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NATIONAL STANDARD OF THE PEOPLE'S REPUBLIC OF CHINA

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Replacing GB 18218-2009

Identification of major hazard installations for hazardous chemicals

危险化学品重大危险源辨识

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Identification of major hazard installations for hazardous chemicals

1 Scope

This Standard specifies the basis and method for identifying major hazard installations for hazardous chemicals.

This Standard applies to production and business organizations which produce, store, use, and operate hazardous chemicals.

This Standard does not apply to:

- a) Nuclear facilities, factories which process radioactive substances, except for the sectors which process non-radioactive substances in these facilities and factories;
- b) Military installations;
- c) Mining industry, except for processing technology and storage activities involving hazardous chemicals;
- d) Off-plant transportation of hazardous chemicals (including railways, roads, waterways, aviation, pipelines, and other modes of transportation);
- e) Offshore oil and natural gas exploration activities.

2 Normative references

The following documents are indispensable for the application of this document. For the dated references, only the editions with the dates indicated are applicable to this document. For the undated references, the latest edition (including all the amendments) are applicable to this document.

GB 30000.2 Rules for classification and labelling of chemicals - Part 2: Explosives

GB 30000.3 Rules for classification and labelling of chemicals - Part 3: Flammable gases

GB 30000.4 Rules for classification and labelling of chemicals - Part 4: Aerosols

3.2 Unit

Production and storage devices, facilities, or sites involving hazardous chemicals, which are divided into production unit and storage unit.

3.3 Threshold quantity

The minimum quantity specified for a hazardous chemical or class of hazardous chemicals to constitute a major hazard installation.

3.4 Major hazard installations for hazardous chemicals

Unit which produces, stores, uses, and operates hazardous chemicals on a permanent or temporary basis, and of which the quantity of hazardous chemicals equals or exceeds the threshold quantity.

3.5 Production unit

Devices and facilities for the production, processing, and use, etc. of hazardous chemicals. When there is a shut-off valve between the device and the facility, USE the shut-off valve as separation boundary to divide into independent units.

3.6 Storage unit

A relatively separate area of storage tanks or warehouses used to store hazardous chemicals. The area of storage tanks, using the fire dike of the tank area as the boundary, is divided into independent units. The warehouse, using independent storehouse (independent building) as the boundary, is divided into independent units.

3.7 Mixture

A mixture or solution which consists of two or more substances.

4 Identification of major hazard installations for hazardous chemicals

4.1 Identification basis

4.1.1 Hazardous chemicals shall, based on their hazard characteristics and their quantities, be identified for major hazard installations. SEE Table 1 and Table 2 for details. The pure substances and mixtures of hazardous chemicals shall be classified in accordance with the provisions of GB 30000.2, GB 30000.3, GB 30000.4, GB 30000.5, GB 30000.7, GB 30000.8, GB 30000.9, GB 30000.10, GB 30000.11, GB 30000.12, GB 30000.13, GB 30000.14, GB 30000.15, GB

Table 1 (continued)

No. description Alias CAS number quantity/t 18 Acetone cyanohydrin Acetone cyanohydrin; 2-hydroxyisobutyronitrile; cyanopropanol 75-86-5 20 19 Acraldehyde Allyl aldehyde; acrolein 107-02-8 20 20 Hydrogen fluoride Fepichlorohydrin (3-chloro-1,2-epoxypropane) 106-89-8 20 21 1-chloro-2,3-epoxypropane Epichlorohydrin (3-chloro-1,2-epoxypropane) 106-89-8 20 22 3-bromo-1,2-epoxypropane Epoxy bromopropane; Bromomethyl oxirane; epibromohydrin 3132-64-7 20 23 Toluene diisocyanate Toluene diisocyanate; TDI 26471-62-5 100 24 Sulfur monochloride Sulfur chloride 10025-67-9 1 25 Hydrogen cyanide Anhydrous hydrocyanic acid 74-90-8 1 26 Sulphur trioxide Sulfuric anhydride 7446-11-9 75 27 3-aminopropene Allyl amine 107-11-9 20 28 Bromine Bromine 151-56-4 20 29 Ethyleneimine		Hazardous chemical name and Threshold								
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35	33	Fulminating mercury		628-86-4	0.5					
36 Nitroglycerin Nitrating glycerol; glycerin trinitrate 55-63-0 1 37 Nitrocellulose [dry or containing water (or ethanol) <25%]	34	Trinitroanisole	Trinitro-methoxybenzene	28653-16-9	5					
36 Nitroglycerin 55-63-0 1 37 Nitrocellulose [dry or containing water (or ethanol) <25%]	35	2,4,6-trinitrotoluene	Trinitrotoluene; TNT	118-96-7	5					
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water (or ethanol) <25%]	27	Nitrocellulose [dry or containing			4					
38 plasticized, containing plasticizer <18%)	31	water (or ethanol) <25%]			1					
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40 Nitrocellulose (containing nitrogen ≤12.6%) Nitrocellulose (containing water 50		,	Nitro-cotton	9004-70-0	10					
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Nitrocellulose (containing water 50		, ,			50					
41	41	• ,								
					50					

Table 1 (continued)

	Hazardous chemical name and				
No.	description	Alias	CAS number	quantity/t	
64	Toluene	Methylbenzene;	100 00 2	500	
		phenylmethane	108-88-3	500	
65	Methanol	Wood alcohol; wood spirit	67-56-1	500	
66	Gasoline (ethanol gasoline,		86290-81-5	200	
	methanol gasoline)		(gasoline)		
67	Ethanol	Alcohol	64-17-5	500	
68	Ether	Diethyl ether	60-29-7	10	
69	Ethyl acetate	Acetic ether	141-78-6	500	
70	N-hexane	Hexane	110-54-3	500	
		Acetic peracid; peroxyacetic		10	
71	Peracetic acid	acid; acetyl hydrogen	79-21-0		
		peroxide			
	Methyl ethyl ketone peroxide				
72	(10% <effective a<="" containing="" content≤10.7%,="" oxygen="" td=""><td></td><td>1338-23-4</td><td>10</td></effective>		1338-23-4	10	
	type diluent ≥48%)				
73	White phosphorus	Yellow phosphorus	12185-10-3	50	
74	Alkyl aluminum	Trialkylaluminium		1	
75	Pentaborane	Pentaborane	19624-22-7	1	
76	Potassium peroxide		17014-71-0	20	
77	Sodium peroxide	Sodium dioxide; Sodium	1313-60-6	20	
''	Sodium peroxide	dioxide		20	
78	Potassium chlorate		3811-04-9	100	
79	Sodium chlorate		7775-09-9	100	
80	Fuming nitric acid		52583-42-3	20	
	Nitric acid (except for red				
81	fuming nitric acid, containing		7697-37-2	100	
	nitric acid >70%)				
82	Guanidine nitrate	Guanidine mononitrate	506-93-4	50	
83	Calcium carbide	Acetylenogen	75-20-7	100	
84	Potassium	Potassium metal	7440-09-7	1	
85	Sodium	Sodium metal	7440-23-5	10	

(t);

- $Q_1,\ Q_2,\ ...,\ Q_n$ The threshold quantity corresponding to each hazardous chemical, in tons (t).
- **4.2.2** The actual quantity of hazardous chemicals present in hazardous chemical storage tanks and other containers, equipment, or warehouse areas is determined according to the design maximum.
- **4.2.3** For mixtures of hazardous chemicals, if the mixture is of the same hazard category as its pure substance, the mixture is considered as a pure substance and is calculated as a whole. If the mixture is not of the same hazard category as its pure substance, then according to the new hazard category, its threshold quantity shall be considered.
- **4.2.4** SEE Appendix A for the identification procedures for major hazard installations for hazardous chemicals.

4.3 Grading of major hazard installations

4.3.1 Grading index of major hazard installations

USE the ratio OF the actual quantity of each hazardous chemical in the unit TO its corresponding threshold quantity. The sum R of the ratios corrected by the correction coefficient is used as the grading index.

4.3.2 Calculation method for grading index of major hazard installations

Grading index of major hazard installations is calculated according to formula (2).

$$R = \alpha \left(\beta_1 \frac{q_1}{Q_1} + \beta_2 \frac{q_2}{Q_2} + \cdots + \beta_n \frac{q_n}{Q_n} \right) \qquad \cdots \qquad (2)$$

Where:

- R Grading index of major hazard installations;
- α Correction coefficient for exposed people outside the plant of the major hazard installations for hazardous chemicals;
- $\beta_1, \beta_2, ..., \beta_n$ Correction coefficient corresponding to each hazardous chemical;
- $q_1, q_2, ..., q_n$ The actual quantity of each hazardous chemical present, in tons (t);

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