

CAL/EPA UNIFIED PROGRAM POLICY MEMORANDUM

SUBJECT: CAL/EPA UNIFIED PROGRAM POLICY FOR HAZARD CLASSIFICATION - GASES -- GUIDANCE	NUMBER: UP-11-06
REFERENCES: California Health & Safety Code, Chapter 6.95, Article 1, Sections 25503.5(a)(1)(E)	DATE ISSUED: 06/07/12 EXPIRES: UNTIL RESCINDED CATEGORY: BUSINESS PLAN PROGRAM

STATEMENT OF PURPOSE

To provide guidance to be used by Cal/EPA, CUPAs, and regulated businesses to ensure that critical information about regulated gases are consistently collected and reported.

BACKGROUND

Cal/EPA oversees the administration of the Unified Hazardous Waste and Hazardous Materials Management Program (Unified Program), a legislatively created consolidation of six hazardous waste and materials programs administered by state and local agencies. The intent of the program is to improve consistency and uniformity in administration, permitting, inspection and enforcement. The Hazardous Materials Release Response Plans and Inventories Program (HMBP) is one of the six programs. Pursuant to the HMBP Program, each CUPA is required to inspect businesses that meet the requirements of the program. All businesses that handle hazardous materials in quantities equal to or greater than 55 gallons, 500 pounds, or 200 cubic feet of gas at standard temperature and pressure or quantities of extremely hazardous substances above the threshold planning quantity, are required to inventory their hazardous materials, develop a site map, develop an emergency plan and implement a training program for employees. Businesses must submit this information to the CUPAs. The CUPA verifies the information and provides it to agencies responsible for protection of public health, safety and the environment.

ANALYSIS

Assembly Bill 408, Wieckowski (AB 408) was Chaptered by the Secretary of State as Chapter 603, Statutes of 2011 on October 8, 2011, and took effect immediately as an urgency statute. AB408 amends Chapter 6.95 of the Health and Safety Code by adding subparagraph (E) to paragraph (1) of subsection (a), section 25503.5. This section raised the reporting thresholds for certain compressed gases from 200 cubic feet to 1,000 cubic feet at standard temperature and pressure.

Conditions of Increased reporting threshold

In order to be eligible for the increased reporting threshold of total volume of 1,000 cubic feet provided under subparagraph (E), a candidate substance must be:

- A gas at standard temperature and pressure; and
- Classified as a hazard for the purposes of 8 CCR 5194 solely as a compressed gas; and
- Be a gas for which the only health and physical hazards are simple asphyxiation and the release of pressure; and
- Not be a gas in a cryogenic state.

The Hazardous Materials Business Plan Technical Advisory Group (TAG) and the Hazardous Materials Steering Committee developed a standard for classifying compressed gases. The Office of Environmental Health Hazard Assessment reviewed the standard and agreed with the result.

The attached guidance document is published for use by businesses and Unified Program Agencies.

ACTION PLAN

1. The Guidance for Hazard Classification - Gas guidance document will be available on-line at the Cal/EPA website.
2. CUPA's are encouraged to inform regulated businesses in their jurisdiction of this guidance document and to post or link to it on their websites.

STATUTORY REFERENCES

California Health and Safety Code, Chapter 6.95, Article 1, Sections 25503.5

Questions

Please direct all questions regarding this policy to Jim Bohon, Unified Program Manager at (916) 327-5097 or email jbohon@calepa.ca.gov.



Don Johnson, Assistant Secretary
California Environmental Protection Agency

Attachment 1 – Guidance for Hazard Classification – Gases



Matthew Rodriguez
Agency Secretary



Guidance for Hazard Classification – Gases

Pursuant to Health and Safety Code 25503.5(a)(1)(E)

Background

Assembly Bill 408, Wieckowski (AB 408) was Chaptered by the Secretary of State as Chapter 603, Statutes of 2011 on October 8, 2011, and took effect immediately as an urgency statute. AB408 amends Chapter 6.95 of the Health and Safety Code by adding the following subparagraph (E) to paragraph (1) of subsection (a), section 25503.5.

(E) (i) A total of 1,000 cubic feet, if the hazardous material is a gas at standard temperature and pressure and is classified as a hazard for the purposes of Section 5194 of Title 8 of the California Code of Regulations solely as a compressed gas, unless the administering agency finds, and provides notice to the business handling the product, that the handling of lesser quantities of that hazardous material requires the submission of a business plan, or any portion thereof, in response to public health, safety, or environmental concerns.

(ii) The hazardous materials subject to this subparagraph include a gas for which the only health and physical hazards are simple asphyxiation and the release of pressure.

(iii) The hazardous materials subject to this subparagraph do not include gases in a cryogenic state.

Purpose

The Hazardous Material Business Plan Technical Advisory Group (HMBP TAG) has determined that guidance is needed for businesses and Unified Program Agencies (UPAs) to consistently classify gases pursuant to subparagraph (E) of section 25503.5. In accordance with paragraph (3) of subsection (a) of section 25503.5, the UPA shall make the findings required by subparagraph (E) in consultation with the local fire chief.

Definition of key terms^{1,2}

“Compressed gas” means:

- (A) A gas or mixture of gases having, in a container, an absolute pressure exceeding 40 psi at 70°F (21.1°C); or
- (B) A gas or mixture of gases having, in a container, an absolute pressure exceeding 104 psi at 130°F (54.4°C) regardless of the pressure at 70°F (21.1°C); or
- (C) A liquid having a vapor pressure exceeding 40 psi at 100°F (37.8°C) as determined by ASTM D-323-72.

¹ Title 8 California Code of Regulations, Division 1, Chapter 4, Subchapter 7, Group 16, Article 109, Section 5194

² Title 49 Code of Federal Regulations, Part 173, Subpart D, Section 173.115(g)

“Health hazard” means:

A substance for which there is statistically significant evidence based on at least one study conducted in accordance with established scientific principles that acute or chronic health effects may occur in exposed employees. The term "health hazard" includes substances which are carcinogens, toxic or highly toxic agents, reproductive toxins, irritants, corrosives, sensitizers, hepatotoxins, nephrotoxins, neurotoxins, agents which act on the hematopoietic system, and agents which damage the lungs, skin, eyes, or mucous membranes. Further definitions and explanations of the scope of health hazards are listed in 8 CCR 5194(c) and Appendix A to Section 5194.

“Physical hazard” means:

A substance for which there is scientifically valid evidence that it is a combustible liquid, a compressed gas, explosive, flammable, an organic peroxide, an oxidizer, pyrophoric, unstable (reactive) or water-reactive. Definitions of the specific categories of physical hazards are listed in 8 CCR 5194(c).

“Cryogenic liquid” means:

A cryogenic liquid means a refrigerated liquefied gas having a boiling point colder than $-90\text{ }^{\circ}\text{C}$ ($-130\text{ }^{\circ}\text{F}$) at 101.3 kPa (14.7 psia) absolute. A material meeting this definition is subject to requirements of this subchapter without regard to whether it meets the definition of a non-flammable, non-poisonous compressed gas in paragraph (b) of this section.

Conditions of increased reporting threshold

In order to be eligible for the increased reporting threshold of total volume of 1,000 cubic feet provided under subparagraph (E), a candidate substance must be:

- A gas at standard temperature and pressure; and
- Classified as a hazard for the purposes of 8 CCR 5194 solely as a compressed gas; and
- Be a gas for which the only health and physical hazards are simple asphyxiation and the release of pressure; and
- Not be a gas in a cryogenic state.

Discussion

Subsection (d) of 8 CCR 5194 establishes the requirement and criteria for manufacturers and importers to evaluate the substances they produce or import to determine if they are hazardous. In addition, health hazards must be defined and determined as mandated in 8 CCR 5194 Appendices A and B. Employers are not required to evaluate substances unless they choose not to rely on the evaluation performed by the manufacturer or importer for the substance to satisfy this requirement. The results of hazard evaluations conducted by manufacturers and importers are provided to employers in the form of:

- Labels and Other Forms of Warning, pursuant to subsection 8 CCR 5194(f); and
- Material Safety Data Sheets, pursuant to 8 CCR 5194(f).

The OSHA webpage³ and interpretative letter⁴ provide additional information on hazard evaluation and communication. Many gases with relatively low toxicity and no physical hazards other than the sudden release of pressure have target organ effects or other health hazards, and are therefore ineligible for the higher reporting threshold provided under subparagraph (E). In addition, some compressed gases pose hazards due to the formation of hazardous products of combustion in fires.

The following is a list of common gases for which the only health and physical hazards were found to be simple asphyxiation and the release of pressure in the compressed state only (all are classified as cryogenic if liquefied). These gases in pure form, mixtures with each other in any ratio, and mixtures with oxygen at concentrations not exceeding 21 percent by volume or a partial pressure of 21.3 kPa (160 torr) were found to be eligible for the increased reporting threshold provided under subparagraph (E).

<u>Name</u>	<u>CAS Number</u>	
Air (non-enriched)	Mixture	} Mixtures of one or more of these gases with each other in any ratio; and/or oxygen at less than or equal to 21 percent by volume or a partial pressure less than or equal to 21.3 kPa (160 torr) (e.g., shielding gases)
Argon	7440-37-1	
Helium	7440-59-7	
Krypton	7439-90-9	
Neon	7440-01-9	
Nitrogen	7727-37-9	
Xenon	7440-63-3	

The following is a partial list of common gases which; either in pure form or present in mixtures with other gases, were found to not meet the criteria for the higher reporting threshold provided under subparagraph (E) for the reasons stated:

Acetylene	74-86-2	Flammable
Carbon Dioxide	124-38-9	Toxicity and Target Organ Effects
Carbon Monoxide	630-08-0	Flammable, Toxic and Target Organ Effects
Fluorocarbons (Freon®, Genetron®, etc.)		Toxicity and Target Organ Effects
Hydrogen	1333-74-0	Flammable
Sulfur Hexafluoride	2551-62-4	Toxicity and Target Organ Effects

In many cases, it will be necessary to refer to the Material Safety Data Sheet (MSDS) to evaluate a compressed gas to determine whether it is eligible for the increased reporting threshold provided under subparagraph (E).

³ "Occupational Safety and Health Administration", *Compressed Gas and Equipment*, n.d., <http://www.osha.gov/SLTC/compressedgasequipment/index.html>. (accessed January 21, 2012).

⁴ "Occupational Safety and Health Administration", *Guidance on whether an inert gas in the non-compressed state represent hazardous chemicals under the Hazard Communication Standard*. (January 25, 1995). http://www.osha.gov/pls/oshaweb/owadisp.show_document?p_table=INTERPRETATIONS&p_id=21683. (accessed January 21, 2012).

Recommended Procedure for Determining Hazard Classes

Review the MSDS to classify the hazards of a candidate substance. The format and content of an MSDS varies according to the standard used in preparing it. Most are organized into 16 sections with common section headings. A *Comparison of MSDS/SDS Elements* in these different formats is available on the OSHA website⁵.

A partial list of pertinent MSDS elements for hazard classification is provided in the table below. Due to variation in formats, these elements may not be included on the MSDS or located in a different section. Although some MSDS elements such as DOT Label and Hazard Class are not directly referenced in 8 CCR 5194, they provide a method for quickly determining the physical or health hazards of a substance.

No.	MSDS Section ⁶	Element	Requirement	Symbols Allowed ⁷
1	2	Physical State	Must be a gas at standard temperature and pressure	
2	2, 3, 8, 11	Emergency Overview or Hazard Designation	Must state "Compressed Gas" or "Contents Under Pressure, Compressed gas" – or – "Contents Under Pressure, Liquefied gas" (not cryogenic). Physical and health hazards must be limited to "Simple Asphyxiation" and "Sudden Release of Pressure" only (no indication of the following hazards):	
			Physical hazards:	
			combustible liquid	
			explosive	
			flammable	
			organic peroxide	
			oxidizer	
			pyrophoric	
			unstable (reactive)	
			water-reactive	
			Health hazards:	
			carcinogen	
			corrosive	
			highly toxic	
			irritant	
			sensitizer	
			toxic	
			target organ effects (partial listing):	
			a. hepatotoxins	
			b. nephrotoxins	

⁵ "Occupational Safety and Health Administration", n.d., *A Guide to The Globally Harmonized System of Classification and Labelling of Chemicals (GHS)*, <http://www.osha.gov/dsg/hazcom/ghs.html#b>, (accessed November 14, 2011).

⁶ Due to variation in formats, all elements may not be included on the MSDS or may be located in different sections than those listed on the table.

⁷ If reported on MSDS.

No.	MSDS Section ⁶	Element	Requirement	Symbols Allowed ⁷
			c. neurotoxins	
			d. agents which act on the blood or hematopoietic system	
			e. agents which damage the lung	
			f. reproductive toxins	
			g. cutaneous hazards	
			h. eye hazards	
3	2, 3, 8, 11	Potential Health Effects or Acute Health Effects	See No. 2 above	
4	2, 3, 8, 11	Acute Toxicity (<i>cf. definition of "toxic" in Appendix A to 8 CCR 5194</i>)	If tested, narrative must not indicate acute health hazards other than "Simple Asphyxiation". If numerical test results are presented here, results must exceed the following: Dermal LD ₅₀ : > 1,000 mg/kg (rat) Oral LD ₅₀ : > 500 mg/kg (rat) Inhalation LC ₅₀ : > 2,000 ppmv (rat)	
5	2, 3, 8, 11	Carcinogenicity	Must not be listed as a carcinogen by NTP, IARC, or OSHA	
6	2, 3, 8, 11	Reproductive Toxicity	If tested, narrative must not indicate reproductive or teratogenic effects	
7	2, 3, 8, 11	Target Organ Statement	Narrative must not indicate target organ hazards other than "Single Exposure - Simple Asphyxiant" (GHS).	
8	5	Flashpoint	If reported, must be "none" or "not applicable".	
9	5	Flammability	Must be nonflammable and not meet the following definition of a flammable gas: 1. A gas that, at ambient temperature and pressure, forms a flammable mixture with air at a concentration of thirteen (13) percent of volume or less; or 2. A gas that, at ambient temperature and pressure, forms a range of flammable mixtures with air wider than twelve (12) percent by volume, regardless of the lower limit	
10	9	Physical State	See No. 1 above	
11	9	Flashpoint	See No. 8 above	
12	9	Boiling Point	If liquid, must be having a boiling point <u>warmer than</u> -90 °C (-130 °F) at 101.3 kPa (14.7 psia) absolute	
12	10	Stability (i.e., Instability, Reactivity)	Must be stable under normal ambient conditions of temperature and pressure, and hazardous polymerization will not occur under normal conditions of storage and use	

No.	MSDS Section ⁶	Element	Requirement	Symbols Allowed ⁷
13	11	Acute Toxicity	See No. 2 above	
14	11	Eye Effects	See No. 2 above	
15	11	Skin Effects	See No. 2 above	
16	11	Carcinogenicity	See No. 5 above	
17	11	Reproductive Effects	See No. 6 above	
18	11	Target Organs	See No. 7 above	
19	11	Teratogenic Effects & Mutagenicity	See No. 6 above	
20	14	DOT Label and Hazard Class	If reported, must be classified as "Non-Flammable Gas" with corresponding Hazard Class Number "2.2" by the Department of Transportation	
21	15	SARA Title III Hazard Categories	If reported, must be either "no" to all hazard categories, or be limited to "Immediate (Acute) Health Hazard" and/or "Sudden Release of Pressure". If the MSDS lists the SARA Hazard Categories for each component rather than for the mixture as a whole, disregard this item for classification purposes	
22	15	WHMIS Hazard Symbol & Classification	If reported, must either be "none", or limited to the symbol and statement for "Class A: Compressed gas"	
23	16	HMIS Rating	If reported, must be no higher than "1" in the Health, Flammability and Physical Hazard/Reactivity ratings with no asterisk "*" indicating chronic health effects. If the MSDS lists a number above "1" for the "Physical Hazard" rating, disregard this item for classification purposes	
24	16	NFPA Codes	If reported, must have no higher than a "1" in the Health and "0" in the Flammability and Instability/Reactivity ratings with no Special Hazards notations except "SA" for "Simple Asphyxiant"	