



Classification and labelling in the GHS

Agenda

- Kick off questions
- Hazards communication: the GHS Label
- Hazardous properties and classification
- Labelling as a classification output

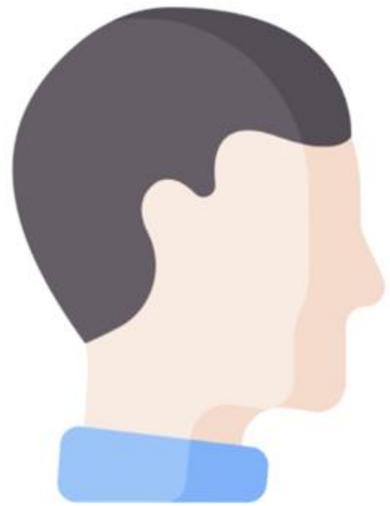


KICK OFF QUESTIONS



Berlo's model of communication

GHS communication flow



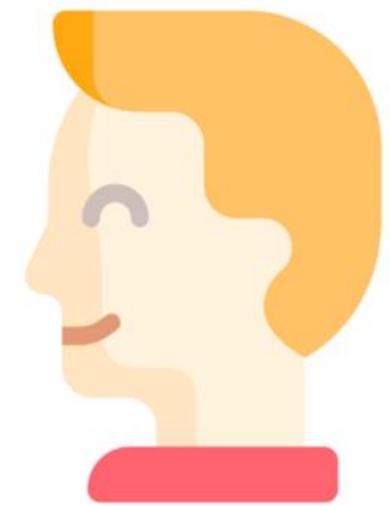
SOURCE



MESSAGE



CHANNEL

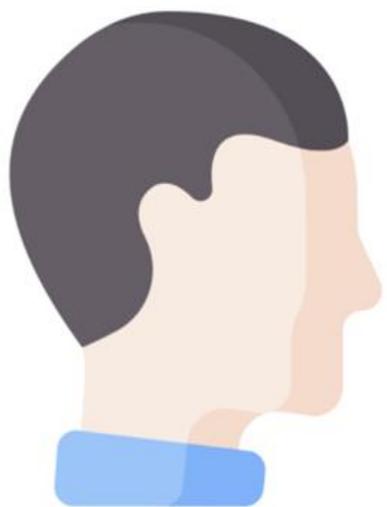


RECEIVER

Berlo's model of communication

GHS communication flow

GHS



SOURCE



MESSAGE



CHANNEL



RECEIVER

MANUFACTURER

**CHEMICAL
PROPERTIES**

LABEL

USER

Formaldehyde

37 %

CAS N° 50-00-0

BATCH N° 132/2025

1 Liter



DANGER

Combustible liquid
Harmful if swallowed
Fatal if inhaled
Causes severe skin burns and eye damage
May cause an allergic skin reaction
May cause cancer
Suspected of causing genetic defects
Toxic to aquatic life

Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
Do not breathe vapours.
Do not get in eyes, on skin, or on clothing.
Wash hands thoroughly after handling.
Wear protective gloves/protective clothing/eye protection/face protection.
In case of inadequate ventilation wear respiratory protection.
IF SWALLOWED: rinse mouth. Do not induce vomiting.
IF ON SKIN: take off immediately all contaminated clothing. Immediately rinse with water for several minutes.
IF INHALED: remove person to fresh air and keep comfortable for breathing.
IF IN EYES: immediately rinse with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
Get emergency medical help immediately.
If skin irritation or rash occurs: get medical help.
Avoid release to the environment.
Store in a well-ventilated place. Keep container tightly closed.
Dispose of contents/container in accordance with local regulation.

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Elaborated by J. Bensignor

GHS label

An example: Formaldehyde

FORMALDEHYDE 101

FACT SHEET



What is formaldehyde?

Formaldehyde is a naturally occurring substance made of carbon, hydrogen and oxygen. It is an ever-present part of our world produced by every living organism – including humans – who make and process about 1.5 ounces of formaldehyde per person every day. It is a well-studied compound and, thanks to decades of innovation, has become a critical component used safely in everyday goods including automobiles/electric vehicles, wood products, medical devices, vaccines fertilizers, and antimicrobials.



Formaldehyde 37 %

PRODUCT IDENTIFIER

CAS N° 50-00-0

BATCH N° 132/2025

1 Liter



DANGER

Combustible liquid
Harmful if swallowed
Fatal if inhaled
Causes severe skin burns and eye damage
May cause an allergic skin reaction
May cause cancer
Suspected of causing genetic defects
Toxic to aquatic life

Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
Do not breathe vapours.
Do not get in eyes, on skin, or on clothing.
Wash hands thoroughly after handling.
Wear protective gloves/protective clothing/eye protection/face protection.
In case of inadequate ventilation wear respiratory protection.
IF SWALLOWED: rinse mouth. Do not induce vomiting.
IF ON SKIN: take off immediately all contaminated clothing. Immediately rinse with water for several minutes.
IF INHALED: remove person to fresh air and keep comfortable for breathing.
IF IN EYES: immediately rinse with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
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SUPPLIER INFORMATION

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Formaldehyde

37 %

CAS N° 50-00-0

BATCH N° 132/2025

1 Liter

PICTOGRAMS



DANGER

SIGNAL WORD

HAZARD STATEMENTS

Combustible liquid
Harmful if swallowed
Fatal if inhaled
Causes severe skin burns and eye damage
May cause an allergic skin reaction
May cause cancer
Suspected of causing genetic defects
Toxic to aquatic life

Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
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Hazardous properties and classification

Hazardous properties and classification

Key definitions

- **The GHS refers to hazards**, it is based on the concept that effective communication of hazards helps minimize risks in any context.
- The **classification** is the process to determine if a chemical is hazardous and the degree of such hazard.
- The **GHS establishes classification criteria** for each assessed hazard, based on the availability of tests methods and data.



unitar course on
Introduction to the GHS

The **classification of hazards** according to the GHS implies:

1. Identifying and examining the relevant data on the hazards of the chemical (data that reflect the chemical's intrinsic hazardous properties), and
1. Determining whether the chemical will be classified as hazardous (and if necessary, its categorization), based on agreed hazard criteria.

Hazardous properties and classification

Hazards groups and classes

HAZARD GROUPS



HAZARD CLASSES

PHYSICAL

1. Explosives
 2. Flammable gases
 3. Aerosols & chemicals under pressure
 4. Oxidizing gases
 5. Gases under pressure
 6. Flammable liquids
 7. Flammable solids
 8. Self-reactive substances and mixtures
 9. Pyrophoric liquids
 10. Pyrophoric solids
 11. Self-heating substances and mixtures
 12. Substances and mixtures which in contact with water emit flammable gases
1. Oxidizing liquids
 2. Oxidizing solids
 3. Organic peroxides
 4. Corrosive to metals
 5. Desensitized explosives

HEALTH

1. Acute toxicity
2. Skin corrosion/irritation
3. Serious eye damage/eye irritation
4. Respiratory or skin sensitization
5. Germ cell mutagenicity
6. Carcinogenicity
7. Reproductive toxicity
8. Specific target organ toxicity – single exposure
9. Specific target organ toxicity – repeated exposure
10. Aspiration hazard

ENVIRONMENTAL

1. Hazardous to the aquatic environment
2. Hazardous to the atmospheric system

Hazardous properties and classification

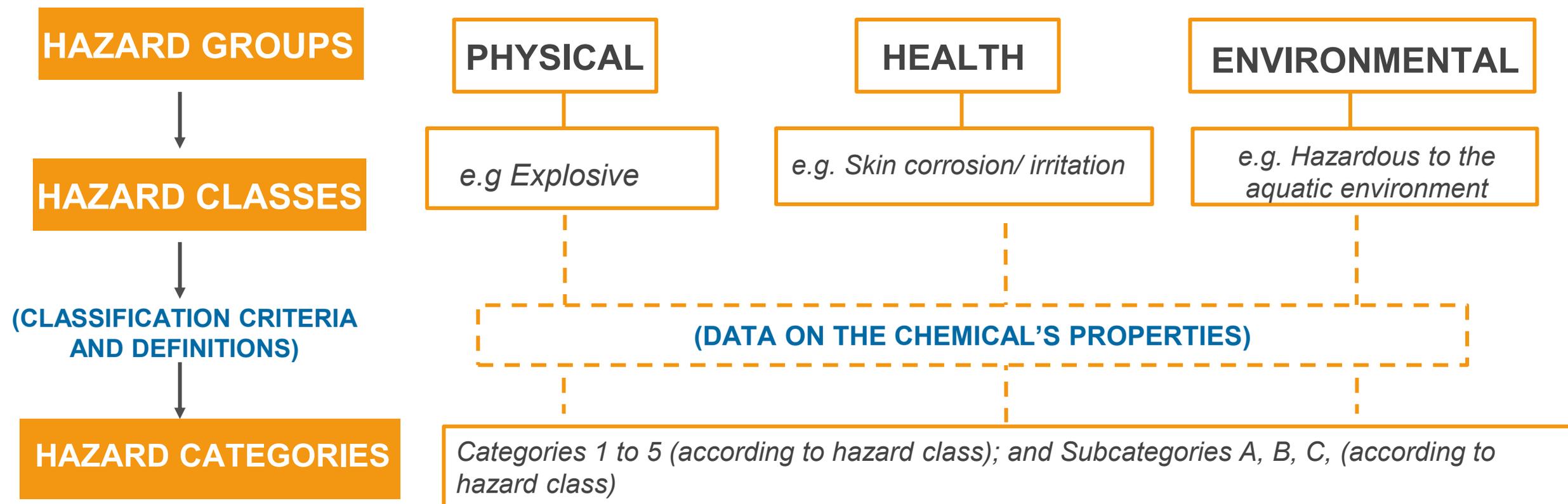
Classification process

The Purple Book

- In the Purple Book, each hazard group is a main part.
- Within each part, chapters cover the individual hazard classes, (providing their **definitions** and **classification criteria**).

Hazardous properties and classification

Classification process



EXAMPLE

Formaldehyde - Flammable Liquids

FLAMMABLE LIQUIDS Group: Physical Hazards

- **Flammable liquid:** liquid having a flash point of not more than 93°C.
- The higher a liquid flash point is, the lower is its risk of fire

Table 2.6.1: Criteria for flammable liquids

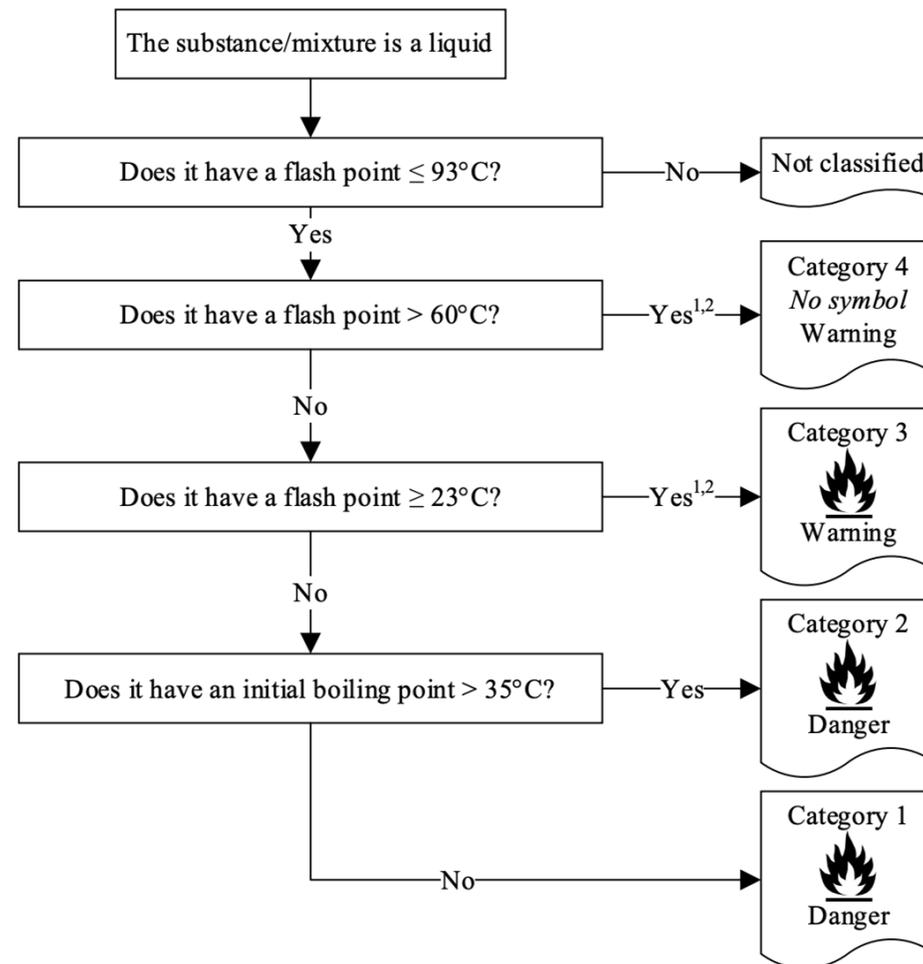
LEVEL OF HAZARDOUSNESS ↑

Category	Criteria
1	Flash point < 23 °C and initial boiling point ≤ 35 °C
2	Flash point < 23 °C and initial boiling point > 35 °C
3	Flash point ≥ 23 °C and ≤ 60 °C
4	Flash point > 60 °C and ≤ 93 °C

EXAMPLE

Formaldehyde - Flammable Liquids

Decision logic 2.6 for flammable liquids



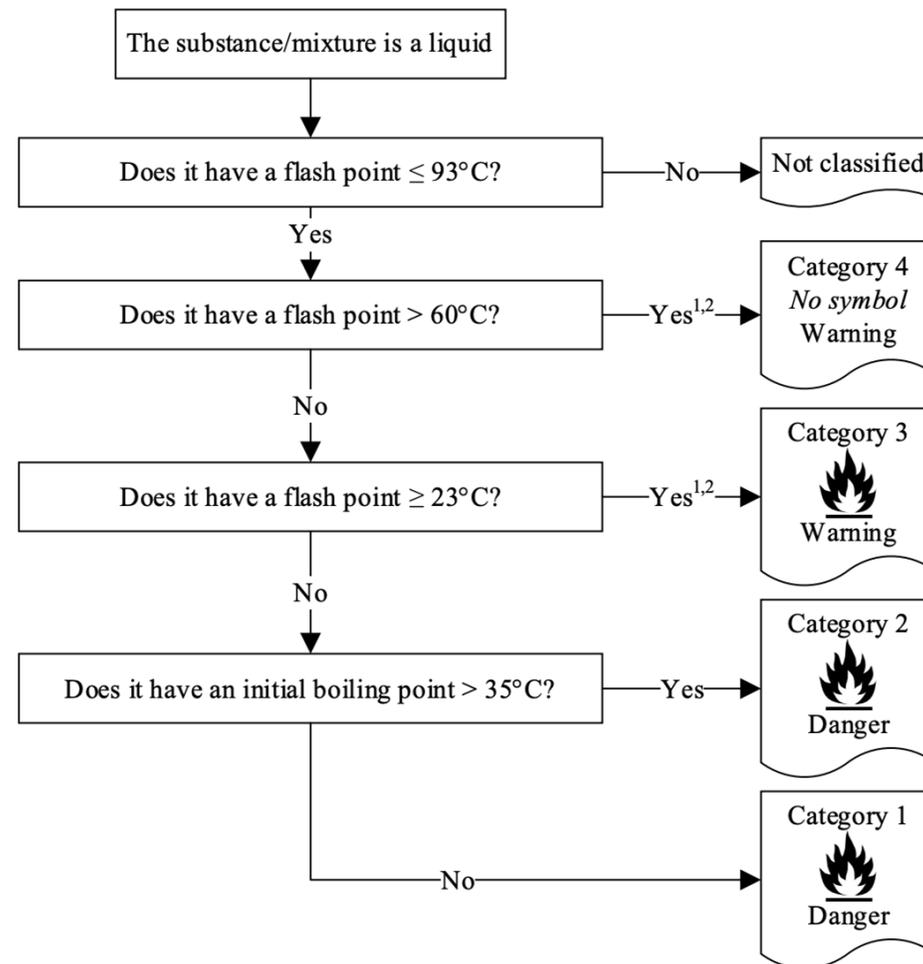
ACTIVITY



ACTIVITY

Classification exercise - Flammable Liquids

Decision logic 2.6 for flammable liquids



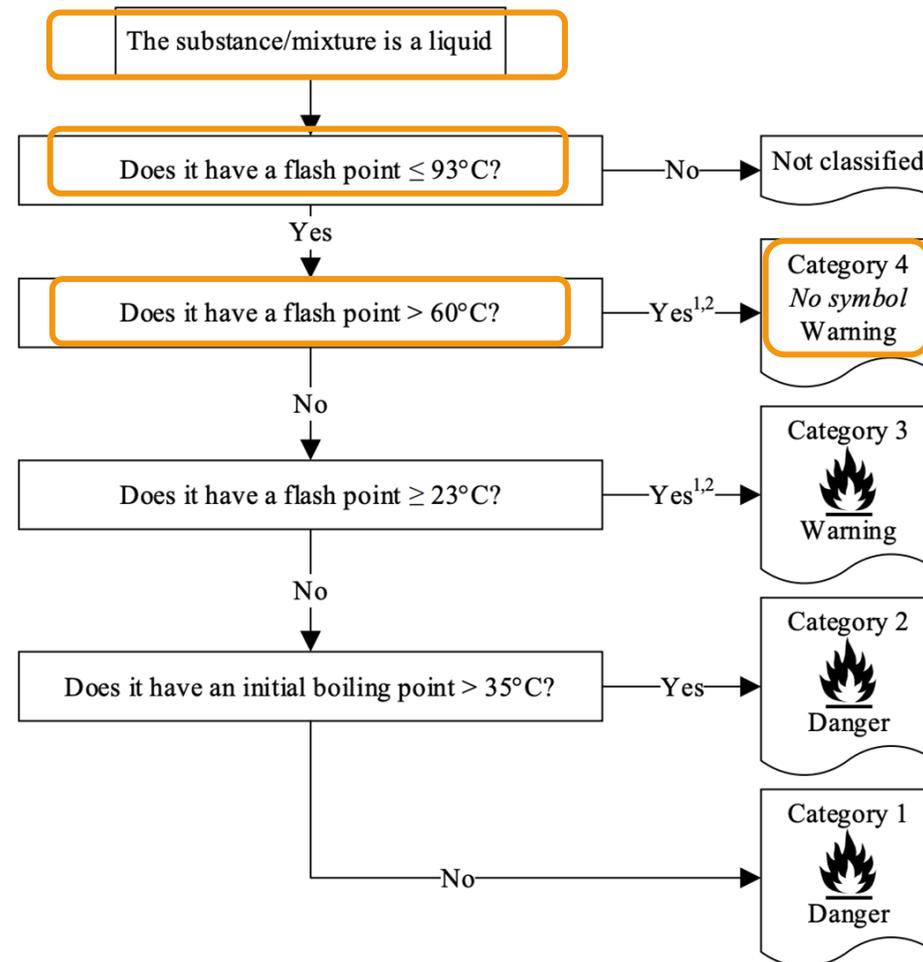
Formaldehyde 37%
CAS N 50-00-0
Flash point: 83°C
Initial boiling point: 98°C

Flammable Liquids
Classification: ?

ACTIVITY

Classification exercise - Flammable Liquids

Decision logic 2.6 for flammable liquids



Formaldehyde 37%
CAS N 50-00-0
Flash point: 83°C
Initial boiling point: 98°C

Flammable Liquids
Classification: Category 4

PHYSICAL HAZARDS

- **Part 2 of the Purple Book** outlines the criteria and methods for the classification of physical hazards.
- These definitions, test methods, and the classification criteria are based on prior harmonization efforts for transport, and expanded to include workplace safety, environmental protection, and consumer safety.
- The physical states (gas, liquid, solid) and certain properties resulting from specific chemical reactions are considered in hazard classes definitions and criteria.

HEALTH HAZARDS

- **Part 3 of the Purple Book** outlines the criteria for the classification of health hazards.
- The GHS **does NOT establish uniform testing methods or mandatory testing for studying health effects.**
- To **avoid duplicate testing in animals**, it proposes using published data, provided it originates from scientifically sound methods and has been validated according to international procedures.
- For some hazard classes, criteria are clear enough to allow self-classification (e.g. Acute toxicity). For others, **criteria are semi-quantitative or qualitative and require expert judgement** to interpret the data for classification (e.g. Carcinogenicity).

HEALTH HAZARDS

- For a chemical to cause an adverse effect on human health, it must interact with the body, this is called **exposure**. A chemical can cause adverse effects by entering the body through different routes of exposure:
 - Ingestion (via the digestive tract), referred to as the **oral**
 - absorption (through the skin), referred to as the **dermal** or cutaneous
 - inhalation (via the respiratory tract), referred to as the **inhalation**
- Exposure can be **acute** (occurring over a short duration) or **chronic** (lasting for a prolonged period)
- The effects may be immediate or delayed, and depend on the exposure conditions. The effects caused by acute or chronic exposure are often different for the same chemical.

Hazardous properties and classification

Classification process - Health hazards - Acute toxicity

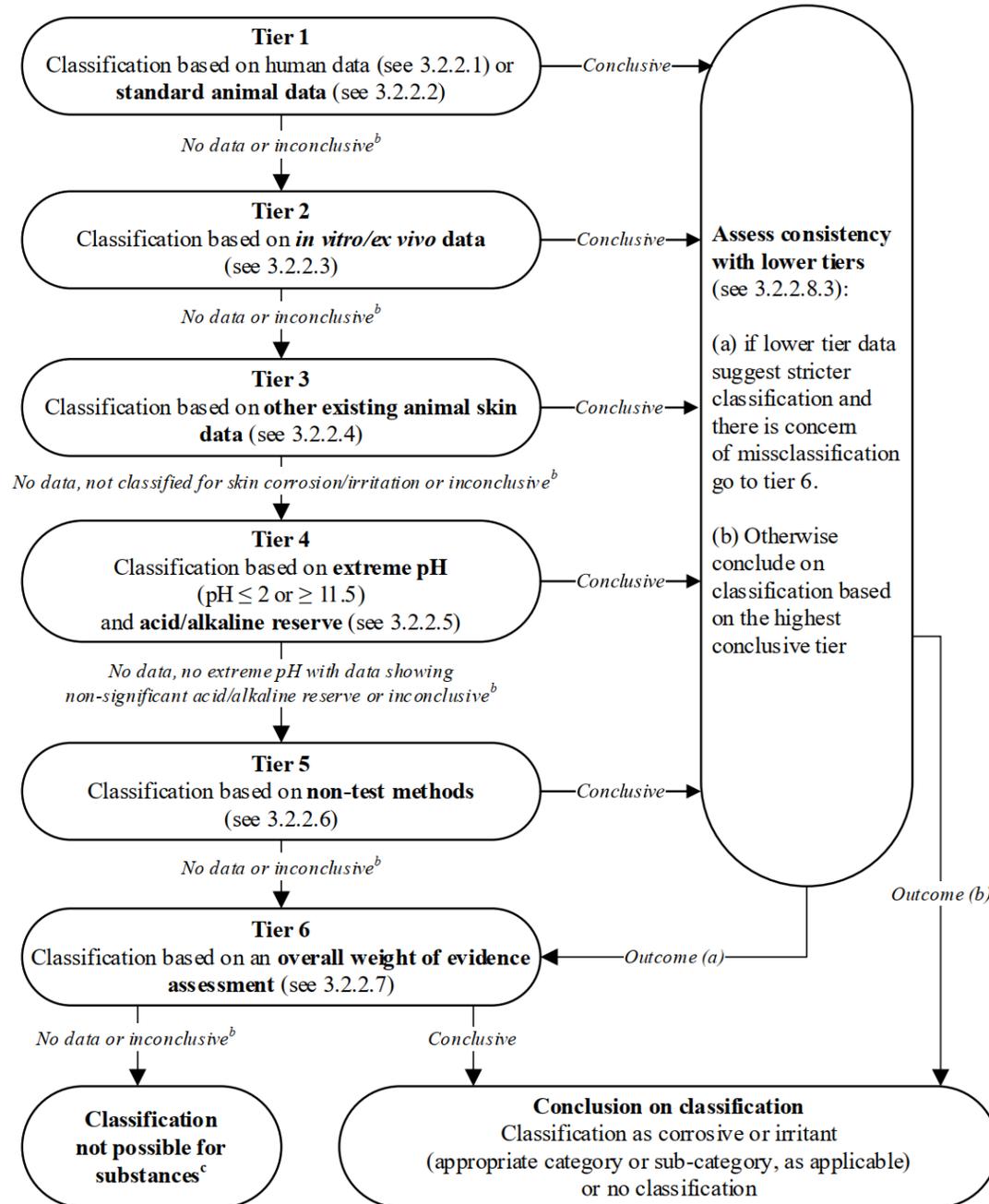
Table 3.1.1: Acute toxicity estimate (ATE) values and criteria for acute toxicity hazard categories

Exposure route	Category 1	Category 2	Category 3	Category 4	Category 5
Oral (mg/kg bodyweight) <i>See notes (a) and (b)</i>	$ATE \leq 5$	$5 < ATE \leq 50$	$50 < ATE \leq 300$	$300 < ATE \leq 2000$	$2000 < ATE \leq 5000$ <i>See detailed criteria in note (g)</i>
Dermal (mg/kg bodyweight) <i>See notes (a) and (b)</i>	$ATE \leq 50$	$50 < ATE \leq 200$	$200 < ATE \leq 1000$	$1000 < ATE \leq 2000$	
Gases (ppmV) <i>See notes (a), (b) and (c)</i>	$ATE \leq 100$	$100 < ATE \leq 500$	$500 < ATE \leq 2500$	$2500 < ATE \leq 20000$	<i>See detailed criteria in note (g)</i>
Vapours (mg/l) <i>See notes (a), (b), (c), (d) and (e)</i>	$ATE \leq 0.5$	$0.5 < ATE \leq 2.0$	$2.0 < ATE \leq 10.0$	$10.0 < ATE \leq 20.0$	
Dusts and Mists (mg/l) <i>See notes (a), (b), (c) and (f)</i>	$ATE \leq 0.05$	$0.05 < ATE \leq 0.5$	$0.5 < ATE \leq 1.0$	$1.0 < ATE \leq 5.0$	

Figure 3.6.1: Hazard categories for carcinogens

<u>CATEGORY 1:</u>	Known or presumed human carcinogens
	The placing of a substance in Category 1 is done on the basis of epidemiological and/or animal data. An individual substance may be further distinguished:
Category 1A:	Known to have carcinogenic potential for humans; the placing of a substance is largely based on human evidence.
Category 1B:	Presumed to have carcinogenic potential for humans; the placing of a substance is largely based on animal evidence.
	Based on strength of evidence together with additional considerations, such evidence may be derived from human studies that establish a causal relationship between human exposure to a substance and the development of cancer (known human carcinogen). Alternatively, evidence may be derived from animal experiments for which there is sufficient evidence to demonstrate animal carcinogenicity (presumed human carcinogen). In addition, on a case by case basis, scientific judgement may warrant a decision of presumed human carcinogenicity derived from studies showing limited evidence of carcinogenicity in humans together with limited evidence of carcinogenicity in experimental animals.
	Classification: Category 1 (A and B) Carcinogen
<u>CATEGORY 2:</u>	Suspected human carcinogens
	The placing of a substance in Category 2 is done on the basis of evidence obtained from human and/or animal studies, but which is not sufficiently convincing to place the substance in Category 1. Based on strength of evidence together with additional considerations, such evidence may be from either limited evidence of carcinogenicity in human studies or from limited evidence of carcinogenicity in animal studies.
	Classification: Category 2 Carcinogen

Figure 3.2.1: Application of the tiered approach for skin corrosion and irritation^a



3.2.2 Classification criteria for substances

Substances can be allocated to one of the following three categories within this hazard class:

(a) Category 1 (skin corrosion)

This category may be further divided into up to three sub-categories (1A, 1B and 1C) which can be used by those authorities requiring more than one designation for corrosivity.

Corrosive substances should be classified in Category 1 where subcategorization is not required by a competent authority or where data are not sufficient for subcategorization.

When data are sufficient, and where required by a competent authority, substances may be classified in one of the three sub-categories 1A, 1B or 1C.

(b) Category 2 (skin irritation)

(c) Category 3 (mild skin irritation)

This category is available for those authorities that want to have more than one skin irritation category (e.g. for classifying pesticides).

Hazardous properties and classification

Classification process - Environmental hazards

ENVIRONMENTAL HAZARDS

- **Part 4 of the Purple Book** outlines the criteria for the classification of environmental hazards.
- The GHS **does NOT establish uniform testing methods or mandatory testing for studying environmental effects.**
- Environmental hazards are divided in:
 - Hazardous to the atmospheric system
 - Hazardous to the aquatic environment
 - Acute hazards
 - Chronic hazards

Classified separately

Table 4.1.1: Categories for substances hazardous to the aquatic environment (Note 1)

(a) Short-term (acute) aquatic hazard

Category Acute 1: (Note 2)

96 hr LC ₅₀ (for fish)	≤ 1 mg/l and/or
48 hr EC ₅₀ (for crustacea)	≤ 1 mg/l and/or
72 or 96hr ErC ₅₀ (for algae or other aquatic plants)	≤ 1 mg/l (Note 3)
Category Acute 1 may be subdivided for some regulatory systems to include a lower band at L(E)C ₅₀ ≤ 0.1 mg/l	

Category Acute 2:

96 hr LC ₅₀ (for fish)	> 1 but ≤ 10 mg/l and/or
48 hr EC ₅₀ (for crustacea)	> 1 but ≤ 10 mg/l and/or
72 or 96hr ErC ₅₀ (for algae or other aquatic plants)	> 1 but ≤ 10 mg/l (Note 3)

Category Acute 3:

96 hr LC ₅₀ (for fish)	> 10 but ≤ 100 mg/l and/or
48 hr EC ₅₀ (for crustacea)	> 10 but ≤ 100 mg/l and/or
72 or 96hr ErC ₅₀ (for algae or other aquatic plants)	> 10 but ≤ 100 mg/l (Note 3)

Some regulatory systems may extend this range beyond an L(E)C₅₀ of 100 mg/l through the introduction of another category.

Hazardous properties and classification

Classification process - Environmental hazards - Chronic hazards

ENVIRONMENTAL HAZARDS

- The classification criteria for chronic hazards to the aquatic environment follow a **sequential approach based on the available data**:
 - Use chronic aquatic toxicity test data (if available);
 - If not, combine acute toxicity data with information on degradability and bioaccumulation

ACTIVITY



ACTIVITY

Hazard classification and categorization

TRUE OR FALSE?

- Acute toxicity is the name of a health hazard class



ACTIVITY

Hazard classification and categorization

TRUE OR FALSE?

- Acute toxicity is the name of a health hazard class - **TRUE**



ACTIVITY

Hazard classification and categorization

TRUE OR FALSE?

- Flammability classification does not distinguish between gases, liquids and solids.



ACTIVITY

Hazard classification and categorization

TRUE OR FALSE?

- Flammability classification does not distinguish between gases, liquids and solids. - **FALSE**

There are different hazard classes for each of the physical states: Flammable gases, Flammable liquids and Flammable solids, which describe specific classification criteria for every one.



ACTIVITY

Hazard classification and categorization

TRUE OR FALSE?

- In hazard categorization, number 1 is the most hazardous category.



ACTIVITY

Hazard classification and categorization

TRUE OR FALSE?

- In hazard categorization, number 1 is the most hazardous category. - **TRUE**



ACTIVITY

Hazard classification and categorization

TRUE OR FALSE?

- If the chemical is classified as hazardous for a specific hazard class, the classification process leads to an assigned hazard category for that hazard class



ACTIVITY

Hazard classification and categorization

TRUE OR FALSE?

- If the chemical is classified as hazardous for a specific hazard class, the classification process leads to an assigned hazard category for that hazard class - **TRUE**



ACTIVITY

Hazard classification and categorization

TRUE OR FALSE?

- All hazard classes have four possible categories.



ACTIVITY

Hazard classification and categorization

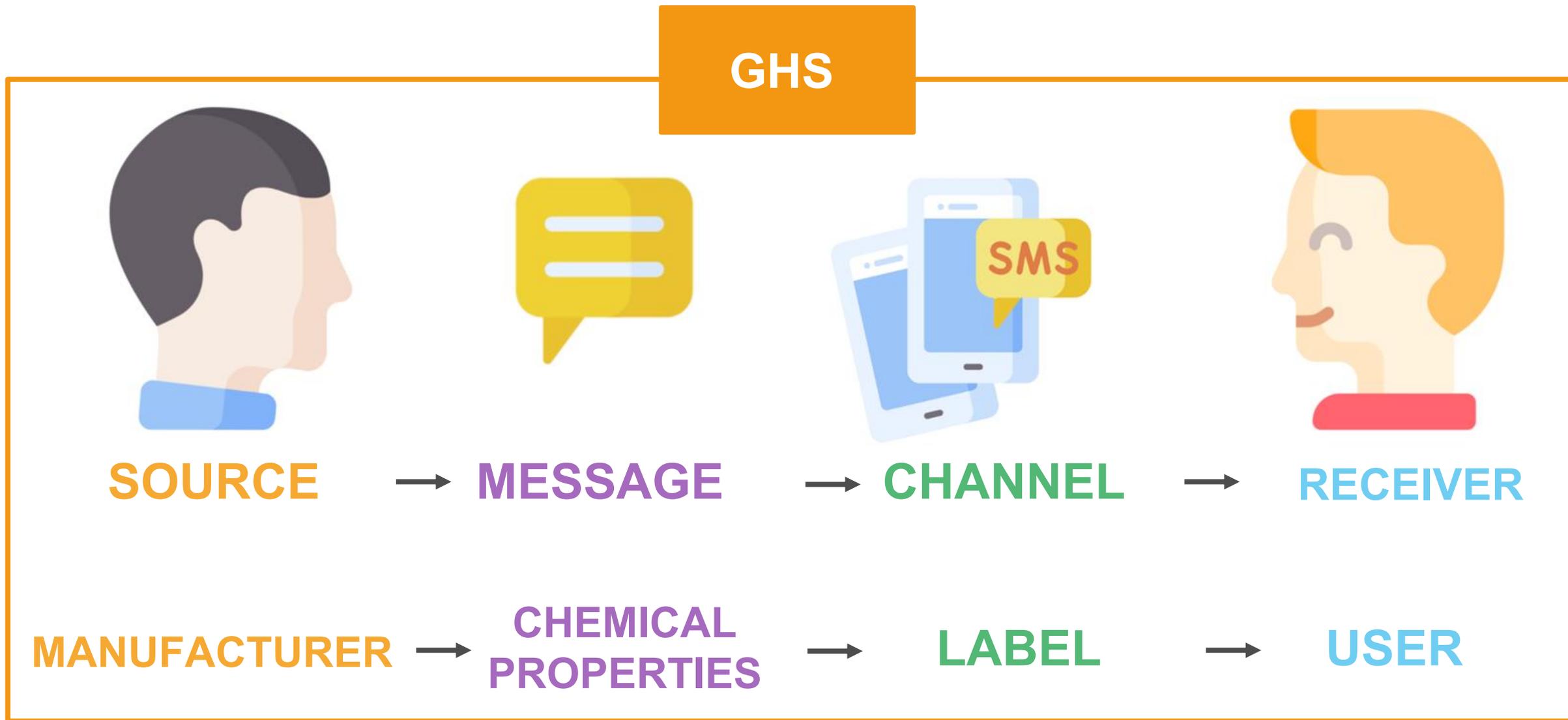
TRUE OR FALSE?

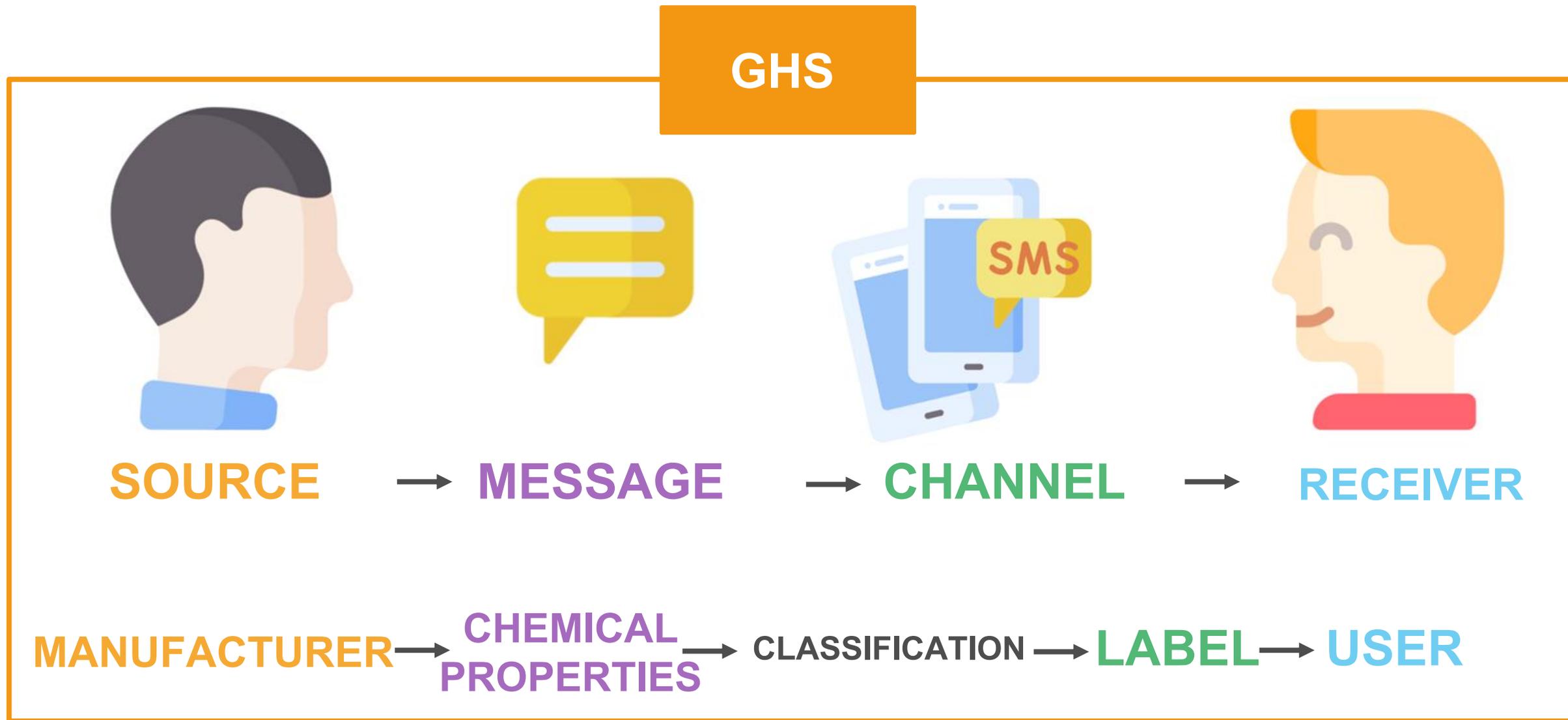
- All hazard classes have four possible categories. - **FALSE**
The number of hazard categories depends on the particular hazard class, having some of them only one possible category and others with different possibilities.





Labelling as a
classification
output





Labelling as a classification output

Connection between classification and labelling

LABEL ELABORATION

- The Purple Book includes **tables that state how the labelling elements should be assigned** according to classification results.
- There is **one table for each hazard class** that includes which pictogram, signal word and hazard statement should be selected for each possible category within that hazard class.

Formaldehyde

37 %

CAS N° 50-00-0

BATCH N° 132/2025

1 Liter

PICTOGRAMS



DANGER

SIGNAL WORD

HAZARD STATEMENTS

Combustible liquid
Harmful if swallowed
Fatal if inhaled
Causes severe skin burns and eye damage
May cause an allergic skin reaction
May cause cancer
Suspected of causing genetic defects
Toxic to aquatic life

Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
Do not breathe vapours.
Do not get in eyes, on skin, or on clothing.
Wash hands thoroughly after handling.
Wear protective gloves/protective clothing/eye protection/face protection.
In case of inadequate ventilation wear respiratory protection.
IF SWALLOWED: rinse mouth. Do not induce vomiting.
IF ON SKIN: take off immediately all contaminated clothing. Immediately rinse with water for several minutes.
IF INHALED: remove person to fresh air and keep comfortable for breathing.
IF IN EYES: immediately rinse with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
Get emergency medical help immediately.
If skin irritation or rash occurs: get medical help.
Avoid release to the environment.
Store in a well-ventilated place. Keep container tightly closed.
Dispose of contents/container in accordance with local regulation.

PRECAUTIONARY STATEMENTS

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EXAMPLE

Formaldehyde Classification

HAZARD CLASS	CLASSIFICATION
Flammable liquids	Category 4
Acute Toxicity, oral	Category 4
Acute Toxicity, inhalation	Category 2
Skin Corrosion / Irritation	Category 1
Skin Sensitization	Category 1A
Germ Cells Mutagenicity	Category 2
Carcinogenicity	Category 1B
Hazardous to the aquatic environment (acute)	Category 2

ACTIVITY



ACTIVITY

Pictogram, signal word and hazard statement assignment - Flammable liquids

- For the hazard class Flammable Liquids, the GHS specifies the labelling elements in Table 2.6.2 of the GHS (Part 2 Physical hazards, Chapter 6 Flammable liquids):

Table 2.6.2: Label elements for flammable liquids



	Category 1	Category 2	Category 3	Category 4
Symbol	Flame	Flame	Flame	<i>No symbol</i>
Signal word	Danger	Danger	Warning	Warning
Hazard statement	Extremely flammable liquid and vapour	Highly flammable liquid and vapour	Flammable liquid and vapour	Combustible liquid

- Which elements correspond to a flammable liquid classified as category 4?

ACTIVITY

Pictogram, signal word and hazard statement assignment - Flammable liquids

- For the hazard class Flammable Liquids, the GHS specifies the labelling elements in Table 2.6.2 of the GHS (Part 2 Physical hazards, Chapter 6 Flammable liquids): Which elements correspond to a flammable liquid classified as category 4?

Table 2.6.2: Label elements for flammable liquids



	Category 1	Category 2	Category 3	Category 4
Symbol	Flame	Flame	Flame	<i>No symbol</i>
Signal word	Danger	Danger	Warning	Warning
Hazard statement	Extremely flammable liquid and vapour	Highly flammable liquid and vapour	Flammable liquid and vapour	Combustible liquid

- Which elements correspond to a flammable liquid classified as category 4?

EXAMPLE

Pictogram, signal word and hazard statement assignment - Flammable Carcinogenicity

- The assignment of the corresponding labelling elements for each category of Carcinogenicity is presented in Table 3.6.2 of the Purple Book (Part 3 Health hazards, Chapter 6 Carcinogenicity).

Table 3.6.2: Label elements for carcinogenicity



	Category 1 (Category 1A, 1B)	Category 2
Symbol	Health hazard	Health hazard
Signal word	Danger	Warning
Hazard statement	May cause cancer (state route of exposure if it is conclusively proven that no other routes of exposure cause the hazard)	Suspected of causing cancer (state route of exposure if it is conclusively proven that no other routes of exposure cause the hazard)

- Which elements correspond to a carcinogenic classified as category 1B as formaldehyde is?

ACTIVITY

Pictogram, signal word and hazard statement assignment - Flammable Carcinogenicity

- The assignment of the corresponding labelling elements for each category of Carcinogenicity is presented in Table 3.6.2 of the Purple Book (Part 3 Health hazards, Chapter 6 Carcinogenicity).

Table 3.6.2: Label elements for carcinogenicity



	Category 1 (Category 1A, 1B)	Category 2
Symbol	Health hazard	Health hazard
Signal word	Danger	Warning
Hazard statement	May cause cancer (state route of exposure if it is conclusively proven that no other routes of exposure cause the hazard)	Suspected of causing cancer (state route of exposure if it is conclusively proven that no other routes of exposure cause the hazard)

- Which elements correspond to a carcinogenic classified as category 1B as formaldehyde is?

ACTIVITY

Labelling exercise

Find the labelling elements in the formaldehyde label, corresponding to its classification for Flammable liquids in cat.4 and Carcinogenicity in cat.1B.

Formaldehyde 37 %

CAS N° 50-00-0

BATCH N° 132/2025

1 Liter



DANGER

Combustible liquid
Harmful if swallowed
Fatal if inhaled
Causes severe skin burns and eye damage
May cause an allergic skin reaction
May cause cancer
Suspected of causing genetic defects
Toxic to aquatic life

Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
Do not breathe vapours.
Do not get in eyes, on skin, or on clothing.
Wash hands thoroughly after handling.
Wear protective gloves/protective clothing/eye protection/face protection.
In case of inadequate ventilation wear respiratory protection.
IF SWALLOWED: rinse mouth. Do not induce vomiting.
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IF INHALED: remove person to fresh air and keep comfortable for breathing.
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Get emergency medical help immediately.
If skin irritation or rash occurs: get medical help.
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Dispose of contents/container in accordance with local regulation.

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ACTIVITY

Labelling exercise

Find the labelling elements in the formaldehyde label, corresponding to its classification for Flammable liquids in cat.4 and Carcinogenicity in cat.1B.

Formaldehyde 37 %

CAS N° 50-00-0

BATCH N° 132/2025

1 Liter



DANGER

Combustible liquid
Harmful if swallowed
Fatal if inhaled
Causes severe skin burns and eye damage
May cause an allergic skin reaction
May cause cancer
~~Suspected of causing genetic defects~~
Toxic to aquatic life

Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
Do not breathe vapours.
Do not get in eyes, on skin, or on clothing.
Wash hands thoroughly after handling.
Wear protective gloves/protective clothing/eye protection/face protection.
In case of inadequate ventilation wear respiratory protection.
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Labelling as a classification output

Multiple hazards and precedence of hazard information

LABELLING ELEMENTS IN CHEMICALS WITH MORE THAN ONE HAZARD

- For **chemicals that have more than one hazard**, section 1.4.10.5.3 of the Purple Book provides rules for assigning labelling elements, including how to choose a single signal word.
- **Example – Formaldehyde:**
 - The Flammable liquids and Carcinogenicity classifications lead to the assignment of two different signal words, WARNING and DANGER, according to tables 2.6.2 and 3.6.2 of the GHS.
 - **The selected signal word must be, in all cases, the word that expresses the highest hazard degree.**
 - In this case, the corresponding signal word is DANGER.

ACTIVITY



ACTIVITY

Labelling as a classification output

TRUE OR FALSE?

- In the case of a chemical with more than one hazard:
The selected signal word must be, in all cases, the word that expresses the highest hazard degree.



ACTIVITY

Labelling as a classification output

TRUE OR FALSE?

- In the case of a chemical with more than one hazard:
The selected signal word must be, in all cases, the word that expresses the highest hazard degree. - **TRUE**



ACTIVITY

Hazard classification and categorization

TRUE OR FALSE?

- When the same pictogram is assigned by more than one hazard, it must be included in the label as many times as the number of hazards requires it.



ACTIVITY

Hazard classification and categorization

TRUE OR FALSE?

- When the same pictogram is assigned by more than one hazard, it must be included in the label as many times as the number of hazards requires it.

FALSE: Each symbol must appear in the label not more than once, even in cases where more than one hazard requires it.



ACTIVITY

Hazard classification and categorization

TRUE OR FALSE?

- Hazard statements can be chosen between the ones assigned according to the classification, prioritizing those expressing the most dangerous properties of the chemical.



ACTIVITY

Hazard classification and categorization

TRUE OR FALSE?

- Hazard statements can be chosen between the ones assigned according to the classification, prioritizing those expressing the most dangerous properties of the chemical.

FALSE: All the assigned hazard statements must be included in the label without omissions.



ACTIVITY

Hazard classification and categorization

TRUE OR FALSE?

- The assigned pictograms must be included in the label, following the GHS criteria for labelling elements assignment when chemicals present more than one hazard.



ACTIVITY

Hazard classification and categorization

TRUE OR FALSE?

- The assigned pictograms must be included in the label, following the GHS criteria for labelling elements assignment when chemicals present more than one hazard. - **TRUE**



PRECAUTIONARY STATEMENTS

- The Purple Book presents **five types of precautionary statements in Annex 3**:
 - **general** statements (mainly for consumer products);
 - those related to **prevention**;
 - those related to **response**;
 - those related to **storage**; and
 - those related to **disposal**.
- Precautionary statements are assigned based on the classification outcome of each hazard class. The Purple Book includes tables indicating all five precautionary statements for each hazard class and category.

**SKIN CORROSION/IRRITATION
(CHAPTER 3.2)**

Hazard category	Symbol		Signal word	Hazard statement
1, 1A, 1B, 1C	Corrosion		Danger	H314 Causes severe skin burns and eye damage

Precautionary statements			
Prevention	Response	Storage	Disposal
<p>P260 Do not breathe dusts or mists. <i>– if inhalable particles of dusts or mists may occur during use.</i></p> <p>P264 Wash hands [and...] thoroughly after handling. <i>- text in square brackets to be used when the manufacturer/supplier or the competent authority specify other parts of the body to be washed after handling.</i></p> <p>P280 Wear protective gloves/protective clothing/eye protection/face protection. Manufacturer/supplier or the competent authority may further specify type of equipment where appropriate.</p>	<p>P301 + P330 + P331 IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.</p> <p>P302 + P361 + P354 IF ON SKIN: Take off immediately all contaminated clothing. Immediately rinse with water for several minutes.</p> <p>P363 Wash contaminated clothing before reuse.</p> <p>P304 + P340 IF INHALED: Remove person to fresh air and keep comfortable for breathing.</p> <p>P316 Get emergency medical help immediately. Competent authority or manufacturer / supplier may add, ‘Call’ followed by the appropriate emergency telephone number, or the appropriate emergency medical help provider, for example, a Poison Centre, Emergency Centre or Doctor.</p> <p>P321 Specific treatment (see ... on this label) ... Reference to supplemental first aid instruction. Manufacturer/supplier or the competent authority may specify a cleansing agent if appropriate.</p> <p>P305 + P354 + P338 IF IN EYES: Immediately rinse with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.</p>	<p>P405 Store locked up.</p>	<p>P501 Dispose of contents/container to... ... in accordance with local/regional/national/international regulations (to be specified). Manufacturer/supplier or the competent authority to specify whether disposal requirements apply to contents, container or both.</p>

ACTIVITY

Labelling exercise

Find the precautionary statements in the formaldehyde label, corresponding to its classification for Skin Corrosion / Irritation for Category 1:

Formaldehyde 37 %

CAS N° 50-00-0

BATCH N° 132/2025

1 Liter



DANGER

Combustible liquid
Harmful if swallowed
Fatal if inhaled
Causes severe skin burns and eye damage
May cause an allergic skin reaction
May cause cancer
Suspected of causing genetic defects
Toxic to aquatic life

Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
Do not breathe vapours.
Do not get in eyes, on skin, or on clothing.
Wash hands thoroughly after handling.
Wear protective gloves/protective clothing/eye protection/face protection.
In case of inadequate ventilation wear respiratory protection.
IF SWALLOWED: rinse mouth. Do not induce vomiting.
IF ON SKIN: take off immediately all contaminated clothing. Immediately rinse with water for several minutes.
IF INHALED: remove person to fresh air and keep comfortable for breathing.
IF IN EYES: immediately rinse with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
Get emergency medical help immediately.
If skin irritation or rash occurs: get medical help.
Avoid release to the environment.
Store in a well-ventilated place. Keep container tightly closed.
Dispose of contents/container in accordance with local regulation.

ACTIVITY

Labelling exercise

Find the precautionary statements in the formaldehyde label, corresponding to its classification for Skin Corrosion / Irritation for Category 1:

Formaldehyde 37 %

CAS N° 50-00-0

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Fatal if inhaled
Causes severe skin burns and eye damage
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In case of inadequate ventilation wear respiratory protection.
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Get emergency medical help immediately.
If skin irritation or rash occurs: get medical help.
Avoid release to the environment.
Store in a well-ventilated place. Keep container tightly closed.
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www.chemcomdac.com.ar

Labelling as a classification output

Codes in Hazard and Precautionary statements

CODES

- The GHS assigns an **alphanumeric code** (a letter and three numbers), to each hazard statement and to each precautionary statement.
- These codes are **for reference purposes only**, they are not part of the statements and must not be used as a replacement under any circumstances.

SKIN CORROSION/IRRITATION
(CHAPTER 3.2)

Hazard category	Symbol	Signal word	Hazard statement
1, 1A, 1B, 1C	Corrosion	Danger	H314 Causes severe skin burns and eye damage

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Labelling as a classification output

Codes in Hazard and Precautionary statements

CODES Hazard Statements

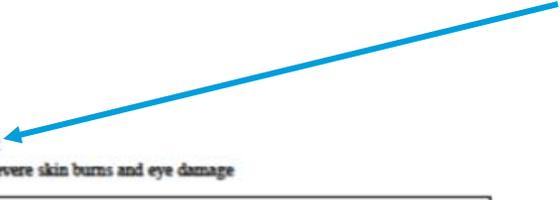
- The GHS assigns an **alphanumeric code** (a letter and three numbers), to each hazard statement and to each precautionary statement.
- The letter **H** (from “Hazard statement”).
- A number that designates the type of hazard, based on the numbering system in the GHS:
 - **2** for physical hazards.
 - **3** for health hazards.
 - **4** for environmental hazards.
- Two additional numbers that correspond to the sequential numbering of hazards arising from the intrinsic properties of the substance or mixture.

SKIN CORROSION/IRRITATION
(CHAPTER 3.2)

Hazard category	Symbol	Signal word	Hazard statement
1, 1A, 1B, 1C	 Corrosion	Danger	H314 Causes severe skin burns and eye damage

Precautionary statements

Prevention	Response	Storage	Disposal



Labelling as a classification output

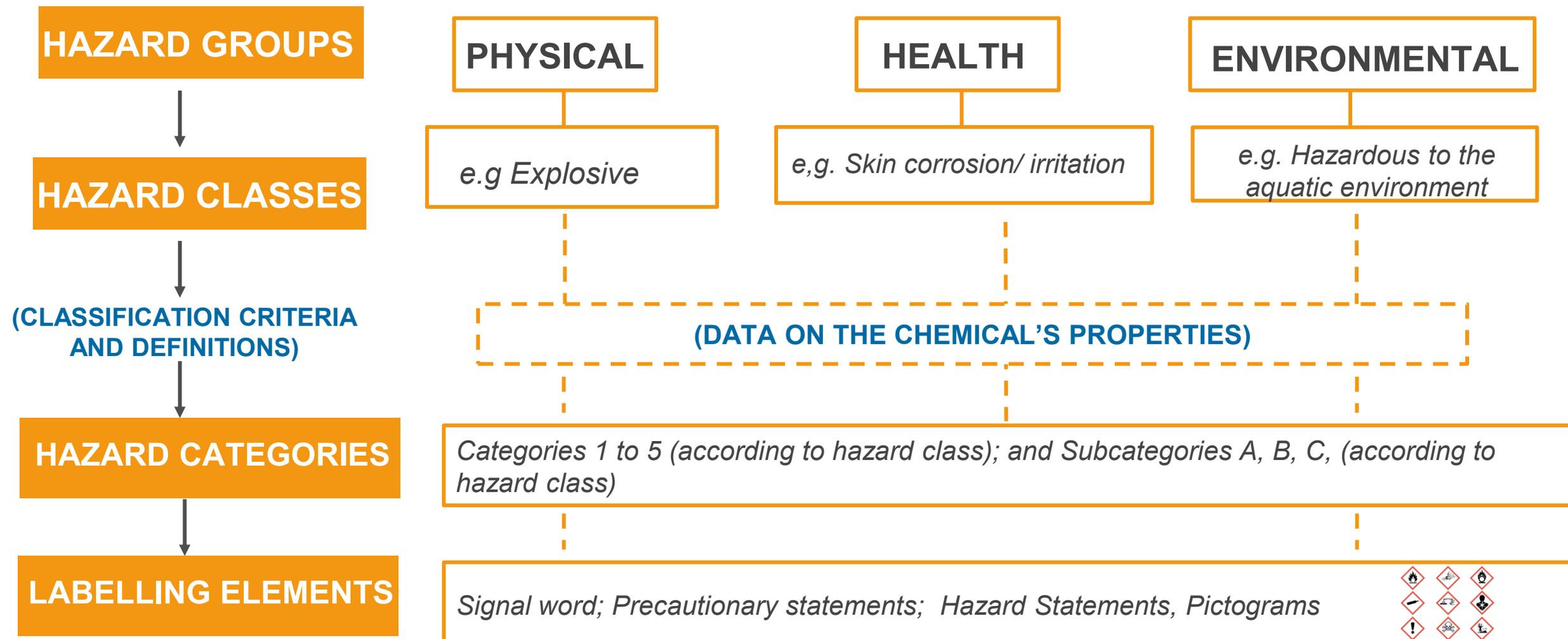
Wrapping up

The GHS establishes:

- definitions for each hazard class, and
- criteria for classifying a chemical for each hazard class
- **the labelling elements that must be included on labels based on the resulting classification.**

Hazardous properties and classification

Classification process



DATA IN THE GHS

unitar course on
Introduction to the GHS

- The GHS is a dynamic system that **does not rely on a single source of data.**
- Data used must be **reliable, high-quality**, and sourced from scientifically **recognized entities**
- **A chemical might be assigned two different classifications, both correct.** This allows scientific advancements and technological improvements to provide new data and enable classification updates
- **Data used for classification is not part of GHS harmonization process:** only classification and labelling criteria are included are harmonized.

KICK OFF QUESTIONS

Let's review



- Do GHS labelling elements communicate risks for specific uses of a chemical?



- Do GHS labelling elements communicate risks for specific uses of a chemical? **NO**



- Do GHS labelling elements communicate risks for specific uses of a chemical? **NO**
- Can GHS labelling elements be used regardless of classification result?



- Do GHS labelling elements communicate risks for specific uses of a chemical? **NO**
- Can GHS labelling elements be used regardless of classification result? **NO**



- Do GHS labelling elements communicate risks for specific uses of a chemical? **NO**
- Can GHS labelling elements be used regardless of classification result? **NO**
- Do GHS classification criteria ever require chemical testing?



- Do GHS labelling elements communicate risks for specific uses of a chemical? **NO**
- Can GHS labelling elements be used regardless of classification result? **NO**
- Do GHS classification criteria ever require chemical testing? **NO**



Thank You!

We hope you enjoyed the presentation

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