2023 KEY PERFORMANCE INDICATORS (KPIs)

SUBMISSION CYCLE GUIDELINE DOCUMENT

GENERAL NOTES

- The data that are submitted must only be for chemical-related operations in South Africa, for the 2022 calendar year. Please note that "operations in South Africa" include cross-border activities as long as the operations are based in/operated from South Africa.
- If a company cannot submit data to CAIA on a site-specific basis, consolidated submissions must first be discussed with CAIA.
- Physical address: If the submission is a consolidated one (following discussion with CAIA), the physical address of where the Responsible Care® Management Representative is based should be provided.
- **1 tonne = 1 000 kilograms, 1 cubic meter = 1 kilolitre = 1 000 litres, 1 Gigawatt hour = 1 000 kilowatt hours.**
- **The KPI Questionnaire has been disaggregated into pages to reduce saving and loading time. Please note that each page must be successfully verified before the fully completed Questionnaire can be submitted to CAIA.**
- When a signatory *reverifies* information, the original comment made by CAIA and the original response provided by the signatory will not be removed but will be retained. Further comments and responses can be included below the responses already submitted.

GENERAL DEFINITIONS

- "Complaints" means concerns or issues raised by external stakeholders including the regulator if relevant; whether in writing or verbally.
- "Contractor" means any person who provides services to the company, but is not directly employed – including trainees and apprentices of the contractor as well as persons providing incidental services to the company. This includes directly managed or full-time contracted transport operations, persons providing services to a company's own site, on property which has been leased or where rights are held by the company to undertake its operation(s).
- "Employee" means any person for which the company is legally responsible under the Occupational Health and Safety Act. The consolidated Act can be downloaded ***here***.
- "Formal Procedure" means a formal, documented procedure for handling safety-, health- or environmental-related complaints.
- "Incident" means an unplanned event resulting in, or having the potential for injury, ill-health, damage or other loss. Note that the definition for "environmental incident" provided in the relevant section differs from this general definition.
- "In-House" means any person who provides services to the company, and is directly employed

including trainees, apprentices and employees of labour brokers.

- "Material" means raw materials, chemical products, waste, samples and empty containers.
- "Public Disruption" means the evacuation of the public, road closure, restriction of public activity or other significant precautionary measure(s) having to be taken due to the danger, or perceived danger to the public, of a chemical release occurring. Include any incident which involved the attendance of the local Emergency Services, attracted adverse local, national and/or international media attention, and/or that lasted for more than one hour.
- "Root Cause" means the initiating cause of a chain of events, where intervention could be implemented to prevent undesirable outcomes. For each question, disaggregate the total number of incidents (for example) into the number of incidents that resulted from each of the four high-level Root Cause categories provided. It is appreciated that there may be more than one root cause per incident and therefore the sum of the root causes may be greater than the number of incidents. The following four high-level Root Cause categories, related to a lack of or inadequate or inappropriate or unsuitable control measures, are provided:
    - MAN: Implies that there is a relationship to personal protective equipment, work behaviour or training.
    - METHOD/MEASUREMENT: Implies that there is a relationship to policies, programmes, systems or communication.
    - MACHINE/MATERIAL: Implies that there is a relationship to equipment, material, productivity factors or quality.
    - ENVIRONMENT: Implies that there is a relationship to facilities, work environment or weather.
- It is appreciated that not all internal reporting can be aligned to the categories provided above, but reporting should still take place as far as possible.
- Root cause reporting remains mandatory. Following agreement, CAIA has added questions to determine the Nature of injuries and incidents. Similarly to the reporting of root causes:;
    - the total number of injuries and/or incidents for each question should be disaggregated amongst the categories provided; and
    - there can be more than one "nature" per injury/incident.

CONTACT INFORMATION AND DETAILS

- The information of the Responsible Care® Management Representative is required:
    - to keep contact information up to date, and
    - for communication purposes during the submission cycle.
- Kindly note that should data capturing be delegated to another person, please ensure that communications from CAIA are shared with the relevant person(s). The Responsible Care® Management Representative is CAIA' s contact point with the company.
- The information of the Highest Authority is required to request approval of the submission once CAIA has reviewed and accepted it.

TRADED PRODUCTS

- Should the company be involved with manufacture, formulation, repacking and/or mixing/blending, whether for own sales or as toll activities, the required information should be completed. Information on non-break bulk operations should not be reported. Note that the provision of tonnage and Standardized Industrial Classification (SIC) Code is required. Should more than nine rows be required, please request a template from admin@caiakpi.co.za that should be completed and then submitted to the same email address.
- From the 2020 reporting cycle, reporting according to SIC Code Manual v. 7 was required, as this is what government is aligning to. Please refer to the letter from StatsSA providing information on the move towards SIC Code Manual v. 7 that can be downloaded ***here***.

SIC Codes - Manual 7

- The Manual is provided for information and for reporting purposes. SIC Code Manual version 7 can be downloaded ***here***.

SAFETY AND HEALTH

- Include all figures from all operational activities; including storage, handling and distribution.
- Note that questions relating to storage and handling are combined.
- Note that incidents involving site visitors, e.g., recordable injuries, must not be reported.

HOURS WORKED

- CAIA calculates the average hours worked per in-house employee per year by using the equation shown below.
- The figures reported must be the total for all workers for the year, including overtime.

NUMBER OF WORKERS

- The figures reported must be an average for the year – not totalled for each month.

Total in-house hours worked/Total number of in-house workers

- Should the data that are submitted be less than 1459 or greater than 2189, it will be queried by CAIA for confirmation purposes.
- CAIA uses this range (1459 – 2189) as a guideline as it falls within 20% of 1824 hours per employee per year. 1824 hours per employee per year provides for 19 days per month, 8 hours per day over a 12-month period, for example.

FATALITIES, RECORDABLE INJURIES, OCCUPATIONAL DISEASES

- "Directly" means caused by the direct exposure to material.
- "Not directly" means caused by anything other than direct exposure to material (e.g., drowning, road accident, falling, electrocution, etc.).
- "Fatality" means an injury leading to death within one year. Note that third-party fatalities must not be reported. Own in-house fatalities, as well as those experienced by contractors, must be reported.
- "Recordable Injury" means any incident resulting in occupational illness and/or injury which arises out of or during an employee's normal course of duty and the execution of work-related responsibilities and which, as a result, requires medical treatment.

For "Recordable Injuries", remember to include:

- Injuries that resulted from all operational activities, including those related to material handling, storage and all forms of transportation.
- Injuries that resulted in a fatality(ies).

For "Recordable Injuries", remember to exclude:

- Injuries that only resulted in first aid (no repeat attention was required).
- Injuries that only resulted in diagnostics being performed.
- Injuries that resulted in a single visit to a medical practitioner for observation and counselling.

"Occupational Disease" means any disease contemplated in Section 65(1)(a) or (b) of the Compensation for Occupational Injuries and Diseases Act. The consolidated Act can be downloaded ***here***.

- Please note that official occupational diseases as a result of SARS-CoV-2 infection (COVID-19) should be included in reporting.

MATERIAL HANDLING AND STORAGE

- Note that questions relating to storage and handling are combined.
  - "Handling" means activities that result in the movement of material from one place to another.
  - "Storage" means activities that keep material in one place for any amount of time.
- Handling and storage incidents should be reported as a single total value. If handling, or storage, or both values are not measured, "NM" should be provided as the answer.

TRANSPORTATION

- Note that all transportation questions have been clarified to include all incidents, as defined. The first question regarding the number of incidents relates to incidents that occurred because material was released (not those where there was an incident that then caused the release of material). The second question relates to the total number of incidents. The number of incidents given to answer the first question should be included in the number of incidents given to answer the second question.
- Importantly, do not be concerned over double-counting in any regard as CAIA takes this into account when calculating statistics. For example, if a road transportation incident occurred that resulted in an environmental incident, the incident should be reported under the applicable road transportation incidents fields AND the environmental incident field found later in the Questionnaire.

ROAD TRANSPORTATION

- Should there be no operational control over road transportation, for example where customers collect their material, this section can be answered as N/A.

PIPELINE TRANSPORTATION

- The reporting of transportation via pipeline should include the material and incidents for which there is operational control of the pipeline, off-site.

PROCESS SAFETY (extensive guidance)

Reporting requirements:

On an annual basis, relevant Responsible Care® signatories are required to report the following data points to CAIA.

1. Total Number of Tier 1 Process Safety Incidents for the year.
2. Total Number of Tier 2 Process Safety Incidents for the year.
3. Total Member Company Worker Hours (employee and contractor)

Reporting by manufacturers and distributors is mandatory.
Note that the International Council of Chemical Associations (ICCA) requires aggregated reporting of Tier 1 and Tier 2 events, while CAIA requires incidents to be disaggregated.

CAIA will use the data to report overall process safety performance in the form of incident rates, normalised per 100 employees where an employee works 2 000 hours a year, as follows:

1. Tier 1 Incident Rate = (Total Number of Tier 1 Incidents / Total Hours Worked) x 200000

2. Tier 2 Incident Rate = (Total Number of Tier 2 Incidents / Total Hours Worked) x 200000

In addition, CAIA will report Process Safety Events (PSE) internationally to the ICCA. PSEs are defined as the sum of Tier 1 and Tier 2 incidents.

Note that CAIA speaks of "incidents" rather than "events".

Background:

As directed by the ICCA Board of Directors, the RCLG developed globally harmonised process safety performance reporting criteria in collaboration with the American Petroleum Institute (API). Details were published in API Recommended Practice 754, Third Edition, August 2021 (API RP 754) and ICCA document "Guidance for reporting on the ICCA globally harmonised process safety metric, January 2022". Signatories may use either of these documents as a basis. However, the definitions contained in this KPI Guideline document must be used.

CAIA Definitions

Definition of a Process Safety Incident

An incident that resulted in:

- a fire, or
- an explosion, or
- an episodic, unintended release of a hazardous chemical from primary containment, or
- an excursion of pressure energy that causes harm,

and in all cases where chemicals and a chemical process was involved.

This definition is in line with that of the ICCA's definition:

A "Process Safety Incident" has occurred when:

- a chemical substance or a chemical process is directly involved; AND
- the incident occurred in production, distribution, storage, utility or pilot plant within the site boundaries of the company's facility; AND
- there was a release of material or energy, including a fire, explosion, or implosion from a process unit.

  Note that API RP754 does not include "energy", but CAIA is aligning in this case to the ICCA guidance.

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

			Tier 1		Tier 2	
Threshold Release Category	Material Hazard Classification Option 1	Material Hazard Classification Option 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.

Location

- The incident occurred in production, distribution, storage, utility, pilot plant within the site boundaries of the company's facility.
- The incident occurs in production, distribution, utilities or pilot plants of a facility reporting metrics under these definitions. This includes tank farms, ancillary support areas (e.g., boiler houses and wastewater treatment plants) and distribution piping under control of the site. All reportable incidents occurring at a location will be reported by the company that is responsible for operating that location. This applies to incidents that may occur in contractor work areas as well as other incidents. At tolling operations and multi-party sites, the company that operates the unit where the incident initiated should record the incident and count it in their reporting. So, incidents occurring during transportation are excluded.

Release of Material

- There was a release of material or energy (e.g., release, fire, explosion, implosion) from a process unit.
- Release of Material – an unplanned or uncontrolled release of any material, including non-toxic and non-flammable materials (e.g., steam, hot water, nitrogen, compressed CO_2 or compressed air), from a process.
- A release to a secondary containment (e.g., wastewater treatment or dyke) will qualify as a process safety incident because the substance was released from the primary containment of a process.

Recordable Injury

- Any incident resulting in occupational illness and/or injury which arises out of or during an employee's normal course of duty and the execution of work-related responsibilities and which, as a result, requires medical treatment.

For "Recordable Injuries", remember to include:

- Injuries that resulted from all operational activities, including those related to material handling, storage and all forms of transportation.
- Injuries that resulted in a fatality(ies).

For "Recordable Injuries", remember to exclude:

- Injuries that only resulted in first aid (no repeat attention was required).
- Injuries that only resulted in diagnostics being performed.
- Injuries that resulted in a single visit to a medical practitioner for observation and counselling.

Direct Damage Cost

- Costs to be considered for this criterion should be those costs directly attributed to the fire and/or explosion, such as the replacement value of equipment lost, structures lost, cost of repairs, environmental clean-up (on and off site), emergency response and/or fines. Direct

costs do not include indirect costs, such as business opportunity losses, loss of profits due to equipment outages, cost of obtaining or operating temporary facilities or cost of obtaining replacement products to meet customer demand (product losses).

- The figure in US Dollars is used to align with international reporting. Responsible Care® signatories should use the Rand:US Dollar exchange rate at the time of the incident to decide if costs exceed the relevant criteria.

Shelter in place (emergency assembly place) / Evacuation

- For the purposes of this reporting, an officially declared shelter in place (emergency assembly place) or evacuation, on or off site.
- The use of a structure and its indoor atmosphere to temporarily separate individuals from a hazardous outdoor atmosphere.

Officially Declared

- A declaration by a recognised community official (e.g., fire, police, civil defence, emergency management) or delegate (e.g., company official) authorised to order the community action (e.g. shelter-in-place, evacuation).

Evacuation

- The act or process of removing persons from a place for reasons of safety or protection.

One-Hour Rule

- For the purpose of reporting under this metric, release thresholds are established for materials over a one-hour time frame. If the release amount of a material reaches or exceeds the reporting threshold in a one-hour period or less, it is reportable. Typically, acute releases occur in one hour or less. If the duration of the release cannot be determined, the duration should be assumed to be one hour.

Primary and Secondary Containment

- A tank, vessel, pipe, rail car or equipment intended to serve as the primary container or used for the transfer of the material. Primary containers may be designed with secondary containment systems to contain and control the release. Secondary containment systems include, but are not limited to, tank dykes, curbing around process equipment, drainage collection systems into segregated oily drain systems, the outer wall of double walled tanks, etc.

Near Misses

- The definition for "Near Miss" is:
    - "Process Safety Near Miss" means: an unforeseen incident where there were no process safety consequences; for example where there has been no loss of primary containment, no fire or explosion, no toxic release and no harm to people the environment or damage to equipment, but there could have been if circumstances were different. For example: activation of an instrument or electrical trip.

PRODUCT STEWARDSHIP

- Kindly note that reporting is mandatory for all activity types, as product stewardship principles are relevant along the entire value chain.
- For applicability of the product stewardship questions, please note that the definition of "product" is: "…either a procured chemical, raw material, intermediate, final product, waste, or sample."; according to the definition used in the Codes of Management Practice.
- The questions in this section are open to company interpretation to a large degree, due to the nature of product stewardship and the difficulty in providing definitions that suit the entire value chain and even single company activities within the same part of the value chain. Signatories are requested to define for themselves the metrics relevant to these questions, and to report on them in the same way each year. This is critical for accurate company-specific year-on-year performance comparisons and reporting, as well as aggregate industry reporting to the public through the Responsible Care® Performance Report."

ENVIRONMENT

POLLUTION PREVENTION

SOLID WASTE

- Effluent should not be included in the reporting of "Solid Hazardous Waste" and "Solid Non-hazardous Waste". A separate section for the reporting of effluent indicators is provided later in the questionnaire.
- Solid wastes that have a liquid component but are not effluent (e.g., sludge), need to be reported in tonnes under the solid waste category. Simply add this tonnage to the solid waste tonnage that is to be reported and report the total for each question.
- Definitions: Apply those of the National Environmental Management: Waste Act as they currently stand. The consolidated Act can be downloaded ***here***. CAIA understands that this may have implications in reporting compared to submissions before 2015, due to concerns with Schedule 3 of the National Environmental Management: Waste Act, but data needs to be reported as per the current legal definitions.
- Note: Unless waste was stockpiled previously, the value for "disposed" should be the difference between what was generated and the sum of what was recycled, reused, recovered and transferred. CAIA acknowledges that this may not always be the case if waste is not completely disposed of between one calendar year and the next.

WASTE MINIMISATION

- "Minimisation" means avoidance of the amount and/or toxicity of waste that is generated and/or disposed of.

EFFLUENT RECYCLING

- Only "liquid" waste is included in this indicator, and this depends on the moisture content of the waste.
- Sludge should be reported under "Solid Waste".

EFFLUENT DISCHARGE

- Due to the challenges that have been noted regarding the receipt of monthly accounts and/or measurements from local authorities, the guidance provided below should be followed in these cases. If own measuring is conducted, kindly provide these values.
- Annual volume - provide the total annual volume that has been discharged, even if some level of treatment has occurred. The volume should include effluent discharged whether a permit is required or not. The volume should exclude water used for domestic purposes where possible.
- Chemical Oxygen Demand – an average value (kg O) per measurement should be provided. If for example, only 4 measurements have been received, the measurements can be added up and divided by 4. This will give an indication of the Chemical Oxygen Demand of effluent for each measurement. Note that CAIA appreciates that estimates are sometimes provided.
- Suspended Solids – an average value (kg) per measurement should be provided. If for example, only 7 measurements have been received, the measurements can be added up and divided by 7. This will give an indication of the Suspended Solids present in effluent for each measurement. Note that CAIA appreciates that estimates are sometimes provided.
- Effluent volume calculation for Chemical Oxygen Demand and Suspended Solids, respectively: to convert from mg/l to kg, multiply mg/l value by 1000, then divide this answer by 1 000 000, then multiply this answer by the annual volume of effluent in kl. Do not divide this by 12.

GREENHOUSE GAS EMISSIONS

- Given the necessary actions required to mitigate greenhouse gas emissions, CAIA now requests information from all direct, process-related activities, rather than just those aligned to national legal reporting requirements. Should there be fuel combustion for mobile and/or stationary purposes, these are calculated by CAIA from the fuel used that is reported under the Energy section of the Questionnaire and do not need to be reported under the Greenhouse Gas Emissions section.
- Answer fields are provided for up to five different activities. Activities are defined and listed according to the Intergovernmental Panel on Climate Change's (IPCC) Third Assessment Report.
- Please report activity code, activity name and the total greenhouse gas emissions for each activity. If there is not an activity code according to the IPCC, please state N/A for the activity code field.
- The data must be reported in kilograms of carbon dioxide equivalents (kg CO_2e). The IPCC's ***Third Assessment Report*** should be consulted to determine the emission factors to be used in the absence of the South African National Greenhouse Gas Emissions Reporting Regulations

and associated Technical Guidance. The ***regulations*** and ***technical guidance document*** are available for download from the links provided herein. Should you be uncertain of the emission factors and global warming potentials to use in the calculations, or need assistance, please make contact with CAIA (admin@caiakpi.co.za) .

- Greenhouse Gas emissions resulting from car hire and flights must not be reported.

ATMOSPHERIC EMISSIONS UNDER LICENCE

- Definition: "atmospheric emissions under licence" means all non-greenhouse gas emissions under licence. The ***Section 21 Notice*** and the ***National Environmental Management: Air Quality Act*** are available for download from the links provided herein. The National Atmospheric Emission Reporting Regulation is available for download ***here***.
- Please provide a value irrespective of how they were obtained. Note that reporting into the KPI must be undertaken annually whether the emissions are measured or not. If they are not measured that year, they should be calculated.
- All values must be provided in kilograms, except for dustfall.
- General calculation examples:
    - take a measurement or estimate for each m^3 emitted, and multiply this by the total m^3 emitted for the year, based on production time (e.g., the plant runs 12 hours per day and each hour the plant is running there is x m^3 which is emitted), or
    - use a mass-balance approach.
- For dustfall, consolidated submissions should report the calendar year average of the 30-day averages, across measurements and facilities/sites; in $mg/m^2/day$.
- Emissions resulting from car hire and flights must not be reported.

ENVIRONMENTAL INCIDENTS

- This series of questions is aligned with Section 30 of the National Environmental Management Act; but has been expanded to include:
    - all substances other than only hazardous substances,
    - "Material" as defined above, and
    - both off- and on-site environmental incidents.

The consolidated Act can be downloaded ***here***.

- "Incident" means an unexpected, sudden and uncontrolled release of a material, including major emission, fire or explosion, that causes, has caused or may cause significant harm to the environment, human life or property;".
- "On-site" means within the geographical boundary of the premises. "Off-site" means outside this.
- Disaggregate the total number of environmental incidents into the number of environmental incidents that resulted in each of the two severity level categories provided.
- Severity Level(s) are related to alignment with the definition of "Incident" provided in the Act. Should the incident not meet the definition in the Act, but meets the other conditions given above, it should be categorised as "Non-Reportable" for the KPI submission.

RESOURCE USE

ENERGY CONSUMPTION

- All data to be provided in gigajoules (GJ) and must only include energy consumed.
- For each type of energy consumed, the data provided must cover the total site net purchase of primary fuels, i.e., fuel purchased minus feedstock.
- Energy obtained via cogeneration activities must not be reported at all.
- Questions are disaggregated by fuel type.
- Fuel used for sales representatives' vehicles to be included under Transportation (Petrol or Diesel).
- Energy use resulting from car hire and flights must not be reported.
- Energy used for domestic purposes must not be reported, where possible.

Conversion Factors

- The following conversion factors are provided to assist with the conversion of common energy units to GJ. Data must be reported in GJ.

- PURCHASED ELECTRICITY
    - Only purchased electricity must be reported here.
    - If the measurement is in kilowatt hours: to obtain GJ - divide by 277.78.
    - If the measurement is in megawatt hours: to obtain GJ - multiply by 1000 to obtain kilowatt hours; then divide by 277.78.

- LIQUID PETROLEUM GAS
    - If the measurement is in BTU: to obtain GJ – multiply by 1.056×10^{-6}.
    - If the measurement is in therms: to obtain GJ - multiply by 100 000 to obtain BTU, then multiply by 1.056×10^{-6}. Alternatively, multiply the value in therms by 0.095.
    - If the measurement is in kilograms: to obtain GJ - divide by 20.425. Alternatively, multiply by 0.049.
    - If the measurement is in m^3: to obtain GJ – divide by 0.53 then divide by 20.425. Alternatively divide by 10.82525.

- NATURAL GAS
    - If the measurement is in m^3: to obtain GJ - divide by 26.71 OR multiply by 0.0374.

- DIESEL
    - To avoid confusion, the question has been divided into Diesel used for transportation and non-transportation purposes. The data for both transportation and non-transportation purposes is required.
    - If the measurement is in litres: to obtain GJ – multiply by 0.0396.
    - If the measurement is in kilolitres: to obtain GJ – multiply by 39.6.
- PETROL
    - To avoid confusion, the question has been divided into Petrol used for transportation and non-transportation purposes. The data for both transportation and non-transportation purposes is required.
    - If the measurement is in litres: to obtain GJ – multiply by 0.0342.
    - If the measurement is in kilolitres: to obtain GJ – multiply by 34.2.
- PARAFFIN (KEROSENE)
    - To avoid confusion, Paraffin (Kerosene) is disaggregated from the other liquid fuel questions.
    - If the measurement is in litres: to obtain GJ – multiply by 0.0375.
    - If the measurement is in kilolitres: to obtain GJ – multiply by 37.5.
    - If the measurement is in kilograms: to obtain GJ - divide by 22.7.
- LOW SULPHUR OIL
    - If the measurement is in litres: to obtain GJ – divide by 1110, and then multiply by 44.1.
- LIQUID FUEL – OTHER
    - Should other liquid fuel be consumed, kindly report it under this question. Provide the energy consumed in GJ and the fuel type.
- SOLID FUEL (coal, for example)
    - For coal: to obtain GJ – convert to tonnes and then multiply by 27.0.
    - Coal used to produce steam, for example, should be reported here.
    - Provide the energy consumed and the fuel type (e.g., coal).
- PURCHASED STEAM
    - The amount of GJ consumed should be reported.

Information needed for the calculation:

- tonnes of steam used in the calendar year; and
- steam pressure (in KPa absolute).

- Step 1: Go to https://www.tlv.com/global/TI/calculator/steam-table-pressure.html?advanced=off
- Step 2: Insert the steam pressure.
- Step 3: Choose “KPa abs” as the unit.
- Step 3: Click calculate.
- Step 4: Use the results of "Enthalpy for Steam" and "Enthalpy for Saturated Water" in the calculation below (making sure the unit kJ/kg is selected). The answer will be GJ of Steam. This value must be the figure reported in the KPI.

GJ Steam = [tonnes steam X (Specific Enthalpy of Saturated Steam - Specific Enthalpy of Saturated Water)] / 1000

OTHER FUEL

- The use of any other fuel for energy consumption purposes should be reported here, providing the value in GJ, and the fuel type.

WATER CONSUMPTION

- The amount of water used from each source should reflect the amount taken from the resource.
- "Other" means water from a source that is neither municipal nor borehole, and includes water used under license, permit, or other means of allocation (including rainwater harvested under licence).
- Water used for domestic purposes must not be reported, where possible.
- “Process water” includes all water used for any and all operations.

COMPLAINTS

- Note that questions relating to safety, health and environmental complaints are relevant to those complaints received from external stakeholders only.

COMMUNITY ENGAGEMENT AND EMERGENCY RESPONSE

- “Community” means in the vicinity of the operation; and can include residents or other businesses/operations. Engagement with the community facilitates stakeholder participation.
- Rather than focusing attention on site visits, CAIA focuses on the number of meetings with external stakeholders. This provides a better reflection of the true engagement that has taken place, as visits to the site may be restricted for safety and health reasons.
- Regular testing of emergency response plans refers to testing recurring at uniform intervals.
- CAIA would like all signatories to perform Desktop Simulation Exercises to identify major gaps or conflicts in emergency response planning with emergency responders. The

duration of a desktop exercise depends on the number of participants; the topic being exercised and the exercise objectives. Many desktop exercises can be conducted in a few hours, making them cost-effective tools to validate plans and capabilities with no real resources being used. Further information on Desktop Simulation Exercises is available ***here***.

INVESTMENTS

- The amounts reported must be for those activities that can be linked to the Responsible Care® Initiative – in other words outside of the normal operation and capital budgets to meet legal requirements.