Classification of process safety incidents
Tier 1 and Tier 2 process safety incidents are those which exceed certain criteria of severity provided below. This classification applies to manufacturing and distribution of chemicals, but transportation is excluded.

TIER 1 Process Safety Incident criteria:
When the severity of a process safety incident exceeds one of the criteria below, it is labelled a TIER 1 incident:

1. Safety/Injury

- Injury resulting in a "days away from work injury" and/or fatality; OR
- A hospital admission and/or fatality of a third-party; OR

2. Direct Damage Costs

- A fire, explosion, damage due to vacuum or clean up necessary to avoid/remediate environmental damage resulting in a direct cost equal to, or greater than the equivalent of US$100000; OR

3. Shelter in place (emergency assembly place)/Evacuation

- An officially declared community evacuation or shelter-in-place; OR

4. Threshold Release quantity

- The amount of material released meets one of the thresholds provided in the Table on pages 8 and 9 for TIER 1 incidents (measured as the amount released in one hour).

TIER 2 Process safety Incident criteria:
When the severity of a process safety incident exceeds one of the criteria below, it is labelled a TIER 2 incident:

1. Safety/Injury

- Injury resulting in a Recordable Injury; OR

2. Direct Damage Costs

- A fire, explosion, damage due to vacuum or clean up necessary to avoid/remediate environmental damage resulting in a direct cost equal to, or greater than the equivalent of US$2500; OR

3. Shelter in place (emergency assembly place)/Evacuation

- An officially declared shelter in place (emergency assembly place) (on- or off-site); OR
- An officially declared evacuation (on- or off-site); OR
- A precautionary declaration should not be considered in the process safety incident; OR

(Note: This last option is different to API RP754 and ICCA guidance, but should be followed as agreed).

4. Threshold Release quantity

- The amount of material released meets one of the thresholds provided in the Table below and on page 9 for TIER 2 incidents (measured in amount released in one hour).

Table of Chemical Release Threshold Quantities

Table 1—Material Release Threshold Quantities

Threshold Release Category	Material Hazard Classification Option 1	Material Hazard Classification Option 2	Tier 1		Tier 2	
			Threshold Quantity (Outdoor)	Threshold Quantity (Indoor)	Threshold Quantity (Outdoor)	Threshold Quantity (Indoor)
TRC 1	TIH Zone A materials	H330 Fatal if inhaled, acute toxicity, inhalation (ch. 3.1) (cat. 1)	≥ 5 kg (11 lb)	≥ 0.5 kg (1.1 lb)	≥ 0.5 kg (1.1 lb)	≥ 0.25 kg (0.55 lb)
TRC 2	TIH Zone B materials	H330 Fatal if inhaled, acute toxicity, inhalation (ch. 3.1) (cat. 2)	≥ 25 kg (55 lb)	≥ 2.5 kg (5.5 lb)	≥ 2.5 kg (5.5 lb)	≥ 1.25 kg (2.75 lb)
TRC 3	TIH Zone C materials	H331 Toxic if inhaled, acute toxicity, inhalation (ch. 3.1) (cat. 3)	≥ 100 kg (220 lb)	≥ 10 kg (22 lb)	≥ 10 kg (22 lb)	≥ 5 kg (11 lb)
TRC 4	TIH Zone D materials	H332 Harmful if inhaled, acute toxicity, inhalation (ch. 3.1) (cat. 4)	≥ 200 kg (440 lb)	≥ 20 kg (44 lb)	≥ 20 kg (44 lb)	≥ 10 kg (22 lb)
TRC 5	Flammable gases	H220 Extremely flammable gas, flammable gases (ch. 2.2) (cat. 1A) H221 Flammable gas, flammable gases (ch. 2.2) (cat. 1B,2)	≥ 500 kg (1100 lb)	≥ 50 kg (110 lb)	≥ 50 kg (110 lb)	≥ 25 kg (55 lb)
	Liquids with normal boiling point ≤ 35 °C (95 °F) and flash point < 23 °C (73 °F)	H224 Extremely flammable liquid and vapor, flammable liquids (ch. 2.6) (cat. 1)				
	Other Packing Group I materials (excluding acids/bases and excluding UNDG Class 1; Class 2.2; Class 4.2; Class 4.3; Class 7; and Class 9 materials)	H228 Flammable solid, flammable solids (ch. 2.7) (cat. 1,2) H230 May react explosively even in the absence of air, flammable gases (ch. 2.2) (chemically unstable gas cat. A) H231 May react explosively even in the absence of air at elevated pressure and/or temperature, flammable gases (ch. 2.2) (chemically unstable gas cat. B) H232 May ignite spontaneously if exposed to air, flammable gases (ch. 2.2) (cat. 1A pyrophoric gas) H250 Catches fire spontaneously if exposed to air, pyrophoric liquids and pyrophoric solids (ch. 2.9 & 2.10) (cat. 1) H310 Fatal in contact with skin, acute toxicity, dermal (ch. 3.1) (cat. 1)				

TRC 6	Liquids with normal boiling point > 35 °C (95 °F) and flash point < 23 °C (73°F)	H225 Highly flammable liquid and vapor, flammable liquids (ch. 2.6) (cat. 2)	≥ 1000 kg (2200 lb) or ≥ 7 oil bbl	≥ 100 kg (220 lb) or ≥ 0.7 oil bbl	≥ 100 kg (220 lb) or ≥ 0.7 oil bbl	≥ 50 kg (110 lb) or ≥ 0.35 oil bbl
	Crude oil ≥ 15 API Gravity (unless actual flash point available)	Crude oil ≥ 15 API Gravity (unless actual flash point available)				
	Other Packing Group II materials (excluding acids/bases and excluding UNDG Class 1; Class 2.2; Class 4.2; Class 4.3; Class 7; and Class 9 materials)	H240 Heating may cause an explosion, self-reactive substances and mixtures and organic peroxides (ch. 2.8 & 2.15) (type A) H241 Heating may cause a fire or explosion, self-reactive substances and mixtures and organic peroxides (ch. 2.8 & 2.15) (type B) H242 Heating may cause a fire, self-reactive substances and mixtures and organic peroxides (ch. 2.8 & 2.15) (types C–F) H271 May cause fire or explosion; strong oxidizer, oxidizing liquids and oxidizing solids (ch. 2.13 & 2.14) (cat. 1) H310 Fatal in contact with skin, acute toxicity, dermal (ch. 3.1) (cat. 2)				
TRC 7	Liquids with flash point ≥ 23 °C (73 °F) and ≤ 60 °C (140 °F)	H226 Flammable liquid and vapor, flammable liquids (ch. 2.6) (cat. 3)	≥ 2000 kg (4400 lb) or ≥ 14 oil bbl	≥ 200 kg (440 lb) or ≥ 1.4 oil bbl	≥ 200 kg (440 lb) or ≥ 1.4 oil bbl	≥ 100 kg (220 lb) or ≥ 0.7 oil bbl
	Liquids with flash point > 60 °C (140 °F) released at a temperature at or above flash point	H227 Combustible liquid, flammable liquids (ch. 2.6) (cat. 4) [**Released at a temperature at or above flash point **] Liquids with flash point > 93 °C (200 °F) released at a temperature at or above flash point				
	Crude oil < 15 API Gravity (unless actual flash point available)	Crude oil < 15 API Gravity (unless actual flash point available)				
	UNDG Class 2, Division 2.2 (non-flammable, non-toxic gases) excluding air	H270 May cause or intensify fire; oxidizer oxidizing gases (ch. 2.4) (cat. 1) UNDG Class 2, Division 2.2 (non-flammable, non-toxic gases) excluding air				
	Other Packing Group III materials (excluding acids/bases and excluding UNDG Class 1; Class 2.2; Class 4.2; Class 4.3; Class 7; and Class 9 materials)	H272 May intensify fire; oxidizer, oxidizing liquids and oxidizing solids (ch. 2.13 & 2.14) (cat. 2,3) H311 Toxic in contact with skin, acute toxicity, dermal (ch. 3.1) (cat. 3)				
TRC 8	Liquids with flash point > 60 °C (140 °F) and ≤ 93 °C (200 °F) released at a temperature below flash point	H227 Combustible liquid, flammable liquids (ch. 2.6) (cat. 4) [**Released at a temperature below flash point **]	N/A	N/A	≥ 1000 kg (2200 lb) or ≥ 7 oil bbl	≥ 500 kg (1100 lb) or ≥ 3.5 oil bbl
	Strong acids/bases (see definition 3.1.2)	H314 Causes severe skin burns, skin corrosion/irritation (ch. 3.2) (cat. 1A)				
	No equivalent	H370 Causes damage to organs, specific target organ toxicity, single exposure (ch. 3.8) (cat. 1)				

NOTE 1 It is recognized that threshold quantities given in kg or lb and bbl are not exactly equivalent. Companies should select one of the pair and use it consistently for all recordkeeping activities.
NOTE 2 Refer to 5.2.3 for guidance on selecting the correct TRC and the use of material hazard classification Option 1 and Option 2.

Other relevant information:

Chemical Involvement

- Is when a chemical substance or chemical process is directly involved.
- A chemical or chemical process must have been directly involved in the incident. For this purpose, the term "process" is used broadly to include the equipment and technology needed for chemical production, including reactors, tanks, piping, boilers, cooling towers, refrigeration systems, etc. An incident with no direct chemical or process involvement, e.g., an office building fire, even if the office building is on a plant site, is not reportable.