safe work australia

CONSULTATION PAPER

UPDATING THE GHS UNDER THE MODEL WHS LAWS

JULY 2019

1. BACKGROUND

Australia's implementation of the GHS

The Globally Harmonized System of Classification and Labelling of Chemicals (GHS) was developed by the United Nations (UN) to provide a single, globally harmonised system for the classification of chemicals and communication of hazards through labels and safety data sheets.

Australia implemented the 3rd revised edition of the GHS (GHS 3) under the model Work Health and Safety (WHS) laws on 1 January 2012, with a transition period of 5 years. The application of the GHS in Australia is limited to workplace hazardous chemicals and does not extend to consumer products, cosmetics, toiletries, human therapeutic goods, food and beverages, tobacco or tobacco products.

GHS 3 became mandatory in most states and territories on 1 January 2017, marking a significant step towards improving Australia's system of classification and labelling of workplace chemicals to take advantage of the improvements and advancements of the GHS.

More information on Australia's implementation of the GHS can be found on Safe Work Australia's website.

Global implementation of the GHS

The GHS is implemented in over 60 countries, including the European Union, USA, Canada, China, Japan, Singapore, Indonesia, Malaysia, New Zealand, South Korea and Thailand. However, the edition of the GHS that is adopted varies across the globe.

The European Union has commenced transitioning to GHS 7, which will be complete in October 2020. The USA and Canada have indicated they will soon be moving to GHS 7, with implementation planned in these economies around 2020-21. Members of the Asia-Pacific Economic Co-operation have all indicated intentions to move to GHS 7 in the near future.

2. PURPOSE OF CONSULTATION

Safe Work Australia is undertaking work to move from GHS 3 to GHS 7 to ensure Australia's requirements for workplace hazardous chemicals reflect the most up to date approach and remain aligned with our key chemicals trading partners.

Your feedback will help Safe Work Australia identify the best way to implement an update to the GHS under the model WHS laws. It is important that updates to Australia's adoption of the GHS align as much as possible with Australia's international trading partners, to ensure a smooth transition and minimise impacts to businesses.

In particular, we would like to hear from manufacturers, importers, suppliers and users of hazardous chemicals in a workplace about their views on moving to GHS 7.

3. SCOPE

The scope of this work is confined to Australia moving to a revised edition of the GHS as referenced under the model WHS laws—that is, a direct update of GHS 3 to GHS 7. The scope includes:

- Adoption of GHS 7 to replace GHS 3 under the model WHS laws.
- Consequential amendments to the model WHS regulations to provide greater clarity to support the implementation of the GHS.
- Transitional arrangements to facilitate implementation of GHS 7.

The scope does not include changes to:

- obligations on duty holders to classify, label and produce SDS for workplace hazardous chemicals
- duty holder responsibilities such as risk management, registers, manifests and emergency plans
- Schedule 6, 7, 8 and 9 under the model WHS regulations, except for consequential amendments needed to ensure consistency with the adoption of GHS 7, or
- the application of the GHS under the model WHS laws to various sectors, such as consumer products, agricultural and veterinary chemicals or human therapeutics.

4. OVERVIEW OF CHANGES FROM GHS 3 TO GHS 7

To help you provide feedback, a summary of the main changes between GHS 3 and GHS 7 is at Attachment A.

The main changes are:

- The addition of a new hazard class for ‘desensitized explosives’ (first included in GHS 6). This change is likely to affect explosives manufacturers/importers and nitrocellulose used in lacquers.
- The addition of a new hazard category (Category 3) to classify non-flammable aerosols (first included in GHS 4). This change will primarily affect manufacturers and importers of aerosols, but will clarify that non-flammable aerosols are not classified in the gases under pressure hazard class.
- Amendments to the classification criteria for flammable gases (finalised in GHS 7).

  The revised criteria set out Category 1A, 1B and Category 2 flammable gases.

  a. Category 1A reflects the previous Category 1 flammable gases, with the inclusion of additional categories for pyrophoric and chemically unstable gases.

     i. Pyrophoric gases classification will apply to a limited number of gases already classified as flammable gases, including arsine, germane, diborane, phosphine, and silane and potentially mixtures containing these substances.

     ii. Chemically unstable gases are classified as flammable gases Category 1 in GHS 3 and will need to be additionally classified in this category. Two major chemically unstable gases are acetylene and ethylene oxide; however other gases and mixtures may also meet the criteria for classification in this category.

b. Category 1B is a new sub-category for gases which meet the flammability criteria for Category 1A, but which are not pyrophoric nor chemically unstable, and which have either a lower flammability limit of more than 6% by volume in air, or a fundamental burning velocity of less than 10cm/s.

    i. Some flammable refrigerant gases are likely to meet the criteria for this category. Where data is not available to support classification in sub-category 1B, the gas will be classified in Category 1A.

c. Category 2 flammable gases remain unchanged from previous editions. Consistent with the current implementation, it is not proposed to adopt this category.

- Revisions to the definitions of some health hazard classes. These definitions were revised to ensure consistency in the way definitions were provided, for example as some definitions were previously taken directly from OECD test guidelines while others were more general. These changes do not affect the scope or classification for these hazard classes.
- Clarifications to the criteria for Serious Eye Damage/Eye irritation Category 2
- Updated precautionary statements to provide greater clarity in their application. These changes make precautionary statements easier for users to read, and easier to use for manufacturer/importers. Instructions for use have also been improved.

    a. For example, the statement P361 "Remove/Take off immediately all contaminated clothing" (GHS 3) has been amended to "Take of immediately all contaminated clothing". In implementation it was found that rather than making a choice between the words 'remove' and 'take off' as was intended, the statement was appearing on some labels verbatim including the back-slashes. Where relevant, the back-slashes, and other optional text have been removed from precautionary statements throughout the GHS.

- Further, GHS 7 provides for greater flexibility in the use of precautionary statements, including combining precautionary statements, and allows for changes to wording of precautionary statements which do not affect the safety message.

5. WHAT WE WOULD LIKE TO KNOW

Transitioning to GHS 7

Moving from GHS 3 to GHS 7 means there will need to be transition arrangements in place so that duty holders have time to meet the new requirements.

The initial transition period for the implementation of the GHS framework from 1 January 2012 to 31 December 2016 gave chemical manufacturers and importers time to reclassify all workplace hazardous chemicals and make necessary changes to product labels and safety data sheets. It also allowed chemicals manufactured or imported before 1 January 2017 to be supplied without needing to meet new GHS labelling requirements. This meant that existing labels on hazardous chemicals which were already in the supply chain were still acceptable for suppliers and end users until stock ran out.

We are interested in your views about the timing of Australia's adoption of GHS 7 to align with our trading partners, and what transitional arrangements are preferred.

CONSULTATION QUESTIONS

1. Noting international movement to adopt GHS 7, when do you think Australia should adopt GHS 7?
2. As the EU transition to GHS 7 finishes in October 2020, should Australia's transition period to GHS 7 begin before October 2020, to ensure that products coming from the EU are accepted in Australia?
3. Noting that the GHS is being continually updated (GHS 8 will be published this year, and GHS 9 in 2021), how long should the transition period to GHS 7 be? For example 12 months, 2 years or longer?
4. What transition arrangements should be applied to minimise the impacts from moving to GHS 7? Some examples are provided below:
    a) A transition period that applies to manufacturers/importers only, with existing labels being acceptable until stock runs out, and end users being able to use existing labelled stock indefinitely.
    b) A staged transition period, such as allowing 12 months for manufacturers/importers to update to the new requirements, and an additional 12 months for suppliers to sell down existing stock. End users would be able to use existing stock for their own use indefinitely, providing it was supplied by the end of the 24 month period.
    c) A transition which applies only to new products or where there is a significant change from GHS 3 to GHS 7 with labels and SDS for existing products being acceptable (regardless of which GHS is used) until the end of the 5 year review cycle for the SDS. For example, a significant change would include updating a product's classification in the hazard classes not included in GHS 3, for example non-flammable aerosols or pyrophoric gases, or updates to ensure it contains correct, current information as required in the regulations. It would not include changes to precautionary statements where the meaning has not changed, consistent with the flexibility provisions in GHS 7. A significant change would not include changes such as updated precautionary statements where the meaning has not changed.[
5. What guidance and/or support can Safe Work Australia provide to ensure you are ready for these changes? For example, online tools, guidance or fact sheets.
6. Beyond a reasonable transition timeframe, are there any other barriers to adopting GHS 7?

Consequential amendments to the model WHS laws

Since the introduction of the model WHS laws, we have received feedback that some minor inconsistencies in Australia's adoption of the GHS creates additional costs for business.

Moving to GHS 7 provides the opportunity to amend the model WHS laws to ensure Australia's adoption of the GHS is consistent with international economies. These proposed amendments are outlined below.

Sub-category 2B eye irritants

The model WHS regulations defines a 'hazardous chemical' as:

> "*a substance, mixture or article that satisfies the criteria for a hazard class in the GHS (including a classification referred to in Schedule 6), but does not include a substance, mixture or article that satisfies the criteria solely for one of the following hazard classes:*
>
> *(a) acute toxicity—oral—category 5;*
>
> *(b) acute toxicity—dermal—category 5;*
>
> *(c) acute toxicity—inhalation—category 5;*
>
> *(d) skin corrosion/irritation—category 3;*
>
> *(e) serious eye damage/eye irritation—category 2B;*
>
> *(f) aspiration hazard—category 2;*
>
> *(g) flammable gas—category 2;*
>
> *(h) acute hazard to the aquatic environment—category 1, 2 or 3;*
>
> *(i) chronic hazard to the aquatic environment—category 1, 2, 3 or 4;*
>
> *(j) hazardous to the ozone layer*."

An issue raised during the implementation of the GHS in Australia has been the treatment of sub-category 2B eye irritants under the definition of 'hazardous chemical'.

Under the building block approach in the GHS, economies can select which hazard classes (for example flammable gases), or hazard category (for example acute toxicity category 5) they adopt. The building block approach does not allow an economy to exclude an individual sub-category from implementation. Rather, economies can select whether sub-categorisation within a hazard category is required. As a general principle, Australia does not require sub-categorisation, but manufacturers/importers may sub-categorise where data is available. This allows maximum flexibility across economies.

The intention of exclusion of sub-category 2B under the definition of a 'hazardous chemical' is that sub-categorisation of category 2 eye irritants was not required, as Category 2A (which is adopted) covers the entire eye irritation spectrum. While the GHS criteria make this clear, the definition, when read in isolation, does not.

As a consequence, we understand that substances classified as Category 2B eye irritants in other GHS countries are not being classified for eye irritation in Australia.

In more detail, if the adverse effect is reversible within 21 days, it is classified Category 2A. If the effect is reversible even in 7 days, it is Category 2B. As a conclusion, if the effect is reversible within 7 days, the substance still needs to be classified as Category 2A or Category 2, as there still is an effect that is reversible within 21 days.

To address this, later revisions of the GHS (including GHS 7) clarified that eye irritants are a single category which can be subdivided into Category 2/2A and 2B, and that Category 2B is contained within Category 2/2A.

We are proposing to remove this ambiguity through adopting GHS 7, which would mean that Category 2 eye irritation is included under the definition of 'hazardous chemical', with sub-categorisation into Category 2A/2B being optional (consistent with the EU implementation) where data is available.

CONSULTATION QUESTIONS

7. Australia's current implementation for Category 2 eye irritants and the exclusion of sub-category 2B is not consistent with the GHS text, or the implementation of the GHS applied by other countries. For consistency with international implementations and the GHS text, it is proposed to clarify this and adopt Category 2, with sub-categorisation into category 2A and 2B being optional. Optional sub-categorisation is consistent with the approach adopted for all other hazard categories, where sub-categorisation is possible.

   Would you support this change?

Ingredient proportions on labels

Schedule 9 to the model Work Health and Safety regulations requires that the label of a hazardous chemical discloses the identity and proportion of each ingredient in the chemical that causes the correct classification of the ingredient in accordance with requirements in Schedule 8.

We have previously received feedback from industry that this requirement leads to additional costs to businesses, as other economies such as the EU and USA do not require this information on a label. Instead, it is acceptable that ingredient proportions are included in the product's safety data sheet.

CONSULTATION QUESTIONS

8. Are there benefits to including ingredient proportions on labels? Given this information is already included in safety data sheets, would there be any negative consequence if this information was not mandatory on a label?

9. Does the requirement to disclose ingredient proportions on the label lead to additional costs for your business?

10. Would you support removing this requirement?

ATTACHMENT A

DETAILED SUMMARY OF AMENDMENTS

GHS 3 TO GHS 7

This Attachment provides a summary of the non-editorial changes from GHS 3 to GHS 7.

AMENDMENTS FROM GHS 3 to GHS 7

Part 2: Physical Hazards

Chapter 2.1 - Explosives

- Division 1.6 explosives are redefined as containing predominantly *"extremely insensitive substances or mixtures…*' instead of '*extremely insensitive detonating substances or mixtures….*"
- A note has been added to clarify that substances and mixtures which are exempted from classification as explosives, but which still have explosive properties, should have this information communicated in the safety data sheet as this must be considered for handling and storage.
- Note 2 has been amended to clarify that some types of explosive substances and mixtures may be classified as desensitized explosives.
- Special provision 347 has been added to the decision logic in Figure 2.1.3 'Procedure for assignment to a division in the class of explosives' to ensure that test series 6 (d) is considered in the decision logic.
- The phrase '*A substance or mixture is not classified as explosive if…'* has been amended to '*The acceptance procedure for the hazard class "Explosives" need not be applied if…*' This amendment reflects that a supplier cannot classify in the class explosives, but must propose the classification to the competent authority.
- Amendments have been made to clarify the use of exothermic decomposition energy and exothermic decomposition temperature to exclude a material from the application of the acceptance procedure.

Chapter 2.2 - Flammable gases

- The criteria for categorising flammable gases have been amended to set out Category 1A, 1B and Category 2 flammable gases.
    - Category 1A reflects the previous Category 1 flammable gases, with the inclusion of the sub-categories for pyrophoric and chemically unstable gases.
    - Category 1B is a new category for gases which meet the flammability criteria for Category 1A, but which are not pyrophoric nor chemically unstable, and which have at least either a lower flammability limit of more than 6% by volume in air, or a fundamental burning velocity of less than 10cm/s.
    - Category 2 flammable gases remain unchanged.

- A Category 1A flammable gas is additionally classified as a chemically unstable gas if it is "able to react explosively even in the absence of air or oxygen"'. Two sub-categories, A and B, are provided for classification for chemically unstable gases.
- A Category 1A flammable gas is additionally classified as a pyrophoric gas if it is "a flammable gas that ignites spontaneously in air at a temperature of 54 ºC or below." In the absence of data on its pyrophoricity, a flammable gas mixture should be classified as a pyrophoric gas if it contains more than 1% (by volume) of pyrophoric component(s).
- Category 1B was added to differentiate lower hazard flammable gases and gas mixtures from conventional flammable gas mixtures, for example products with a lower burning velocity developed by the refrigeration and foam plastics industries.
- The label elements and decision logic for flammable gases have been amended to reflect these changes.
- Guidance on determining flammability for Category 1B has been included to (reference to ISO817: 2014).
- The calculation of the flammability of a gas mixture has been amended to reflect ISO 10156:2010:
    - The equivalency factors (Ki) for the inert gases versus nitrogen have been revised to Ki(Ar)=0.55, Ki(He)=0.9.
    - The Tci coefficients have been revised to Tci H2=5.5%, Tci CH4=8.7%.

      Note that while the equivalency factors have been amended, the formula remains unchanged and classification outcomes should not be affected.
- If a flammable gas or gas mixture is additionally classified in one or more sub-categories, then all relevant classification(s) should be communicated on the safety data sheet and the relevant hazard communication elements included on the label.

Chapter 2.3 - Aerosols

- The heading of Chapter 2.3 has been changed to '*Aerosols'* (replacing '*Flammable aerosols*').
- A new hazard category, Category 3, 'non-flammable aerosols', has been added to classify non-flammable aerosols. This ensures appropriate criteria and hazard communication elements for non-flammable aerosols are provided, as well as consolidating and clarifying the physical hazard classification criteria and hazard communication elements for all aerosols within one chapter of the GHS.
- Category 3 has no pictogram but carries a '*Warning'* signal word and the hazard statement '*Pressurized container: May burst if heated'*. It is noted that aerosols which do not meet the criteria for inclusion in Category 1 or Category 2 (extremely flammable or flammable aerosols) should be classified in Category 3 (non-flammable aerosols).
- The decision logics for flammable aerosols, spray aerosols and foam aerosols have been updated to reflect that where an aerosol does not meet the criteria for Category 1 or 2, it is now to be classified as Category 3, and that amended to clarify the references to flammable components refers to 'by mass'.
- It has been clarified that *aerosols* do not fall additionally within the scope of flammable gases, gases under pressure, flammable liquids, or flammable solids. However, depending on their contents, aerosols may be within the scope of other hazard classes (which includes their labelling elements).

Chapter 2.4 – Oxidizing gases

- The reference to ISO 10156 has been updated to the 2010 version. The example of how to classify an oxidizing gas mixture according to ISO 10156:2010 has been updated accordingly.

Chapter 2.5 – Gases under pressure

- The definition of '*gases under pressure'* has been clarified to "*gases which are contained in a receptacle at a pressure of 200 kPa (gauge) or more at 20° C, or which are liquefied or liquefied and refrigerated."*
- The decision logic for classifying gases under pressure has been updated to reflect the distinction between low pressure liquefied gas and high pressure liquefied gas.

Chapter 2.7 – Flammable solids

- It is clarified that powders of metal or metal alloys are classified as flammable solids when they can be ignited and the reaction spreads over the whole length of a 100mm sample in 10 minutes or less.

Chapter 2.8 – Self-reactive substances and mixtures

- The decision logic for self-reactive substances and mixtures has been amended. The references to '*under confinement'* are now '*under defined confinement'* and '*can it detonate as packaged'* has been revised to '*can it explode as packaged'*. Additional boxes to define a self-reactive substance or mixture into Type F or Type G have also been included to reflect the classification criteria guidance.

Chapter 2.12 - Substances and mixtures which, in contact with water, emit flammable gas

- The classification criteria for Category 3 is changed from '*equal to or greater than 1 litre'* to '*greater than 1 litre'* for consistency with the UN model regulations for the transport of dangerous goods. The decision logic has also been updated to reflect this amendment.

Chapter 2.14 – Oxidizing solids

- The classification criteria for oxidizing solids has been updated to include test O.3 from the UN Manual Tests and Criteria. The decision logic table has been updated to reflect this change.

Chapter 2.15 – Organic peroxides

- The decision logic for organic peroxides has been amended. The references to '*under confinement'* are now '*under defined confinement'* and '*can it detonate as packaged'* has been revised to '*can it explode as packaged'*. Additional boxes to define an organic peroxide into Type F or Type G have also been included to reflect the classification criteria guidance.

Chapter 2.17 - Desensitized explosives

- A new chapter has been added for the new hazard class 'desensitized explosives'. Due to the hazardous physical properties of these substances, their incorporation into the GHS ensures safe handling, storage and transportation.

- Desensitized explosives are solid or liquid explosive substances or mixtures which are phlegmatized to suppress their explosive properties in such a manner that they do not mass explode and do not burn too rapidly, and therefore may be exempted from the hazard class 'explosives'.
- The associated guidance on classification criteria, hazard communication, label elements, and a decision logic diagram has also been included.

Part 3: Health hazards

Chapter 3.1 - Acute toxicity

- Guidance has been added to clarify that if a substance or mixture is classified for more than one route of exposure, then all relevant classifications should be communicated on the safety data sheet and the relevant hazard communication elements should be included on the label.
- The definition of 'acute toxicity' has been revised to now refer to "*serious adverse health effects (i.e., lethality) occurring after a single or short-term oral, dermal or inhalation exposure to a substance or mixture"*. In Table 3.1.1, the acute toxicity estimate values have been revised to identify maximum values and range values. The classification criteria also notes that in cases where data from human experience is also available (e.g. occupational data, epidemiology studies, clinical reports), it should be considered in a weight of evidence approach.

Chapter 3.2 - Skin corrosion/irritation

- The definitions have been amended to remove the 4 hour time limit. The definition of 'skin corrosion' now refers to "*the production of irreversible damage to the skin; namely, visible necrosis through the epidermis and into the dermis occurring after exposure to a substance or mixture"*. The definition of 'skin irritation' has been revised to refer to "*the production of reversible damage to the skin occurring after exposure to a substance or mixture"*.
- The introductory information on classification criteria has been replaced with a short summary of how substances can be allocated to one of the three categories within the hazard class.
- Guidance on how skin corrosion is determined based on animal test data has been revised. Table 3.2.1 has been updated accordingly.
- Guidance on how skin irritation is determined based on animal test data has been revised. Table 3.2.2 has been updated accordingly.
- The figure showing the tiered approach to evaluating information has been amended for consistency with other changes and further guidance has been included regarding the tiered approach and total weight of evidence approach to classification.
- The decision logics have been updated to reflect amendments to the guidance
- A new section has been added to note that classification criteria for the skin and eye hazard classes in the GHS are provided in terms of a 3-animal test. Additional guidance has been included on how to classify based on existing data from studies with four or more animals.

Chapter 3.3 - Serious eye damage/eye irritation

- The definitions have been amended to remove the 21 day observation period. The definition of 'serious eye damage' now refers to "*the production of tissue damage in the eye, or serious physical decay of vision, which is not fully reversible, occurring after exposure of the eye to a substance or mixture"*. The definition of 'eye irritation' has been revised to refer to "*the production of changes in the eye, which are fully reversible, occurring after exposure of the eye to a substance or mixture"*.
- The introductory information on classification criteria has been replaced with a short summary of how substances can be allocated to one of the two categories within the hazard class.
- Clarification is provided that eye irritants are a single category which can be subdivided into Category 2/2A and 2B and that Category 2B is contained within Category 2/2A.
- Guidance on the criteria for determining the categories of serious eye damage/irreversible effects on the eye based on animal test data has been revised. Table 3.3.1 sets out the two classification categories and criteria and has been updated accordingly.
- Guidance on the criteria for determining the categories of reversible eye effects on the eye has been revised. Table 3.3.2 sets out the classification categories and criteria and has been updated accordingly.
- A reference to OECD Test Guideline 460 (Fluorescein leakage (FL)) test method for eye corrosion/serious damage has been included.
- Guidance has been included to support classification for skin and eye hazard classes that have existing data from tests with more than three animals.
- The decision logic 3.3.1 for serious eye damage/eye irritation has been amended. This includes clarification on the considerations for assessing the category of a substance or mixture that has the potential to cause irreversible eye damage and a substance or mixture that is an eye irritant.
- Figure 3.3.1 showing the tiered approach to evaluating information has been amended for consistency with other changes.
- Further guidance has been included regarding the tiered approach and total weight of evidence approach to classification.
- The decision logic 3.3.2 has been amended for classification of mixtures on the basis of information/data on similar tested mixtures and ingredients to reflect changes in the two classification categories.

Chapter 3.4 - Respiratory or skin sensitization

- The definition of 'respiratory sensitization' has been revised to refer to "*hypersensitivity of the airways occurring after inhalation of a substance or a mixture"*. The definition of 'skin sensitization' has been revised to refer to "*an allergic response occurring after skin contact with a substance or a mixture"*.

Chapter 3.5 - Germ cell mutagenicity

- A new definition of 'germ cell mutagenicity' has been added which refers to "*heritable gene mutations, including heritable structural and numerical chromosome aberrations in germ cells occurring after exposure to a substance or mixture"*.
- The table showing the cut-off/concentration limits triggering classification of a mixture has been amended to reflect the separation of Category 1A and Category 1B mutagens. The table identifying label elements for germ cell mutagenicity has been amended to remove duplication between Category 1A and 1B mutagens.

- The reference to Mouse spot test (OECD Test Guideline 484) for germ cell mutagenicity has been removed.

Chapter 3.6 - Carcinogenicity

- The definition of 'carcinogenicity' has been revised to refer to "*the induction of cancer or an increase in the incidence of cancer occurring after exposure to a substance or mixture"*.
- The table showing the cut-off/concentration limits triggering classification of a mixture has been amended to reflect the separation of Category 1A and Category 1B carcinogens. The table identifying label elements for carcinogenicity has been amended to remove duplication between Category 1A and 1B carcinogens.

Chapter 3.7 - Reproductive toxicity

- The table showing the cut-off/concentration limits triggering classification of a mixture has been amended to reflect the separation of Category 1A and Category 1B reproductive toxicants. The table identifying label elements for reproductive toxicity has been amended to remove duplication between Category 1A and 1B reproductive toxicants.
- A reference to OECD Test Guideline 443 (*Extended One-Generation Reproductive Toxicity Study*) has also been included.
- A new paragraph sets out that in cases where the additivity approach is used for Category 3 ingredients, the 'relevant ingredients' of a mixture are those which are present in concentrations equal to or above 1%, unless there is the view that an ingredient present at a concentration of less than 1% is still relevant when classifying the mixture for respiratory tract irritation or narcotic effects.

Chapter 3.8 - Specific target organ toxicity - Single Exposure

- The definition of 'specific target organ toxicity - single exposure' has been revised to refer to "*specific, non-lethal toxic effects on target organs occurring after a single exposure to a substance or mixture"*.

Chapter 3.9 - Specific target organ toxicity - Repeated Exposure

- The definition of 'specific target organ toxicity - repeated *exposure'* has been revised to refer to "*specific toxic effects on target organs occurring after repeated exposure to a substance or mixture"*.

Chapter 3.10 - Aspiration hazard

- The definition of 'aspiration hazard' has been inserted which refers to "*severe acute effects such as chemical pneumonia, pulmonary injury or death occurring after aspiration of a substance or mixture"*.
- It is clarified that the 'relevant ingredients' of a mixture are those which are present in concentrations at or above 1%.

Annex 1

- Annex 1 and Annex 2 have been merged into one single annex to form Annex 1: *Classification and Labelling Summary Tables*. This brings together the hazard classification, pictogram, signal word, hazard statement and hazard codes into one table for every hazard category for easier reference.

- The summary tables have been updated to reflect amendments to flammable gases, pyrophoric gases, chemically unstable gases, aerosols and desensitized explosives

Annex 3

- The classification and labelling summary tables for flammable gases, aerosols and desensitized explosives have been updated to reflect the revisions to Chapters 2.2 and 2.3 and 2.17.
- The codification and use of precautionary statements has been extensively updated, including revised hazard statement codes. These changes are also reflected in the matrix tables.
- Guidance has been updated about omitting precautionary statements where the advice is not relevant, combining/consolidating precautionary statements, variation of texts not affecting the safety message, and the application of precautionary statements concerning medical response.
- A new paragraph has been inserted to clarify that where square brackets [...] appear around text in a precautionary statement, this indicates that the text in square brackets is not appropriate in every case and should be used only in certain circumstances.
- Some precautionary statements have been added or revised to provide greater clarity in their application or to reflect the revisions made under Chapter 2. The table below shows examples of GHS 3 phrases and new GHS 7 phrases. The majority of changes are minor and editorial in nature.

GHS 3	GHS 7
P223: Keep away from any possible contact with water, because of violent reaction and possible flash fire	P223: Do not allow contact with water
P340: Remove victim to fresh air and keep at rest in a position comfortable for breathing	P340: Remove person to fresh air and keep comfortable for breathing
N/A	New phrase - P364: And wash it before reuse

Section 2 – Codification of precautionary statements

- Extensive amendments have been made to the codification of prevention precautionary statements in Table A3.2.2. The types of amendments include: amended or deleted prevention precautionary statements; deleted hazard classes & categories; inserted new hazard classes and categories; amended hazard categories, and deleted or amended conditions for use.

Section 3 – Use of precautionary statements

- The amendments to the precautionary statements in Table A3.2.2 are also reflected in Table A3.3.5–the matrix of precautionary statements for each hazard class/category.

Section 4 – Codification of pictograms

- A new section has been added to provide a reference on the codes assigned to each of the GHS pictograms. The codes are not to be used on labels or in section 2 of the safety data sheets.

Annex 4

- The guidance on classification information in safety data sheets has been amended to clarify that if a substance or mixture is classified into more than one category in a hazard class, then all classifications should be communicated. For example, the route of exposure differentiates the acute toxicity classification as follows: acute oral toxicity Category 1, acute dermal toxicity Category 1 and acute inhalation toxicity Category 1.

- For flammable gases, Table 4.3.9.2 now refers to the fundamental burning velocity for gas mixtures classified as Category 1B.

- Clarification has been provided on what should be included in safety data sheets including '*Other hazards which do not result in classification'* and *'Suitable extinguishing media'*.

- It is noted that the toxicological information section on the safety data sheet should always include the relevant hazards listed in sub-section A4.3.11.1. If data is not available, the hazards should still be listed with a statement that data is not available. Additional statements have also been included in sub-section A4.3.11.6 for when available data shows that the mixture or substance does not meet the criteria for classification or if the substance or mixture is not classified for other reasons.

- Further guidance is provided on the transport of bulk cargoes according to IMO instruments, covering liquid bulk cargoes, solid bulk cargoes and liquefied gas cargoes.

Annex 7

- A new example of labelling small packaging has been included. The example illustrates small glass ampoules supplied in sealed polythene sleeves, packaged inside a cardboard box. The polythene sleeve provides an end tag showing key label elements, with all required GHS label elements appearing on the cardboard box outer packaging.
- A new example has been included of fold-out labels for containers which have insufficient space to identify all necessary GHS label elements, for example on small containers or where information needs to be displayed in multiple languages.