinder filling plant and trading place shall deliver the container before its expiry date of inspection to the inspection place approved by the central regulating authorities to carry out the inspection pursuant to periodical inspection criteria, and the container passing the inspection shall be so labeled before being used.
- Article 75- 1 The inspection place shall inspect containers in accordance with the standards of regular inspection toward the containers of the liquefied petroleum gases. Unqualified containers shall be destroyed under the supervision of the district fire department.  
The inspection place shall keep the inspective records more than six years at least and shall report to the central administration and district fire department for reference.  
The inspection place shall install monitors to record the inspective situation of the containers and valves' inspection. The recording shall be preserved for more than one month.  
The inspection place shall maintain the function of the interior inspection and safety facilities and shall conduct regular adjustment and self-inspection. The inspectors shall take educational training per six months.
- Article 75- 2 The inspection center shall apply for accreditation before conducting inspection. After receiving accreditation through examination, the inspection could be conducted. The accreditation shall include:  
1. The name, code, company' s registered number, business registration certification number and address.  
2. The name of the representative.  
3. The expiration date.  
Any changes of the above items shall be applied for alteration by the inspection center in fifteen days.  
The accreditation of the first item is valid for three years. The extension can be applied for to the central administration before three months of the due date. Each extension is valid for three year.  
The inspection center is punished, according to these regulations, to close or temporarily terminate its operation less than 30 days shall return unused qualified labels and could continue the inspection work after being inspected and qualified by the district fire bureau.
- Article 76 The operator of liquefied petroleum gases trading place shall mark its trade name and telephone number on the container at where can be easily identified.
- Article 77 Gas filling, loading and unloading of domestic or business use shall be only carried out at the repackaging place.
- Article 78 Before carrying out the gas filling at the cylinder filling plant of liquefied petroleum gases, the following things and matters shall be confirmed:  
1. The container shall mark the trade name and telephone number of a qualified trading place;

2. The container has not yet survived its expiry date of inspection; and
3. An appearance visual inspection for the container has been done to make sure that the container is free of corrosion and/or deformation, and the container can be placed in its standing position.

No gas shall be filled into the container found noncompliance with any of those requirements set forth in the preceding paragraph; and the operator of the cylinder filling plant shall promptly notify the operator of the trading place to take actions as may be required.

Chapter Four: Additional Articles

Article 79 Before the Regulations were amended and announced on Nov. 1 2006, the places in which the facilities to manufacture, store or process public hazardous materials and inflammable pressurized gases have been installed shall submit the documentation consisting of the drawings demonstrating the location, construction and equipments and improvement program to local firefighting authority in 6 months after the date of the announcement of the Regulations, and carry out the improvement work in two years after the date of announcement according to the items to be improved listed in Attachment 5. Upon the deadline of completion, failure to improve and provide substantial proof that this place is an existing legal place, failure to improve within the specific deadline or failure to improve according to Attachment 5 is punishable as specified in Article 42.

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Article 79- 1 Those listed as public hazardous materials announced by the central regulating authorities or amended and added on Attachment 1, the legal establishments that have already set up the manufacturing, storing, or processing of these materials above the control the quantity before the announcement or the effective date of the amendment on Attachment 1 shall, within six months of the announcement or the effective date of the amendment on Attachment 1, submit a report to the local firefighting authority with the location, structure, equipment drawings, and the improvement plan of the establishment attached. These establishments shall complete the improvement, according to the improvement items listed in Attachment 5, within two years of the announcement or the effective date of the amendment on Attachment 1; those that fail to improve or do not meet the requirements in Attachment 5 within the period will be punished according to Article 42 of the Act.

Article 80 The Regulations shall become effective on the date it is published.