GUIDELINES FOR THE CLASSIFICATION OF HAZARDOUS CHEMICALS

DEPARTMENT OF OCCUPATIONAL SAFETY AND HEALTH
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PREFACE

These guidelines may be cited as the Guidelines for the Classification of Hazardous Chemicals (hereinafter referred to as "the Guidelines".

The purpose of the Guidelines is to elaborate on and explain the requirements of Regulation 4 of the Occupational Safety and Health (Classification, Packaging and Labelling of Hazardous Chemicals) Regulations 1997 [P.U. (A) 143] (hereinafter referred to as "the Regulations") which stipulates the duty of a supplier of hazardous chemicals to classify each hazardous chemicals according to the specific nature of the risk involved in the use and handling of the chemicals at work. The Guidelines also recommend appropriate risk and safety phrases to be assigned to the chemical and which must be included on the label of the packaging of the hazardous chemicals and which must be included on the label of the packaging of the hazardous chemicals as required by Regulation 7 (1) (d) of the Regulations.

Suppliers of hazardous chemicals are advised to familiarize themselves with the Guidelines and follow these closely in classifying hazardous chemicals. When there is any conflict or inconsistency between the Guidelines and the Regulations, then the provisions of the Regulations will prevail. A supplier, however, may choose to interpret the requirements of the Regulation differently but in such a case he has to prove to the Director General of Occupational Safety and Health that his interpretation is, in effect, at least on a par with the interpretation given in the Guidelines. The Guidelines must be read in conjunction eith the Regulations, the Guidelines for Labelling of Hazardous Chemicals, and the Guidelines for the Formulation of a Chemical Safety Data Sheet.

These Guidelines will be reviewed from time to time. Suppliers are welcome to respond with feedback to the Department in writing with a view to making the Guidelines more comprehensive and user-friendly.

Director General
Department of Occupational Safety and Health
Malaysia

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Glossary

Acute health risk	risk which may result in adverse effect that occurs immediately or shortly after exposure
Boiling point	the temperature of a liquid at which the vapour pressure (i.e. the pressure characteristic at any given temperature
Chemical	any chemical element, compound or mixture thereof, whether natural or synthetic, but not including any microorganism
CAS Number	Chemical Abstracts Service Registry Number; the unique number assigned to a chemical by the Chemical Abstracts Service, Columbus, Ohio, USA.
Carcinogenic	substances or preparations which if inhaled or ingested or penetrated into the skin, may include cancer in human or increase its incidence
Chronic health risk	risk which may result in an adverse effect that occurs after repeated or prolonged exposure
Flash point	the lowest temperature in degrees Celsius at which a liquid will produce enough vapour to ignite
Hazardous chemical	any chemical possessing any of the properties described in Parts A or B of Schedule I of the Regulations or for which relevant information exists to indicate that chemical is hazardous
LC_{50}	a concentration of a chemical in air which is estimated to produce death in 50% of an experimental animal population on inhalation over a specified short period of time
LD_{50}	a dose of a chemical applied through ingestion, injection or skin application which is estimated to produce death in 50% of an experimental animal population
Mutagenic	substances or preparations which if inhaled or ingested or penetrated into the skin may induce genetic changes in spermatozoa or ovum cells or increase their incidence
Teratogenic	substances or preparation which if inhaled or ingested or penetrated into the skin of a pregnant woman, may induce deformation in the foetus or increase its incidence

UN Number

United Nation Number, a system of four digit number assigned by the United Nation Committee of Experts on the Transport of Dangerous Goods. UN Number are assigned to one substances or to a group of substances with similar characteristics. They are not necessarily unique to one chemical, and may cover a group of chemicals with similar hazardous properties, for example, Organophosphorus pesticides, liquid, toxic - UN No. 3018.

1. INTRODUCTION

1.1. Regulation 4 stipulates the duty of a supplier of hazardous chemicals to classify each hazardous chemical according to the *specific nature of the risk* involved during use and handling of the chemical at work.

1.2. The Regulations define "specific nature of the risk" in relation to classification of chemicals to mean the explosive, oxidising, extremely flammable, highly flammable, flammable, very toxic, toxic, harmful, corrosive, irritant, carcinogenic, teratogenic or mutagenic nature of a particular chemical.

1.3. Schedule I of the Regulations categorises a chemical as hazardous based on:

(i) its physicochemical properties (Part A of Schedule I), i.e. explosive, oxidising, extremely flammable, highly flammable or flammable; or

(ii) its health effects (Part B of Schedule I), i.e. very toxic, toxic, harmful, corrosive, irritant, carcinogenic, teratogenic or mutagenic.

1.4. Chemicals which are carcinogenic, teratogenic or mutagenic are classified as either toxic or harmful. Paragraphs 3.2.4, 3.2.5 and 3.2.6 will give more information on the classification of these class of chemicals.

1.5. Chemicals characterised by more than one specific nature of risk within either system mentioned in paragraph 1.3 must be classified under the category which represents the greatest degree of hazard. For chemicals grouped into categories defined in Part A of Schedule I, explosive is more hazardous than oxidising; oxidising is more hazardous than extremely flammable; extremely flammable is more hazardous than highly flammable; highly flammable is more hazardous than flammable. While for those grouped into categories defined in Part B of Schedule I, very toxic is more hazardous than toxic; toxic is more hazardous than corrosive; corrosive is more hazardous than harmful; harmful is more hazardous than irritant.

2. CLASSIFICATION BASED ON PHYSICOCHEMICAL PROPERTIES

2.1 GENERAL

Classification of chemicals based on physicochemical properties must be done using methods specified in **Annex V (A) to Directive 67/548/EEC** (hereinafter referred to as **"the Directive"**) and as amended in the subsequent Directives. A chemical is considered as hazardous and should be classified as either explosive, oxidising, extremely flammable, highly flammable or flammable when the results of tests carried out according to the Directive satisfy one or more of the specific nature of the risk definitions in Part A of Schedule 1 of the Regulations. Figure I summarises the criteria of chemical classification according to physicochemical properties.

Figure 1

SUMMARY OF THE CRITERIA OF CHEMICAL CLASSIFICATION

ACCORDING TO PHYSICOCHEMICAL PROPERTIES

CLASSIFICATION	PHYSICOCHEMICAL PROPERTIES
Explosive	chemicals and preparations which may explode under the effect of flame or sensitive to shocks or friction than dinitrobenzene
Oxidising	chemicals and preparations which give rise to highly exothermic reaction when in contact with other chemicals, particularly flammable chemicals
Extremely Flammable	liquid chemicals and preparations with a flash point $< 0^{o}$ C and boiling point $\leq 35^{o}$ C
Highly Flammable	(i) chemicals and preparations which may become hot and finally catch fire in contact with air at ambient temperature without any application of energy; (ii) solid substances and preparations which may readily catch fire after brief contact with a source of ignition and which continue to burn or be consumed after removal of the source of ignition; (iii) liquid substances and preparations having a flash point below 21^{o} C but which are not extremely flammable. (iv) gaseous substances and preparations which are flammable in air at normal pressure; or (v) substances and preparations which, when in contact with water or damp air, evolve highly flammable gases in dangerous quantities.
Flammable	liquid substances and preparations having a flash point $\geq$ than 21^{o} C and $\leq 55^{o}$ C.

2.2 RISK-PHRASES FOR CHEMICALS CLASSIFIED ACCORDING TO THE PHYSICO-CHEMICAL PROPERTIES

2.2.1 Explosive

A chemical or preparation which is classified as explosive must carry at least one risk-phrase i.e. either R2 or R3. The choice of which risk-phrase to be assigned should be guided by the test results in accordance to the Directives or as follows -

RISK PHRASE	PROPERTIES
R2 *(Risk of explosion by shock, friction, fire or other sources of ignition)*	All explosive chemicals or preparations, including certain organic peroxides, except for those chemicals or preparations set for risk-phrase R3 below.
R3 *(Extreme risk of explosion by shock, friction, fire or other sources of ignition*).	All substances or preparations which are particularly sensitive such as picric acid salts, pentaerythritetetranitrate (PETN) and certain undiluted organic peroxides such as dibenzoyl peroxide.

2.2.2 Oxidising

A chemical or preparation which is classified as oxidising must carry at least one of the following risk-phrases i.e. R11, R8 or R9. The choice of which risk-phrase to choose must be guided by the results of the test in accordance to the Directives or as follows -

RISK PHRASE	PROPERTIES
R11 *(Highly flammable)*	*Organic peroxides which has flammable properties even when not in contact with other combustible material.
R8 *(Contact with combustible material may cause fire)*	Other oxidising chemicals or preparations including inorganic peroxides, which may cause fire or enhance the risk of fire when in contact with combustible material.
R9 *(Explosive when mixed with combustible material)*	Other oxidising chemicals or preparations including inorganic peroxides,which become explosive when mixed with combustible materials such as certain chlorates.

***Note on peroxides:** Organic peroxides classified as hazardous on the basis of their structure (e.g R-O-O-H ; R1-O-O-R2) are generally classified as oxidising, and should be labeled as oxidising chemical under paragraph 2.2.2. However, if the test results carried out in accordance with the Directives showed that the organic peroxide (in the form in which it is placed on the market) have explosive properties, then paragraph 2.2.1 will apply.*

2.2.3 Extremely Flammable, Highly Flammable and Flammable

Substances or preparations which are classified as extremely flammable, highly flammable, very flammable or flammable must carry risk-phrases determined by the test results in accordance to the Directives or as follows -

CLASS	RISK PHRASE	PROPERTIES
Extremely flammable	R12 *(Extremely flammable)*	Liquid substances or preparations which have a flash point lower than 0 °C and a boiling point lower than or equal to 35°C.
Highly flammable	R11 *(Highly flammable)*	Solid substances or preparations which may readily catch fire after brief contact with a source of ignition and which continue to burn or to be consumed after removal of the source of ignition. Liquid substances or preparations having a flash point below 21° C but which are not extremely flammable.
	R12 *(Extremely flammable)*	Gaseous substances or preparations which are flammable in air at normal pressure.
	R13 *(Extremely flammable liquefied gas)*	Gaseous substances or preparations which are flammable in air at normal pressure when put on the market in liquefied form.
	R15 *(Contact with water liberates highly flammable gases)*	Substances or preparations which in contact with water or damp air, evolve highly flammable gases in dangerous quantities, at minimum rate of one liter per kilogram per hour.
	R17 *(Spontaneous flammable in air)*	Substances or preparations which become hot and finally catch fire in contact with air at ambient temperature without any input of energy.

CLASS	RISK PHRASE	PROPERTIES
Flammable	R10 *(Flammable)*	Liquid substances and preparations having flash point equal or greater than 21° C, and less than or equal to 55 ° C.

		However, in practice, it has been shown that a preparation having a flash point equal to or greater than 21° C and less than or equal to 55 ° C need not be classified as flammable if the preparation could not in any way support combustion.

2.2.4 Other physico-chemical properties

Additional risk-phrases should be assigned to a substance and preparation which has been classified by virtue of paragraph 2.2.1 to 2.2.3 inclusive, if test results in accordance with the Directives or information from other sources showed that the substance or preparation has other inherent hazardous properties. The substance or preparation should carry additional risk-phrases and the phrases should be chosen according to the following guide -

RISK PHRASE	PROPERTIES
R1 *(Explosive when dry)*	Explosive substances and preparations which are put on the market in solution or in wetted form e.g nitrocellulose with more than 12.6% nitrogen.
R4 *(Forms very sensitive explosive metallic compound)*	Substances or preparations which may form sensitive explosive metallic derivatives e.g picric acid, styphnic acid.
R5 *(Heating may cause an explosion)*	For thermally unstable substances and preparations not classified as explosive e.g. perchloric acid > 50%.
R6 *(Explosive with or without contact with air)*	For substances or preparations which are unstable at ambient temperatures e.g. acetylene
R11 *(Highly flammable)*	Organic peroxides which have flammable properties even when not in contact with other combustible material.
R14 *(Reacts violently with water)*	Substances or preparations which react violently with water, e.g. acetyl chloride, alkali metals, titanium tetrachloride.
R16 (*Explosive when mixed with oxidising substances*)	For substances or preparations which react explosively with an oxidising agent, e.g red phosphorus.

RISK PHRASE	PROPERTIES
R18 (*In use, may form flammable/explosive vapour-air mixture)*	Preparations not in themselves classified as flammable, which contain volatile components which are flammable in air.

R19 *(May form explosive peroxides)*	Substances or preparations which may form explosive peroxides during storage, e.g diethyl ether, 1,4- dioxan.
R30 *(Can become highly flammable in use)*	Preparations not in themselves classified as flammable, which become flammable due to the loss of non-flammable volatile components.
R44 *(Risk of explosion if heated under confinement)*	Substances or preparations not in themselves classified as explosive in accordance with paragraph 2.2.1 but which may nevertheless display explosive properties in practice if heated under sufficient confinement. For example, certain substances which would decomposed explosively if heated in a steel drum do not show this effect if heated in less-strong containers.

3. CLASSIFICATION BASED ON HEALTH EFFECTS

3.1 GENERAL

Figure 2 summarised the criteria used to classify chemicals based on their health effects as stipulated in Part B of Schedule I of the Regulations. The criteria set in the Regulations may, however, be inadequate to classify a chemical or preparation according to the specific nature of the risk. These guidelines contain additional information to address these gaps using guidance adopted by the European Communities (EC). The EC criteria take into consideration both short and long term health effects, and are applicable to both pure substances as well as preparations or mixtures.

Substances which have been classified according to the Directive and which do not contradict the requirements of the Regulations is deemed to have been classified as required by Regulation 4 of the Regulations.

3.2 HEALTH EFFECTS CRITERIA AND RISK-PHRASES

The toxicity data stipulated in Part B of Schedule I of the Regulations (Figure 2) refer to acute animal test data only which may not be adequate to classify a chemical. As mention in paragraph 3.1, these Guidelines elaborate on the criteria given in the Regulations by giving additional information on other toxicological testing data as well as other relevant data which can be used by suppliers to assist them in classifying a chemical. The following are the combined health effects criteria (both stipulated and non-stipulated criteria in the Regulations) which are recommended for use in classifying a chemical according to its health effects.

3.2.1. Very Toxic, Toxic and Harmful Effects

Classification of a chemical or preparation into the very toxic, toxic or harmful classes depends on the different types of toxicity data which have been generated for the particular chemical. For the purpose of these Guidelines, three different types of toxicity data are considered:

(a) Acute Lethal Effects

A chemical or preparation which is considered to be hazardous as a result of its acute lethal effects can be classified as either very toxic, toxic or harmful according to its LD_{50} /LC_{50} values for three routes of exposure as described below:

(i) Oral (through the mouth)

LD_{50} < 25mg/kg absorbed orally in rat - **very toxic (R28).**

LD_{50} between 25 and 200mg/kg absorbed orally in rat **- toxic (R25).**
LD_{50} between 200 and 500mg/kg absorbed orally in rat - **harmful (R22).**

(ii) Dermal (through the skin)

LD_{50} < 50 mg/kg percutaneous absorption in rat or rabbit - **very toxic (R27).**

LD_{50} between 50 and 400 mg/kg percutaneous absorption in rat or rabbit - **toxic (R24).**

LD_{50} between 400 and 2000 mg/kg percutaneous absorption in rat or rabbit - **harmful (R21).**

(iii) Inhalation

LC_{50} < 0.5 mg/litre inhalation in rat per 4 hours - **very toxic (R26).**

LC_{50} between 0.5 and 2.0 mg/litre inhalation in rat per 4 hours - **toxic (R23).**

LC_{50} between 2 and 20 mg/litre inhalation in rat per 4 hours - **harmful (R20).**

(b) Non-Lethal Irreversible Effects After a Single Exposure

A chemical or preparation capable of causing severe irreversible effects (other than carcinogenesis, mutagenesis or teratogenesis) after a single exposure is considered to be a hazardous chemical. Such irreversible effects can include central nervous system effects, kidney necrosis, liver lesions, anemia or paralysis.

These substances are subdivided into three categories:

- Very Toxic (R39).
- Toxic (R39).
- Harmful (R40).

For oral, dermal and inhalation routes, the same dose ranges as for acute lethal effects apply for very toxic, toxic and harmful hazard classifications, as in sub-paragraph (a). An additional risk phrase is assigned to indicate oral, dermal or inhalation route of administration/exposure, that is:

- Very Toxic (R26,R27 or R28).
- Toxic (R23, R24 or R25).
- Harmful (R20, R21 or R22).

(c) Severe Effects After Repeated or Prolonged Exposure

A chemical or preparation capable of causing serious damage to health is considered to be hazardous. Serious damage in this context means a clear functional disturbance or morphological change of toxicological significance resulting from repeated or prolonged exposure by an appropriate route. Such a substance can be classified as either toxic or harmful according to the following criteria:

(i) Toxic

A chemical or preparation for which danger of serious damage to health is likely from repeated or prolonged exposure by an appropriate route at dosage levels significantly lower than those for harmful substances should be classified as toxic (R48).

(ii) Harmful

A chemical or preparation for which danger of serious damage to health is likely from repeated or prolonged exposure by the following routes at the following dose ranges should be classified as harmful (R48).

- LD_{50} between 200 and 500 mg/kg absorbed orally in rat.
- LD_{50} between 400 and 2000 mg/kg percutaneous absorption in rat or rabbit.
- LC_{50} between 2 and 20 mg/litre inhalation in rat per 4 hours.

3.2.2 Corrosive Effects

A chemical or a preparation is considered to be corrosive if, when it is applied to healthy intact animal skin, it produces full thickness destruction of skin tissue on at least one animal during the test for skin irritation cited in the Directives or during an equivalent method or if the results can be predicted, for example from strong acid or alkaline reactions. Classification can be based on the results of validated in-vitro tests. The chemical or preparation shall be classified as corrosive. Risk phrases shall be assigned in accordance with the following criteria:

Causes severe burns *(35)*
If when applied to healthy intact animal skin, full thickness destruction of skin tissue occurs as a result of up to three minutes exposure, or if this result can be predicted

Causes burns *(34)*
If, when applied to healthy intact animal skin, full thickness destruction of skin tissue occurs as a result of up to four hours exposure, or if this result can be predicted.

3.2.3 Irritant Effects

A chemical or preparation is determined to be hazardous and classified as irritant if it causes :

- inflammation of the skin (R38)
- eye irritation (R36)
- serious eye effects (R41)

- irritation to the respiratory system (R37); or
- sensitising effect s (R43 or R42)

Substances which are strongly acidic or alkaline are usually not tested for irritant effects, owing to their predictable corrosive properties.
The following criteria are to be used when testing the whole substance, whether it is a mixture or pure substance, for its irritant effects. Firstly the scientific literature should be used to determine whether an accepted causal relationship exists between the substance and irritant effects in humans. However if the evidence from the scientific literature is inadequate, then the criteria to be used are stated below:

a). Inflammation of the skin

Substances are considered to be skin irritants (R38) if:

- when applied to healthy intact animal skin for up to 4 hours, significant inflammation occurs which persists for 24 hours or more after the end of the exposure period; or
- practical experience shows they are capable of causing inflammation in a substantial number of persons.

b) Eye contact - irritating to eyes

Substances are considered to be eye irritants (R36) if:

- when applied to the eye of the animal, they cause significant ocular lesions (within 72 hours following exposure) which present for 24 hours or more after instillation of the test material; or
- practical experience shows they are capable of causing eye irritation in a substantial number of persons.

c) Eye contact - serious eye effects

Substances are considered to present risk of serious damage to eyes (R41) if, when applied to the eye of the animal, they cause severe ocular lesions which present 24 hours or more after instillation of the test material.

Substances which can cause serious damage to the eyes pose a greater risk than the substances classified as eye irritants.

d) Inhalation - irritation to the respiratory system

The designation of substances which cause serious irritation to the respiratory system (R37) is normally based on practical observation in humans and reports in scientific literature which have led to the establishment of an accepted causal relationship between a substance and a respiratory irritation effect on persons who have inhaled the substance. However, animal test results may be used where available and classified for irritant potential.

e) Sensitising effects

Substances which causes sensitisation by either skin contact (R43) or by inhalation (R42) are determined to be hazardous substances, and classified as Irritant and Harmful respectively.

The following criteria shall be used when testing the whole substance, whether it is a mixture or pure substance, for its health effects. First, the scientific literature should be used to determine whether there are reports which have led to the establishment of an accepted causal relationship between the

substance and a sensitisation effects on persons exposed. However, if evidence for this is inadequate, then the criterias below are to be applied.

i) Skin sensitisers

Substances are considered to be skin sensitisers (R43) if:

- practical experience shows that the substances are capable of inducing a sensitisation reaction by skin contact in a substantial number of persons; or
- there is a positive response in an appropriate animal study.

ii) Sensitisation by inhalation

Substances which can cause sensitisation by inhalation (R42) are those where practical evidence is available which shows that they are capable of inducing a sensitisation reaction in humans at a greater frequency than would be expected from the response of a general population. There are currently no standard animal testing procedures for determining sensitisation by inhalation.

3.2.4 Carcinogenic Effects

A chemical or preparation is considered to be carcinogenic if it is suspected to cause or have caused cancer in humans or animals upon prolonged exposure. A carcinogen may be categorized into either of the following categories:

Category 1
substances known to be carcinogen to humans;

Category 2
substances regarded as if they are carcinogen to humans; and

Category3
substances which cause concern for humans owing to possible
carcinogen effects, but in respect of which the available information is not adequate
for making a satisfactory assessment.
Note: The placing of a substance into Category 1 is done on the basis of epidemiological data. The placement of substances into Category 2 and Category 3 is based primarily on animal experiments.

Category 1

a) A substance is included in Category 1 and classified as Toxic (R45 or R49) if there is sufficient evidence to establish a causal association between human exposure and the development of cancer on the basis of epidemiological data. The existence of a causal relationship would be supported by any of the following:

- an increased incidence of one or more cancer types in an exposed population in comparison with a non-exposed population;

- evidence of dose-time-response relationships, that is, an increased cancer incidence associated with higher exposure levels or with increasing exposure duration;

- an association between exposure and increased risk observed in more than one study ;

- demonstration of a decline in risk after reduction of exposure; and

- specificity of any association, defined as an increased occurrence of cancer at one target organ or of one morphological type.

b) For a substance which presents a carcinogenic risk only when inhaled, for example, as dust, vapour or fumes, the specific risk phrase R49 should be used instead of R45.

Category 2

a) A substance is included in Category 2 and classified as Toxic (R45 or R49) if there is sufficient evidence, on the basis of appropriate long term animal studies or other relevant information, to provide a strong presumption that human exposure to that substance may result in the development of cancer.

b) For Category 2 classification, either positive results in two animal species should be available or clear positive evidence in one species, together with supporting evidence such as genotoxicity data, metabolic or biochemical studies, induction of benign tumours, structural relationship with other known carcinogen, or data from epidemiological studies suggesting an association.

c) Human data providing suspicions of carcinogen potential may warrant a Category 2 classification irrespective of the nature of any animal data . Increased confidence in the credibility of a causal relationship would be provided by evidence of carcinogenicity in animals and/or of genotoxicity potential in short term screening tests.

Category 3

A substance is included in Category 3 and classified as Harmful (R40) if there is some evidence from appropriate animal studies that human exposure can result in the development of cancer, but this evidence is sufficient to place the substance in Category 2. Category 3 substances comprise two subcategories:

a) Substances which are well investigated, but for which the evidence of tumour inducing effects is insufficient for classification in Category 2. Additional experiments would not be expected to yield further relevant information with respect to classification.

b) Substances which are insufficiently investigated. The available data are inadequate, but they raise concern for humans. This classification is provisional and further experiments are necessary before a final decision can be made.

For a distinction between Category 2 and Category 3, the arguments listed below are relevant which reduce the significance of experimental tumour induction in view of possible human exposure. These arguments, especially in combination, would lead in most cases to classification in Category 3, even though tumours have been induced in animals:

a) Carcinogen effects only at very high dose levels exceeding the 'maximal tolerated dose'. The maximal tolerated dose is characterised by toxic effects which, although not reducing lifespan, go along with physical changes such as about 10% retardation in weight gain.

b) Appearance of tumor, especially at high dose levels, only in particular organ of certain species known to be susceptible to a high spontaneous tumor formation.

c) Appearance of tumors, only at the sight of application, in very sensitive test system, for example, intra peritoneal or subcutaneous application of certain locally active compound, if the particular target is not relevant to humans.

- Lack of genotoxicity in short term tests in vivo and in vitro.

- Existence of a secondary mechanism of action with the implementation of a practical threshold above a certain dose level, for example, hormonal effects on target organs or on mechanisms of physiological regulation and chronic stimulation of cell proliferation.

- Existence of a species-specific mechanism of tumour formation, for example, by specific metabolic pathways irrelevant for humans.

For a distinction between Category 3 and no classification, arguments are relevant which demonstrate that the available animal data are not relevant to humans, for example:

A substance should not be classified in any of the categories if the mechanism of experimental tumour formation is clearly identified, with good evidence that this process cannot be extrapolated to humans.

a) If the only available tumour data are liver tumors in certain sensitive strains of mice, without any supplementary evidence, the substance may not be classified in any of the categories.

b) Particular attention should be paid to cases where the only available tumour data are the occurrence of neoplasms at sites and in strains where they are well known to occur spontaneously with a high incidence.

3.2.5 Mutagenic Effects

A mutagen is an agent that give rise to an enhanced occurrence of mutations. A mutation is a permanent change in the amount structure of the genetic material in an organism, resulting in a change of the phenotypic characteristic of the organism.
The alterations may involve a single gene, a block of genes or a whole chromosome. Effects involving single genes may be a consequence of effects on a single DNA bases (point mutations) or of large changes, including deletions, within the gene. Effects on whole chromosomes may involve structural or numerical changes. A mutation in the germ cells in sexually reproducing organisms may be transmitted to the offspring.

Substances are determined to be hazardous due to mutagenic effects if they fall into the following categories:

Category 1
substances known to be mutagenic to humans;

Category 2
substances which should be regarded as if they are mutagenic to humans; and

Category 3
substances which cause concern for humans owing to possible mutagenic effects, but in respect of which available information does not satisfactorily demonstrate heritable genetic damage.

It should be noted that substances are classified as mutagens with specific reference to inherited genetic damage. However, mutagenicity assays which show 'induction of genetically relevant events in somatic cells' are generally also regarded as an alert for possible carcinogenic activity .

Method development for mutagenicity testing is an ongoing process. For many new tests no standardised protocols and evaluation criteria are presently available. For the evaluation of mutagenicity data, the quality of the test performance and the degree of validation of the test method have to be considered.

Category 1

a) A substance is included in Category 1 and classified as Toxic (R46) if there is sufficient evidence to establish a causal association between human exposure and heritable genetic damage.

b) To place a substance in Category 1, positive evidence from human mutation epidemiology studies will be needed. It is recognised that it is extremely difficult to obtain reliable information from

studies of the incidence of mutations in human populations, or on possible increases in their frequencies. Examples of such substances are not known to date.

Category 2

a) A substance is included in Category 2 and classified as Harmful if there is sufficient evidence, generally on the basis of appropriate animal studies and other relevant information, to provide a strong presumption that human exposure can result in the development of heritable genetic damage.

b) To place a substance in Category 2, positive results are needed from assays showing: (a) mutagenic effects; or (b) other cellular interactions relevent to mutagenicity, in germ cells of *in vivo*; or (c) mutagenic effects in somatic cells of mammals in vivo in combination with clear evidence that the substance or a relevant metabolite reaches the germ cells.

c) With respect to placement in Category 2, at present the following methods are appropriate:

i) *In vivo* germ cell mutagenicity assays:

- specific locus mutation tests,
- heritable translocation test, and
- dominant lethal mutation test.

These assays actually demonstrate the appearance of affected progeny or a defect in the developing embryo.

ii) *In vivo* assays showing relevent interaction with germ cells (usually DNA):

- assays for chromosomal abnormalities, as detected by cytogenetic analysis, including aneuploidy caused by malsegregation of chromosomes,
- test for sister chromatid exchanges,
- test for unscheduled DNA synthesis,
    - assays of (covalent) binding of mutagen to germ cell DNA, and
    - assaying other kinds of DNA damage.

These assays provide evidence of a more or less indirect nature. Positive results in this assays would normally be supported by positive results from *in vivo* somatic cell mutagenicity assays in mammals or in humans (see under Category 3).

iii) In vivo assays showing mutagen effects in somatic cells of mammals (see subsection under Category 3). In combination with toxicokinetic methods or other methodologies capable of demonstrating that the compound or a relevant metabolite reaches the germ cells.

For subsection under Category 2 i) and ii), positive results from host-mediated assays or the demonstration of unequivocal effects in *in vitro* mutagenicity assays can be considered as supporting evidence.

Category 3

a) A substance is included in Category 3 and classified as Harmful (R40) if there is evidence, from appropriate mutagenicity studies, of concern that human exposure can result in the development of heritable damage , but that this evidence is insufficient to place the substance in Category 2.

b) To place a substance in Category 3, positive results are needed in assays showing: a) mutagenic effects; or b) other cellular interaction relevant to mutagenicity in somatic cells of mammals *in vivo*. The latter, especially, would normally be supported by positive results from *in vitro* mutagenicity assays.

c) For effects in somatic cells in vivo, at present the following methods are appropriate:

i) In vivo somatic cell mutagenicity assays:

- bone marrow micronucleus test or metaphase analysis,
- metaphase analysis of peripheral lymphocytes, and
- mouse coat colour spot test.

ii) In vivo somatic cell DNA interaction assays:

- test for sister chromatid exchanges in somatic cells,
- test for unscheduled DNA synthesis in somatic cells,
- assay for the (covalent) binding of mutagen to somatic cell DNA, and
- assay for DNA damage in somatic cells, for example, by alkaline elution.

d) Substances showing positive results only in *in vitro* mutagenicity assays should normally not be classified. Their further investigation using *in vivo* assays, however, is strongly indicated. In exceptional cases, for example, a substance showing pronounced responses in several *in vitro* assays, for which no relevant *in vivo* data are available and which shows resemblance to known mutagens/carcinogens, classification in Category 3 could be considered.

3.2.6 Teratogenic Effects

Substances are determined to be hazardous due to teratogenic effects if they fall into the following categories:

Category 1
substances known to be teratogenic to humans; and

Category 2
substances which can be regarded as if they are teratogenic to humans.

The risk phrase R47 applies to both categories.

Category 1

A substance is included in Category 1 and classified as Toxic (R47) if there is sufficient evidence to establish a causal association between human exposure and subsequent no-heritable birth defects in offspring.

Category 2

A substance is included in Category 2 and classified as Harmful (R47) if there are sufficient evidence, generally on the basis of appropriate animal studies and other relevant information, to provide strong presumption that human exposure to the substance may result in non-heritable birth defects in offspring.

3.3 CHOICE OF RISK PHRASES

The choice for the core risk-phrases for each specific nature of risk for chemicals classified according to their health effects recommended in paragraph 3.2 are summarised in Appendix VI. In addition, additional phrases or combination of phrases are identified to accompany the core phrase if the substance or preparation exhibit the properties described.

Figure 2

CHEMICAL CLASSIFICATION ACCORDING TO HEALTH EFFECTS CRITERIA AS STIPULATED IN PART B OF SCHEDULE I OF THE REGULATIONS

CLASSIFICATION	HEALTH EFFECTS	TOXICITY DATA
Very Toxic	substances and preparations which if inhaled or ingested or penetrated into the skin or inhaled may involve extremely serious acute or chronic health risks or even death	LD_{50} < 25 mg/kg oral absorption in rat LD_{50} < 50 mg/kg skin absorption in rat or rabbit LC_{50} < 0.5 mg/litre (4-hour) inhalation in rat
Toxic	substances and preparations which if inhaled or ingested or penetrated into the skin may involve serious acute or chronic health risks or even death substances and preparations which are defined as carcinogenic, tetratogenic or mutagenic	LD_{50} between 25 and 200 mg/kg oral absorption in rat LD_{50} between 50 and 400 mg/kg skin absorption in rat or rabbit LC_{50} between 0.5 to 2 mg/litre (4-hour) inhalation in rat
Corrosive	substances and preparations which may, on contact with living tissues, destroy them	
Harmful	substances and preparations which if inhaled or ingested or penetrated into the skin may involve limited health risk	LD_{50} between 200 and 500 mg/litre oral absorption in rat LD_{50} between 400 and 2000 mg/kg skin absorption in rat or rabbit LC_{50} between 2 and 20 mg/litre (4-hour) in rat

Irritant	non-corrosive substances and preparations which, through immediate, prolonged or repeated contact with the skin or mucous membrane, can cause inflammation	

4. LISTED HAZARDOUS CHEMICALS BASED ON HEALTH EFFECTS

4.1. A limited number of hazardous chemicals are listed in Appendix VII to assist suppliers in classifying pure or single-ingredient chemicals or multi-ingredient mixtures. There are two types of information fields contained in the list namely:

- chemical identification information which consist of three fields, namely the chemical name, CAS number, and the United Nation number; and
- hazard classification data which consist of three fields, namely concentration cut-off levels, risk phrases and safety phrases.

4.2. Concentration cut-off levels are levels which have been determined to assist suppliers to classify single-ingredient chemicals or multi-ingredient chemical mixtures by comparing the concentration(s) of the ingredient(s) with the cut-off levels for that particular ingredient of concern.

A chemical mixture is regarded as hazardous if any ingredient is present at a concentration above its lowest relevant concentration cut-off level shown in the list. The hazard class as well as the risk and safety phrases for the ingredient will be assigned as prescribed in the list. The overall hazard class of a mixture should be based on the highest degree of hazard exhibited by any ingredient. Note that the concentration cut-off levels are designed to provide a practical level of protection and a convenient amount of information, and it should not be construed that an effect cannot occur below these levels.

4.3. If the concentration of each ingredient in the mixture lies below its corresponding cut-off level and the health effects of the ingredients are additive, classification of the chemical should be done using the appropriate formula from among the several given in Appendix I. These formulae are applicable only for chemicals which have irritant, corrosive or acute lethal effects.

5. NON-LISTED HAZARDOUS CHEMICALS BASED ON HEALTH EFFECTS

5.1 Classification of a chemical which is not listed in Appendix VII should be based on the health effects criteria described in section 3. Once a chemical has been classified, the appropriate risk phrase for the chemical can be obtained with the aid of the table given in Appendix II.

5.2 For a multi-ingredient mixture containing ingredients which are not listed in Appendix VI, each ingredient should be classified using the health effects criteria discussed in paragraph 3. Once all the ingredients have been classified then the hazard class for the mixture can be determined with the aid of Tables 1 to 14 of Appendix IV.

6. PROCEDURE FOR CLASSIFYING CHEMICALS BASED ON HEALTH EFFECTS

6.1 GENERAL

The flow chart in Appendix III depicts the various steps for classifying a chemical based on its health effects. The important starting point is to get relevant information on the chemical before it can be classified and supplied to the end user. These data include:

(i) data on the health effects of a chemical (for a pure chemical) or its individual constituent ingredients (for a multi-ingredient chemical mixture) including any information on the additive effect of the ingredients; and

(ii) data on the concentrations of ingredients in the mixture.

The responsibility to classify chemicals is on the supplier which can be either manufacturer , formulator or importer. It is important that the classification of hazardous chemicals are carried out by a person who has the competency in this area.

The following is a step by step account of the procedure for classifying a chemical in line with the flow chart shown in Appendix III.

6.2 CLASSIFICATION PROCEDURE FOR PURE CHEMICALS

Step 1: Use the List of Hazardous Chemical

(i) Refer to the List and check the chemical identity against the List.

(ii) Use the List to classify the chemical if at least one entry is found under the columns with symbols Xn, T, T+, Xi, C. If not go to Step 2.

(iii) Compare chemical concentration with the concentration cut-off levels.

(iv) Determine the hazard category(ies) by looking-up the column under which the chemical concentration equals or exceeds the cut-off level. The result may give one category from among the three acute lethal effect columns (Xn, T, T+) or one category from either of the irritant or corrosive effect columns (Xi and C) or one category from each group (Xn, T or T+ and Xi or C).

(v) Assign risk and safety phrases by looking up the columns for risk and safety phrases. Then go to Step 3.

(vi) If the chemical concentration does not exceed the lowest concentration cut-off level, then the chemical is not considered as a hazardous chemical.

Step 2: Apply the Health Effects Criteria

(i) Determine the hazard category(ies) by comparing the chemical health effects with the health effects criteria described in section 3.

(ii) Assign appropriate risk phrases based on the chemical health effects. Then go to Step 3.

Step 3: Determine Overall Hazard Classification

(i) If the chemical falls under more than one hazard category, the overall hazard classification is based on the hazard category that poses the greatest degree of hazard.

6.3 CLASSIFICATION PROCEDURE FOR MIXTURES

Step 1: Use the List of Hazardous Chemicals

(i) Refer to the List and check the identity of an ingredient against the List.

(ii) Use the List to classify the ingredient if at least one entry is found under columns Xn to C. If not go to Step 3.

(iii) Compare the ingredient concentration with its appropriate cut-off levels.

(iv) If the ingredient concentration < lowest cut-off level, the ingredient is considered as non-hazardous and go to (vi). Otherwise proceed.

(v) Determine the hazard category(ies) for the ingredient by looking-up the column under which the ingredient concentration equals or exceeds the cut-off level. The result may give one category from among the three acute lethal effect columns (Xn, T or T+) or one category from either of the irritant or corrosive effect columns (Xi or C) or one category from each group (Xn, Tor T+ and Xi or C).

(vi) Repeat procedures (i) to (iv) for the next ingredient until all ingredients are considered. If each ingredient in the mixture is at a concentration below its concentration cut-off level, go to Step 2. Otherwise proceed.

(vii) Determine the hazard category(ies) of the mixture by comparing the hazard category(ies) of each individual hazardous ingredient against the appropriate table from among Tables 1-14 in Appendix IV. Then go to Step 4.

Step 2: Use the Formulae

(i) If the ingredients do not act additively or do not have acute lethal, irritant or corrosive effects, then consider the mixture as non-hazardous and terminate the procedure. Otherwise proceed.

(ii) Use the appropriate formula from among the several given in Appendix I to determine the hazard category of the mixture.

(iil) Assign appropriate risk phrases. Then go to Step 4

Step 3: Apply the Health Effects Criteria

(i) Determine the hazard category(ies) of each ingredient by comparing the health effects of each ingredient with the health effects criteria describe in section 3.

(ii) If no ingredient meets the health effects criteria then consider the mixture as non-hazardous and terminate the procedure. Otherwise, assign the appropriate risk phrases based on the health effects of each hazardous ingredient. Then go to Step 4.

Step 4: Determine Overall Hazard Classification

(i) If the chemical falls under more than one hazard category, the overall hazard classification is based on the hazard category that poses the greatest degree of hazard.

6.4 CLASSIFYING A MIXTURE USING THE CUT-OFF LEVEL CONCEPT

Appendix V gives examples of how to classify a chemical mixture using the cut-off concept for references purposes.

REFERENCES

1. Worksafe Standard Australia - List of Designated Hazardous Substances NOHSC:0007(1994).

2. Worksafe Standard Australia - Approved Criteria For Classifying Hazardous Substances - NOHSC:1008(1994).

3. Official Journal of the European Community - Council Directive 79/831/EEC.

4. Official Journal of the European Community - Council Directive 67/548/EEC.

5. Official Journal of the European Community - Council Directive 91/325/EEC.

6. Occupational Safety and Health (Classification, Packaging and Labeling of Hazardous Chemicals) Regulations 1997.

7. Worksafe Standard Australia - List of Designated Hazardous Substances NOHSC:10005(1994).

APPENDIX I

FORMULAE FOR CLASSIFICATION OF MIXTURES WITH INGREDIENT CONCENTRATIONS BELOW CUT-OFF LEVELS AND HAVING ADDITIVE EFFECTS

This appendix applies to a mixture all of whose ingredients are present at concentrations below their cut-off levels and these ingredients have additive health effects. The formulae are relevant only for irritant, corrosive and acute lethal effects. For irritant and corrosive mixtures the formulae are used only for the purpose of assigning R-phrases:

I.1 Acute lethal effects

(i) Very toxic mixtures

A mixture containing more than one very toxic ingredient is classified as very toxic if:

$$\sum (\% A/CCL_A) \geq 1$$

where

% A = percentage by weight of each very toxic ingredient
CCL_A = concentration cut-off level for each very toxic ingredient

(ii) Toxic mixtures

A mixture containing more than one very toxic or toxic ingredient is classified as toxic if:

$$\sum (\%A/CCL_A + \%B/CCL_B) \geq 1$$

where

%B = percentage by weight of each toxic ingredient
CCL_B = concentration cut-off level for each toxic ingredient

(iii) Harmful mixtures

A mixture containing more than one very toxic, toxic or harmful is classified as harmful if:

$$\sum (\%A/CCL_A + \%B/CCL_B + \%C/CCL_C) \geq 1$$

where

%C = percentage by weight of each harmful ingredient
CCL_C = concentration cut-off level for each harmful ingredient

I.2 Corrosive effects

(i) Very corrosive mixtures

A mixture containing more than one very corrosive ingredient (risk phrase R35) is classified as very corrosive if:

$$\sum (\%D/CCL_D) \geq 1$$

where

%D = percentage by weight of each very corrosive ingredient
CCL_D = concentration cut-off level for each very corrosive ingredient

(ii) Corrosive mixtures

A mixture containing more than one very corrosive (risk phrase R35) or corrosive (risk phrase R34) ingredient is classified as corrosive if:

$$\sum (\%D/CCL_D + \%E/CCL_E) \geq 1$$

where

%E = percentage by weight of each corrosive ingredient
CCL_E = concentration cut-off level for each corrosive ingredient

I.3. Irritant effects

(i) Irritant mixtures with risk of serious eye damage

A mixture containing more than one irritant ingredient with risk of serious eye damage (risk phrase R41) is classified as irritant if:

$$\sum (\%F/CCL_F) \geq 1$$

where

%F = percentage by weight of each irritant ingredient with risk of serious eye damage
CCL_F = concentration cut-off level for each irritant ingredient with risk of serious eye damage

(ii) Skin irritant mixtures

A mixture containing more than one very corrosive, corrosive or skin irritant ingredient (risk phrase R38) is classified as skin irritant if:

$\sum (\%D/CCL_D + \%E/ CCL_E + \%G/CCL_G) \geq 1$

where

%G = percentage by weight of each skin irritant ingredient
CCL_G = concentration cut-off level for each skin irritant ingredient

(iii) Eye irritant mixtures

A mixture containing more than one irritant ingredient with risk of serious eye damage (risk phrase 41) or eye irritant ingredient (risk phrase R36) is classified as eye irritant if:

$\sum (\%F/CCL_F + \%H/CCL_H) \geq 1$

where

%H = percentage by weight of each eye irritant ingredient
CCL_H = concentration cut-off level for each eye irritant ingredient

(iv) Respiratory irritant mixtures

A mixture containing more than one respiratory irritant ingredient (risk phrase R37) is classified as respiratory irritant if:

$\sum (\%J/CCL_J) \geq 1$

where

%J = percentage by weight of each respiratory irritant ingredient
CCL_J = concentration cut-off level for each respiratory irritant ingredient

APPENDIX II

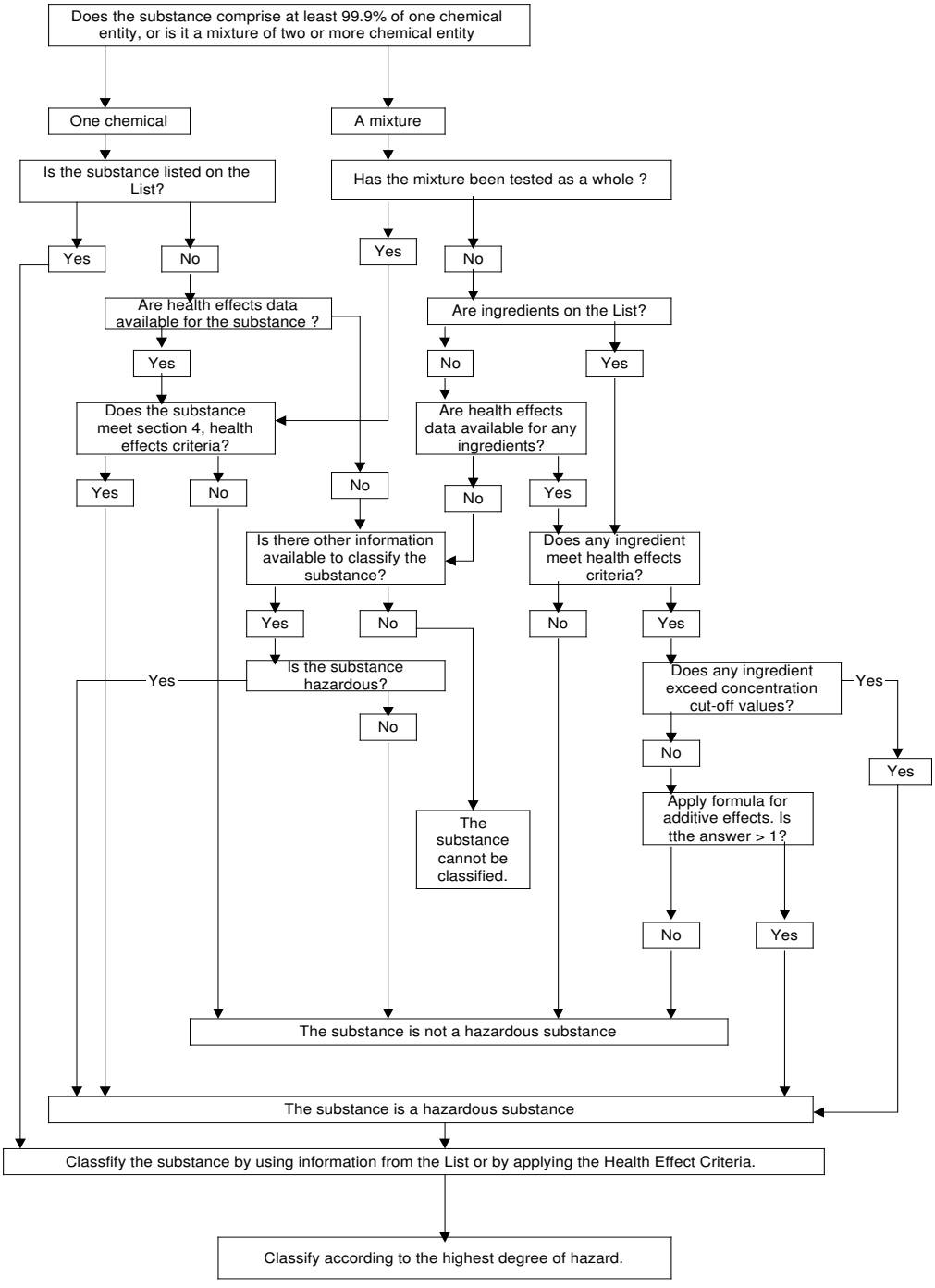
RECOMMENDED RISK PHRASES FOR CLASSIFICATIONS BASED ON HEALTH EFFECTS

CLASSIFICATION	RISK PHRASE	R-NUMBER
Very Toxic	very toxic if swallowed	R28
	very toxic in contact with skin	R27
	very toxic by inhalation	R26
Toxic	toxic if swallowed	R25
	toxic in contact with skin	R24
	toxic by inhalation	R23
	may cause cancer	R45
	may cause heritable genetic damage	R46
	may cause birth defects	R47

Corrosive	causes severe burns	R35
	causes burns	R34
Harmful	harmful if swallowed	R22
	harmful in contact with skin	R21
	harmful by inhalation	R20
	may cause sensitization by inhalation	R42
Irritant	irritating to skin	R38
	irritating to eyes	R36
	may cause sensitization by skin contact	R43

APPENDIX III

PROCESS OF DETERMINING WHETHER A SUBSTANCE IS HAZARDOUS



APPENDIX IV

HEALTH-EFFECTS BASED CLASSIFICATION OF NON-LISTED CHEMICALS AND RECOMMENDED RISK PHRASES

This appendix applies to a chemical which is not listed in Appendix VII and which have been classified using the health effects criteria in described in paragraph 3. It lists the recommended risk and safety phrases which should accompany the hazardous chemical. The appendix should be used as follows:

(i) Classify the chemical in the left hand vertical column of the tables.

(ii) Compare the concentration of the chemical with its concentration cut-off level listed in the table row.

(iii) Determine the mixture classification by reading the column heading for the concentration range matching the ingredient concentration in the mixture.

1. Acute lethal effects

Table 1: Solid and Liquid Mixtures

	Ingredient	Very Toxic	Toxic	Harmful
1.	Very Toxic R26, R27, R28	≥ 7% R26,R27,R28	1% ≤ conc. ≤7% R23,R24,R25	0.1 ≤ conc. ≤1% R20,R21,R22
2.	Toxic R23, R24, R25		≥ 25% R23,R24,R25	3% ≤conc. ≤25% R20,R21,R22
3.	Harmful R20, R21, R22			≥ 25% R20,R21,R22

concentrations are in % w/w

Table 2: Gaseous Mixtures

	Ingredient	Very Toxic	Toxic	Harmful
1.	Very Toxic R26	≥ 1% R26	0.2% ≤conc. ≤ 1% R23	0.02% ≤ conc. ≤0.2% R20
2.	Toxic R23		≥ 5% R23	0.5% ≤conc. ≤5% R20
3.	Harmful R20			≥ 5% R20

concentrations are in % v/v

2. Non-lethal irreversible effects after a single exposure

Table 3: Solid and Liquid Mixtures

	Ingredient	Very Toxic	Toxic	Harmful
1.	Very Toxic R39	≥10% R39	1%≤ conc.≤10%	0.1% ≤conc.≤1%

			R39	R40
2.	Toxic R39		≥10% R39	1%≤conc.≤10% R40
3.	Harmful R40			≥10% R40

concentrations are in % w/w

Table 4: Gaseous Mixtures

	Ingredient	Very Toxic	Toxic	Harmful
1.	Very Toxic R39	≥1% R39	0.2%≤ conc.≤1% R39	0.02≤ conc.≤0.2% R40
2.	Toxic R39		≥5% R39	0.5%≤conc.≤5% R40
3.	Harmful R40			≥5% R40

concentrations are in % v/v

3. Severe effects after repeated or prolonged exposure

Table 5: Solid and Liquid Mixtures

	Ingredient	Toxic	Harmful
1.	Toxic R48	≥10% R48	1%≤ conc.≤10% R48
2.	Harmful R48		≥10% R48

concentrations are in % w/w

Table 6: Gaseous Mixtures

	Ingredient	Toxic	Harmful
1.	Toxic R48	≥5% R48	0.5%≤ conc.≤5% R48
2.	Harmful R48		≥5% R48

concentrations are in % v/v

4. Corrosive and irritant effects

Table 7 : Solid and liquid mixtures

Ingredient	Very corrosive	Corrosive	Irritant serious eye damage	Irritant
1. Very corrosive R35	≥ 10% R35	5% ≤ conc. < 10% R34		1% ≤ conc. < 5% R36,R38
2. Corrosive R34		≥ 10% R34		5% ≤ conc. < 10% R36,R38
3. Irritant (Serious eye damage) R41			≥ 10% R41	5% ≤ conc. < 10% R36
4. Irritant R36,R37,R38				≥ 20% R36,R37,R38

concentrations are in % w/w.

Table 8 : Gaseous mixtures

Ingredient	Very corrosive	Corrosive	Irritant (serious eye damage)	Irritant
1. Very corrosive R35	≥ 1% R35	0.2% ≤ conc.<1% R34		0.02% ≤conc.<0.2% R37
2. Corrosive R34		≥ 5% R34		0.5% ≤ conc. < 5% R37
3. Irritant (Serious eye damage) R41			≥ 5% R41	0.5% ≤ conc. < 5% R36
4. Irritant R36,R37,R38				≥ 5% R37,(R36,R38)

concentrations are in % v/v.

5. Sensitising effects

Table 9: Solid and liquid mixtures

Ingredient	Harmful 42	Irritant R43
1. Respiratory sensitising R42	≥ 1% R42	
2. Skin sensitising R43		≥ 1% R43
3. Skin and respiratory sensitising R42/43	≥ 1% R42/43	

concentrations are in % w/w.

Table 10: Gaseous mixtures

Ingredient	Harmful R42
1. Respiratory sensitising R42	≥ 0.2% R42
2. Skin and respiratory sensitising	≥ 0.2% R42/43

concentrations are in % v/v.

6. Carcinogenic effects

The concentration cut-off levels for a gaseous mixture is the same as for solid and liquid mixtures.

Table 11: Solid, Liquid and Gaseous Mixtures

	Ingredient	Toxic	Harmful R42
1.	Category 1 R45 or R49	≥0.1% R45 or R49	
2.	Category 2 R45 or R49	≥0.1% R45 or R49	
3.	Category 3 R40.		≥1% R40

concentrations are in % w/w for solids and liquids, and in v/v for gases.

7. Mutagenic effects

The concentration cut-off levels for a gaseous mixture is the same as for solid and liquid mixtures.

Table 12: Solid, Liquid and Gaseous Mixtures

	Ingredient	Toxic	Harmful
1.	Category 1 R46	≥0.1% R46	
2.	Category 2 R46	≥0.1% R46	
3.	Category 3 R40		≥1% R40

concentrations are in % w/w for solids and liquids, and in v/v for gases

8. Teratogenic effects

Table 13: Solid and Liquid Mixtures

	Ingredient	Toxic	Harmful
1.	Category 1 R47	≥0.5% R47	
2.	Category 2 R47		≥5% R47

concentrations are in % w/w

Table 14: Gaseous Mixtures.

	Ingredient	Toxic	Harmful
1.	Category 1 R47	≥0.2% R47	
2.	Category 2 R47		≥1% R47

concentrations are in % v/v

APPENDIX V

CLASSIFYING A MIXTURE USING THE CONCENTRATION CUT-OFF LEVEL CONCEPT

Example. 1: A substance containing 0.5% w/w Paraquat

I. The data shows that paraquat is Very Toxic on the basis of its acute lethal effects (risk phrase R26/R27/R28).

II. Therefore, Paraquat meets health effects criteria. The concentration cut-off levels of Appendix IV should now be applied.

III. According to Table 1, a mixture with 0.5% w/w of a Very Toxic substance is to be classified as Harmful, as the concentration is below the concentration cut-off level for a Very Toxic mixture (7%). It is also below the concentration cut-off level for a Toxic mixture (1%), but within the range (0.1-1%) for a Harmful mixture . The substance is therefore a hazardous substance and is classified as Harmful, with R20/21/22 the most appropriate risk phrase.

Example 2: **A substance containing 7% w/w Acrylic acid**

I. The data show that Acrylic acid is Corrosive (risk phrase R34).

II. Therefore, Acrylic acid meets the health effects criteria of section 3. The concentration cut-off levels of Appendix IV should now be applied.

III. According to Table 7, a mixture with 7% w/w of a Corrosive substance is to be classified as Irritant, as the concentration is in the range 5-10%, but below the cut-off level for a level for a Corrosive mixture (10%). The substance is therefore a hazardous substance and is classified as Irritant, with R36/38 the most appropriate risk phrase.

Example 3: A substance containing 70% w/w 2-Hydroxyethylamine and 30% w/w Amyl alcohol.

I. As the substance is a mixture, its classification depends on whether the mixture has been tested as a whole and whether it has health effects that meet the criteria in Appendix 1. If the mixture has not been tested as a whole, the availability of the health effects data on the ingredients (2-Hydroxyethylamine and Amyl alcohol) needs to be considered.

II. The data available for 2-Hydroxyethylamine and Amyl alcohol show that:

III. 2- Hydroxyethylamine is Harmful by inhalation on the basis of its acute lethal effects (risk phrase R20) and is an Irritant (risk phrase R36/37/38); and

IV. Amyl alcohol is harmful by inhalation on the basis of its acute lethal effects (risk phrase R20).

V. Therefore, both 2-Hydroxyethylamine and Amyl alcohol meet the health effects criteria of paragraph 3. The concentration cut-off levels of Appendix IV should now be applied.

VI. According to Table 7, a mixture containing an Irritant (risk phrase R36/37/38) at a concentration above 20% w/w is a hazardous substance and the mixture is classified as Irritant, with risk phrase R36/37/38 considered appropriate.

VII. Therefore, according to the health effects criteria of section 3 and the concentration cut-off levels of Table1 and Table 7, a 70% 2-Hydroxyethylamine and 30% Amyl alcohol mixture is a hazardous substance and the mixture is classified as Harmful and irritant, with the R20 and R36/37/38 the most appropriate risk phrases. The final classification for this mixture is Harmful.

Example 4: A substance containing 0.5% w/w 3,3- Dichlorobenzidine.

I. The data shows that 3,3- Dichlorobenzidine is:

- a category 2 Carcinogen;
- Harmful by skin contact on the basis of its acute lethal effects; and
- a skin sensitiser.

I. Therefore, 3,3- Dichlorobenzidine meets the health effects criteria of section 3. The concentration cut-off levels of Table 1-14 should now be applied.

II. According to Table 1, a mixture with 0.5% w/w of a Harmful substance is not a hazardous substance on the basis of its acute lethal effects.

III. According to Table 9, a mixture with 0.5% w/w of a skin sensitiser is not a hazardous substance on the basis of its sensitising effects.

IV. According to Table 11, a mixture with 0.5% w/w of a Category 2 Carcinogen is to be classified as Toxic, with risk phrase R45 to be assigned to the mixture. The substance is therefore a hazardous substance and is classified as Toxic with risk phrase R45.

Example 5: A substance containing 10% w/w Methyl mercaptan, 20% w/w n-Pentanol and 2% w/w 2,4,6- Trinitrophenol.

1. The data show that:

- Methyl mercaptan is Harmful by inhalation on the basis of its acute lethal effects (risk phrase R20);

- n-Pentanol is Harmful by inhalation on the basis of its acute lethal effects (risk phrase R20); and

- 2,4,6-Trinitrophenol is Toxic if swallowed on the basis of its acute lethal effects (risk phrase R23/24/25).

1. Therefore, each of the three ingredients in the mixture meets the health effects criteria of section 3. The concentration cut-off levels of Table 1-14 should now be applied.

2. According to Table 1, a mixture with less than 25% w/w of a Harmful ingredients is not classified as hazardous substance on the basis of its acute lethal effects. Similarly, a mixture with less than 3% w/w of a Toxic ingredient is not classified as a hazardous substance on the basis of its acute lethal effects. Since all hazardous ingredients in the mixture are in concentrations below their respective cut-off levels and they have similar health effects, the formulae of Appendix I must be used to determine whether the mixture overall is a hazardous substance.

3. Assuming that the three ingredients have additive health effects, the appropriate formulae in Appendix 1 can be applied.

   Step 1: Consider the concentration cut-off levels for a Toxic mixture. These are in Table 1 for acute lethal effects that is:

   for a Toxic ingredient, 25% w/w;

   for a Harmful ingredient, no concentration cut-off level is given in the table as it is not appropriate.

   Therefore, a mixture is not classified as Toxic as the only toxic ingredient (2,4,6-Trinitrophenol) is present at concentration below 25% w/w, the sum is less than 1, that is:

   %B/conc. = 2/25

   Step 2 : Consider the concentration cut-off levels for a Harmful mixture In Table 1, that is:

   - for a Very Toxic ingredient, 0.1% w/w;
   - for a Toxic ingredient, 3% w/w; and
   - for a Harmful ingredient, 25% w/w.

   Therefore, the formula for a Harmful mixture in Appendix 1 can be applied.
   $\sum (\%A/CCL_A + \%B/CCL_B + \%C/CCL_C) \geq 1$

   where
   %C = percentage by weight of each harmful ingredient
   CCL_C = concentration cut-off level for each harmful ingredient

   There are no Very Toxic ingredients, so there is no %A, that is:
   $CCL_C = 0/0.1$

   2,4,6-Trinitrophenol is the only Toxic ingredient, so:

   $\%B/CCL_B = 2/3$

   Methyl mercaptan and n-Pentanol are both Harmful ingredients, so:

   $\%C/CCL_C = 10/25 + 20/25 + = 30/25$

   Applying the formula:

   $\sum (\%A/CCL_A + \%B/CCL_B + \%C/CCL_C)$

$\sum$ = [0/0.1 + 2/3 + 30/25] = 1.9, which is ≥ 1

Therefore, the mixture is a hazardous substance and is classified as Harmful with R20/21/22 the most appropriate risk phrases.

Example 6: A substance containing 15% w/w 3-Chlorophenol and 10% w/w Bromobenzene.

I. The available data show that:

- 3-Chlorophenol is Harmful on the basis of its acute lethal effects (risk phrase R20/21/22); and
- Bromobenzene is Irritant on contact with the skin (risk phrase R38).

I. Therefore, each of the two ingredients in the mixture meets the health effects criteria of section 4. The concentration cut-off levels in Table1-14 should now be applied.

II. According to Table1, a mixture containing less than 25% w/w of a Harmful ingredients not classified as a hazardous substance on the basis of its acute lethal effects. According to Table 7, a mixture containing less than 20% w/w of an Irritant is not classified as a hazardous substance on the basis of its irritant effects.

III. As the health effects for each ingredient are different, they are not additive, so it is not necessary to apply the formulae in Appendix 1. The mixture is therefore not a hazardous substance.

APPENDIX VI

CHOICE OF RISK PHRASES

CLASS	RISK PHRASE	PROPERTIES
VERY TOXIC SUBSTANCES AND PREPARATIONS	R26 *(Very toxic by inhalation)*	Acute toxicity results LC_{50} inhalation, rat: <0.5 mg/litre per 4 hours.
	R27 *(Very toxic in contact with skin)*	Acute toxicity results LD_{50} dermal, rat or rabbit: < 50 mg/kg.
	R28 *(Very toxic if swallowed)*	Acute toxicity results LD_{50} oral, rat: < 25 mg/kg.
	R39 *(Danger of very serious irreversible effects)*	Strong evidence that irreversible damage other than the effects referred to in paragraph 4 is likely to be caused by a single exposure by an appropriate route, generally in the above mentioned dose range . In order to indicate the route of administration/exposure the following combinations should be used: R39/26, R39/27, R39/28, R39/26/27, R39/26/28, R39/27/28, R39/26/27/28.
TOXIC SUBSTANCES AND PREPARATIONS	R23 *(Toxic by inhalation)*	Acute toxicity results LC_{50} inhalation, rat: 0.5 < LC_{50} < 2mg/litre per 4 hours
	R24 *(Toxic in contact with skin)*	Acute toxicity results LC_{50} inhalation, rat or rabbit : 50 < LD_{50} < 400 mg/kg

	R25 *(Toxic if swallowed)*	Acute toxicity results LD_{50} oral, rat: 25 <LD_{50} <400 mg/kg
	R39 *(Danger of very serious irreversible effects)*	Strong evidence that irreversible damage other than the effects referred to in section 4 is likely to be caused by a single exposure by an appropriate route, generally in the above mentioned dose range. In order to indicate the route of administration/exposure the following combinations should be used: R39/23, R39/24, R39/25, R39/23/24, R39/23/25, R39/24/25, R39/23/24/25.
CLASS	**RISK PHRASE**	**PROPERTIES**
TOXIC SUBSTANCES AND PREPARATIONS	R48 *(Danger of serious damage to health by prolonged exposure)*	Serious damage (clear functional disturbance or morphological change which have toxicological significance) is likely to be caused by repeated or prolonged exposure by an appropriate route. Substances are classified at least as toxic when these effects are observed at levels of one order of magnitude lower (i.e ten fold) than those set out for R48 under harmful classification. In order to indicate the route of administration/exposure the following combinations should be used: R48/23, R48/24, R48/25, R48/23/24, R48/23/25, R48/24/25, R48/23/24/25.
HARMFUL SUBSTANCES AND PREPARATIONS	R20 *(Harmful by inhalation)*	Acute toxicity results ; LC_{50} inhalation rat: 2< LC_{50} < 20mg/litre per 4 hours
	R22 *(Harmful if swallowed)*	Acute toxicity results LD_{50}, rat: 200 < LD_{50} < 2000mg/kg
	R40 *(Possible risk of irreversible effects)*	Strong evidence that irreversible damage other than the effects referred to in paragraph 4 is likely to be caused by a single exposure by an appropriate route, generally in the above-mentioned dose range. In order to indicate the route of administration/exposure the following combinations should be used: R40/20, R40/21, R40/22, R40/20/21, R40/20/22, R40/21/22, R40/20/21/22.
	R42 *(May cause sensitisation by inhalation)*	If practical evidence is available which shows the substances and preparations to be capable of inducing a sensitisation reaction in humans by inhalation, at a greater frequency than would be expected from the response of a general population.
	R48 *(Danger of serious damage to health by prolong exposure)*	Serious damage (clear functional disturbance or morphological change which toxicological significance) is likely to be caused by repeated or prolonged exposure by an appropriate route.

		In order to indicate the route of administration/exposure the following combination should be used: R48/20, R48/21, R48/22, R48/20/21, R48/20/22, R48/21/22, R48/20/21/22.
CLASS	**RISK PHRASE**	**PROPERTIES**
CORROSIVE SUBSTANCES AND PREPARATIONS	R35 *(Causes severe burns)*	If when applied to healthy intact animal skin, full thickness destruction of skin tissue occurs as a result of up to three minutes exposure, or if this result can be predicted.
	R34 *(Causes burns)*	If, when applied to healthy intact animal skin, full thickness destruction of skin tissue occurs as a result of up to four hours exposure, or if this result can be predicted.
IRRITANT SUBSTANCES AND PREPARATIONS	R36 *(Irritating to eyes)*	If, when applied to the eye of the animal, significant ocular lesions are caused and which persist for 24 hours or more after instillation of the test material. Ocular lesions are significant if the means of the scores have any of the values: Cornea opacity equal to or greater than 2 but less than 3: iris lesion equal to or greater than 1 but not greater than 1.5: redness of the conjunctivae equal to or greater than 2.5: oedema of the conjunctivae (chemosis) equal to or greater than 2. The same shall be the case where the test have been completed using 3 animals if the lesions, on two or more animals, are equivalent to any of the above values except that for iris lesion the value should be equal to or greater than but less than 2 and for redness of conjunctivae the value should be equal to or greater than 2.5.
	R37 *(Irritating to the respiratory system)*	Substances and preparations which cause serious irritation to the respiratory system, based normally on practical observation.
	R38 *(Irritating to skin)*	If when applied to healthy intact animal skin for up to four hours, significant inflammation is caused and which persists for 24 hours or more after the end of exposure period. Inflammation is significant if the mean value of the scores is two or more for either erythema and eschar formation or oedema formation. The same shall be the case where the test has been completed using three animals, if the score for either erythema and eschar formation or oedema formation observed in two or more animals is equivalent to the value of two or more.
CLASS	**RISK PHRASE**	**PROPERTIES**
IRRITANT SUBSTANCES AND PREPARATIONS	R41 *(Risk of serious damage to eye)*	If when applied to the eye of the animal severe ocular lesions are caused and which are present 24 hours or more after instillation of the

		test material. Ocular lesions are severe if the means of the score have any of the values: cornea opacity equal to or greater than 3; iris lesion greater than 1.5. The same shall be the case where the test has been completed using three animals if these lesion, on two or more animals, have any of the values: cornea opacity equal to or greater than 3; iris lesion equal to 2. The use of R34 or R35 precludes the use of R41.
	R43 *(May cause sensitisation by skin contact)*	If practical experience shows the substances and preparations to be capable of inducing a sensitisation reaction in a substantial number of person by skin contact, or on the basis of a positive response in experimental animals. In the case of the adjuvent type test method for skin sensitised detailed in the Directives or in the case of other adjuvent-type test methods, a response of at least 30% of the animals is considered positive. For any other test method a response of at least 15% of the animals is considered positive.

ADDITIONAL RISK PHRASES

R29 *(Contact with water liberates toxic gas)*	For substances and preparations which in contact with water or damp air, evolve very toxic/toxic gases in potentially dangerous amounts, e.g aluminium phosphide, phosphorus pentasulphide.
R31 *(Contact with acids liberates toxic gas)*	For substances and preparations which react with acids to evolve toxic gases in dangerous amounts e.g. sodium hypochlorite, barium polysulphide.
R32 *(Contact with acids liberates very toxic gas)*	For substances and preparations which react with acids to very toxic gases in dangerous amounts; e.g. salts of hydrogen cyanide, sodium azide.

List of Hazardous Chemicals

Alphabetical index Appendix VII

Footnotes concentration cut-off levels

a = Ingredient to be classified with R20 instead of R26 and /or R21 instead of R27 and/or R22 instead of R27.

b = Between 3% and 25% ingredient to be classified with R20 instead of R23 and/or R21 instead of R24 and/or R22 instead of R25.

c = Ingredient to be classified with R23 instead of R26 and/or R24 instead of R27 and/or R25 instead of R28.

d = Between 5% and 10% ingredient to be classified with R34 and at and above 10% to be classified as Very Corrosive (C+) with R35.

e = Ingredient to be classified with R36/38 instead of R34 or R35.

f = Between 5% and 10% ingredient to be classified with R36 (instead of R41) and at and above 10% to be classified with R41.

g = Ingredient to be classified with R23 instead of R26 and/or R24 instead of R27 and/or R25 instead of R28 plus R39.

h = Ingredient to be classified with R20 instead of R26 and/or R21 instead of R27 and/or R22 instead of R28 plus R40 instead of R39.

i = Between 5% and 20% ingredient to be classified with R34 and above 20% ingredient to be classified as Very Corrosive (C+) with R35.

j = Ingredient to be classified with R20 instead of R23 and/or R21 instead of R24 and/or R22 instead of R25 plus R40 instead of R39.

k = Ingredient to be classified with R20 instead of R23 and/or R21 instead of R24 and/or R22 instead of R25.

l = Above 1% ingredient to be classified with R45.

m = Between 1% and 7% ingredient to be classified with R34 and at and above 7% ingredient to be classified as Very Corrosive (C+) with R35.

n = Between 5% and Corrosive limit (%) ingredient to be classified with R36/38 instead of R34.

o = Above 1% ingredient to be classified with R23 and/or R24 and/or R25.

p = Between 1% and 10% ingredient to be classified with R20 instead of R23 and/or R21 instead of R24 and/or R22 instead of R25 plus R48.

q = Ingredient to be classified with R20 instead of R23 and/or R21 instead of R24 and/or R22 instead of R25 plus R48.

r = Above 5% ingredient to be classified with R20 and/or R21 and/or R22 plus R48.

s = Above 10% ingredient to be classified with R20 and/or R21 and/or R22 plus 48.

t = Above this concentration ingredient to be classified with R36 and/or R37 and/or R38.

u = Above 20% ingredient to be classified with R36 and/or R37 and/or R38.

v = Between 2% and 5% ingredient to be classified with R34 and at and above 5% to be classified as Very Corrosive (C+) with R35.

w = Above 5% ingredient to be classified with R36 and/or R37 and/or R38.

x = Between 1% and 7% ingredient to be classified with R23 instead of R26 and/or R24 instead of R27 and/or R25 instead of R28.

y = Between 0.1% abd 1% ingredient to be classified with R20 instead of R23 and/or R21 instead of R24 and/or R22 instead of R25.

z = Above 0.01% ingredient to be classified with R45.

A = Between 0.2% and 1% ingredient to be classified with R20 instead of R23 and/or R21 instead of R24 and/or R22 instead of R25.

B = Above 1% ingredient to be classified with R47.

C = Above this concentration ingredient to be classified with R20 and/or R21 and/or R22.

D = Above 1% ingredient to be classified with R40.

E = Above this concentration ingredient to be classified with R33.

F = Above 1% ingredient to be classified with R32.

G = Above this concentration ingredient to be classified with R42 and/or R43.

H = Above this concentration ingredient to be classified with R23 and/or R24 and/or R25.

J = Above this concentration ingredient to be classified with R26 and/or R27 and/or R28.

K = Above this concentration ingredient to be classified as Very Corrosive (C+) with R35.

L = Above 12.5% ingredient to be classified with R20 and/or R21 and or/ R22.

N = Above this concentration ingredient to be classified with R23 and/or R24 and/or R25 plus R48.

P = Between 0.1% and 1% ingredient to be classified with R20 instead of R26 and/ or R21 instead of R27 and/or R22 instead of R28.

Q = Above this concentration ingredient to be classified with R45 or R49 and/or R46 and/or R47.

R = Between 5% and 25% ingredient to be classified with R20 instead of R23 and/or R21 instead of R24 and/or R22 instead of R25.

S = Between 10% and 90% ingredient to be classified with R34 instead of R35 and at and above 90% to be classified as Very Corrosive (C+) with R35.

T = Ingredient to be classified with R36/37/38 instead of R34.

U = Above 1% ingredient to be classified with R62 and/or R63.

V = Between 25% and 90% ingredient to be classified with R34 instead of R35 and at and above 90% to be classified as Very Corrosive (C+) with 35.

W = Above this concentration to be classified with with R26 and/or R27 and/or R28 plus R39.

X = Above this concentration ingredient to be classified with R41 in addition to R34 or R35.

Y = Above 25% ingredient to be classified with R20 and/or R21 and/or R22.

Z = Above 25% ingredient to be classified with R23 and/or R24 and/or R25.

a' = Above this concentration to be classified with R23 and/or R24 and/or R25 plus R39.

e' = Above 5% ingredient to be classified with R47.

N' = Above 10% ingredient to be classified with with R23 and/or R24 and /or R25 plus R48.

ABBREVIATIONS AND EXPLANATIONS

Abbreviations

N/A= not applicable.

%= weight of ingredient/weight mixture.

Explanations

1. The symbols used to the health hazard categories (that is, Xn, T, T+, Xi, and C) are those used by the EC in regulations relating to the classification, packaging and labelling of dangerous substances.

2. Numbers in brackets (either 1 or 2) following risk phrases R45 (carcinogen), R46 (mutagen) or R47 (teratogen) refer to the categories as set out in the Approved Criteria2.

3. Risk phrase R40 is used to indicate three different health effects:

   (a) non-lethal irreversible effects after single exposure

   (b) carcinogenic effects (category 3)

   (c) mutagenic effects (category 3).

   Unless otherwise specified R40 refers to effect (a).

   When appended by (3) R40 refers to effect (b).

   When appended by (M3), R40 refers to effect (c).

4. Where alternative risk phrases to those assigned in the List are specified in the concentration cut-off level footnotes, the alternative risk phrases will cease to apply at the concentration limit which triggers those risk pharases assigned in the List. For example, where a substance has been assigned risk phrases R26 and/or R28 in the List footnote c appended to a concentraion cut-off level applies until the concentration limit appended by footnote J.

5. All concentration values in the concentration cut-off level footnotes should be read as:

   Above = "at and above";

   Between = "at and above" (first stipulated concentation) and "below" (second stipulated concentration).

ALPHABETICAL INDEX

LIST OF HAZARDOUS CHEMICALS

Substance Name	CAS Number	UN Number	Conc cut-off Xn %	Conc cut-off T %	Conc cut-off T+%*	Conc cut-off Xi %*	Conc cut-off C %*	Risk Phrases	Safety Phrases
Acephate	30560-19-1		25.0C	—	—	—	—	22	36
Acetal	105-57-7	1088	—	—	—	10.0t	—	11 36/38	9 16 33
Acetaldehyde	75-07-0	1089	1.0D	—	—	20.0t	—	36/37 40(3)	16 33 36/37
Acetaldehyde diethyl acetal	105-57-7	1088	—	—	—	10.0t	—	11 36/38	9 16 33
Acetic acid	64-19-7	2790	—	—	—	10.0e	25.0VX	10 35	2 23 26
Acetic aldehyde	75-07-0	1089	1.0D	—	—	20.0t	—	36/37 40(3)	16 33 36/37
Acetic anhydride	108-24-7	1715	—			8.0e	20.0X	10 34	26
Acetic oxide	108-24-7	1715	—	—	—	8.0e	20.0X	10 34	26
Acetone cynohydrin	75-86-5	1541	0.1a	1.0c	7.0J	—	—	26/27/28	7/9 27 45
Acetone hexafluoride	684-16-2	2420	—	—	—	—	—		
Acetone nitrile	75-05-8	1648	3.0k	25.0H	—	—	—	11 23/24/25	16 27 44
Acetyl ketene	674-82-8	2521	25.0C	—	—	—	—	10 20	3
Acetyl acetone	123-54-6	2310	25.0C	—	—	—	—	10 22	21 23 24/25
Acetyl chtoride	75-36-5	1717	—	—	—	5.0e	10.0X	11 14 34	9 16 26
Acetylene dichloride	540-59-0	1150	12.5C	—	—	—	—	11 20	7 16 29
Acetylene tetrabromide	79-27-6	2504	0.1a	1.0c	7.0J	20.0t	—	26 36	1 24 27 45
Acetylene tetrachloride	79-34-5	1702	0.1a	1.0c	7.0J	—	—	26/27	2 38 45
Acetyl hydroperoxide	79-21-0		10.0C	—	—	2.0e	10.0X	5 22 34	3 27 36
Acetyl oxide	108-24-7	1715	—	—	—	8.0e	20.0X	10 34	26
Acetylsalicylic acid	50-78-2		—	—	—	—	—		
Aconitine	302-27-2		0.1a	1.0c	7.0J	—	—	26/28	1 24 45
Acraldehyde	107-02-8	1092	0.1a	1.0bc	7.0JZ	5.0e	10.0X	11 25 26 34	3/9/14 26 36/37/39 38 45
Acroleic acid	79-10-7	2218	—	—	—	5.0e	10.0X	10 34	26 36
Acrolein	107-02-8	1092	0.1a	1.0bc	7.0JZ	5.0e	10.0X	11 25 26 34	3/9/14 26 36/37/39 38 45
Acrelaldehyde	107-02-8	1092	0.1a	1.0bc	7.0JZ	5.0e	10.0X	11 25 26 34	3/9/14 26 36/37/39 38 45
Acrylamide	79-06-1	2074	3.0k	25.0H	—	—	—	23/24/25 33	27 44
Acrylates	N/A		—	—	—	20.0t	—	36/37/38	26 28

Acrylic acid	79-10-7	2218	—	—	—	5.0e	10.0X	10	34					26	36			
Acrylic acid isobutyl ester	106-63-8	2527	25.0C	—	—	1.0Gu	—	10	20/21	38	43				9	24	37	
Acrylic aldehyde	107-02-8	1092	0.1a	1.0bc	7.0JZ	5.0e	10.0X	11	25	26	34			3/9/14	26	36/37/39	38	45
Acrylonitrile	107-13-1	1093	—	0.1QAo	—	20.0t	—	11	23/24/25	38	45(2)			16	27	44	53	
Adipic acid	124-04-9		—	—	—	20.0t	—	36										
Adipic ketone	120-92-3	2245	—	—	—	20.0t	—	10	36/38					23				
Alcohol of sulphur	75-15-0	1131	0.2q	1.0QN		20.0t	—	11	23	36/38	47(2)	48	16	33	36/37	45		
Aldehyde	75-07-0	1089	1.0D	—	—	20.0t	—	36/37	40(3)					16	33	36/37		
Aldicarb	116-06-3		0.1a	1.0c	7.0J	—	—	27/28						22	36/37	45		
Aldrin	309-00-2		1.0qd	10.0N	—	—	—	24/25	40(3)	48				22	36/37	44		
Alkali ethoxides	N/A	—	—	—	—	5.0e	10.0X	11	34					8	16	26	43	
Alkali methoxides	N/A	—	—	—	—	5.0e	10.0X	11	34					8	16	26	43	
Allethrin	584-79-2		25.0C	—	—	—	—	22				36						
Allidochlor	93-71-0		25.0C	—	—	20.0t	—	20/21/22	36/38			2	13					
Allyl alcohol	107-18-6	1098	3.0k	25.0H	—	20.0t	—	10	23/24/25	36/37/38		36/37/39	38	44				
Allyl aldehyde	107-02-8	1092	0.1a	1.0bc	7.0JZ	5.0e	10.0X	11	25	26	34		3/9/14	26	36/37/39		38	45
Allylamine	107-11-9	2334	3.0k	25.0H	—	—	—	11	23/24/25			9	16	24/25	44			
Allyl chloride	107-05-1	1100	0.1a	1.0c	7.0J	—	—	11	26			16	29	33	45			
Allyl-2, 3-epoxy-propyl ether	106-92-3	2219	25.0C	—	—	1.0G	—	20	43			24/25						
Allyl glycidyl ether	106-92-3	2219	25.0C	—	—	1.0G	—	20	43			24/25						
Allyl lodide	556-56-9	1723	—	—	—	5.0e	10.0X	10	34			7	26					
Allyl propyl disulphide	2179-59-1		—	—	—	—	—											
Aluminium alkyls	N/A	3051	—	—	—	5.0e	10.0X	14	17	34		16	43					
Aluminium chloride (anhydrous)	7446-70-0	1726	—	—	—	5.0e	10.0X	34				7/8	28					
Aluminium phosphide	20859-73-8	1397	0.1a	1.0c	7.0J	—	—	15/29	28	32			3/9/14	30	36/37	45		
Aluminium tributyl	1116-70-7	3051	—	—	—	5.0e	10.0X	14	17	34		16	43					
Aluminium triethyl	1116-73-0	3051	—	—	—	5.0e	10.0X	14	17	34		16	43					
Aluminium trimethyl	75-24-1	3051	—	—	—	5.0e	10.0X	14	17	34		16	43					
Ametryne	834-12-8		25.0C	—	—	—	—	20/22				2	13					
Amidithion	919-76-6		25.0C	—	—	—	—	22				24	36					
1-Amino-3-aminomethyl-3, 5, 5-trimethyl cyclohexane	2855-13-2	2289	25.0C	—	—	1.0Gn	10.0X	21/22	34	43		26	36/37/39					
ortho-Aminoanisole	90-04-0	2431	0.1a	1.0cE	7.0J	—	—	26/27/28	33			28	36/37	45				
Aminobenzene	62-53-3	1547	0.2kE	1.0H	—	—	—	23/24/25	33			28	36/37	44				
p-Aminobenzene sulphonic acid	121-57-3		25.0C	—	—	—	—	20/21/22				25	28					
4-Aminobiphenyl	92-67-1		—	0.1QY	—	—	—	22	45(1)			44	53					
4-Aminobiphenyl (salts)	N/A		—	0.1QY	—	—	—	22	45(1)			44	53					
1-Aminobutane	109-73-9	1125	—	—	—	20.0t		11	36/37/38				16	26	29			
2-Aminobutane	13952-84-6		—	—	—	20.0t	—	11	36/37/38			13	16	29				

Substance Name	CAS Number	UN Number	Conc cut-off Xn %	Conc cut-off T %	Conc cut-off T+%*	Conc cut-off Xi %*	Conc cut-off C %*	Risk Phrases	Safety Phrases
Aminocarb	2032-59-9		3.0k	25.0H	—	—	—	24/25	28 36/37 44
Aminocyclohexane	108-91-8	2357	25.0C	—	—	5.0e	10.0X	10 21/22 34	36/37/39
Aminodimethyl benzene (mixed isomers)	1300-73-8	1711	3.0k	25.0H	—	—	—	23/24/25 33	28 36/37 44
2-Amino-4, 6-dinitrophenol	96-91-3		25.0C	—	—	—	—	1 20/21/22	35
4-Aminodiphenyl	92-67-1		—	0.1QY	—	—	—	22 45(1)	44 53
Aminoethane	75-04-7	1036	—	—	—	20.0t	—	36/37	16 26 29
2-Aminoethanol	141-43-5	2491	25.0C	—	—	20.0t	—	20 36/37/38	
Aminomethane	74-89-5	1061	—	—	—	20.0t	—	36/37	16 26 29
2-Amino-8-methylpropanol	124-68-5		—	—	—	10.0t	—	36/38	
3-Aminomethyl-3, 5, 5-trimethyl cyclohexylamine	2855-13-2	2289	25.0C	—	—	1.0Gn	10.0X	21/22 34 43	26 36/37/39
1-Amino-3-nitrobenzene	99-09-2	1661	3.0k	25.0H	—	—	—	23/24/25 33	28 36/37 44
1-Amino-2-nitrobenzene	88-74-4	1661	3.0k	25.0H	—	—	—	23/24/25 33	28 36/37 44
2-Aminopropane	75-31-0	1221	—	—	—	20.0t	—	36/37/38	16 26 29
1-Amino-2-propanol	78-96-6		—	—	—	5.0e	10.0X	34	23 26 36
3-Amino propyl diethyl amine	104-78-9	2684	25.0C	—	—	1.0Gn	10.0X	10 21/22 34 43	26 36/37/39
2.Aminopy ridine	504-29-0		—	—	—	—	—		
Amitrol	61-82-5		1.0Ds	—	—	—	—	22 40(3) 48	36 37
Amitrole	61-82-5		1.0Ds	—	—	—		22 40(3) 48	36 37
Ammonia (anhydrous)	7664-41-7	1005	3.0k	25.0H	—	—	—	10 23	7/9 16 3
Ammonia (solution <35%)	N/A	2672	—	—	—	5.0eu	10.0X	34 37	7 26
Ammonium acid fluoride	1341-49-7	1727	1.0k	10.0H	—	0.1e	1.0X	25 34	22 26 37
Ammonium arsenate	7784-44-3	1546	3.0k	25.0H	—	—	—	23/25	1/2 20/21 28 44
Ammonium bichromate	7789-09-5	1439	—	—	—	0.5Gu	—	1 8 36/37/38 43	28 35
Ammonium bifluoride	1341-49-7	1727	1.0k	10.0H	—	0.1e	1.0X	25 34	22 26 37
Ammonium bis (2,4,6-trinitro phenyl) amide	2844-92-0		0.1a	1.0cE	7.0J	—	—	1 26/27/28 33	35 36 45
Ammonium chloride	12125-02-9		25.0C	—	—	20.0t	—	22 36	22
Ammonium dichromate	7789-09-5	1439	—	—	—	0.5Gu	—	1 8 36/37/38 43	28 35

Ammonium dipicryl aminate	2844-92-0		0.1a	1.0cE	7.0J	—	—	1	26/27/28	33	35	36	45		
Ammonium fluoride	12125-01-8	2505	3.0k	25.0H	—	—	—	23/24/25			1/2	26	44		
Ammonium fluorosilicate	16919-19-0	2854	1.0k	10.0H	—	—	—	23/24/25			1/2	26	44		
Ammonium hydrogen fluoride	1341-49-7	1727	1.0k	10.0H	—	0.1e	1.0X	25	34		22	26	37		
Ammonium perfluorooctanoate	3825-26-1		—	—	—	—	—								
Ammonium picrate	131-74-8	1310	3.0k	25.0H	—	—	—	3	23/24/25		28	35	37	44	
Ammonium polysulphide	12259-92-6	2818	—	—	—	1.0e	5.0X	31	34		26				
Ammonium polysulphides	9080-17-5		—	—	—	1.0e	5.0X	31	34		26				
Ammonium silicofluoride	1309-32-6	2854	25.0C	—	—	—	—	22			2	13	24/25		
Ammonium sulphamate	7773-06-0		—	—	—	—	—								
Amosite	12172-73-5	2212	—	0.1QpN	—	—	—	23	45(1)	48	22	44	53		
Amly alcohol	71-41-0		25.0C	—	—	—	—	10	20		24/25				
Amyl methyl ketone	110-43-0	1110	25.0C	—	—	—	—	10	22		23				
sec-Amyl acetate	626-38-0	1104	—	—	—	—	—								
tert-Amyl alcohol	75-85-4	1105	25.0C	—	—	—	—	11	20		9	16	24/25		
Amyl aldehyde	110-62-3	2058	—	—	—	—	—								
Amyl carbinol	111-27-3	2282	25.0C	—	—	—	—	22			24/25				
Amyl chloride	543-59-9	1107	25.0C	—	—	—	—	11	20/21/22		9	29			
Aniline	62-53-3	1547	0.2kE	1.0H	—	—	—	23/24/25	33		28	36/37	44		
Aniline (salts)	N/A	1548	3.0k	25.0H	—	—	—	23/24/25	33		28	36/37	44		
Aniline oil	62-53-3	1547	0.2kE	1.0H	—	—	—	23/24/25	33		28	36/37	44		
P-Anisidine	104-94-9		0.1a	1.0cE	7.0J	—	—	26/27/28	33		28	36/37	45		
o-Anisidine	90-04-0	2431	0.1a	1.0cE	7.0J	—	—	26/27/28	33		28	36/37	45		
o-Anisidine hydrochloride	134-29-2		0.1a	1.0cE	7.0J			26/27/28	33		28	36/37	45		
Antimonous chloride	7783-56-4	1733	3.0k	25.0H	—	—	—	23/24/25			7	26	44		
Antimony	7440-36-0	2871	—	—	—	—	—								
Antimony (compounds)	N/A	1549	0.25C	—	—	—	—	20/22			22				
Antimony chloride	10025-91-9	1733	—	—	—	5.0eu	10.0X	34	37		26				
Antimony hydride	7803-52-3	2676	25.0C	—	—	—	—	20/22			22				
Antimony lactate	58164-88-8	1550	25.0C	—	—	—	—	20/22			22				
Antimony pentachloride	7647-18-9	1730	—	—	—	5.0eu	10.0X	34	37		26				
Antimony pentafluoride	7783-70-2	1732	25.0C	—	—	—	—	20/22			22				
Antimony perchloride	7647-18-9	1730	—	—	—	5.0eu	10.0X	34	37		26				
Antimony potassium tartrate	28300-74-5	1551	25.0C	—	—	—	—	20/22			22				

Substance Name	CAS Number	UN Number	Conc cut-off Xn %	Conc cut-off T %	Conc cut-off T+%*	Conc cut-off Xi %*	Conc cut-off C %*	Risk Phrases			Safety Phrases			
Antimony trichloride	10025-91-9	1733	—	—	—	5.0eu	10.0X	34	37		26			
Antimony trifluoride	7783-56-4		3.0k	25.0H	—	—	—	23/24/25			7	26	44	
Antimony trihydride	7803-52-3	2676	25.0C	—	—	—	—	20/22			22			
Antimony trioxide	1309-64-4		—	—	—	—	—							
ANTU	86-88-4	1651	0.1a	1.0cD	7.0J	—	—	28	40(3)		1/2	25	36/37	45
Arsenic	7440-38-2	1558	0.1k	0.2H	—	—	—	23/25			1/2	20/21	28	44
Arsenic (compounds)	N/A	1556	0.1k	0.2H	—	—	—	23/25			1/2	20/21	28	44
Arsenic (fuming liquid)	7784-34-1	1560	3.0k	25.0H	—	—	—	23/25			1/2	20/21	28	44
Arsenic (white)	1327-53-3	1561	—	0.1QPx	7.0J	5.0e	10.0X	28	34	45(1)	45	53		
Arsenic acid	7778-39-4	1553	3.0k	25.0H	—	—	—	23/25			1/2	20/21	28	44
ortho-Arsenic acid	7778-39-4	1553	3.0k	25.0H	—	—	—	23/25			1/2	20/21	28	44
Arsenical dust	8028-73-7	1562	3.0k	25.0H	—	—	—	23/25			1/2	20/21	28	44
Arsenic bromide	7784-33-0	1555	3.0k	25.0H				23/25			1/2	20/21	28	44
Arsenic butter	7784-34-1	1560	3.0k	25.0H				23/25			1/2	20/21	28	44
Arsenic chloride	7784-34-1	1560	3.0k	25.0H				23/25			1/2	20/21	28	44
Arsenic hydride	7784-42-1	2188	3.0k	25.0H				23/25			1/2	20/21	28	44
Arsenic pentoxide	1303-28-2	1559	3.0k	25.0H				23/25			1/2	20/21	28	44
Arsenic tribromide	7784-33-0	1555	3.0k	25.0H				23/25			1/2	20/21	28	44
Arsenic trichloride	7784-34-1	1560	3.0k	25.0H				23/25			1/2	20/21	28	44
Arsenic trioxide	1327-53-3	1561	—	0.1QPx	7.0J	5.0e	10.0X	28	34	45(1)	45	53		
Arsenious chloride	7784-34-1	1560	3.0k	25.0H	—	—	—	23/25			1/2	20/21	28	44
Arsenous bromide	7784-33-0	1555	3.0k	25.0H				23/25			1/2	20/21	28	44
Arsenous chloride	7784-34-1	1560	3.0k	25.0H				23/25			1/2	20/21	28	44
Arsine	7784-42-1	2188	3.0k	25.0H				23/25			1/2	20/21	28	44
Asbestos	1332-21-4		—	0.1QpN	—	—	—	23	45(1)	48	22	44	53	
Asbestos (blue)	12001-28-4	2212	—	0.1QpN	—	—	—	23	45(1)	48	22	44	53	
Asbestos (brown)	12172-73-5	2212	—	0.1QpN	—	—	—	23	45(1)	48	22	44	53	
Asbestos (white)	12001-29-5	2590	—	0.1QpN	—	—	—	23	45(1)	48	22	44	53	
Aspirin	50-78-2		—	—	—	—	—							
Atrazine	1912-24-9		—	—	—	—	—							
Atropine	51-55-8		0.1a	1.0c	7.0J	—	—	26/28			1	25	45	
Azinphos-ethyl	2642-71-9		0.1a	1.0bc	7.0J	—	—	24	28		28	36/37	45	
Azinphos-methyl	86-50-0		0.1a	1.0bcZ	7.0J	—	—	24	28		28	36/37	45	
Aziridine	151-56-4	1185	0.1a	1.0cD	7.0J	—	—	11	26/27/28	40	9	29	36	45
Azobenzene	103-33-3		25.0C	—	—	—	—	20/22			28			

Azothoate	5834-96-8		25.0C	—	—	—	—	20/22						2	13		
Azoxybenzene	495-48-7		25.0C	—	—	—	—	20/22						28			
Barban	101-27-9		25.0C	—	—	1.0G	—	22	43					24	36		
Barium	7440-39-3	1400	—	—	—	—	—										
Barium permanganate	7787-36-2	1448	25.0C	—	—	—	—	20/22						28			
Barium (salts)	N/A		1.0C	—	—	—	—	20/22						28			
Barium azide	18810-58-7	0224	25.0C	—	—	—	—	20/22						28			
Barium binoxide	1304-29-6	1449	25.0C	—	—	—	—	8	20/22					13	27		
Barium bromate	13967-90-3	2719	25.0C	—	—	—	—	20/22						28			
Barium carbonate	513-77-9		25.0C	—	—	—	—	22						24/25			
Barium chlorate	13477-00-4	1445	25.0C	—	—	—	—	9	20/22					13	27		
Barium dioxide	1304-29-6	1449	25.0C	—	—	—	—	8	20/22					13	27		
Barium hypochlorite	13477-10-6	2741	25.0C	—	—	—	—	20/22						28			
Barium monoxide	1304-28-5	1884	25.0C	—	—	—	—	20/22						28			
Barium oxide	1304-28-5	1884	25.0C	—	—	—	—	20/22						28			
Barium perchlorate	13465-95-7	1447	25.0C	—	—	—	—	9	20/22					27			
Barium peroxide	1304-29-6	1449	25.0C	—	—	—	—	8	20/22					13	27		
Barium polysulphides	50864-67-0		—	—	—	20.0t	—	31	36/37/38					28			
Barium silicoflouride	17125-80-3		25.0C	—	—	—	—	20/22						28			
Barium sulphide	21109-95-5	1564	25.0C	—	—	—	—	20/22	31					28			
Barium superoxide	1304-29-6	1449	25.0C	—	—	—	—	8	20/22					13	27		
BCME	542-88-1	2249	—	0.1QPxb	7.OJYZ	—	—	10	22	24	26	45(1)		45	53		
Benquinox	495-73-8		3.0k	25.0H	—	—	—	23/24/25						2	13	44	
Bensulide	741-58-2		25.0C	—	—	—	—	22						24	36		
Bentazone	25057-89-0		25.0C	—	—	—	—	20/21/22						2	13		
Benzal chloride	98-87-3	1886	—	—	—	20.0t	—	36/37/38						39			
Benzal dehyde	100-52-7		25.0C	—	—	—	—	22						24			
Benzenamine	62-53-3	1547	0.2kE	1.0H	—	—	—	23/24/25	33					28	36/37	44	
Benzene	71-43-2	1114	—	0.1QpN	—	—	—	11	23/24/25		45(1)	48		16	29	44	53
1,3-Benzenediol	108-46-3	2876	10.0C	—	—	20.0t	—	22	36/38					26			
Benzene hexachloride	608-73-1		1.0Db	25.0CH	—	—	—	21	25		40(3)			22	36/37	44	
Benzene-1, 2, 4-tricarboxylic-1, 2-anhydride	552-30-7		0.3G	—	—	10.0t	—	36/37/38	42					22	28		
Benzidine	92-87-5	1885	—	0.1QY	—	—	—	22	45(1)					44	53		
Benzo (a) anthracene	56-55-3		—	0.1Q	—	—	—	45(2)						44	53		
Benzo (k) fluoranthene	207-08-9		—	0.1Q	—	—	—	45(2)						44	53		
Benzo (b) fluoranthene	205-99-2		—	0.1Q	—	—	—	45(2)						44	53		
Benzoguanamine	91-76-9		25.0C	—	—	—	—	22									
Benzol	71-43-2	1114	—	0.1QpÑ	—	—	—	11	23/24/25		45(1)	48		16	29	44	53
Benzolene	71-43-2	1114	—	0.1QpÑ	—	—	—	11	23/24/25		45	48	16	29	44	53	
Benzonitrile	100-47-0	2224	25.0C	—	—	—	—	21/22						23			

Substance Name	CAS Number	UN Number	Conc cut-off Xn %	Conc cut-off T %	Conc cut-off T+%*	Conc cut-off Xi %*	Conc cut-off C %*	Risk Phrases					Safety Phrases				
Benzophenone-3, 3,3[1],4,4[1]-tetra-carboxylic dianhydride	2421-28-5		—	—	—	1.0t	—	36/37					25				
Benzo (a) pyrene	50-32-8		—	0.1Qe	—	—	—	45(2)	46(2)	47(2)			44	53			
Benzoquinone	106-51-4	2587	3.0k	25.0H	—	20.0t	—	23/25	36/37/38				26	28	44		
Benzotrichloride	98-07-7	2226	25.0C	—	—	—	—	20					24/25				
Benzoyl alcohol	100-51-6		25.0C	—	—	—	—	20/22					26				
Benzoyl chloride	98-88-4	1736	—	—	—	5.0e	10.0x	34					26				
Benzoyl peroxide	94-36-0	2085	—	—	—	20.0t	—	3	36/37/38				3/7/9	14	27	34	37/39
Benzo[d, e, f] chrysene	50-32-8		—	0.1Qe	—	—	—	45(2)	46(2)	47(2)			44	53			
Benzthiazuron	1929-88-0		25.0C	—	—	—	—	22					24/25				
Benzyl alcohol	100-51-6		25.0C	—	—	—	—	20/22					26				
Benzyl benzoate	120-51-4		25.0C	—	—	—	—	22					25				
Benzyl bromide	100-39-0	1737	—	—	—	20.0t	—	36/37/38					39				
Benzyl bromide	100-39-0	1737	—	—	—	20.0t	—	36/37/38					39				
Benzyl chloride	100-44-7	1738	—	—	—	20.0t	—	36/37/38					39				
Benzyl chlorocarbonate	501-53-1	1739	—	—	—	5.0eu	10.0x	34	37				26				
Benzyl chloroformate	501-53-1	1739	—	—	—	5.0eu	10.0x	34	37				26				
Benzyl dichloride	98-87-3	1886	—	—	—	20.0t	—	36/37/38					39				
Benzyldimethylamine	103-83-3	2619	25.0C	—	—	5.0e	10.0x	10	20/21/22	34			26	36			
Benzylidene chloride	98-87-3	1886	—	—	—	20.0t	—	36/37/38					39				
Beryllium	7440-41-7	1567	—	0.1QPxp	7.0JN	1.0Gu	—	23/25	26	36/37/38	43	48	45	53			
Beryllium (compounds)	N/A	1566	—	0.1QPxp	7.0JN	1.0Gu	—	23/25	26	36/37/38	43	48	45	53			
Beryllium nitrate	13597-99-4	2464	0.1h	1.0g	10.0W	20.0t	—	26/27	37	39			26	28	45		
BHC	608-73-1		1.0DB	25.0CH	—	—	—	21	25	40(3)			22	36/37	44		
Bichloroacetic acid	79-43-6	1764	—	—	—	1.0e	5.0dx	35					26				
Binapacryl	485-31-4		3.0k	25.0H	—	—	—	23/24/25					2	13	44		
Biphenyl	92-52-4		—	—	—	—	—										
Biphenyl-4-ylamine (salts)	N/A		—	0.1QY	—	—	—	22	45(1)				44	53			
Bis (2-chloroethyl) ether	111-44-4	1916	0.1a	1.0CD	7.0J	—	—	10	26/27/28		40		7/9	27	38	45	
Bis (chloromethyl) other	542-88-1	2249	—	0.1QPxb	7.0JYZ	—	—	10	22	24	26	45(1)	45	53			
Bisaminopropylamine	56-18-8	2269	25.0C	—	—	1.0Gn	10.0x	21/22	34	43			26	36/37/39			
1, 3-Bis (2, 3-epoxy-propoxy) benzene	101-90-6		0.1k	1.0Dh		1.0G	—	23/24/25	40	43		23	24	44			
1, 4-Bis (2, 3-epoxy-propoxy) butane	2425-79-8		25.0C	—	—	1.0Gu	—	20/21	36/38	43			26	28	37/39		

Bis [4- (2, 3-epoxypropoxy) phenyl] propane	1675-54-3		—	—	—	1.0GW	—	36/38	43			28	37/39					
Bismuth telluride	1304-82-1		—	—	—	—	—											
Boron fluoride	7637-07-2	1008	0.1a	1.0C	7.0J	1.0e	5.0dX	14	26	35	1/2		9	26	28	/36/37/39	45	
Boron oxide																		
Boron tribromide	10294-33-4	2692	0.1a	1.0c	7.0J	1.0e	5.0dX	14	26/28	35	1/2		9	26	28	36/37/39	45	
Boron trichloride	10294-34-5	1741	0.1a	1.0c	7.0J	5.0e	10.0X	14	26/28	34	1/2		9	26	28/	36/37/39	45	
Boron trifluoride	7637-07-2	1008	0.1a	1.0c	7.0J	1.0e	5.0dX	14	26	35	1/2		9	26	28/	36/37/39	45	
Boron trifluoride (dihydrate)	13319-75-0	2851	0.1a	1.0c	7.0J	1.0e	5.0dX	14	26	35	9		26	28	36	45		
Boron trifluoride acetic acid (complex)	753-53-7	1742	0.1a	1.0c	7.0J	1.0e	5.0dX	14	26	35	9		26	28	36	45		
Bromacil	314-40-9		—	—	—	—	—											
Bromine	7726-95-6	1744	0.1a	1.0c	7.0J	1.0e	5.0dX	26	35			7/9	26					
Bromine pentafluoride	7789-30-2	1745	—	—	—	—	—	—										
Bromoacetic acid	79-08-3	1938	3.0k	25.0H	—	1.0e	5.0dX	23/24/25	35		36/37/39							
Bromobenzene	108-86-1	2514	—	—	—	20.0t	—	10	38									
Bromochloromethane	74-97-5	1997	—	—	—	—	—											
Bromoethane	74-96-4	1891	25.0C	—	—	—	—	20/21/22			28							
Bromofenoxim	13181-17-4		25.0C	—	—	—	—	20/22				2	13					
Bromoform	75-25-2	2515	3.0k	25.0H	—	20.0t	—	23	36/38			28	44					
Bromomethane	74-83-9	1062	0.1a	1.0c	7.0J	20.0t	—	26	36/37/38			1/2	7/9	24/25	27	45		
Bromophos	2104-96-3		25.0C	—	—	—	—	22				36						
Bromophos-ethyl	4824-78-6		3.0k	25.0CH	—	—	—	21	25			28	36/37	44				
1-Bromopropane	106-94-5	2344	25.0C	—	—	—	—	10	20			9	24					
alpha-Bromotoluene	100-39-0	1737	—	—	—	20.0t	—	36/37/38			39							
Bromotrifluoromethane	75-63-8	1009	—	—	—	—	—											
Bromoxynil	1689-84-5		3.0k	25.0H	—	—	—	23/24/25			2	13	44					
Brucine	357-57-3	1570	0.1a	1.0c	7.0J	—	—	26/28				1	13	45				
Buta-1, 3-diene	106-99-0		—	0.1Q	—	—	—	45(2)				9	16	33	53			
1,3-Butadiene	106-99-0		—	0.1Q	—	—	—	45(2)				9	16	33	53			
1,3-Butadiene (LPG)	106-99-0		—	0.5Q	—	—	—	45(2)				9	16	33	53			
Butanedioldiglycidyl ether	2425-79-8		25.0C	—	—	1.0Gu	—	20/21	36/38	43		26	28	37/39				
Butanenitrile	109-74-0	2411	3.0k	25.0H	—	—	—	10	23/24/25			44						
Butane -1-thiol	109-79-5	2347	—	—	—	—	—											
1-Butanethiol	109-79-5	2347	—	—	—	—	—											
2-Butanol	78-92-2	1120	25.0C	—	—	—	—	10	20			16						
Butan-2-0l	78-92-2	1120	25.0C	—	—	—	—	10	20			16						
secondary-Butanol	78-92-2	1120-	25.0C	—	—	—	—	10	20			16						
tertiary-Butanol	75-65-0	1120	25.0C	—	—	—	—	11	20			9	16					
2-Butanone oxime	96-29-7		—	—	—	1.0Gu	—	36	43				23	24				
Butanoyl choloride	141-75-3	2353	—	—	—	5.0e	10.0X	11	34				16	23	26	36		
2-Butenal	4107-30-3	1143	3.0k	25.0H	—	20.0t	—	11	23	36/37/38			29	33	44			
1-Butoxybutane	142-96-1	1149	—	—	—	10.0t	—	10	36/37//38									
2-Butoxyethanol	111-76-2	2369	12.5C	—	—	20.0t	—	20/21/22	37			24/25						
2-Butoxyethyl acetate	112-07-2		25.0C	—	—	—	—	20/21				24						
3-Butoxypropan-2-ol	5131-66-8		—	—	—	20.0t	—	36/38										
1-Butoxy-2-propanol	5131-66-8		—	—	—	20.0t		36/38										
1-(2-Butoxypropoxy) propan-2-ol	24083-03-2		25.0C	—	—	—	—	21/22										

Substance Name	CAS Number	UN Number	Conc cut-off Xn %	Conc cut-off T %	Conc cut-off T+%*	Conc cut-off Xi %*	Conc cut-off C %*	Risk Phrases	Safety Phrases
Butter'of antimony	10025-91-9	1733	—	—	—	5.Oeu	10.0X	34 37	26
tertiary-Butyl-∝, ∝-dimethyl benzyl peroxide	3457-61-2	2091	—	—	—	20.0t	—	11 36/37/38	3/7/9 14 27 37/39
Butyl acrylate	141-32-2	2348	—	—	—	1.0Gu	—	10 36/37/38 43	9
n-Butyl acrylate	141-32-2	2348	—	—	—	1.0Gu	—	10 36/37/38 43	9
n-Butylalcohol	71-36-3	1120	25.0C	—	—	—	—	10 20	16
tert-Butyl alcohol	75-65-0	1120	25.0C	—	—	—	—	11 20	9 16
sec-Butyl alcohol	78-92-2	1120	25.0C					10 20	16
normal-Butylamine	109-73-9	1125	—	—	—	20.0t	—	11 36/37/38	16 26 29
Butylamine	109-73-9	1125	—	—	—	20.0t	—	11 36/37/38	16 26 29
tert-Butylaminoethyl methacrylate	3775-90-4		—	—	—	1.0Gu	—	36/38 43	26
normal-Butyl chloroformate	592-34-7	2743	3.0k	25.0H	—	5.0e	10.0x	10. 23 34	26 36 44
tert-Butyl chromate	1189-85-1	—	—	—	—	—	—		
tertiary-Butyl cumene peroxide	3457-61-2	2091	—	—	—	20.0t	—	11 36/37/38	3/7//9 14 27 37/39
tertiary-Butyl cumyl peroxide	3457-61-2	2091	—	—	—	20.0t	—	11 36/37/38	3/7//9 14 27 37/39
1,4-Butyleneglycol diacrylate	1070-70-8		25.0C	—	—	10Gn	10.0X	21 34 43	26 36/37/39
1, 3-Butyleneglycol diacrylate	19485-03-1		25.0C	—	—	10Gn	10.0X	21 34 43	26 36/37/39
Butyl ether	142-96-1	1149	—	—	—	10.0t	—	10 36/37/38	
n-Butyl glycidyl ether	2426-08-6		25.0C	—	—	1.0G	—	20 43	24/25
Butyl glycidyl ether	2426-08-6		25.0C	—	—	1.0G	—	20 43	24/25
n-Butyl lactate	138-22-7		—	—	—	—	—		
Butyl mercaptan	109-79-5	2347	—	—	—	—	—		
normal-Butyl mercaptan	109-79-5	2347	—	—	—	—	—		
n-Butyl methacrylate	97-88-1	2227	—	—	—	1.0Gu	—	10 36/37/38 43	
tertiary-Butyl peroxide	110-05-4	2102	—	—	—	20.0tt	—	11 37/38	3/7/9 14 27 37/39
o-sec-Butylphenol	89-72-5	2228	—	—	—	—	—		
normal-Butyl thioalcohol	109-79-5	2347	—	—	—	—	—		
p-tert-Butyltoluene	98-51-1		—	—	—	—	—		
2-Butyne-1,4-diol	110-65-6	2761	3.0k	25.0H	—	5.0e	10.0X	25 34	22 36 44
Butyric acid	107-92-6	2820	—	—	—	5.0e	10.0X	34	26

Butyric alcohol	71-36-3	1120	25.0C	—	—	—	—	10	20			16		36				
Butyronitrile	109-74-0	2411	3.0k	25.0H	—	—	—	10	23/24/25			44						
Butyryl chloride	141-75-3	2353	—	—	—	5.0e	10.0X	11	34			16	23	26	36			
Cacodylic acid	75-60-5	1572	3.0k	25.0H	—	—	—	23/25				1/2	20/21	28	44			
Cadmium	7440-43-9	2570	—	—	—	—	—											
Cadmium (compounds)	N/A	2570	0.1C	—	—	—	—	20/21/22				22						
Cadmium chloride	10108-64-2		—	0.1QpN	—	—	—	23/25	45(2)	48		44	53					
Cadmium cyanide	542-83-6		0.1aE	1.0cDF	7.0J	—	—	26/27/28	32	33	40		1/2	7	28	29	45	
Cadmium fluoride	7790-79-6		0.1kDE	10.0H	—	—	—	23/25	33	40		22	44					
Cadmium fluorosilicate	17010-21-8		0.1kDE	10.0H	—	—	—	23/25	33	40		22	44					
Cadmium formate	4464-23-7		0.1kDE	10.0H	—	—	—	23/25	33	40		22	44					
Cadmium idodide	7790-80-9		0.1kDE	10.0H	—	—	—	23/25	33	40		22	44					
Cadmium oxide	1306-19-0		0.1kDE	10.0H	—	—	—	23/25	33	40		22	44					
Cadmium sulphide	1306-23-6		25.0C	—	—	—	—	20/21/22				22						
Cajeputene	138-86-3	2052	—	—	—	25.0t	—	10	38			28						
Calcium oxide	1305-78-8	1910	—	—	—	—	—											
Calcium arsenate	7778-44-1	1573	3.0k	25.0H	—	—	—	23/25				1/2	20/21	28	44			
Calcium arsenite	27152-57-4	1574	3.0k	25.0H	—	—	—	23/25				1/2	20/21	28	44			
Calcium carbimide	156-62-7	1403	—	—	—	—	—	23/25				1/2	20/21	28	44			
Calcium chloride	10043-52-4		—	—	—	20.0t	—	36				22	24					
Calcium chromate	13765-19-0		—	0.1QY	—	—	—	22	45(2)			44	53					
Calcium cyanamide	156-62-7	1403	—	—	—	—	—											
Calcium hexafluorosilicate	16925-39-6	2856	10.0C	—	—	—	—	22				2	13	24/25				
Calcium hydroxide	1305-62-0		—	—	—	—	—											
Calcium hypochlorite	7778-54-3	2880	—	—	—	5.0e	10.0X	8	31	34		2	26	43				
Calcium phosphide	1305-99-3	1360	0.1a	1.0c	7.0J	—	—	15/29	28			1/2	22	43	45			
Calcium polysulphides	1344-81-6		—	—	—	20.0t	—	31	36/37/38			28						
Calomel	10112-91-1		25.OC	—	—	—	—	22				2						
Camphoclor	8001-35-2		1.0Db	25.OCH	—	20.0t	—	21	25	37/38	40(3)		36/37	44				
Camphor	76-22-2	2717	—	—	—	—												
Caprolactam	105-60-2		—	—	—	—												
Captafol	2425-06-1		—	—	—	—												
Captan	133-06-2		—	—	—	—												
Carbaryl	63-25-2		25.0C	—	—	—	—	22					2	22	24			
Carbofuran	1563-66-2		0.1a	1.0C	7.0J	—	—	26/28					36/37		45			
Carbolic acid	108-95-2	1671	1.0k	5.0X	—	1.0e	5.0X	24/25	34			2	28	44				
Carbon bisulphide	75-15-0	1131	0.2q	1.0QN	—	20.0t	—	11	23	36/38	47(2)	48	16	33	36/37	45		
Carbon bisulphuret	75-15-0	1131	0.2q	1.0QN	—	20.0t	—	11	23	36/38	47(2)	48	16	33	36/37	45		
Carbon black	1333-86-4	1361	—	—	—	—	—											
Carbon disulfide	75-15-0	1131	0.2q	1.0QN	—	20.0t	—	11	23	36/38	47(2)	48	16	33	36/37	45		
Carbon monoxide	630-08-0	1016	3.0k	25.0H	—	—	—	23				1/2	7	16	45			
Carbon oxyfluoride	353-50-4	2417	—	—	—	—	—											
Carbon sulphide	74-15-0	1131	0.1a	1.0c	7.0J	—	—	26				27	29	33	43	45		

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Carbon sulphide	75-15-0	1131	0.2q	1.0QN	—	20.0t	—	11	23	36/38	47(2)	48	16	33	36/37	45
Carbon tetrabromide	558-13-4	2516	—	—	—	—	—									
Carbon tetrachloride	56-23-5	1846	0.2q	1.0ND	—	—	—	23/24/25		40(3)	48	23	36/37			44
Carbonyl chloride	75-44-5	1076	0.1a	1.0c	7.0J	—	—	26				1/2	7/9	24/25	45	
Carbonyl fluoride	353-50-4	2417	—	—	—	—	—									
Carbophenothion	786-19-6		3.0k	25.0H	—	—	—	24/25				28	36/37		44	
Catechol	120-80-9		25.0C	—	—	20.0t	—	21/22	36/38			22	26	37		
Caustic antimony	10025-91-9	1733	—	—	—	5.0eu	10.0X	34	37			26				
Caustic potash (solid)	1310-58-3	1813/ 1814	—	—	—	0.5e	2.0vX	35				2	26	37/39		
Caustic soda (solid)	1310-73-2	1823	—	—	—	1.0e	5.0dX	35				2	26	37/39		
CFC 11	75-69-4		—	—	—	—	—									
CFC 112	76-12-0		—	—	—	—	—									
CFC 112a	76-11-9		—	—	—	—	—									
CFC 113	76-13-1		—	—	—	—	—									
CFC 114	76-14-2	1958	—	—	—	—	—									
CFC 115	76-15-3	1020	—	—	—	—	—									
CFC 12	75-71-8	1028	—	—	—	—	—									
Chloral hydrate	302-17-0	2075	3.0k	25.0H	—	20.0t	—	25	36/38			25	44			
2-Chlorallyl diethyldithiocarbamate	95-06-7		—	0.1QY	—	—	—	22	45(2)			44	53			
Chloralose	15879-93-3		25.0C	—	—	—	—	20/22				2	16	24/25	28	
Chloramine T (sodium salt)	127-65-1		—	—	—	20.0t	—	36/37/38				2	7	15		
Chlordane	57-74-9		1.0DY	—	—	—	—	21/22	40(3)			36/37				
Chlordecone	143-50-0		1.0Db	25.0H	—	—	—	24/25	40(3)			22	36/37		44	
Chlordimeform	6164-98-3		1.0DY	—	—	—	—	21/22	40(3)			22	36/37			
Chlordimeform hydrochloride	19750-95-9		1.0DY	—	—	—	—	22	40(3)			22	36/37			
Chlorendic anhydride	115-27-5		—	—	—	1.0t	—	36/37/38				25				
Chlorfenac	85-34-7		25.0C	—	—	—	—	22								
Chlorfenethol	80-06-8		25.0C	—	—	—	—	22				36				
Chlorfenprop-methyl	14437-17-3		25.0C	—	—	—	—	21/22				36/37				
Chlorfenvinphos	470-90-6		0.1a	1.0bc	7.0J	—	—	24	28			28	36/37		45	
Chlorinated camphene	8001-35-2		1.0Db	25.0CH	—	20.0t	—	21	25	37/38		40(3)		36/37	44	
Chlorinated lime	7778-54-3	2880	—	—	—	5.0e	10.0X	8	31	34		2	26	43		
Chlorine	7782-50-5	1017	3.0k	25.0H	—	20.0t	—	23	36/37/38			7/9	44			

Chlorine cyanide	506-77-4	1589	—	—	—	—	—											
Chlorine dioxide	10049-04-4		—	—	—	—	—											
Chlorine trifluoride	7790-91-2	1749	—	—	—	—	—											
Chlormequat chloride	999-81-5		25.0C	—	—	—	—	20/21/22				2	13					
Chloroacetaldehyde	107-20-0	2232	—	—	—	—	—											
Chloroacetic acid	79-11-8	1750/1751	0.2k	2.0H	—	1.0e	5.0dX	23/24/25	35			22	36/37/39					
Chloroacetone	78-95-5	1695	—	—	—	—	—											
Chloroacetonitrile	107-14-2	2668	3.0k	25.0H	—	—	—	23/24/25				44						
Chloroacetophenone	532-27-4	1697	—	—	—	—	—											
∝-Chloroacetophenone	532-27-4	1697	—	—	—	—	—											
Choloroacetyl chloride	79-04-9	1752	—	—	—	5.0eU	10.0X	34	37			9	26					
3-Chloroaniline	108-42-9	2019	3.0k	25.0H	—	—	—	23/24/25	33			28	36/37	44				
meta-Chloroaniline	108-42-9	2019	3.0k	25.0H	—	—	—	23/24/25	33			28	36/37	44				
ortho-Chloroaniline	95-51-2	2019	3.0kE	25.0H	—	—	—	23/24/25	33			28	36/37	44				
2-Chloroaniline	95-51-2	2019	3.0k	25.0H	—	—	—	23/24/25	33			28	36/37	44				
4-Chloroaniline	106-47-8	2018	3.0k	25.0H	—	—	—	23/24/25	33			28	36/37	44				
para-Chloroaniline	106-47-8	2018	3.0k	25.0H	—	—	—	23/24/25	33			28	36/37	44				
Chloroaniline (mixed isomers)	27134-26-5		3.0k	25.0H	—	—	—	23/24/25	33			28	36/37	44				
ortho-Chloro-benzaldehyde	89-98-5		—	—	—	5.0e	10.0X	34				26						
2-Chlorobenzaldehyde	89-98-5		—	—	—	5.0e	10.0X	34	20/22			26						
Chlorobenzene	108-90-7	1134	5.0C	—	—	—	—	10	20			24/25						
2-Chlorobenzonitrile	873-32-5		25.0C	—	—	20.0t	—	21/22	36			23						
para-Chlorobenzoyl peroxide	94-17-7	2113	—	—	—	20.0t	—	3	36/37/38			3/7/9	14	27	34	37/39		
o-Chlorobenzylidene malononitrile	2698-41-1		—	—	—	—	—											
Chlorobromomethane	74-97-5	1887	—	—	—	—	—											
2-Chloro-1, 3-butadiene	126-99-8	1991	25.0C	—	—		—	20						9	16	29	33	
4-Chloro-m-cresol	59-50-7		5.0C	—	—	20.0t	—	21/22	38			26	28					
Chlorodifluoromethane	75-45-6	1018	—	—	—	—	—											
Chlorodimethyl ether	107-30-2	1239	—	0.1QY	—	—	—	11	20/21/22	45(1)		9	16	44	53			
1-Chloro-2, 4-dinitrobenzene	97-00-7	1577	3.0k	25.0H	—	—	—	23/24/25	33			28	37	44				
Chlorodinitrobenzene (mixed isomers)	25567-67-3	1577	3.0k	25.0H	—	—	—	23/24/25	33			28	37	44				
1-Chloro-2, 3-epoxypropane	106-89-8	2023	0.1k	1.0lH	—	1.0Gn	10.0X	10 45(2)	23/24/25	34	43	9	44	53				
2-Chloroethanol	107-07-3	1135	0.1a	1.0c	7.0J	—	—	26/27/28				7/9	28	45				
2-Chloroethylalcohol	107-07-3	1135	0.1a	1.0c	7.0J	—	—	26/27/28				7/9	28	45				
Chloroethylene	75-01-4	1086	—	0.1Q	—	—	—	45(1)				9	16	44	53			
Chloroform	67-66-3	1888	1.0Dr	—	—	20.0t	—	20/22	38	40(3)	48	36/37						
Chloromethane	74-87-3	1063	1.0Ds	—	—	—	—	20	40(3)	48		9	16	33				
Chloromethyl methyl ether	107-30-2	1239	—	0.1QY	—	—	—	11	20/21/22	45(1)		9	16	44	53			

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4-Chlore-3-methylphenol	59-50-7		5.0C	—	—	20.0t	—	21/22	38		26	28		
4-Chloro-2-methy-lphenoxyacetic acid (salts)	N/A		25.0C	—	—	—	—	20/21/22			2	13		
4-(4-Chloro-2-methylphenoxy) butyric acid (salts and esters)	N/A		25.0C	—	—	—	—	20/21/22			2	13		
3-Chloro-2-methylprop-1-ene	563-47-3	2554	25.0C	—	—	—	—	11	20		9	16	29	33
Chloronitroaniline (mixed isomers)	41587-36-4		0.1a	1.0cE	7.0J	—	—	26/27/28	33		28	36/37	45	
1, 4-Chloroni-trobenzene	100-00-5	1578	3.0k	25.0H	—	—	—	23/24/25	33		28	37	44	
1-Chloro-1-nitropropane	600-25-9		25.0C	—	—	—	—	20/22						
Chloropentaf-luoroethane	76-15-3	1020	—	—	—	—	—							
1-Chloropentane	543-59-9	1107	25.0C	—	—	—	—	11	20/21/22		9	29		
Choloropentane (mixed isomers)	2965-63-1	1107	25.0C	—	—	—	—	11	20/21/22		9	29		
Chlorophacinone	3691-35-8		1.0q	10.0N	—	—	—	24/25	48		36/37	44		
2-Chlorophenol	95-57-8	2021	25.0C	—	—	—	—	20/21/22			2	28		
3-Chlorophenol	108-43-0	2020	25.0C	—	—	—	—	20/21/22			2	28		
4-Chlorophenol	106-48-9	2020	25.0C	—	—	—	—	20/21/22			2	28		
m-Chloropheno-xyacetic acid	122-88-3		25.0C	—	—	—	—	20/21/22			2	13		
Chloropicrin	76-06-2	1580	0.1a	1.0c	7.0J	20.0t	—	26/2728	36/37/38		26	36	45	
β-Chloroprene	126-99-8	1991	25.0C	—	—	—	—	20			9	16	29	33
Chloroprene (inhibited)	126-99-8	1991	25.0C	—	—	—	—	20			9	16	29	33
1-Chloropropane	540-54-5	1278	25.0C	—	—	—	—	11	20/21/22		9	29		
3-Chloropropene	107-05-1	1100	0.1a	1.0c	7.0J	—		11	26		16	29	33	45
2-Chloropropionic acid	598-78-7	2511	25.0C	—	—	—	—	22	33		23	26	28	36
alpha-Chloropropionic acid	598-78-7	2511	25.0C	—	—	—	—	22	33		23	26	28	36
o-Chlorostyrene	2039-87-4		—	—	—	—	—							
Chlorosulphonic acid	7790-94-5	1754	—	—	—	1.0eu	5.0dX	14	35	37	26			
Chlorosulphuric acid	7790-94-5	1754	—	—	—	1.0eu	5.0dX	14	35	37	26			
alpha-Chlorotoluene	100-44-7	1738	—	—	—	20.0t	—	36/37/38			39			
meta-Cholorotolune	108-41-8		25.0C	—	—	—	—	20			24/25			
o-Chlorotoluene	95-49-8		25.0C	—	—	—	—	20			24/24			

ortho-Chlorotoluene	95-49-8		25.0C	—	—	—	—	20				24/25				
p-Chlorotoluene	106-43-4		25.0C	—	—	—	—	20				24/25				
2,4,6-chlorotrinitrobenzene	88-88-0	0155	0.1a	1.0c	7.0J	—	—	2	26/27/28			35	45			
Chlorphonium chloride	115-78-6		3.0k	25.0CH	—	20.0t	—	21	25	36/37		36/37/39		44		
Chlorpyrifos	2921-88-2		3.0k	25.0H	—	—	—	24/25				28	36/37	44		
Chlorpyrifos-methyl	5598-13-0		3.0k	25.0H	—	—	—	23/24/25				2	13	44		
Chlorthiamid	1918-13-4		25.0C	—	—	—	—	20/21/22				2	13			
Chlorthion	500-28-7		25.0C	—	—	—	—	20/21/22				2	13			
Chromic acid (solid)	1333-82-0	1463	—	—	—	1.0Ge	5.0dX	8	35	43		28				
Chromic anhydride	1333-82-0	1463	—	—	—	1.0Ge	5.0dX	8	35	43		28				
Chromium	7440-47-3		—	—	—	—	—									
Chromium chromate	24613-89-6		—	0.1Q	—	1.0Ge	5.0dX	8	35	43	45(2)	44	53			
Chromium oxychloride	14977-61-8	1758	—	—	—	1.0e	5.0dX	8	35			7/8	22	28		
Chromium trioxide (anhydrous)	1333-82-0	1463	—	—	—	1.0Ge	5.0dX	8	35	43			28			
Chromyl chloride	14977-61-8	1758	—	—	—	1.0e	5.0dX	8	35			7/8	22	28		
Chrysene	218-01-9		—	—	—	—	—									
Chrysotile	12001-29-5	2590	—	0.1QpÑ	—	—	—	23	45(1)	48		22	44	53		
Cinene	138-86-3	2052	—	—	—	25.0t	—	10	38			28				
Cinerin I	25402-06-6		25.0C	—	—	—	—	20/21/22				2	13			
Cinerin II	121-20-0		25.0C	—	—	—	—	20/21/22				2	13			
Cinnamene	100-42-5	2055	12.5C	—	—	12.5t	—	10	20	36/38		23				
Cinnamol	100-42-5	2055	12.5C	—	—	12.5t	—	10	20	36/38		23				
Clopidol	2971-90-6		—	—	—	—	—									
Cobalt	7440-48-4		—	—	—	—	—									
Cobalt carbonyl	10210-68-1		—	—	—	—	—									
Colchicine	64-86-8		0.1a	1.0c	7.0J	—	—	26/28				1	13	45		
Copper	7440-50-8	1587	—	—	—	—	—									
Copper (I) chloride	7758-89-6		25.0C	—	—	—	—	22				22				
Copper (II) chloride	1344-67-8	2802	25.0C	—	—	—	—	22				22				
Copper acetoarsenite	12002-03-8	1585	3.0k	25.0H	—	—	—	23/25				1/2	20/21	28	44	
Copper arsenite	10290-12-7	1586	3.0k	25.0H	—	—	—	23/25	33			1/2	20/21	28	44	
Copper naphthenate	1338-02-9		25.0C	—	—	—	—	10	22							
Copper oxide	1317-39-1		25.0C	—	—	—	—	22				22				
Coumachlor	81-82-3		10.0s	—	—	—	—	22	48			37				
Coumaphos	56-72-4		0.1a	1.0c	7.0J	—	—	21	28			28	36/37	45		
Coumatetralyl	5836-29-3		0.1a	1.0cp	7.0JN	—	—	24/25	27/28	48		36/37	45			
Coumithoate	572-48-5		3.0k	25.0H	—	—	—	25				28	36/37	44		
4-CPA	122-88-3		25.0C	—	—	—	—	20/21/22				2	13			
m-Cresol	108-39-4	2076	1.0k	5.0H	—	1.0e	5.0X	24/25	34				36/37/39		44	
0-Cresol	95-48-7	2076	1.0k	5.0H	—	1.0e	5.0X	24/25	34				36/37/39		44	

Substance Name	CAS Number	UN Number	Conc cut-off Xn %	Conc cut-off T %	Conc cut-off T+%*	Conc cut-off Xi %*	Conc cut-off C %*	Risk Phrases			Safety Phrases					
p-Cresol	106-44-5	2076	1.0k	5.0H	—	1.0e	5.0x	24/25	34		36/37/39			44		
Cresol (all isomers)	1319-77-3	2076	3.0k	25.0H	—	5.0e	10.0X	24/25	34		2	28		44		
Cresyl glycidyl ether	26447-14-3		—	—	—	2.0t	—	38			26	28				
Cresylic acid	1319-77-3	2022	3.0k	25.0H	—	5.0e	10.0X	24/25	34		2	28		44		
Crimidine	535-89-7		0.1a	1.0c	7.0J	—	—	26/27/28			1	13		45		
Crocidolite	12001-28-4	2212	—	0.1QpÑ	—	—	—	23	45(1)	48	22	44		53		
Crotonaldehyde	4170-30-3	1143	3.0k	25.0H	—	20.0t	—	11	23	36/37/38	29	33		44		
Crotonic aldehyde	4170-30-3	1143	3.0k	25.0H	—	20.0t	—	11	23	36/37/38	29	33		44		
Crotoxyphos	7700-17-6		3.0k	25.0H	—	—	—	24/25			28	36/37		44		
Crufomate	299-86-5		25.0C	—	—	—	—	21/22				36/37				
Cumene	98-82-8	1918	—	—	—	25.0t	—	10	37							
Cumene hydroperoxide	80-15-9	2116	—	—	—	1.0e	5.0dx	11	35			3/7/9	14	27	37	39
Cumyl hydroperoxide	80-15-9	2116	—	—	—	1.0e	5.0dx	11	35			3/7/9	14	27	37	39
Cupric arsenite	10290-12-7	1586	3.0k	25.0H	—	—	—	23/25	33			1/2	20/21	28	44	
Cupric chloride	1344-67-8	2802	25.0C	—	—	—	—	22				22				
Cuprous chloride	7758-89-6		25.0C	—	—	—	—	22				22				
Cyanamide	420-04-2		3.0k	25.0H	—	1.0Gu	—	25	36/38	43	3	22	36	44		
Cyanazine	21725-46-2		3.0k	25.0H	—	—	—	23/24/25			2	13		44		
Cyanides (inorganic)	N/A	1588	0.1a	1.0c	7.0J	—	—	26/27/28	32		1/2	7	28	29	45	
Cyanogen	460-19-5	1026	3.0k	25.0H	—	—	—	11	23		23	44				
Cyanogen chloride	506-77-4	1589	—	—	—	—	—									
Cyanophos	2636-26-2		25.0C	—	—	—	—	21/22			36/37					
Cyanthoate	3734-95-0		0.1a	1.0bc	7.0J	—	—	24	28		36/37		45			
Cyanuric chloride	108-77-0	2670	—	—	—	20.0t	—	36/37/38			28					
Cyclohexanol	108-93-0		25.0C	—	—	20.0t	—	20/22	37/38		24/25					
Cyclohexanone	108-94-1	1915	25.0C	—	—	—	—	10	20		25					
Cyclohexanone peroxide	12262-58-7	2117/ 2119	—	—	—	1.0e	5.0dx	3	35		3/7/9	14	27	34	37/39	
Cyclohexene	110-83-8	2256	—	—	—	—	—									
Cyclohexyl acrylate	3066-71-5		—	—	—	20.0t	—	37/38								
Cyclohexylamine	108-91-8	2357	25.0C	—	—	5.0e	10.0X	10	21/22	34			36/37/39			
Cyclonite	121-82-4	0072	—	—	—	—	—									
Cyclopentadiene	542-92-7	—	—	—	—	—	—									
Cyclopentanone	120-92-3	2245	—	—	—	20.0t	—	10	36/38				23			
Cyclotrimethylene trinitramine	121-82-4	0072	—	—	—	—	—									
Cycluron	2163-69-1		25.0C	—	—	—	—	20/21/22		2			13			

Cyhexatin	13121-70-5		25.0C	—	—	—	—	20/21/22		2		13					
2,4-D	94-75-7	2765	25.0C	—	—	20.0t	—	22	36/37/38			36/37					
2, 4-D (salts and esters)	N/A		25.0C	—	—	—	—	20/21/22		2		13					
Dazomet	533-74-4		25.0C	—	—	—	—	21/22				2	13				
2,4-DB	94-82-6		25.0C	—	—	—	—	21/22				36/37					
2,4-DB (Salts and esters)	N/A		25.0C	—	—	—	—	20/21/22				2	13				
DDT	50-29-3		1.0qD	10.0N	—	—	—	25	40(3)	48		22	36/37	44			
DDVP	62-73-7		3.0k	25.0H	—	—	—	23/24/25				2	13	44			
Deanol	108-01-0	2051	—	—	—	20.0t	—	10	36/37/38			28					
Decarbofuran	1563-67-3		3.0k	25.0H	—	—	—	23/24/25				2	13	44			
DEHP	117-81-7		—	—	—	—	—										
Demeton	8065-48-3		0.1a	1.0c	7.0J	20.0t	—	26/27/28	36			1	13	26	28	45	
Demeton-O	298-03-3		0.1a	1.0c	7.0J	—	—	27/28				28	36/37	45			
Demeton-O-methyl	867-27-6		3.0k	25.0H	—	—	—	25				24	36/37	44			
Demeton-S	126-75-0		0.1a	1.0c	7.0J	—	—	27/28				28	36/37	45			
Demeton-S-methyl	919-86-8		3.0k	25.0H	—	—	—	24/25				28	36/37	44			
Demeton-S-methyl sulphone	17040-19-6		3.0k	25.0CH	—	—	—	21	25			22	28	36/37	44		
2,4-DES	136-78-7		25.0C	—	—	—	—	20/21/22				2	13				
Desmetryne	1014-69-3		25.0C	—	—	—	—	20/21/22				2	13				
Diacetone	123-42-2	1148	—	—	—	10.0t	—	36				24/25					
Diacetone alcohol	123-42-2	1148	—	—	—	10.0t	—	36				24/25					
Diacetone alcohol (technical grade)	123-42-2	1148	—	—	—	10.0t	—	11	36			7	16	24/25			
N,N'-Diacetylbenzidine	613-35-4		25.0C	—	—	—	—	20/21/22				22	36				
Dialifos	10311-84-9		0.1a	1.0bc	7.0J	—	—	24	28			28	36/37	45			
Diallate	2303-16-4		1.0DY	—	—	—	—	22	40(3)			25	36/37				
Diallyl phthalate	131-17-9		25-0C	—	—	—	—	22				24/25					
Diamine	302-01-2	2029	0.1a	1.0cD	7.0J	5.0e	10.0X	10	26/27/28	34	40		36/37/39		45		
meta-Diaminobenzene	108-45-2	1673	3.0k	25.0H	—	1.0G	—	23/24/25	43			28	44				
ortho-Diaminobenzene	95-54-5	1673	3.0k	25.0H	—	1.0G	—	23/24/25	43			28	44				
1, 2-Diaminobenzene	95-54-5	1673	3.0k	25.0H	—	1.0G	—	23/24/25	43			28	44				
1, 3-Diaminobenzene	108-45-2	1673	3.0k	25.0H	—	1.0G	—	23/24/25	43			28	44				
1, 4-Diaminobenzene	106-50-3	1673	3.0k	25.0H	—	1.0G	—	23/24/25	43			28	44				
para-Diaminobenzene	106-50-3	1673	3.0k	25.0H	—	1.0G	—	23/24/25	43			28	44				
4, 4'-diaminobiphenyl	92-87-5	1885	—	0.1QY	—	—	—	22	45(1)			44	53				
4, 4'-Diaminodiphenyl-methane	101-77-9	2651	25.0C	—	—	—	—	20/21/22									
1, 2-Diaminoethane	107-15-3	1604	25.0C	—	—	1.0Gn	10.0X	10	21/22	34	43	9	26		36/37/39		
2, 4-Diamino-6-phenyl-S-triazine	91-76-9		25.0C	—	—	—	—	22									
2, 4-Diaminotoluene	95-80-7	1709	25.0C	—	—	—	—	20/21/22				28					
2, 4-Diaminotoluene sulphate	N/A		25.0C	—	—	—	—	20/21/22									

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2, 5-Diaminotoluene sulphate	615-50-9		25.0C	—	—	—	—	20/21/22				28				
o-Dianisidine	119-90-4		—	0.1QY	—	—	—	22	45(2)			44	53			
Diazinon	333-41-5		25.0C	—	—	—	—	22				24	25			
Diazomethane	334-88-3		—	—	—	—	—									
Dibenzo (a,h) anthracene	53-70-3		—	0.1Q	—	—	—	45(2)				44	53			
Dibenzoyl peroxide	94-36-0	2085	—	—	—	20.0t	—	3	36/37/38			3/7/9	14	27	34	37/39
1, 2-Dibromo-3-chloropropane	96-12-8	2872	—	0.1QbsZ	—	—	—	20/22	25	45(2)	46(2)		44	53		
Dibromodifluoromethane	75-61-6	1941	—	—	—	—	—									
1, 2-Dibromoethane	106-93-4	1605	—	0.1Qyo	—	20.0t	—	23/24/25	36/37/38	45(2)		44	53			
Dibromomethane	74-95-3	2664	12.5C	—	—	—	—	20				24				
Di-n-butylamine	111-92-2	2248	25.0C	—	—	—	—	10	20/21/22							
Dibutylaminoethanol	102-81-8	2873	—	—	—	—	—									
2-N-Dibutylaminoethanol	102-81-8	2873	—	—	—	—	—									
2. 6-Di-tert-butyl-p-cresol	128-37-0		—	—	—	—	—									
normal-Dibutyl ether	142-96-1	1149	—	—	—	10.0t	—	10	36/37/38							
Di-tert-butyl peroxide	110-05-4	2102	—	—	—	20.0t	—	11	37/38			3/7/9	14	27	37/39	
Dibutyl phosphate	107-66-4		—	—	—	—	—									
Dibutyl phthalate	84-74-2		—	—	—	—	—									
Dibutyltin hydrogen borate	75113-37-0		1.0q	10.0NY	—	1.0Gf	—	21/22	25	41	43	48	1/2	22	26	36/37 45
Dicamba	1918-00-9		25.0C	—	—	—	—	20/21/22				2	13			
Dicamba (salts)	N/A		25.0C	—	—	—	—	20/21/22				2	13			
Dichlofenthion	97-17-6		25.0C	—	—	—	—	22								
Dichlofluanid	1085-98-9		25.0C	—	—	—	—	20/21/22				2	13			
Dichlone	117-80-6		25.0C	—	—	20.0t	—	22	36/38			26				
Dichloroacetic acid	79-43-6	1764	—	—	—	1.0e	5.0dX	35				26				
Dichloroacetyl chloride	79-36-7	1765	—	—	—	1.0e	5.0dX	35				9	26			
Dichloroacetylene	7572-29-4		—	—	—	—	—									
Dichloroaniline (Mixed isomers)	27134-27-6		3.0k	25.0H	—	—	—	23/24/25	33			28	36/37	44		
1, 2-Dichlorobenzene	95-50-1	1591	5.0C	—	—	20.0t	—	22	36/37/38			23				
1, 4-Dichlorobenzene	106-46-7	1591	25.0C	—	—	—	—	22				2	24/25			
para-Dichlorobenzene	106-46-7	1591	25.0C	—	—	—	—	22				2	24/25			
o-Dichlorobenzene	95-50-1	1591	5.0C	—	—	20.0t	—	22	36/37/38			23				
ortho-Dichlorobenzene	95-50-1	1591	5.0C	—	—	20.0t	—	22	36/37/38			23				
p-Dichlorobenzene	106-46-7	1591	25.0C	—	—	—	—	22				2	24/25			

3, 3'-Dichlorobenzidine	91-94-1		—	0.1QY	—	1.0G	—	21	43		45(2)		44	53			
3, 3'-Dichlorobenzidine (salts)	N/A		—	0.1QY	—	1.0G	—	21	43		45(2)		44	53			
Di-para-chlorobenzoyl peroxide	94-17-7	2113	—	—	—	20.0t	—	3	36/37/38				3/7/9	14	27	34	37/39
Di-(4-chlorobenzoyl) peroxide	94-17-7	2113	—	—	—	20.0t	—	3	36/37/38				3/7/9	14	27	34	37/39
2, 2'-Dichlorodiethyl ether	111-44-4	1916	0.1a	1.0cD	7.0J	—	—	10	26/27/28		40		7/9	27	38	45	
Dichlorodifluoromethane	75-71-8	1028	—	—	—	—	—										
sym—Dichlorodimethylether	542-88-1	2249	—	0.1QPxb	7.09JYZ	—	—	10	22		24 26	45(1)	45	53			
1,3-Dichloro-5,5-dimethyl hydantoin	118-52-5		—	—	—	—	—										
Dichlorodiphenyltrich -loroethane	50-29-3		1.0cp	10.0N	—	—	—	25	40(3)		48		22	36/37	44		
1,1-Dichloroethane	75-34-3	2362	12.5c	—	—	20.0t	—	11	22		36/37		26	23			
1,2-Dichloroethane	107-06-2	1184	—	0.1QY	—	20.0t	—	11	22		36/37/38	45(2)	16	29	44	53	
Dichloroether	111-44-4	1916	0.1a	1.0D	7.0J	—	—	10	26/27/28		40		7/9	27	38	45	
1,1-Dichloroethylene	75-35-4	1303	1.0DL	—	—	—	—	20	40				7	16	29		
1.2-Dichloroethylene	540-59-0	1150	12.5C	—	—	—	—	11	20				7	16	29		
Dichloroethylene	540-59-0	1150	12.5C	—	—	—	—	11	20				7	16	29		
sym-Dichloroethyl ether	111-44-4	1916	0.1a	1.0cD	7.0J	—	—	10	26/27/28		40		7/9	27	38	45	
Dichloroethyl ether	111-44-4	1916	0.1a	1.0cD	7.0J	—	—	10	26/27/28		40		7/9	27	38	45	
Dichloroethyl oxide	111-44-4	1916	0.1a	1.0cD	7.0J	—	—	10	26/27/28		40		7/9	27	38	45	
Dichlorofluoromethane	75-43-4	1029	—	—	—	—	—										
Dichloroisocyanuric acid (dry)	2782-57-2	2465	25.0C	—	—	20.0t	—	8	22 31		36/37		8	26	41		
Dichloromethane	75-09-2	1593	1.0D	—	—	—	—	40(3)					23	24/25	36/37		
Dichloromonofluorom-ethane	75-43-4	1029	—	—	—	—	—										
1,1-Dichloro-1-nitroethane	594-72-9	2650	3.0k	25.OH	—	—	—	23/24/25					26	44			
2,4-Dichlorophenol	120-83-2	2021	25.0C	—	—	20.0t	—	22	36/38				26	28			
4-(2,4-Dichlorophe-noxy) butyric acid (salts)	N/A		25.0C	—	—	—	—	20/21/22					2	13			
2,4-Dichlorophen-oxy acetic acid	94-75-7	2765	25.0C	—	—	20.0t	—	22	36/37/38				36/37				
1,1-Dichloropropane	78-99-9		12.5C	—	—	—	—	11	20				9	16	29	33	
1,2-Dichloropropane	78-87-5	1279	12.5C	—	—	—	—	11	20				9	16	29	33	
1,3-Dichloropropane	142-28-9		12.5C	—	—	—	—	11	20				9	16	29	33	
1,3-Dichloro-2-propanol	96-23-1		—	0.1QbyZ	—	—	—	21	25	45(2)			44	53			
Dichloropropene	542-75-6	2047	25.0C	—	—	—	—	11	22				9	16	29	33	
1,1-Dichloropropene	563-58-6	2047	3.0k	25.0H	—	—	—	11	25				16	29	33	44	

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1,2-Dichloropropene	563-54-2	2047	3.0k	25.0H	—	—	—	11	25			16	29	33	44
1,3-Dichloropropene	542-75-6	2047	25.0C	—	—	—	—	11	22			9	16	29	33
2,3-Dichloropropene	78-88-6	2047	25.0C	—	—	—	—	11	22			9	16	29	33
3,3-Dichloropropene	563-57-5	2047	25.0C	—	—	—	—	11	22			9	16	29	33
2,2-Dichloropropionic acid	75-99-0		—	—	—	—	—								
Dichlorotetrafluoro-ethane	76-14-2	1958	—	—	—	—	—								
alpha-Dichlorotoluene	98-87-3	1886	—	—	—	20.0t	—	36/37/38				39			
Dichloro-1,3,5-triazinetrione, potassium-salt	2244-21-5		25.0C	—	—	20.0t	—	8	22	31	36/37		8	26	41
Dichloro-1,3,5-triazinetrione, sodium salt	2893-78-9	25.0C	—	—	20.0t	—		8	22	31	36/37		8	26	41
Dichloro-S-triazine-2, 4,6-trione	2782-57-2	2465	25.0C	—	—	20.0t	—	8	22	31	36/37		8	26	41
Dichloroprop	120-36-5		25.0C	—	—	5.0fu	—	21/22	38	41		22	36/37		
Dichlorprop (salts)	N/A		25.0C	—	—	—	—	20/21/22				2	13		
Dichlorvos	62-73-7		3.0k	25.0H	—	—	—	23/24/25				2	13	44	
Dicofol	115-32-2		25.0C	—	—	—	—	20/21/22				2	13		
Dicophane	50-29-3		1.0qD	10.0N	—	—	—	25	40(3)	48		22	36/37	44	
Dicoumarin	66-76-2		3.0k	25.0H	—	—	—	23/24/25				2	13	44	
Dicrotophos	141-66-2		0.1a	1.0bc	7.0J	—			24	28		28	36/37	45	
Dicumyl peroxide	80-43-3	2121	—	—	—	20.0t	—	11	36/37/38			3/7/9	14	27	37/39
Dicyanogen	460-19-5	1026	3.0k	25.0H	—	—	—	11	23			23	44		
Dicylohexylamine	101-83-7	2565	25.0C	—	—	5.0e	10.0X	22	34			36/37/39			
Dicylohexyl ammonium nitrite	3129-91-7	2687	10.0C	—	—	—	—	20/22				15	41		
Dicylopentadiene	77-73-6	2048	—	—	—	—	—					15	41		
Dicylopentadienyl iron	102-54-5		—	—	—	—	—								
Dieldrin	60-57-1		0.1a	1.0cpD	7.0JN	—	—	25	27	40(3)	48		22	36/37/	45
Diepoxybutane	1464-53-5		0.1kg	1.0DH	—	20.0t	—	23/24/25	36/37/38	40	42/43		23	24	44
Diethanolamine	111-42-2		—	—	—	10.0t	—	36/38				26			
Diethylamine	109-87-7	1154	—	—	—	20.0t		11	36/37			16	26	29	
2-Diethylaminoethanol	100-37-8	2686	—	—	—	20.0t	—	10	36/37/38			28			
Diethylaminoethanol	100-37-8	2686	—	—	—	20.0t	—	10	36/37/38			28			

2-Diethylaminoethyl methacrylate	105-16-8		25.0C	—	—	1.0Gu	—	20	36/38	43		26				
N,N-Diethylaminopropylamine	104-78-9	2684	25.0C	—	—	1.0Gn	10.0X	10	21/22	34	43		26		36/37/39	
N,N-Diethylaniline	91-66-7	2432	1.0kE	5.0H	—	—	—	23/24/25	33			28	37	44		
N,N-Diethyl-1,3-diaminopropane	104-78-9	2684	25.0C	—	—	1.0Gn	10.0X	10	21/22	34	43		26		36/37/39	
Diethylene diamine	110-85-0	2579	—	—	—	5.0e	10.0X	34				26	36			
1,4-Diethyline dioxide	123-91-1	1165	1.0D	—	—	20.0t	—	11	19	36/37	40(3)		16	36/37		
Diethylene ether	123-91-1	1165	1.0D	—	—	20.0t	—	11	19	36/37	40(3)		16	36/37		
Diethylene glycol diacrylate	4074-88-8		3.0k	25.0H	—	1.0Gu	—	24	36/38	43		28	39	44		
Diethylene glycol dinitrate	693-21-0	0075	0.1a	1.0cE	7.0J	—	—	3	26/27/28	33		33	35	36/37	45	
Diethylene oxide	123-91-1	1165	1.0D	—	—	20.0t	—	11	19	36/37	40(3)		16	36/37		
Diethylenetriamine	111-40-0	2079	25.0C	—	—	1.0Gn	10.0X	21/22	34	43		26	36/37/39			
N,N-Diethylethanolamine	100-37-8	2686	—	—	—	20.0t	—	10	36/37/38			28				
Di-(2-ethylhexyl)phthlate	117-81-7	—	—	—	—											
Diethylmagnesium	557-18-6	3053	—	—	—	5.0e	10.0X	14	17	34		16	43			
O,O-Diethyl-O-(4- methylcoumarin-7-yl) phosphorothioate	299-45-6		0.1a	1.0c	7.0J	—	—	26/27/28				1	13	28	45	
Diethyl oxalate	95-92-1	2525	25.0C	—	—	20.0t	—	22	36			23				
N,N-Diethyl-p-phenylenediamine	93-05-0		3.0k	25.0H	5.0e		10.0X		25	34		26	36	44		
Diethyl phthalate	84-66-2		—	—	—	—										
Diethyl sulphate	64-67-5	1594	—	0.1QY	—	5.0e	10.0X	20/21/22	34	45(2)	46(2)		26	44	53	
Diethylzinc	557-20-0	1366	—	—	—	5.0e	10.0X	14	17	34		16	43			
Difluorodibromomethane	75-61-6	1941	—	—	—	—										
Digitoxin	71-63-6		3.0k	25.0H	—	—	—	23/25		33		1	44			
Diglycidyl ether	2238-07-5		—	—	—	—	—									
Diglycidyl resorcinol ether	101-90-6		0.1k	1.0DH	—	1.0G	—	23/24/25	40	43		23	24	44		
Digol dinitrate	693-21-0	0075	0.1a	1.0cE	7.0J	—	—	3	26/27/28	33		35	36/37	45		
1,4 -Dihydroxybenzene	123-31-9		25.0C	—	—	—	—	20/22				2	24/25	39		
1,2 -Dihydroxybenzene	120-80-9		25.0C	—	—	20.0t	—	21/22	36/38			22	26	37		
Diisobutyl ketone	108-83-8	1157	—	—	—	10.0t	—	10	37			24				
Diisopropanolamine	110-97-4		—	—	—	20.0t	—	36				26				
Diisopropylamine	108-18-9	1158	—	—	—	20.0t	—	11	36/37/38			9	16			
Diketene	674-82-8	2521	25.0C	—	—	—	—	10	20			3				
Dilauroyl peroxide	105-74-8	2124	—	—	—	20.0t	—	11	36/37/38			3/7/9	14	27	37/39	
Dimefox	115-26-4		0.1a	1.0c	7.0J	—	—	27/28				23	28	36/37	38	45
Dimepranol	108-16-7		25.0C	—	—	5.0e	10.0X	10	22	34		23	26	36		
Dimercury dichloride	10112-91-1		25.0C	—	—	—	—	22				2				

Substance Name	CAS Number	UN Number	Conc cut-off Xn %	Conc cut-off T %	Conc cut-off T+%*	Conc cut-off Xi %*	Conc cut-off C %*	Risk Phrases				Safety Phrases				
Dimetan	122-15-6		3.0k	25.0H	—	—	—	25				1/2	36/37	45		
Dimethoate	60-51-5		25.0C	—	—	—	—	21/22				36/37				
1,4 -Dimethoxyacetylene	110-65-6	2716	3.0k	25.0H	—	5.0e	10.0X	25	34			22	36	44		
3,3' -Dimethoxybenzidine	119-90-4		—	0.1QY	—	—	—	22	45(2)			44	53			
3,3' -Dimethoxybenzidine (salts)	N/A		—	0.1QY	—	—	—	22	45(2)			44	53			
1,2 -Dimethoxyethane	110-71-4	2252	25.0C	—	—	—	—	10	19	20		24/25				
Dimethoxymethane	109-87-5	1234	—	—	—	—	—									
Dimethoxystrychnine	357-57-3	1570	0.1a	1.0c	7.0J	—	—	26/28				1	13	45		
N,N-Dimethyl acetamide	127-19-5		25.0C	—	—	20.0t	—	20/21	36			26	28	36		
Dimethylamine	124-40-3	1032	—	—	—	20.0t	—	36/37				16	26	29		
2- Dimethylaminoethanol	108-01-0	2051	—	—	—	20.0t	—	10	36/37/38			28				
Dimethylaminoethyl methacrylate	2867-47-2	2522	25.0C	—	—	1.0Gu	—	21/22	36/38	43		26	28			
2-Dimethylaminoethylamine	108-00-9		25.0c	—	—	1.0e	5.0dX	11	21/22	35		16	23	26	28	36
1- Dimethylaminopropan -2-ol	108-16-7		25.0C	—	—	5.0e	10.0X	10	22	34		23	26	36		
3,4 Dimethylaniline	95-64-7	1711	3.0k	25.0H	—	—	—	23/24/25	33			28	36/37	44		
N,N-Dimethylaniline	121-69-7	2253	1.0kE	5.0H	—	—	—	23/24/25	33			28	37	44		
Dimethylarsinic acid	75-60-5	1572	3.0k	25.0H	—	—	—	23/25				1/2	20/21	28	44	
Dimethylbenzene (mixed isomers)	1330-20-7	1307	12.5C	—	—	20.0t	—	10	20/21	38		16	25	29		
3,3' -Dimethylbenzidine	119-93-7		—	0.1QY	—	—	—	22	45(2)			44	53			
N,N' -Dimethylbenzidine	8810-74-4		25.0C	—	—	—	—	20/21/22				22	36			
N,N'-Dimethylbenzylamine	103-83-3	2619	25.0C	—	—	5.0e	10.0X	10	20/21/22	34		26	36			
Dimethyl carbamoyl chloride	79-44-7	2262	—	0.1QbYZ	—	20.0t	—	22	23	36/37/38	45(2)		44	53		
N,N-Dimethylcarbamoyl chloride	79-44-7	2262	—	0.1QbYZ	—	20.0t	—	22	23	36/37/38	45(2)		44	53		
Dimethyl carbonate	616-38-6	1161	25.0C	—	—	—	—	11	20/21/22			9	29			
N,N-Dimethyl-1,3 -diaminopropane	109-55-7		25.0C	—	—	1.0Gn	10.0X	10	22	34	43		26	36/37/39		
Dimethyl-dichlorosilane	75-78-5	1162	—	—	—	20.0t	—	11	36/37/38							
Dimethyleneimine	151-56-4	1185	0.1a	1.0cD	7.0J	—	—	11	26/27/28	40		9	29	36	45	

Dimethylethanolamine	108-01-0	2051	—	—	—	20.0t	—	10	36/37/38			28				
Dimethylformamide	68-12-2	2265	25.0C	—	—	20.0t	—	20/21	36			26	28	36		
N,N -Dimethylformamide	68-12-2	2265	25.0C	—	—	20.0t	—	20/21	36			26	28	36		
2,6-Dimethyl-4-heptanone	108-83-8	1157	—	—	—	10.0t		10	37				24			
1,2-Dimethylhydrazine	540-73-8		—	0.1QbZ	—	—	—	23/24/25	45(2)			44	53			
1,1-Dimethylhydrazine	57-14-7	1163	—	0.1QbZ	—	5.0e	10.0X	11	23/25	34	45(2)		16	33	44	53
Dimethyl hydrazine (asymetrical)	57-14-7	1163	—	0.1QbZ	—	5.0e	10.0X	11	23/25	34	45(2)		16	33	44	53
1,2 -Dimethylimidazole	1739-84-0		25.0C	—	—	5.0fu	—	22	38	41		24	26			
Dimethylmagnesium	2999-74-8	3053	—	—	—	5.0e	10.0X	14	17	34		16	43			
Dimethylnitrosamine	62-75-9		—	0.1QPxp	7.0JÑ	—	—	25	26	45(2)	48		45	53		
N,N -Dimethylph-enylenediamine	99-98-9		3.0k	25.0H	—	—	—	23/24/25				28	44			
Dimethylphthalate	131-11-3		—	—	—	—	—									
Dimethylsulfamoyl-chloride	13360-57-1		—	0.1QPxy	7.0J	5.0e	10.0X	21/22	26	34	45(2)		45	53		
Dimethyl sulphate	77-78-1	1595	—	0.1QPxb	7.0JZ	5.0e	10.0X	25	26	34	45(2)		26	27	45	53
Dimethylzinc	544-97-8	1370	—	—	—	5.0e	10.0X	14	17	34		16	43			
Dimetilan	644-64-4		3.0k	25.0H	—	—	—	23/24/25				2	13	44		
Dimexan	1468-37-7		25.0C	—	—	—	—	20/21/22				2	13			
Dinex	131-89-5		3.0k	25.0H	—	—	—	23/24/25				2	13	44		
Dinex (salts and esters)	N/A		3.0k	25.0H	—	—	—	23/24/25				2	13	44		
Dinitolmide	148-01-6		-	—	—	—	—									
2,4-Dinitroaniline	97-02-9		0.1a	1.0cE	7.0J	—	—	26/27/28	33			28	36/37	45		
1,2-Dinitrobenzene	528-29-0	1597	0.1a	1.0cE	7.0J	—	—	26/27/28	33			28	36/37	45		
1,3-Dinitrobenzene	99-65-0	1597	0.1a	1.0cE	7.0J	—	—	26/27/28	33			28	36/37	45		
1,4-Dinitrobenzene	100-25-4	1597	0.1a	1.0cE	7.0J	—	—	26/27/28	33			28	36/37	45		
m-Dinitrobenzene	99-65-0	1597	0.1a	1.0cE	7.0J	—	—	26/27/28	33			28	36/37	45		
meta-Dinitrobenzene	99-65-0	1597	0.1a	1.0cE	7.0J	—	—	26/27/28	33			28	36/37	45		
o-Dinitrobenzene	528-29-0	1597	0.1a	1.0cE	7.0J	—	—	26/27/28	33			28	36/37	45		
ortho -Dinitrobenzene	528-29-0	1597	0.1a	1.0cE	7.0J	—	—	26/27/28	33			28	36/37	45		
p-Dinitrobenzene	100-25-4	1597	0.1a	1.0cE	7.0J	—	—	26/27/28	33			28	36/37	45		
Dinitrobenzene (mixed isomers)	25154-54-5	1597	0.1a	1.0cE	7.0J	—	—	26/27/28	33			28	36/37	45		
2,4-Dinitrochlorobenzene	97-00-7	1577	3.0k	25.0H	—	—	—	23/24/25	33			28	37	44		
4,6-Dinitro-ortho-cresol	534-52-1	1598	0.1a	1.0cE	7.0J	—	—	26/27/28	33			1	13	28	45	
Dinitro-o-cresol	534-52-1	1598	0.1a	1.0cE	7.0J	—	—	26/27/28	33			1	13	28	45	
4, 6-Dinitro-o-cresol ammonium salt	2980-64-5		0.1a	1.0cE	7.0J	—	—	26/27/28	33			1	13	28	45	
Dinitrogen tetroxide	10544-72-6	1067	0.1a	1.0c	7.0J	20.0t	—	26	37			7/9	26	45		
2, 4-Dinitrophenol	51-28-5		3.0k	25.0H	—	—	—	23/24/25	33			28	37	44		
Dinitrophenol (mixed isomers)	25550-58-7	1599	3.0k	25.0H	—	—	—	23/24/25	33			28	37	44		
Dinitrophenol (salts)	N/A		3.0k	25.0H	—	—	—	23/24/25	33			28	37	44		

Substance Name	CAS Number	UN Number	Conc cut-off Xn %	Conc cut-off T %	Conc cut-off T+%*	Conc cut-off Xi %*	Conc cut-off C %*	Risk Phrases	Safety Phrases
Dinitrophenol, sodium salt	1011-73-0	1321	3.0k	25.0H	—	—	—	23/24/25 33	28 37 44
2, 4-Dinitrotoluene	121-14-2	2038	3.0k	25.0H	—	—	—	23/24/25 33	28 37 44
Dinitrotoluene (mixed isomers)	25321-14-6	2038	3.0k	25.0H	—	—	—	23/24/25 33	28 37 44
Dinobuton	973-21-7		3.0k	25.0H	—	—	—	25	37 44
Dinocap	39300-45-3		25.0C	—	—	—	—	20/22	2 13
Dinocton	104078-12-8		25.0C	—	—	—	—	20/21/22	2 13
8, 9-Dinorborn-5-ene-2, 3-dicarboxylic anhydride	25134-21-8		25.0C	—	—	1.0Gu	—	22 36/37/38 43	39
Dinosam	4097-36-3		3.0k	25.0H	—	—	—	23/24/25	2 13 44
Dinosam (salts and esters)	N/A		3.0k	25.0H	—	—	—	23/24/25	2 13 44
Dinoseb	88-85-7		0.1a	1.0c	7.0J	—	—	26/27/28	1 13 44
Dinoseb (salts and esters)	N/A		3.0k	25.0H	—	—	—	23/24/25	2 13 44
Dinoterb	1420-07-1		3.0k	25.0H	—	—	—	23/24/25	2 13 44
Dinoterb (salts and esters)	N/A		3.0k	25.0H	—	—	—	23/24/25	2 13 44
Di-sec-octyl phthalate	117-81-7		—	—	—	—	—		
Dioxacarb	6988-21-2		3.0k	25.0H	—	—	—	25	37 44
1, 4-Dioxan	123-91-1	1165	1.0D	—	—	20.0t	—	11 19 36/37 40(3)	16 36/37
Dioxane	123-91-1	1165	1.0D	—	—	20.0t	—	11 19 36/37 40(3)	16 36/37
1, 4-Dioxane	123-91-1	1165	1.0D	—	—	20.0t	—	11 19 36/37 40(3)	16 36/37
Dioxathion	78-34-2		0.1a	1.0bc	7.0J	—	—	24 26/28	28 36/37 45
Dioxyethylene ether	123-91-1	1165	1.0D	—	—	20.0t	—	11 19 36/37 40(3)	16 36/37
Dipentene	138-86-3	2052	—	—	—	25.0t	—	10 38	28
Diphenamid	957-51-7		25.0C	—	—	—	—	20/21/22	2 13
Diphenylamine	122-39-4	2811	3.0k	25.0H	—	—	—	23/24/25 33	28 36/37 44
Diphenylaminechloroarsine	578-94-9	1698	3.0k	25.0H	—	—	—	23/25	1/2 20/21 28 44
Diphenylchloroarsine	712-48-1	1699	3.0k	25.0H	—	—	—	23/25	2 20/21 28 44
Diphenylmethane-4, 4'-diisocyanate	101-68-8	2849	1.0GY	—	—	20.0t	—	20 36/37/38 42	26 28 38 45
Dipicrylamine	131-73-7	0079	0.1a	1.0cE	7.0J	—	—	2 26/27/28 33	35 36 44
Dipropylamine	142-84-7	2383	—	—	—	20.0t	—	11 36/37/38	9 16
Di-normal-propylamine	142-84-7	2383	—	—	—	20.0t	—	11 36/37/38	9 16
Dipropylene triamine	56-18-8	2269	25.0C	—	—	1.0Gn	10.0X	21/22 34 43	26 36/37/39

Diquat	2764-72-9		0.1a	1.0c	7.0J	—	—	26/27/28				1	13	45				
Diquat (salts)	N/A		0.1a	1.0	7.0J	—	—	26/27/28				1	13	45				
Diquat dibromide	85-00-7		0.1a	1.0c	7.0J	—	—	26/27/28				1	13	45				
Diquat dichloride	4032-26-2		0.1a	1.0c	7.0J	—	—	26/27/28				1	13	45				
Direct Black 38	1937-37-7		—	—	—	—	—											
Disodium selenate	13410-01-0	2630	3.0k	25.0H	—	—	—	23/25	33			20/21	28	44				
Disulfiram	97-77-8		—	—	—	—	—											
Disulfoton	298-04-4	0.1a	1.0c	7.0J	—	—	27/28					28	36/37	45				
Disulphur dichloride	10025-67-9	1828	—	—	—	5.0eu	10.0X	14	34	37		26						
Disulphuric acid	8014-95-7	1831	—	—	—	1/0eu	5.0dX	14	35	37		26	30					
Dithianon	3347-22-6	—	25.0C	—	—	—	—	20/21/22						2	13			
Diuron	330-54-1		10.0s	—	—	—	—	22	48			2	22	37				
Divinyl benzene	1321-74-0		—	—	—	—	—											
DMCC	79-44-7	2262	—	0.1QYZb	—	20.0t	—	22	23	36/37/38	45(2)		44	53				
DMNA	62-75-9		—	0.1QPxp	7.0JN	—	—	25	26	45(2)	48		45	53				
DNOC, potassium salt	N/A		3.0k	25.0H	—	—	—	23/24/25	33				2	13	44			
DNOC, sodium salt	2312-76-7		3.0k	25.0H	—	—	—	23/24/25	33			2	13	44				
Dodecahydrodipheny-lamine	101-83-7	2565	25.0C	—	—	5.0e	10.0X	22	34			36/37/39						
Dodine	2439-10-3		25.0C	—	—	20.0t	—	22	36/38			26						
Drazoxolon	5707-69-7		3.0k	25.0H	—	—	—	23/24/25					2	13				
DSMA	144-21-8		3.0k	25.0H	—	—	—	23/25				1/2	20/21	28	44			
Dutch liquid	107-06-2	1184	—	0.1QY	—	20.0t	—	11	22	36/37/38	45(2)		16	29	44	53		
Dutch oil	107-06-2	1184	—	0.1QY	—	20.0t	—	11	22	36/37/38	45(2)		16	29	44	53		
EDB	106-93-4	1605	—	0.1QYo	—	20.0t	—	23/24/25	36/37/38	45(2)		44	53					
EDC	107-06-2	1184	—	0.1QY	—	20.0t	—	11	22	36/37/38	45(2)		16	29	44	53		
Emerald Green	12002-03-8	1585	3.0k	25.0H	—	—	—	23/25				1/2	20/21	28	44			
Endosulfan	115-29-7		3.0k	25.0H	—	20.0t	—	24/25	36			28	36/37	44				
Endothal-sodium	129-67-9		3.0k	25.0CH	—	20.0t	—	21	25	36/37/38		36/37/39		44				
Endothion	2778-04-3		3.0k	25.0H	—	—	—	24/25				36/37	44					
Endrin	72-20-8		0.1a	1.0bc	7.0J	—	—	24	28			22	36/37	45				
Ephedrine	299-42-3		25.0C	—	—	—	—	22				22	25					
Epichlorohydrin	106-89-8	2023	0.1k	1.0LH	—	1.0Gn	10.0X	10 45(2)	23/24/25	34	43		9	44	53			
EPN	2104-64-5		0.1a	1.0c	7.0J	—	—	27/28				22	36/37	45				
1, 2-Epoxy-4-epoxyethyl cyclohexane	106-87-6		0.1k	1.0DH	—	—	—	23/24/25	40			23	24	44				
1, 2-Epoxyethane	75-21-8	1040	—	0.1Qbz	—	20.0t	—	23	36/37/38	45(2)	46(2)		3/7/9	16	33	44	53	
1, 2-Epoxy-3-phenoxypropane	122-60-1		25.0C	—	—	1.0G	—	21	43			24/25						
1, 2-Epoxypropane	75-56-9	1280	—	0.1QY	—	20.0t	—	20/21/22	36/37/38	45(2)		3/7/9	16	33	44	53		
2, 3-Epoxy-1-propanol	556-52-5	2622	1.0GCk	5.0H	—	20.0t	—	21/22	23	36/37/38	42/43		44					
2, 3-Epoxypropyl methacrylate	106-91-2		25.0C	—	—	1.0Gu	—	20/21/22	36/38	43		26	28					

Substance Name	CAS Number	UN Number	Conc cut-off Xn %	Conc cut-off T %	Conc cut-off T+%*	Conc cut-off Xi %*	Conc cut-off C %*	Risk Phrases			Safety Phrases			
2,3-Epoxypropyl-2-ethyl cyclohexyl ether	130014-35-6		—	—	—	1.0Gu	—	36/38	43		26	28	37/39	
1,2-Epoxy-3-(tolyloxy) propane	26447-14-3		—	—	—	2.0t	—	38			26	28		
EPTC	759-94-4		25.0C	—	—	—	—	22			23			
Erbon	136-25-4		25.OC	—	—	20.0t	—	22						
Ethanal	75-07-0	1089	1.0D	—	—	20.0t	—	36/37	40(3)		16	33	36/37	
Ethane-1,2,-dione	107-22-2		—	—	—	10.0t	—	36/38			26	28		
Ethane nitrile	75-05-8	1648	3.0k	25.0H	—	—	—	11	23/24/25		16	27	44	
Ethanethiol	75-08-1	2363	25.0C	—	—	—	—	11	20		16	25		
Ethanoic anhydride	108-24-7	1715	—	—	—	8.0e	20.0X	10	34		26			
Ethanolamine	141-43-5	2491	25.0C	—	—	20.0t		20	36/37/38					
Ethion	563-12-2		3.0k	25.0CH	—	—	—	21	25		25	36/37	44	
Ethoate-methyl	116-01-8		25.0C	—	—	—	—	21/22			36/37			
Ethoprophos	13194-48-4		0.1a	1.0bc	7.0JZ	—	—	25	27			36/37/39	45	
2-Ethoxyethanol	110-80-5	1171	5.0QY	—	—	—	—	10	20/21/22	47(2)	53			
2-Ethoxyethyl acetate	111-15-9	1172	5.0QY	—	—	—	—	20/21/22	47(2)		53			
Ethoxyquin	91-53-2		25.0C	—	—	—	—	20/21/22			2	13		
Ethyl chloroacetate	105-39-5	1181	3.0k	25.0H	—	—	—	23/24/25			7/9	44		
Ethyl chloroethanoate	105-39-5	1181	3.0k	25.0H	—	—	—	23/24/25			7/9	44		
Ethyl methacrylate	97-63-2	2277	—	—	—	1.0Gu	—	11	36/37/3843		9	16	29	33
Ethyl nitrite	109-95-5	1194	25.0C	—	—	—	—	2	20/21/22					
Ethyl acrylate	140-88-5	1917	25.0C	—	—	1.0GW	—	11	20/22	36/37/38	43	9	16	33
Ethyl aldehyde	75-07-0	1089	1.0D	—	—	20.0t	—	36/37	40(3)			16	33	36/37
Ethylamine	75-04-7	1036	—	—	—	20.0t	—	36/37				16	26	29
Ethyl amyl ketone	106-68-3	2271	—	—	—	—	—							
N-Ethylaniline	103-69-5	2272	3.0k	25.0H	—	—	—	23/24/25	33			28	37	44
Ethyl benzene	100-41-4	1175	25.0C	—	—	—	—	11	20			16	24/25	29
Ethylbenzol	100-41-4	1175	25.0C	—	—	—	—	11	20			16	24/25	29
Ethyl bromide	74-96-4	1891	25.0C	—	—	—	—	20/21/22				28		
Ethyl bromoacetate	105-36-2	1603	0.1a	1.0c	7.0J	—	—	26/27/28				7/9	26	45
2-Ethylbutanol	97-95-0	2275	25.0C	—	—	—	—	21/22						
2-Ethybutyl alcohol	97-95-0	2275	25.0C	—	—	—	—	21/22						
Ethyl butyl ketone	106-35-4		25.0C	—	—	20.0t	—	10	20	36		24		
Ethyl chlorocarbonate	541-41-3	1182	3.0k	25.0H	—	20.0t	—	11	23	36/37/38		9	16	33 44
Ethyl chloroformate	541-41-3	1182	3.0k	25.0H	—	20.0t	—	11	23	36/37/38		9	16	33 44

Ethyldimethylamine	598-56-1	2734/ 2735	25.0C	—	—	5.0e	10.0X	20/22	34				23	16	26	36	
S-Ethyl-N, N-dipropyl thiocarbamate	759-94-4		25.0C	—	—	—	—	22					23				
Ethylene glycol mono-ethylether acetate	111-15-9	1172	5.0QY	—	—	—	—	20/21/22	47(2)			53					
Ethylene glycol monoethylether acetate	110-49-6	1189	5.0QY	—	—	—	—	20/21/22	47(2)			53					
Ethylene chloride	107-06-2	1184	—	0.1QY	—	20.0t	—	11	22	36/37/38	45(2)		16	29	44	53	
Ethylene chlorohydrin	107-07-3	1135	0.1a	1.0C	7.0J	—	—	26/27/28				7/9	28	45			
Ethylenediamine	107-15-3	1604	25.0C	—	—	1.0Gn	10.0X	10	21/22	34	43		9	26	36/37/39		
Ethylene dibromide	106-93-4	1605	—	0.1Qyo	—	20.0t	—	23/24/25	36/37/38	45(2)		44	53				
Ethylene dichloride	107-06-2	1184	—	0.1QY	—	20.0t	—	11	22	36/37/38	45(2)		16	29	44	53	
Ethylene dimethacrylate	97-90-5		—	—	—	20.0t	—	36/37									
Ethylene dinitrate	628-96-6		0.1a	1.0cE	7.0J	—	—	2	26/27/28	33			33	35	36/37	45	
Ethyleneglycol	107-21-1		25.0C	—	—	—	—	22					2				
Ethylene glycol dimethacrylate	97-90-5		—	—	—	20.0t	—	36/37									
Ethylene glycol dimethyl ether	110-71-4	2252	25.0C	—	—	—	—	10	19	20			24/25				
Ethylene glycol dinitrate	628-96-6		0.1a	1.0cE	7.0J	—	—	2	26/27/28	33			33	35	36/37	45	
Ethylene glycol monobutyl ether	111-76-2	2369	12.5c	—	—	20.0t	—	20/21/22	37				24/25				
Ethylene glycol monoethyl ether	110-80-5	1171	5.0QY	—	—	—	—	10	20/21/22	47(2)			53				
Ethylene glycol monoiso propyl ether	109-59-1		25.0C	—	—	20.0t	—	20/21	36				24/25				
Ethylene glycol monomethylether	109-86-4	1188	5.0QY	—	—	—	—	10	20/21/22	47(2)			53				
Ethylenelmine	151-56-4	1185	0.1a	1.0cD	7.0J	—	—	11	26/27/28	40				9	29	36	45
Ethylene oxide	75-21-8	1040	—	0.1QbZ	—	20.0t	—	23	36/37/38	45(2)	46(2)		3/7/9	16	33	44	53
Ethylglycol acetate	111-15-9	1172	5.0QY	—	—	—	—	20/21/22	47(2)				53				
2-Ethylhexyl acrylate	103-11-7		—	—	—	1.0Gu	—	37/38	43								
Ethyl hydrosulphide	75-08-1	2363	25.0C	—	—	—	—	11	20				16	25			
Ethylidene chloride	75-34-3	2362	12.5C	—	—	20.0t	—	11	22	36/37			16	23			
Ethylidene dichloride	75-34-3	2362	12.5C	—	—	20.0t	—	11	22	36/37			16	23			
Ethylidene diethyl ether	105-57-7	1088	—	—	—	10.0t	—	11	36/38				9	16	33		
Ethyl mercaptan	75-08-1	2363	25.0C	—	—	—	—	11	20				16	25			
Ethyl methyl ketone	78-93-3	1193	—	—	—	20.0t	—	36/37					9	16	25	33	
Ethyl methyl ketone oxime	96-29-7		—	—	—	1.0Gu	—	36	43				23	24			
N-Ethylmorpholine	100-74-3		—	—	—	—	—										
Ethyl oxalate	95-92-1	2525	25.0C	—	—	20.0t	—	22	36				23				
Ethylphenylamine	103-69-5	2272	3.0k	25.0H	—	—	—	23/24/25	33				28	37	44		

Substance Name	CAS Number	UN Number	Conc cut-off Xn %	Conc cut-off T %	Conc cut-off T+%*	Conc cut-off Xi %*	Conc cut-off C %*	Risk Phrases				Safety Phrases				
Ethyl propenoate	140-88-5	1917	25.0C	—	—	1.0Gw	—	11	20/22	36/37/38	43		9	16	33	
Ethyl silicate	78-10-4	1292	25.0C	—	—	20.0t	—	10	20	36/37						
Ethly sulphate	64-67-5	1594	—	0.1QY	—	5.0e	10.0X	20/21/22	34	45(2)	46(2)		26	44	53	
Ethyl sulphydrate	75-08-1	2363	25.0C	—	—	—	—	11	20			16	25			
Ethyl thioalcohol	75-08-1	2363	25.0C	—	—	—	—	11	20			16	25			
Fenaminosulf	140-56-7		3.0k	25.0H	—	—	—	23/24/25				2	13	44		
Fenazaflor	14255-88-0		25.0C	—	—	—	—	20/21/22				2	13			
Fenchlorphos	299-84-3		25.0C	—	—	—	—	21/22				25	36/37			
Fenitrothion	122-14-5		25.0C	—	—	—	—	22								
Fenoprop	93-72-1		25.0C	—	—	20.0t	—	22	38			37				
Fenoprop (salts)	N/A		25.0C	—	—	—	—	20/21/22				2	13			
Fenson	80-38-6		25.0C	—	—	—	—	20/21/22				2	13			
Fensulfothion	115-90-2		0.1a	1.0c	7.0J	—	—	27/28				23	28	36/37	45	
Fenthion	55-38-9		3.0k	25.0CH	—	—	—	21	25			36/37	44			
Fenthion-eithyl	1716-09-2		25.0C	—	—	20.0t	—	20/21/22	36/38			2	13			
Fentin acetate	900-95-8		0.1a	1.0bc	7.0JZ	1.0Gu	—	24/25	26	36/38	43		36/37	45		
Fentin hydroxide	76-87-9		0.1a	1.0bc	7.0JZ	20.0t	—	24/25	26	36/38		36/37	45			
Fermentation amyl alcohol	123-51-3	1201	—	—	—	—	—									
Ferric arsenate	10102-49-5	1606	3.0k	25.0H	—	—	—	23/25	33			1/2	20/21	28	44	
Ferric arsenite	63989-69-5	1606	3.0k	25.0H	—	—	—	23/25				1/2	20/21	28	44	
Ferrous arsenate	10102-50-8	1608	3.0k	25.0H	—	—	—	23/25	33			1/2	20/21	28	44	
Fluenetil	4301-50-2		0.1a	1.0c	7.0J	—	—	27/28				28	36/37	45		
Fluoroboric acid	16872-11-0	1775	—	—	—	10.0e	25.0X	34				26	27			
Fluoric acid	7664-39-3	1790	0.1a	1.0c	7.0J	0.1e	X1.0mX	26/27/28	35			7/9	26	36/37/39		45
Fluorine	7782-41-4	1045	0.1a	1.0c	7.0J	1.0e	5.0dX	7	26	35		7/9	36	45		
Fluorine monoxide	7783-41-7	2190	—	—	—	—	—									
Fluoroacetamide	640-19-7		0.1a	1.0c	7.0J	—	—	26/27/28				1/2	20	22	26	45
Fluoroacetates (soluble)	N/A		0.1a	1.0c	7.0J	—	—	28				1/2	20	22	26	45
Fluoroacetic acid	144-49-0	2642	0.1a	1.0c	7.0J	—	—	28				1/2	20	22	26	45
Fluoroformyl fluoride	353-50-4	2417	—	—	—	—	—									
Fluorosilicates	N/A		10.0C	—	—	—	—	22				2	13	24/25		
Fluorosilicic acid	16961-83-4	1778	—	—	—	5.0e	10.0X	34				26	27			
Fluorosulphonic acid	7789-21-1	1777	25.0C	—	—	1.0e	5.0dX	20	35			26				
Fonofos	944-22-9		0.1a	1.0c	7.0J	—	—	27/28				28	36/37	45		
Formal	109-87-5	1234	—	—	—	—	—									

Formaldehyde	50-00-0	1198/ 2209	1.0Rd	25.0H	—	1.0Gn	25.0X	23/24/25	34	40(3)	43	26	36/37	44	51	
Formaldehyde dimethylacetal	109-87-5	1234	—	—	—	—	—									
Formamide	75-12-7	—	—	—	—	—										
Formetanate	22259-30-9		0.1a	1.0c	7.0J	—	—	26/27/28				1	13	45		
Formic acid	64-18-6	1779	—	—	—	2.0e	10.0SX	35				2	23	26		
Formothion	2540-82-1		25.0C	—	—	—	—	21/22				36/37				
Formyldimethylamine	68-12-2	2265	25.0C	—	—	20.0t	—	20/21				26	28	36		
Fuberidazole	3878-19-1		25.0C	—	—	—	—	20/21/22				2	13			
Fumaric acid	110-17-8		—	—	—	20.0t	—	36				26				
Fumarin	117-52-2		3.0k	25.0H	—	—	—	23/24/25				2	13	44		
Furfural	98-01-1	1199	1.0k	5.0H	—	—	—	23/25				24/25	44			
Furfuraldehyde	98-01-1	1199	1.0k	5.0H	—	—	—	23/25				24/25	44			
Furfuryl alcohol	98-00-0	2874	5.0C	—	—	—	—	20/21/22								
Germane	7782-65-2	2192	—	—	—	—	—									
Germanium hydride	7782-65-2	2192	—	—	—	—	—									
Germanium tetrahdride	7782-65-2	2192	—	—	—	—	—									
Glutaraldehyde	111-30-8		—	—	—	—	—									
Glyceryl trinitrate (solution in alcohol)	55-63-0	3064	0.1a	1.0cE	7.0J	—	—	3	26/27/28	33		33	35	36/37	45	
Glycidol	556-52-5	2622	1.0GCK	5.0H	—	20.0t	—	21/22	23	36/37/38	42/43		44			
Glycidyl acrylate	106-90-1		3.0k	25.0H	—	1.0Gn	10.0X	23/24/25	34	43		26	36/37/39		44	
Glycol chlorohydrin	107-07-3	1135	0.1a	1.0c	7.0J	—	—	26/27/28					7/9	28	45	
Glycol dichloride	107-06-2	1184	—	0.1QY	—	20.0t	—	11	22	36/37/38	45(2)		16	29	44	53
Glycol dimethyl ether	110-71-4	2252	25.0C	—	——	—		10	19	20			24/25			
Glyoxal	107-22-2		—	—	—	10.0t	—	36/38					26	28		
Guanidine monohydrochloride	50-01-1		25.0C	—	—	20.0t	—	22	36/38				22			
Guanidinium chloride	50-01-1		25.0C	—	—	20.0t	—	22	36/38				22			
Hafnium	7440-58-6	1326/ 2545	—	—	—	—	—									
Halothane	151-67-7		—	—	—	—	—									
HCFC 21	75-43-4	1029	—	—	—	—	—									
HCFC 22	75-45-6	1018	—	—	—	—	—									
gamma-HCH	58-89-9	2761	3.0k	25.0H	—	20.0t	—	23/24/25	36/38			2	13	44		
HCH	608-73-1		1.0Db	25.0CH	—	—	—	21	25	40(3)		22	36/37	44		
Heptachlor	76-44-8		1.0DEb	25.0H	—	—	—	24/25	33	40(3)		36/37	44			
Heptachlor epoxide	1024-57-3		1.0DEb	25.0H	—	—	—	25	33	40(3)		36/37	44			
2-Heptanone	110-43-0	1110	25.0C	—	—	—	—	10	22			23				
3-Heptanone	106-35-4		25.0C	—	—	20.0t	—	10	20	36		24				
Hexachloroacetone	116-16-5		25.0C	—	—	—	—	22				24/25				
Hexachlorobenzene	118-74-1		—	0.1QpN	—	—	—	25	45(2)	48		44	53			
Hexachlorobutadiene	87-68-3	2279	—	—	—	—	—									

Substance Name	CAS Number	UN Number	Conc cut-off Xn %	Conc cut-off T %	Conc cut-off T+%*	Conc cut-off Xi %*	Conc cut-off C %*	Risk Phrases			Safety Phrases				
7-Hexachlorocycl-ohexane	58-89-9		3.0k	25.0H	—	20.0t	—	23/24/25	36/38		2	13	44		
Hexachlorocyclohexane	608-73-1		1.0Db	25.0CH	—	—	—	21	25	40(3)	22	36/37	44		
Hexachlorocycl-opentadiene	77-47-4	2646	—	—	—	—	—								
Hexachloroethane	67-72-1		—	—	—	—	—								
Hexachloronaphthalene	1335-87-1		—	—	—	—	—								
Hexachlorophene	70-30-4	2875	0.2k	2.0H	—	—	—	24/25			20	37	44		
Hexafluoroacetone	684-16-2	2420	—	—	—	—	—								
Hexafluro-2-propanone	684-16-2	2420	—	—	—	—	—								
Hexafluoropropylene	116-15-4	1858	25.0C	—	—	20.0t	—	20	37		41				
Hexafluorosilicates	N/A		10.0C	—	—	—	—	22			2	13	24/25		
Hexahydroaniline	108-91-8	2357	25.0C	—	—	5.0e	10.0X	10	21/22	34	36/37/39				
Hexahydro-1, 3-isobenzofurandione	85-42-7		—	—	—	1.0t	—	36/37/38			23	39			
Hexahyadrophthalic anhydride	85-42-7		—	—	—	1.0t	—	36/37/38			23	39			
Hexahyldropyridine	110-89-4	2401	3.0k	25.0H	—	5.0e	10.0X	11	23/24	34	16	26	27	44	
Hexamethylene diacrylate	13048-33-4		—	—	—	1.0Gu	—	36/38	43		39				
Hexamethylene diisocyanate	822-06-0	2281	1.0Gb	25.0H	—	20.0t	—	23	36/37/38	42/43	26	28	38	45	
1, 6-Hexamethylene diisocyanate	822-06-0	2281	1.0Gb	25.0H	—	20.0t	—	23	36/37/38	42/43	26	28	38	45	
Hexamethylphospho-ramide	680-31-9		—	0.1Q	—	—	—	45(2)	46(2)		44	53			
Hexamethylphosphoric triamide	680-31-9		—	0.1Q	—	—	—	45(2)	46(2)		44	53			
Hexan-2-one	591-78-6		1.0q	10.0N	—	—	—	11	23	48	9	16	29	44	51
n-Hexane	110-54-3	1208	5.0r	—	—	—	—	11	20	48	9	16	24/25	29	51
Hexanitrodiphenylamine	131-73-7	0079	0.1a	1.0cE	7.0J	—	—	2	26/27/28	33	35	36	44		
sec-Hexanol	97-95-0	2275/2282	25.0C	—	—	—	—	21/22							
Hexan-1-ol	111-27-3	2282	25.0C	—	—	—	—	22			24/25				
Hexolite	121-82-4	0118	—	—	—	—	—								
Hexyl	131-73-7	0079	0.1a	1.0cE	7.0J	—	—	2	26/27/28	33	35	36	44		
sec-Hexyl acetate	108-84-9	1233	—	—	—	—	—								
Hexyl alcohol	111-27-3	2282	25.0C	—	—	—	—	22			24/25				

Hexylene glycol	107-41-5		—	—	—	10.0t	—	36/38										
Hydrazine	302-01-2	2029	0.1a	1.0cD	7.0J	5.0e	10.0X	10	26/27/28	34	40			36/37/39			45	
Hydrazine (hydrate)	10217-52-4	2030	1.0kD	10.0H	—	5.0e	10.0X	24/25	34	40				36/37/39				
Hydrazine base	302-01-2	2029	0.1a	1.0cD	7.0J	5.0e	10.0X	10	26/27/28	34	40			36/37/39	45			
Hydrazinobenzene	100-63-0	2572	3.0k	25.0H	—	20.0t	—	23/24/25	36				28	44				
Hydrobromic acid	10035-10-6	1788	—	—	—	10.0et	40.0X	34	37				7/9	26				
Hydrochloric acid	7647-01-0	1789	—	—	—	1.0eu	5.0dX	35	37				7/9	26	44			
Hydrocyanic acid	74-90-8	1051	0.1a	1.0c	7.0J	—	—	26					1/2	7/9	16	36/37	38	45
Hydrofluoboric acid	16872-11-0	1775	—	—	—	10.0e	25.0X	34					26	27				
Hydrofluoric acid	7664-39-3	1790	0.1a	1.0c	7.0J	0.1e	1.0mX	26/27/28	35				7/9	26		36/37/39	45	
Hydrofluosilicic acid	16961-83-4	1778	—	—	—	5.0e	10.0X	34					26	27				
Hydrogen antimonide	7803-52-3	2676	25.0C	—	—	—	—	20/22					22					
Hydrogen arsenide	7784-42-1	2188	3.0k	25.0H	—	—	—	23/25					1/2	20/21	28	44		
Hydrogen bromide	10035-10-6	1788	—	—	—	1.0eu	5.0dX	35	37				7/9	26	44			
Hydrogen carboxylic acid	64-18-6	1779	—	—	—	2.0e	10.0SX	35					2	23	26			
Hydrogen chloride	7647-01-0	1789	—	—	—	1.0eu	5.0dX	35	37				7/9	26	44			
Hydrogen cyanide	74-90-8	1614	0.1a	1.0c	7.0J	—	—	26					1/2	7/9	16	36/37	38	45
Hydrogen cyanide (salts)	N/A		0.1a	1.0c	7.0J	—	—	26/27/28	32				1/2	7	28	29	45	
Hydrogen fluoride	7664-39-3	1790	0.1a	1.0c	7.0J	0.1e	1.0mX	26/27/28	35				7/9	26	36/37/39		45	
Hydrogen iodide (anhydrous)	10034-85-2	2197	—	—	—	1.0eu	5.0dX	35	37				7/9	26	44			
Hydrogen peroxide	7722-84-1	2014/ 2015	—	—	—	5.0e	20.0X	8	34				3	28	36/39			
Hydrogen phosphide	7803-51-2	2199	—	—	—	—	—											
Hydrogen selenide	7783-07-5	2202	3.0k	25.0H	—	—	—	23/25	33				20/21	28	44			
Hydrogen sulphide	7783-06-4	1053	0.1a	1.0c	7.0J	—	—	26					7/9	25	45			
Hydrogen sulphide (liquified)	7783-06-4	1053	0.1a	1.0c	7.0J	—	—	26					7/9	25	45			
Hydroquinone	123-31-9		25/0C	—	—	—	—	20/22					2	24/25	39			
Hydroselenic acid	7783-07-5	2202	3.0k	25.0H	—	—	—	23/25	33				20/21	28	44			
Hydrosilicofluoric acid	16961-83-4	1778	—	—	—	5.0e	10.0X	34					26	27				
2-Hydroxyethyl acrylate	818-61-1		0.2k	2.0H	—	0.2Gn	10.0X	24	34	43			26	36/39	44			
2-Hydroxyethylamine	141-43-5	2491	25.0C	—	—	20.0t	—	20	36/37/38									
2-Hydroxyethyl methacrylate	868-77-9		—	—	—	1.0Gu	—	36/38	43				26	28				
2-Hydroxypropyl acrylate	999-61-1		3.0k	25.0H	—	1.0Gn	10.0X	23/24/25	34	43			26	36/39	44			
Hydroxypropyl methacrylate	923-26-2		—	—	—	20.0t	—	36/38					26	28				
8-Hydroxyquinoline sulphate	134-31-6		25.0C	—	—	—	—	20/21/22					2	13				
Hyoscine	51-34-3		0.1a	1.0c	7.0J	—	—	26/27/28					1	25	45			
hyoscyamine	101-31-5		0.1a	1.0c	7.0J	—	—	26/28					1	24	45			
3, 3'-Iminobispropylamine	56-18-8	2269	25.0C	—	—	1.0Gn	10.0X	21/22	34	43			26	36/37/39				

Substance Name	CAS Number	UN Number	Conc cut-off Xn %	Conc cut-off T %	Conc cut-off T+%*	Conc cut-off Xi %*	Conc cut-off C %*	Risk Phrases					Safety Phrases				
Indene	95-13-6		—	—	—	—	—										
Indium	7440-74-6		—	—	—	—	—										
Inositol nicotinate	6556-11-2		0.1a	1.0c	7.0J	—	—	26/27/28					1	13	28	45	
Iodine	7553-56-2	1759	25.0C	—	—	—	—	20/21					23	25			
Iodoacetic acid	64-69-7		3.0k	25.0H	—	1.0e	5.0dX	25	35				22	36/37/39		44	
Iodoform	75-47-8		—	—	—	—	—										
Iodomethane	74-88-4	2644	1.0Db	25.0CH	—	20.0t	—	21	23/25	37/38	40(3)		36/37	38	44		
Ioxynil	1689-83-4		3.0k	25.0H	—	—	—	23/24/25					2	13	44		
Iron oxide	1309-37-1		—	—	—	—	—										
Isoamyl acetate	123-92-2	1104	—	—	—	—	—										
Isoamyl alcohol	123-51-3	1201	—	—	—	—	—										
Isobenzan	297-78-9		0.1a	1.0c	7.0J	—	—	27/28					28	36/37	45		
Isobutanol	78-83-1	1120	25.0C	—	—	—	—	10	20				16				
Isobutenyl chloride	563-47-3	2554	25.0C	—	—	—	—	11	20				9	16	29	33	
Isobutyl acrylate	106-63-8	2527	25.0C	—	—	1.0Gu	—	10	20/21	38	43	9	24	37			
Isobutyl propenoate	106-63-8	2527	25.0C	—	—	1.0Gu	—	10	20/21	38	43	9	24	37			
Isobutyl alcohol	78-83-1	1120	25.0C	—	—	—	—	10	20				16				
Isobutyl methacrylate	97-86-9		—	—	—	1.0Gu	—	10	36/37/38	43							
Isobutyric acid	79-31-2	2529	25.0C	—	—	—	—	21/22									
Isobutyryl chloride	79-30-1	2395	—	—	—	1.0e	5.0dX	11	35				16	23	26	36	
Isodrin	465-73-6		0.1a	1.0c	7.0J	—	—	26/27/28					1	13	28	45	
Isolan	119-38-0		0.1a	1.0c	7.0J	—	—	27/28					1/2	28	36/37/39		45
Isophorone	78-59-1		—	—	—	25.0t	—	36/37/38				26					
Isophorone diamine	2855-13-2	2289	25.0C	—	—	1.0Gn	10.0X	21/22	34	43			26	36/37/39			
Isophorone di isocyanate	4098-71-9	2290	1.0Gb	25.0H	—	20.0t	—	23	36/37/38	42/43			26	28	38	45	
Isopropanolamine	78-96-6		—	—	—	5.0e	10.0X	34					23	26	36		
Isopropenylbenzene	98-83-9	2303	—	—	—	25.0t	—	10	36/37								
2-Isopropoxyethanol	109-59-1		25.0C	—	—	20.0t	—	20/21	36				24/25				
Isopropylamine	75-31-0	1221	—	—	—	20.0t	—	36/37/38					16	26	29		
N-Isopropylaniline	768-52-5		—	—	—	—	—										
Isopropylbenzene	98-82-8	1918	—	—	—	25.0t	—	10	37								
Isopropyl carbinol	78-83-1	1120	25.0C	—	—	—	—	10	20				16				
Isopropyl glycidyl ether	4016-14-2		—	—	—	—	—										
Isopropylidene acetone	141-79-7	1229	5.0C	—	—	—	—	10	20/21/22				25				

S-[2-(Isopropyl-sulphinyl) ethyl] -0,0-dimethyl phosphorothiate	2674-91-1		3.0k	25.0H	—	—	—	23/24/25				2	13	44	
Isoproturon	34123-59-6		1.0DY	—	—	—	—	22	40(3)			36/37			
Isovalerone	108-83-8	1157	—	—	—	10.0t	—	10	37			24			
Kelevan	4234-79-1		3.0k	25.0CH	—	—	—	22	24			36/37	44		
Kepone	143-50-0		1.0Db	25.0H	—	—	—	24/25	40(3)			22	36/37	44	
Ketene	463-51-4		—	—	—	—	—								
Kings Green	12002-03-8	1585	3.0k	25.0H	—	—	—	23/25				1/2	20/21	28	44
Lauroyl peroxide	105-74-8	2124	—	—	—	20.0t	—	11	36/37/38			3/7/9	14	27	37/39
Lead (compounds)	N/A		1.0CE	—	—	—	—	20/22	33			13	20/21		
Lead acetate	301-04-2	1616	—	0.5Qs	—	—	—	22	33	47(1)	48	44	53		
Lead alkyls	N/A		0.05aE	0.1c	0.5J	—	—	26/27/28	33			13	26	36/37	45
Lead arsenate	7784-40-9	1617	1.0CE	—	—	—	—	20/22	33			13	20/21		
Lead arsenates	N/A	1617	1.0CE	—	—	—	—	20/22	33			13	20/21		
Lead arsenites	N/A	1618	1.0CE	—	—	—	—	20/22	33			13	20/21		
Lead azide	13424-46-9	0129	25.0C	—	—	—	—	3	20/22	33		33	34	35	
Lead chromate	7758-97-6		1.0DE	—	—	—	—	33	40(3)			22			
Lead cyanide	592-05-2	1620	1.0CE	—	—	—	—	20/22	33			13	20/21		
Lead dioxide	1309-60-0	1872	1.0CE	—	—	—	—	20/22	33			13	20/21		
Lead hexafluoro-silicate	1310-03-8		1.0CE	—	—	—	—	20/22	33			13	20/21	24/25	
Lead nitrate	10099-74-8	1469	1.0CE	—	—	—	—	20/22	33			13	20/21		
Lead perchlorate	13637-76-8	1470	1.0CE	—	—	—	—	20/22	33			13	20/21		
Lead peroxide	1309-60-0	1872	1.0CE	—	—	—	—	20/22	33			13	20/21		
Lead phosphate	7446-27-7		—	0.5Qs	—	—	—	22	33	47(1)	48	44	53		
Lead phosphite	1344-40-7	2989	1.0CE	—	—	—	—	20/22	33			13	20/21		
Lead styphnate	15245-44-0		25.0C	—	—	—	—	3	20/22	33		33	34	35	
Lead sulphate	7446-14-2	1794	1.0CE	—	—	—	—	20/22	33			13	20/21		
Lead tetramethethyl	75-74-1	1649	0.05aE	0.1c	0.5J	—	—	26/27/28	33			13	26	36/37	45
Lead trinitroresorcinate	63918-97-8		25.0C	—	—	—	—	3	20/22	33		33	34	35	
Leptophos	21609-90-5		1.0j	10.0WY	—	—	—	21	25	39		25	36/37/39		44
Limonene	138-86-3	2052	—	—	—	25.0t	—	10	38			28			
Lindane	58-89-9		3.0k	25.0H	—	20.0t	—	23/24/25	36/38			2	13	44	
Linuron	330-55-2		1.0D	—	—	—	—	40(3)				36/37			
Lithium	7439-93-2	1415	—	—	—	5.0e	10.0X	14/15	34			1/2	8	43	45
Lithium hydride	7580-67-8	1414/ 2805	—	—	—	—	—								
London Purple	8012-74-6	1621	—	0.1QPx	7.0J	5.0e	10.0X	28	34	45(1)		45	53		
Magnesium alkyls	N/A		—	—	—	5.0e	10.0X	14	17	34		16	43		
Magnesium arsenate	10103-50-1	1622	3.0k	25.0H	—	—	—	23/25	33			1/2	20/21	28	44
Magnesium diamide	7803-54-5	2004	—	—	—	5.0e	10.0X	14	17	34		16	43		

Substance Name	CAS Number	UN Number	Conc cut-off Xn %	Conc cut-off T %	Conc cut-off T+%*	Conc cut-off Xi %*	Conc cut-off C %*	Risk Phrases			Safety Phrases			
Magnesium diethyl	557-18-6	3053	—	—	—	5.0e	10.0X	14	17	34	16	43		
Magnesium fluorosilicate	18972-56-0	2853	10.0C	—	—	—	—	22			2	13	24/25	
Magnesium oxide	1309-48-4		—	—	—	—	—							
Magnesium phosphide	12057-74-8	2011	0.1a	1.0c	7.0J	—	—	15/29	28		1/2	22	43	45
Malathion	121-75-5		25.0C	—	—	—	—	22			24			
Maldision	121-75-5		25.0C	—	—	—	—	22			24			
Maleic acid	110-16-7		25.0C	—	—	20.0t	—	22	36/37/38		26	28	37	
Maleic anhydride	108-31-6	2215	1.0GY	—	—	10.0t	—	22	36/37/38	42	22	28	39	
Malononitrile	109-77-3	2647	3.0k	25.0H	—	—	—	23/24/25			23	27		
Manganese	7439-96-5		—	—	—	—	—							
Manganese cyclopentadienyl tricarbonyl	12079-65-1	—	—	—	—	—	—							
Manganese dioxide	1313-13-9		25.0C	—	—	—	—	20/22			25			
MCPA	94-74-6	2765	25.0C	—	—	—	—	20/21/22			2	13		
MPCA (salts and esters)	N/A		25.0C	—	—	—	—	20/21/22			2	13		
MCPB	94-81-5		25.0C	—	—	—	—	20/21/22			2	13		
MCPB (salts and esters)	N/A		25.0C	—	—	—	—	20/21/22			2	13		
MDI	101-68-8	2849	1.0GY	—	—	20.0t	—	20	36/37/38	42	26	28	38	45
Mecarbam	2595-54-2		3.0k	25.0H	—	—	—	23/24/25			2	13	44	
Mecoprop	93-65-2		25.0C	—	—	—	—	20/21/22			2	13		
Mecoprop (salts)	N/A		25.0C	—	—	—	—	20/21/22			2	13		
MEK	78-93-3	1193	—	—	—	20.0t	—	36/37			9	16	25	33
Menazon	78-57-9		25.0C	—	—	—	—	20/21/22			2	13		
para-Mentha-1,8(9)-diene	138-86-3	2052	—	—	—	25.0t	—	10	38		28			
para-Menthane hydro-peroxide	80-47-7	2125	—	—	—	1.0e	5.0dX	11	35		3/7/9	14	27	37/39
8-p-Menthyl hydroperoxide	80-47-7	2125	—	—	—	1.0e	5.0dx	11	35		3/7/9	14	27	37/39
Mephosfolan	950-10-7		0.1a	1.0c	7.0J	—	—	27/28			36/37/39		45	
Mercaptoacetic acid	68-11-1	1940	0.2k	2.0H	—	5.0e	10.0X	23/24/25	34		2	25	27	28
Mercuric chloride	7487-94-7	1624	1.0a	1.0cE	7.0J	—	—	26/27/28	33		1/2	13	28	45
Mercuric cyanide	592-04-1	1636	1.0a	1.0cE	7.0J	—	—	26/27/28	33		1/2	13	28	45

Mercuric acetate	1600-27-7	1629	0.1a	1.0cE	7.0J	—	—	26/27/28	33	2	13	28	36	45
Mercuric arsenate	7784-37-4	1623	0.1a	1.0cE	7.0J	—	—	26/27/28	33	1/2	13	28	45	
Mercuric bromide	7789-47-1	1634	0.1a	1.0cE	7.0J	—	—	26/27/28	33	1/2	13	28	45	
Mercuric iodide	7774-29-0	1638	0.1a	1.0cE	7.0J	—	—	26/27/28	33	1/2	13	28	45	
Mercuric nitrate	10045-94-0	1625	0.1a	1.0cE	7.0J	—	—	26/27/28	33	1/2	13	28	45	
Mercuric oxide	21908-53-2	1641	0.1a	1.0cE	7.0J	—	—	26/27/28	33	1/2	13	28	45	
Mercuric oxycyanide	1335-31-5	1642	3.0k	25.0H	—	—	—	23/24/25	33	28	35	44		
Mercuric potassium cyanide	581-89-9	1626	0.1a	1.0cE	7.0J	—	—	26/27/28	33	1/2	13	28	45	
Mercuric sulphate	7783-35-9	1645	0.1a	1.0cE	7.0J	—	—	26/27/28	33	1/2	13	28	45	
Mercuric thiocyanate	592-85-8	1646	0.1a	1.0cE	7.0J	—	—	26/27/28	33	1/2	13	28	45	
Murcurol	12002-19-6	1639	0.1a	1.0c	7.0J	—	—	26/27/28		1/2	13	28	45	
Mercurous acetate	631-60-7	1634	0.1a	1.0cE	7.0J	—	—	26/27/28	33	2	13	28	36	45
Mercurous bromide	10031-18-2	1629	0.1a	1.0cE	7.0J	—	—	26/27/28	33	1/2	13	28	45	
Mercurous chloride	10112-91-1		25.0C	—	—	—	—	22		2				
Mercurous iodide	7783-30-4	1638	0.1a	1.0cE	7.0J	—	—	26/27/28	33	1/2	13	28	45	
Mercurous nitrate	10415-75-5	1627	0.1a	1.0cE	7.0J	—	—	26/27/28	33	1/2	13	28	45	
Mercurous oxide	15829-53-5	1641	0.1a	1.0cE	7.0J	—	—	26/27/28	33	1/2	13	28	45	
Mercurous sulphate	7783-36-0	1628	0.1a	1.0cE	7.0J	—	—	26/27/28	33	1/2	13	28	45	
Mercury	7439-97-6	2809	3.0k	25.0H	—	—	—	23	33	7	44			
Mercury (inorganic compounds	N/A		0.1aE	0.5c	2.0J	—	—	26/27/28	33	1/2	13	28	45	
Mercury (organic compounds)	N/A		0.05aE	0.5c	1.0J	—	—	26/27/28	33	2	13	28	36	45
Mercury acetate	1600-27-7	1629	0.1a	1.0cE	7.0J	—	—	26/27/28	33	2	13	28	36	45
Mercurys alkyls	N/A		0.05aE	0.1c	0.5J	—	—	26/27/28	33	2	13	28	36	45
Mercury ammonium chloride	10124-48-8	1630	0.1a	1.0cE	7.0J	—	—	26/27/28	33	1/2	13	28	45	
Mercury benzoate	583-15-3	1631	0.1a	1.0cE	7.0J	—	—	26/27/28	33	1/2	13	28	36	45
Mercury bichloride	7487-94-7	1624	0.1a	1.0cE	7.0J	—	—	26/27/28	33	1/2	13	28	45	
Mercury bisulphate	7783-35-9	1633	0.1a	1.0cE	7.0J	—	—	26/27/28	33	1/2	13	28	45	
Mercury cyanide	592-04-1	1636	0.1a	1.0cE	7.0J	—	—	26/27/28	33	1/2	13	28	45	
Mercury fulminate	628-86-4	0135	3.0k	25.0H	—	—	—	23/24/25	33	3	34	35	44	
Mercury gluconate	63937-14-4	1637	0.1a	1.0cE	7.0J	—	—	26/27/28	33	2	13	28	36	45
Mercury iodide	7783-30-4	1638	0.1a	0.1cE	7.0J	—	—	26/27/28	33	1/2	13	28	45	
Mercury nucleate	12002-19-6	1639	0.1a	1.0c	7.0J	—	—	26/27/28		1/2	13	28	45	
Mercury oleate	1191-80-6	1640	0.1a	1.0cE	7.0J	—	—	26/27/28	33	2	13	28	36	45
Mercury oxide	15829-53-5	1641	0.1a	1.0cE	7.0J	—	—	26/27/28	33	1/2	13	28	45	
Mercury oxycyanide	1335-31-5	1642	3.0k	25.0H	—	—		23/24/25	33	28	35	44		
Mercury potassium iodide	7783-33-7	1643	0.1a	1.0cE	7.0J	—	—	26/27/28	33	1/2	13	28	45	
Mercury salicylate	5970-32-1	1644	0.1a	1.0cE	7.0J	—	—	26/27/28	33	2	13	28	36	45
Mercury thiocyanate	592-85-8	1646	0.1a	1.0cE	7.0J	—	—	26/27/28	33	1/2	13	28	45	

Substance Name	CAS Number	UN Number	Conc cut-off Xn %	Conc cut-off T %	Conc cut-off T+%*	Conc cut-off Xi %*	Conc cut-off C %*	Risk Phrases				Safety Phrases				
Mesitylene	108-67-8	2325	—	—	—	20.0t		10	37							
Mesityl oxide	141-79-7	1229	5.0C	—	—	—	—	10	20/21/22			25				
Metaarsenic acid	10102-53-1	1554	3.0k	25.0H	—	—	—	23/25	33			1/2	20/21	28	44	
Metaldehyde	108-62-3	1332	25.0H	—	—	—	—	10	20/22			2	24/25			
Metanilic acid	121-47-1		25.0C	—	—	—	—	20/21/22				25	28			
Methacrylates	N/A		—	—	—	20.0t		36/37/38				26	28			
Methacrylic acid	79-41-4	2531	—	—	—	2.0e	25.0X	34				15	26			
Metham-sodium	137-42-8		25.0C	—	—	5.0f	—	21/22	31	41		2	26		36/327/39	
Methamidophos	10265-92-6		0.1a	1.0bc	7.0JZ	20.0t	—	24	28	36		22	28	36/37	45	
Methanal	50-00-0	1198/ 2209	1.0RD	25.0H	—	1.0Gn	25.0X	23/24/25	34	40(3)	43	26	36/37	44	51	
Methanesulphonic acid	75-75-2	2585/ 2586	—	—	—	5.0e	10.0x	34				26	36			
Methanethiol	74-93-1	1064	25.0c	—	—	—	—	20				16	25			
Methanol	67-56-1	1230	3.0k	20.0H	—	—	—	11	23/25			2	7	16	24	
Methidathion	950-37-8		0.1a	1.0c	7.0J	—	—	21	28			22	28	36/37	45	
Methiocarb	2032-65-7		3.0k	25.0H	—	—	—	23/24/25				2	13	44		
Methomyl	16752-77-5		—	—	—	—	—									
ortho-Methoxyaniline	90-04-0	2431	0.1a	1.0cE	7.0J	—	—	26/27/28	33			28	36/37	45		
Methoxychlor	72-43-5		—	—	—	—	—									
2-Methoxyethanol	109-86-4	1188	5.0QY	—	—	—	—	10	20/21/22	47(2)		53				
2-Methoxyethyl acetate	110-49-6	1189	5.0QY	—	—	—	—	20/21/22	47(2)			53				
4-Methoxy-2 nitroaniline	96-96-8		0.1a	1.0cE	7.0J	—	—	26/27/28	33			28	36/37	45		
4-Methoxyphenol	150-76-5		—	—	—	—	—									
Methyl alcohol	67-56-1	1230	3.0k	20.0H	—	—	—	11	23/25				2	7	16	24
Methyl amyl ketone	110-43-0	1110	25.0C	—	—	—	—	10	22				23			
Methyl "cellosolve"	109-86-4	1188	5.0QC	—	—	—	—	10	20/21/22	47(2)			53			
Methyl "cellosolve" acetate	110-49-6	1189	5.0QY	—	—	—	—	20/21/22	47(2)			53				
2-Methyl-butylacrylate	97-88-1		—	—	—	1.0Gu	—	10	36/37/38	43						
Methyl acetic acid	79-09-4	1848	—	—	—	10.0T	25.0X	34					2	23	26	
Methyl acetoacetate	105-45-3		—	—	—	20.0t	—	36					26			

Methyl acetylene	74-99-7		—	—	—	—	—								
beta-Methyl acrolein	4170-30-3	1143	3.0k	25.0H	—	20.0t	—	11	23	36/37/38	29	33	44		
Methyl acrylate	96-33-3	1919	10.0C	—	—	5.0t	—	11	20/22	36/37/38	9	16	33		
Methyl acrylonitrile	126-98-7		3.0k	25.0H	—	1.0G	—	11	23/34/25	43	9	16	18	29	45
Methylal	109-87-5	1234	—	—	—	—	—								
Methyl allyl chloride	563-47-3	2554	25.0C	—	—	—	—	11	20		9	16	29	33	
Methylamine	74-89-5	1061	—	—	—	20.0t	—	36/37			16	26	29		
Methyl amyl acetate	108-84-9	1233	—	—	—	—	—								
Methyl n-amyl ketone	110-43-0	1110	25.0C	—	—	—	—	10	22		23				
N-Methylaniline	100-61-8	2294	3.0k	25.0H	—	—	—	23/24/25	33		28	37	44		
Methylbenzene	108-88-3	1294	12.5C	—	—	—	—	11	20		16	25	29	33	
Methylbenzol	108-88-3	1294	12.5C	—	—	—	—	11	20		16	25	29	33	
Methyl borate	121-43-7	2416	25.0C	—	—	—	—	10	21		2	23	25		
Methyl bromide	74-83-9	1062	0.1a	1.0c	7.0J	20.0t	—	26	36/37/38		1/2	7/9	24/25	27	45
2-Methylbutan-2-ol	75-85-4	1105	25.0C	—	—	—	—	11	20		9	16	24/25		
Methyl n-butyl ketone	591-78-6		1.0q	10.0N	—	—	—	11	23	48	9	16	29	44	51
Methyl carbonate	616-38-6	1161	25.0C	—	—	—	—	11	20/21/22		9	29			
Methyl chloride	74-87-3	1063	1.0Ds	—	—	—	—	20	40(3)	48	9	16	33		
Methyl chlorocarbonate	79-22-1	1238	3.0k	25.0H	—	20.0t	—	11	23	36/37/38	9	16	33	44	
Methyl chloroform	71-55-6	2831	25.0C	—	—	—	—	20			24/25				
Methyl chloroformate	79-22-1	1238	3.0k	25.0H	—	20.0t	—	11	23	36/37/38	9	16	33	44	
Methylchloromethyl ether	107-30-2	1239	—	0.1QY	—	—	—	11	20/21/22	45(1)	9	14	44	53	
Methyl chlirophenoxy acetic acid	94-74-6	2765	25.0C	—	—	—	—	2021/22			2	13			
Methyl cyanide	75-05-8	648	3.0k	25.0H	—	—	—	11	23/24/25		16	27	44		
Methyl-2-cyanoacrylate	137-05-3		—	—	—	—	—								
2-Methylcyclohexanol	583-59-5		25.0C	—	—	—	—	20			24/25				
2-Methylcyclohexanone	583-60-8	2296	25.0C	—	—	—	—	10	20		25				
o-Methylcyclohexanone	583-60-8	2296	25.0C	—	—	—	—	10	20		25				
Methyl demeton	8022-00-2		3.0k	25.0H	—	20.0t	—	23/24/25	36		2	13	26	44	
N-Methyldiethanolamine	105-59-9		—	—	—	20.0t	—		36		24				
1-Methyl-2,4-dinitrobenzene	121-14-2	2038	3.0k	25.0H	—		—	23/24/25	33		28	37	44		
Methyl dinitrobenzene (mixed isomers)	25321-14-6	2038	3.0k	25.0H	—	—	—	23/24/25	33		28	37	44		
2-Methyl-4,6-dinitrophenol	534-52-1	1598	0.1a	1.0cE	7.0J	—	—	26/27/28	33		1	13	28	45	
Methylene chlorobromide	74-97-5	1887	—	—	—	—	—								
p,p-Methyl dianiline	101-77-9	2651	25.0C	—	—	—	—	20/21/22							
4,4-Methylenebis (2-chloroaniline)	101-14-4		—	0.1QY	—	—	—	22	45(2)		45	53			

Substance Name	CAS Number	UN Number	Conc cut-off Xn %	Conc cut-off T %	Conc cut-off T+%*	Conc cut-off Xi %*	Conc cut-off C %*	Risk Phrases				Safety Phrases			
Methylenebis (4-cyclohexyl isocyanate)	5124-30-1		1.0Gb	25.0H	—	20.0t	—	23	36/37/38	42/43		26	28	38	45
Methylene bis phenyliso-cyanate	101-68-8	2849	1.0GY	—	—	20.0t	—	20	36/37/38	42		26	28	38	45
Methylene bromide	74-95-3	2664	12.5C	—	—	—	—	20				24			
Methylene chloride	75-09-2	1593	1.0D	—	—	—	—	40(3)				23	24/25	36/37	
Methylene cyanide	109-77-3	2647	3.0k	25.0H	—	—	—	23/24/25				23	27		
4, 4'-Methylene dianiline	101-77-9	2651	25.0C	—	—	—	—	20/21/22							
Methylene dibromide	74-95-3	2664	12.5C	—	—	—	—	20				24			
4,4'-Methylenedi (cyclohexyl isocyanate)	5124-30-1		1.0Gb	25.0H	—	20.0t	—	23	36/37/38	42/43		26	28	38	45
Methylene dimethyl ether	109-87-5	1234	—	—	—	—	—								
N-Methyl-2-ethanolamine	109-83-1		—	—	—	5.0e	10.0X	34				23	26	36	
Methylethylcarbinol	78-92-2	1120	25.0C	—	—	—	—	10	20			16			
Methyl ethyl ketone	78-93-3	1193	—	—	—	20.0t	—	36/37				9	16	25	33
Methyl ethyl ketone peroxide	1338-23-4		—	—	—	—	—								
Methylglycol acetate	110-49-6	1189	5.0QY	—	—	—	—	20/21/22	47(2)			53			
5-Methylheptan-3-one	541-85-5	2271	—	—	—	10.0t	—	10	36/37			23			
Methyl hydrazine	60-34-4	1244	—	—	—	—	—								
1-Methylimidazole	616-47-7		25.0C	—	—	5.0e	10.0X	21/22	34			26	36		
Methyl iodide	74-88-4	2644	1.0Db	25.0CH	—	20.0t	—	21	23/25	37/38	40(3)	36/37	38	44	
Methyl isobutenyl ketone	141-79-7	1229	5.0C	—	—	—	—	10	20/21/22			25			
Methyl isobutyl carbinol	108-11-2	2053	—	—	—	25.0t	—	10	37			24/25			
Methyl isobutyl carbinolacetate	108-84-9	1233	—	—	—	—	—								
Methyl isocyanate	624-83-9	2480	3.0k	25.0H	—	20.0t	—	23/24/25	36/37/38			9	30	43	44
Methyl isonitrile	624-83-9	2480	3.0k	25.0H	—	20.0t	—	23/24/25	36/37/38			9	30	43	44
Methyl isothiocyanate	556-61-6	2477	25.0C	—	—	—	—	10	20/22			24/25			
Methyl mercaptan	79-93-1		25.0C	—	—	—	—	20				16	25		
Methyl methacrylate	80-62-6	1247	—	—	—	1.0Gu	—	11	36/37/38	43		9	16	29	33
Methyl methacrylate monomer (inhibited)	80-62-6	1247	—	—	—	1.0Gu	—	11	36/37/38	43		9	16	29	33

Methyl mustard oil	556-61-6	2477	25.0C	—	—	—	—	10	20/22			24/25					
Methyl-5-norbornene-2, 3-dicarboxyilic anhydride	25134-21-8		25.0C	—	—	1.0Gu	—	22	36/37/38	43		39					
Methyl orthosilicate	681-84-5	2606	—	—	—	—	—										
Methyloxirane	75-56-9	1280	—	0.1QY	—	20.0t	—	20/21/22	36/37/38	45(2)		3/7/9	16	33	44	53	
Methyl parathion	298-00-0	2052	0.1a	1.0bc	7.0J	—	—	24	28			28	36/37	45			
2-Methylpentane-2, 4-diol	107-41-5		—	—	—	10.0t	—	36/38									
4-Methylpentan-2-ol	108-11-2	2053	—	—	—	25.0t	—	10	37			24/25					
4-Methyl-3-penten-2-one	141-79-7	1229	5.0C	—	—	—	—	10	20/21/22			25					
4-Methyl-2 pentyl acetate	108-84-9	1233	—	—	—	—	—										
Methyl picrate	606-35-9		25.0C	—	—	—	—	2	20/21/22		35						
2-Methylpropan-1-ol	78-83-1	1120	25.0C	—	—	—	—	10	20		16						
2-Methylpropan-2-ol	75-65-0	1120	25.0C	—	—	—	—	11	20		9	16					
2-Methylpropanoly chloride	79-30-1	2395	—	—	—	1.0e	5.0dX	11	35		16	23	26	36			
2-Methylpropenoic acid	79-41-4	2531	—	—	—	2.0e	25.0X	34			15	26					
Methyl propyl ketone	107-87-9	1249	—	—	—	—	—										
3-Methylpyrazol-5-yl-dimethyl carbamate	2532-43-6		3.0k	25.0H	—	—	—	23/24/25			2	13	44				
4-Methylpyridine	108-89-4	2313	3.0k	25.0CH	—	20.0t	—	10	20/22	24 36/37/38	26	36	44				
2-Methylpyridine	109-06-8	2313	25.0C	—	—	20.0t	—	10	20/21/22	36/37	26	36					
N-Methyl-2-pyrrolidone	872-50-4		—	—	—	10.0t	—	36/38			41						
Methyl silicate	681-84-5	2606	—	—	—	—	—										
a-Methyl styrene	98-83-9	2303	—	—	—	25.0t	—	10	36/37								
Methyl-2,3,5,6-tetrachloro-4-pyridyl sulphone	13108-52-6		25.0C	—	—	1.0Gu	—	21/22	36	43	26	28					
Methyltrichloro silane	75-79-6	1250	—	—	—	20.0t	—	11	14	36/37/38	26	39					
Metoxuron	19937-59-8		25.0C	—	—	—	—	20/21/22			2	13					
Mevinphos (mixed isomers)	7786-34-7		0.1a	1.0c	7.0J	—	—	26/27/28			1	13	28	45			
MIBC	108-11-2	2053	—	—	—	25.0t	—	10	37		24/25						
Mica	12001-26-2		—	—	—	—	—										
Mipafox	371-86-8		0.1h	1.0g	10.0W	—	—	26/27/28	39		1	13	45				
Mirbane oil	98-95-3	1662	0.1a	1.0cE	7.0J	—	—	26/27/28	33		28	36/37	45				

Substance Name	CAS Number	UN Number	Conc cut-off Xn %	Conc cut-off T %	Conc cut-off T+%*	Conc cut-off Xi %*	Conc cut-off C %*	Risk Phrases		Safety Phrases			
MOCA	101-14-4		—	0.1QY	—	—	—	22	45(2)	45	53		
Molybdenum	7439-98-7		—	—	—	—	—						
Monobromo benzene	108-86-1	2514	—	—	—	20.0t	—	10	38				
Monochloroacetic acid	79-11-8	1750/ 1751	0.2k	2.0H	—	1.0e	5.odX	23/24/25	35	22	36/37/39		
Monochloro benzene	108-90-7	1134	5.0C	—	—	—	—	10	20		24/25		
Monochlorobenzol	108-90-7	1134	5.0C	—	—	—	—	10	20		24/25		
Monochlorodifluoro methane	75-45-6	1018	—	—	—	—	—						
Monocrotophos	6923-22-4		0.1a	1.0bc	7.0J	—	—	24	28	23	36/37	45	
Monoethanolamine	141-43-5	2491	25.0C	—	—	20.0t	—	20	36/37/38				
Monoethylamine	75-04-7	1036	—	—	—	20.0t	—	36/37		16	26	29	
Monolinuron	1746-81-2		25.0C	—	—	—	—	20/21/22		2	13		
Monomethylamine	74-89-5	1061	—	—	—	20.0t	—	36/37		16	26	29	
Monomethylaniline	100-61-8	2294	3.0k	25.0H	—	—	—	23/24/25	33	28	37	44	
Monodmetilan	2532-43-6		3.0k	25.0H	—	—	—	23/24/25		2	13	44	
Monosodium methylarsonate	2163-80-6		3.0k	25.0H	—	—	—	23/25		1/2	20/21	28	44
Monuron	150-68-5		1.0DY	—	—	—	—	22	40(3)	36/37			
Monuron-TCA	140-41-0		1.0D	—	—	20.0t	—	36/38	40(3)	36/37			
Morfamquat	4636-83-3		25.0C	—	—	—	—	20/21/22		2	13		
Morpholine	110-91-8	2054	25.0C	—	—	5.0e	10.0X	10	20/21/22 34	23	36		
Morphothion	144-41-2		3.0k	25.0H	—	—	—	23/24/25		2	13	44	
Moss Green	12002-03-8	1585	3.0k	25.0H	—	—	—	23/25		1/2	20/21	28	44
MPK	107-87-9	1249	—	—	—	—	—						
Muriatic acid	7647-01-0	1789	—	—	—	1.0eu	5.0dX	35	37	7/9	26	44	
Nabam	142-59-6		25.0C	—	—	20.0t	—	22	38	2	13		
Naled	300-76-5		25.0C	—	—	20.0t	—	20/21/22	36/37	2	13		
Naphthalenen	91-20-3	1334	—	—	—	—	—						
2-Naphtol	135-19-3		25.0C	—	—	—	—	20/22		24/25			
β-Naphthol	135-19-3		25.0C	—	—	—	—	20/22		24/25			
1-Naphthylacetic acid	86-87-3		25.0C	—	—	—	—	22		24/25			
alpha-Naphthylamine	134-32-7	2077	25.0C	—	—	—	—	20/21/22	33	22	36		
2-Napthylamine	91-59-8	1650	—	0.01QY	—	—	—	22	45(1)	44	53		
beta-Naphthylamine	91-59-8	1650	—	0.01QY	—	—	—	22	45(1)	44	53		

2-Naphthylamine (salts)	N/A		—	0.1QY	—	—	—	22	45(1)		44	53			
1,5-Naphthylene diisocyanate	3173-72-6		1.0GY	—	—	20.0t	—	20	36/37/38	42	26	28	38	45	
Naphthylandindion	2156-11-8		3.0k	25.0H	—	—	—	25			2	13	44		
Naphthylindandione	1786-03-4		3.0k	25.0H	—	—	—	25			2	13	44		
1-Naphthyl methycarbamate	63-25-2		25.0C	—	—	—	—	22			2	22	24		
Naphthylthiourea	86-88-4	1651	0.1a	1.0cD	7.0J	—	—	28	40(3)		1/2	25	36/37	45	
alpha-Naphthyl thiourea	86-88-4	1651	0.1a	1.0cD	7.0J	—	—	28	40(3)		1/2	25	36/37	45	
1-(1-Naphthyl)-2-thiourea	86-88-4	1651	0.1a	1.0cD	7.0J	—	—	28	40(3)		1/2	25	36/37	45	
Neopentyl glycol diacrylate	2223-82-7		3.0k	25.0H	—	1.0Gu	—	24	36/38	43	28	39	44		
Nickel	7440-02-0	2881	—	—	—	—	—								
Nickel carbonyl	13463-39-3	1259	0.1a	1.0cD	7.0J	—	—	11	26	40	9	23	45		
Nickel tetracarbonyl	13463-39-3	1259	0.1a	1.0cD	7.0J	—	—	11	26	40	9	23	45		
Nicotine	54-11-5	1654	0.1a	1.0c	7.0J	—	—	26/27/28			1	13	28	45	
Nicotine hydrochloride	2820-51-1	1656	0.1a	1.0c	7.0J	—	—	26/27/28			1	13	28	45	
Nicotine salicylate	29790-52-1	1657	0.1a	1.0c	7.0J	—	—	26/27/28			1	13	28	45	
Nicotine sulphate	65-30-5	1658	0.1a	1.0c	7.0J	—	—	26/27/28			1	13	28	45	
Nicotine tartrate	65-31-6	1659	0.1a	1.0c	7.0J	—	—	26/27/28			1	13	28	45	
Nitrapyrin	1929-82-4		—	—	—	—	—								
Nitric acid	7697-37-2	2031/ 2032	—	—	—	1.0e	5.0iX	8	35		23	26	36		
Nitric oxide	10102-43-9	1660	—	—	—	—	—								
5-Nitroacenaphthene	602-87-9		—	0.1Q	—	—	—	45(2)			44	53			
p-Nitroaniline	100-00-6		3.0k	25.0H	—	—	—	23/24/25	33		28	36/37	44		
2-Nitro-p-anisidine	96-96-8		0.1a	1.0cE	7.0J	—	—	26/27/28	33		28	36/37	45		
Nitrobenzene	98-95-3	1662	0.1a	1.0cE	7.0J	—	—	26/27/28	33		28	36/37	45		
Nitrobenzol	98-95-3	1662	0.1a	1.0cE	7.0J	—	—	26/27/28	33		28	36/37	45		
4-Nitrobiphenyl	92-93-3		—	—	—	—	—								
p-Nitrochloro benzene	100-00-5	1578	3.0k	25.0H	—	—	—	23/24/25	33		28	37	44		
4-Nitrodiphenyl	92-93-3		—	—	—	—	—								
Nitroethane	79-24-3	2842	25.0C	—	—	—	—	10	20/22		9	25	41		
Nitrogen dioxide	10102-44-0	1067	0.1a	1.0c	7.0J	20.0t	—	26	37		7/9	26	45		
Nitrogen peroxide (liquid)	10102-44-0	1067	0.1a	1.0c	7.0J	20.0t	—	26	37		7/9	26	45		
Nitrogen trifluoride	7783-54-2	2451	—	—	—	—	—								
Nitroglycerin	55-63-0	0143/ 0144	0.1a	1.0cE	7.0J	—	—	3	26/27/28	33	33	35	36/37	45	
Nitrolim	156-62-7	1403	—	—	—	—	—								
Nitromethane	75-52-5	1261	25.0C	—	—	—	—	5	10	22	41				
2-Nitronaphthalene	581-89-5	2538	—	0.1Q	—	—	—	45(2)			44	53			
4-Nitrophenol	100-02-7		25.0C	—	—	—	—	20/21/22	33		28				

Substance Name	CAS Number	UN Number	Conc cut-off Xn %	Conc cut-off T %	Conc cut-off T+%*	Conc cut-off Xi %*	Conc cut-off C %*	Risk Phrases				Safety Phrases		
p-Nitrophenol	100-02-7		25.0C	—	—	—	—	20/21/22	33			28		
1-Nitropropane	108-03-2	2608	25.0C	—	—	—	—	10	20/21/22			9		
2-Nitropropane	79-46-9	2608	—	0.1QY	—	—	—	10	20/22	45(2)		9	44	53
p-Nitrosoaniline	659-49-4		25.0C	—	—	—	—	20/21/22				25	28	
4-Nitrosoaniline	659-49-4		25.0C	—	—	—	—	20/21/22				25	28	
N-Nitrosodimethylamine	62-75-9		—	0.1QPxp	7.0JN	—	—	25	26	45(2)	48	45	53	
m-Nitrotoluene	99-08-1	1664	3.0k	25.0H	—	—	—	23/24/25	33			28	37	44
o-Nitrotoluene	88-72-2	1664	3.0k	25.0H	—	—	—	23/24/25	33			28	37	44
p-Nitrotoluene	99-99-0	1664	3.0k	25.0H	—	—	—	23/24/25	33			28	37	44
Nitrotoluidine (mixed isomers)	28676-13-3		3.0k	25.0H	—	—	—	23/24/25	33			28	36/37	44
Nitrotrichloro methane	76-06-2	1580	0.1a	1.0c	7.0J	20.0t	—	26/27/28	36/37/38			26	36	45
Nitrous ether	109-95-5	1194	25.0C	—	—	—	—	2	20/21/22					
Nitrous oxide	10024-97-2	1070	—	—	—	—	—							
Nonane	111-84-2	1920	—	—	—	—	—							
Norbormide	991-42-4		3.0k	25.0H	—	—	—	23/24/25				2	13	44
5-Norbornene-endo-2,3-dicarboxylic anhydride	129-64-6		—	—	—	20.0t	—	36/37/38				39		
2-Norbornyl acrylate	10027-06-2		25.0C	—	—	1.0Gu	—	21	38	43		28		
Octachloronaph thalene	2234-13-1		—	—	—	—	—							
3-Octanone	106-68-3	2271	—	—	—	—	—							
Oil of turpentine	8006-64-2	1299	25.0C	—	—	—	—	10	20/21/22			2		
Oleum	8014-95-7	1831	—	—	—	1.0eu	5.0dx	14	35	37		26	30	
Omethoate	1113-02-6		3.0k	25.0H	—	—	—	23/24/25				2	13	44
Orthophoshoric acid	7664-38-2	1805	—	—	—	10.0e	25.0X	34				26		
Osmium tetroxide	20816-12-0	2471	0.1a	1.0c	7.0J	5.0e	10.0X	26/27/28	34			7/9	26	45
Oubain	630-60-4		3.0k	25.0H	—	—	—	23/25	33			44		
Oxalic acid	144-62-7		5.0C	—	—	—	—	21/22				2	24/25	
Oxalic acid (salts)	N/A		5.0C	—	—	—	—	21/22				2	24/25	

Oxirane	**75-21-8**	**1040**	—	**0.10bz**	—	**20.0t**	—	**23**	**36/37/38**	**45(2)**	**46(2)**		**3/7/9**	**16**	**33**	**44**	**53**
Oxydemeton-methyl	**301-12-2**		0.1a	1.0c	7.0J	—	—	26/27/28				1	13	28	45		
Oxydiethylene bis (chioro-formate)	106-75-2		25.0C	—	—	5.0fu	—	22	38	41		23	26				
Oxydisulfoton	2497-07-6		0.1a	1.0c	7.0J	—	—	26/27/28				1	13	45			
Oxygen (liquid)	7782-44-7	1072/ 1073	—	—	—	5.0e	10.0X	8	34			21					
Oxygen difluoride	7783-41-7	2190	—	—	—	—	—										
Oxygen fluoride	7783-41-7	2190	—	—	—	—	—										
Oxymethylene	50-00-0	1198/ 2209	1.0RD	25.0H	—	1.0Gn	25.0X	23/24/25	34	40(3)	43		26	36/37	44	51	
Oxone	10028-15-6		—	—	—	—	—										
PAP	2597-03-7		25.0C	—	—	—	—	20/21/22				2	13				
Papaverine	58-74-2		25.0C	—	—	—	—	22				22					
Paraverine hydrocloride	61-25-6		25.0C	—	—	—	—	22				22					
Paraffin wax (fume)	8002-74-2		—	—	—	—	—										
Paraformaldehyde	30525-89-4	2213	25.0C	—	—	—	—	22				24/25					
Paraquat	4685-14-7		0.1a	1.0c	7.0J	—	—	26/27/28				1	13	45			
Paraquat (salts)	N/A		0.1a	1.0c	7.0J	—	—	26/27/28				1	13	45			
Parathion	56-38-2	2052	0.1a	1.0c	7.0J	—	—	27/28				28	36/37	45			
Parathion-methyl	298-00-0	2052	0.1a	1.0bc	7.0J	—	—	24	28			28	36/37	45			
PCB-1254	11097-69-1	2315	1.0E	—	—	—	—	33				35					
PCBs	1336-36-3	2315	1.0E	—	—	—	—	33				35					
Pebulate	1114-71-2		25.0C	—	—	—	—	20/21/22				2	13				
Pentachloroethane	76-01-7	1669	0.2q	1.0ND	—	—	—	23	40(3)	48		23	36/37				
Pentachloronaphthalene	1321-64-8		25.0C	—	—	20.0t	—	21/22	36/38			35					
Pentachlorophenol	87-86-5	2020	0.1ab	1.0cDZ	7.0J	20.0t	—	24/25	26	36/37/38	40(3)		1/2	22	36/37	45	
Pentachlorophenol (alkali salts)	N/A		0.1ab	1.0cDZ	7.0J	20.0t	—	24/25	26	36/37/38	40(3)		1/2	22	36/37	45	
Pentaerythriol tetraacrylate	N/A		—	—	—	1.0Gu	—	36/38	43			26	39				
Pentaerythriotol triacrylate	3524-68-3		—	—	—	1.0Gu	—	36/38	43			39					
Pentaethylenehexamine	4067-16-7	2734/ 2735	—	—	—	1.0Gn	10.0X	34	43			26	36/37/39				
Pentalin	76-01-7	1669	0.2q	1.0ND	—	—	—	23	40(3)	48		23	36/37				
Pentanal	110-62-3	2058	—	—	—	—	—										
Pentan-2, 4-dione	123-54-6	2310	25.0C	—	—	—	—	10	22			21	23	24/25			
1, 5-Pentanedial	111-30-8		—	—	—	—	—										
2, 4-Pentanedione	123-54-6	2310	25.0C	—	—	—	—	10	22			21	23	24/25			
n-Pentanol	71-41-0		25.0C	—	—	—	—	10	20			24/25					
2-Pentanone	107-87-9	1249	—	—	—	—	—										
Pentyl alcohol	71-41-0		25.0C	—	—	—	—	10	20			24/25					
Peracetic acid	79-21-0		10.0C	—	—	2.0e	10.0x	5	22	34		3	27	36			
Perchloric acid	7601-90-3	1802/ 1873	—	—	—	1.0e	5.0dx	5	8	35			23	26	36		

Substance Name	CAS Number	UN Number	Conc cut-off Xn %	Conc cut-off T %	Conc cut-off T+%*	Conc cut-off Xi %*	Conc cut-off C %*	Risk Phrases				Safety Phrases				
Perchlorethylene	127-18-4	1897	1.0D	—	—	—	—	40(3)				23	36/37			
Perchloroflouride	7616-94-6	1955	—	—	—	—	—									
Perchloromethylmercaptan	594-42-3	1670	—	—	—	—	—									
Perchloryl fluoride	7616-94-6	1955	—	—	—	—	—									
Peroxyacetic acid	79-21-0		10.0C	—	—	2.0e	10.0X	5	22	34		3	27	36		
Phenarsazine chloride	578-94-9	1698	3.0k	25.0H	—	—	—	23/25				1/2	20/21	28	44	
Phene	71-43-2	1114	—	0.1QpÑ	—	—	—	11	23/24/25	45(1)	48	16	29	44	53	
o-Phenetidine	94-70-2	2311	3.0k	25.0H	—	—	—	23/24/25	33			28	36/37	45		
p-Phenetidine	156-43-4	2311	3.0k	25.0H	—	—	—	23/24/25	33			28	36/37	45		
Phenidone	92-43-3		25.0C	—	—	—	—	22								
Phenkapton	2275-14-1		3.0k	25.0H	—	—	—	23/24/25				2	13	44		
Phenol	108-95-2	1671	1.0k	5.0H	—	1.0e	5.0X	24/25	34			2	28	44		
Phenothiazine	92-84-2		—	—	—	—	—									
Phenthoate	2597-03-7		25.0C	—	—	—	—	20/21/22				2	13			
Phenyl bromide	108-86-1	2514	—	—	—	20.0t	—	10	38							
Phenyl chloride	108-90-7	1134	5.0C	—	—	—	—	10	20			24/25				
Phenyl chloromethyl ketone	532-27-4	1697	—	—	—	—	—									
Phenylamine	62-53-3	1547	0.2kE	1.0H	—	—	—	23/24/25	33			28	36/37	44		
Phenyl chloroform	98-07-7	2226	25.0C	—	—	—	—	20				24/25				
Phenyl cyanide	100-47-0	2224	25.0C	—	—	—	—	21/22				23				
Phenyldichloroarsine	696-28-6	2759	3.0k	25.0H	—	—	—	23/25				1/2	20/21	28	44	
meta-Phenylenediamine	108-45-2	1673	3.0k	25.0H	—	1.0G	—	23/24/25	43			28	44			
Phenyhydrazine	106-50-3	1673	3.0k	25.0H	—	1.0G	—	23/24/25	43			28	44			
Phenylenediamine (mixed isomers)	25265-76-3		3.0k	25.0H	—	1.0G	—	23/24/25	43			28	44			
Phenylethane	100-41-4	1175	25.0C	—	—	—	—	11	20			16	424/25	29		
Phenyl ether	101-84-8		—	—	—	—	—									
Phenylethylene	100-42-5	2055	12.5C	—	—	12.5t	—	10	20	36/38		23				
Phenyl glycidyl ether	122-60-1		25.0C	—	—	1.0G	—	21	43			24/25				
Phenylhydrazine	100-63-0	2572	3.0k	25.0H	—	20.0t	—	23/24/25	36			28	44			
Phenyl hydride	71-43-2	1114	—	0.1QpN	—	—	—	11	23/24/25	45(1)	48	16	29	44	53	
Phenyl mercapian	108-98-5	2337	—	—	—	—	—									
Phenyl Mercuri acetate	62-38-4	1674	0.1a	1.0cE	7.0J	—	—	26/27/28	33			2	13	28	36	45
Phenyl mercuric hydroxide	100-57-2	1894	0.1a	1.0cE	7.0J	—	—	26/27/28	33			2	13	28	36	45
Phenylmercuric nitrate	55-68-5	1895	0.1a	1.0cE	7.0J	—	—	26/27/28	33			2	13	28	36	45

Phenylmethane	108-88-3	1294	12.5C	—	—	—	—	11	20		16	25	29	33	
N-Phenyl-beta-naphthylamine	135-88-6		—	—	—	—	—								
Phenyloxirane	96-09-3		—	0.1QY	—	20.0t		21	36	45(2)	44	53			
Phenylphosphine	638-21-1		—	—	—	—	—								
1-Phenylpropane	103-65-1	2364	—	—	—	25.0t	—	10	37						
2-Phenylpropene	98-83-9	2303	—	—	—	25.0t	—	10	36/37						
1-Phenyl-3-pyrazolidone	92-43-3		25.0C	—	—	—	—	22							
6-Phenyl-1,3,5-triazine-2, 4-diamine	91-76-9		25.0C	—	—	—	—	22							
Phorate	298-02-2		0.1a	1.0c	7.0J	—	—	27/28			28	36/37	45		
Phosacetim	4104-14-7		0.1a	1.0c	7.0J	—	—	27/28			28	36/37	45		
Phosalone	2310-17-0		3.0k	25.0H	—	—	—	23/24/25			2	13	44		
Phosgene	75-44-5	1076	0.1a	1.0c	7.0J	—	—	26			1/2	7/9	24/25	45	
Phosmet	732-11-6		25.0C	—	—	—	—	20/21/22			2	13			
Phosnichlor	5826-76-6		25.0C	—	—	—	—	20/21/22			2	13			
Phosphamidon (mixed isomer)	13171-21-6		0.1a	1.0Dbc	7.0J	—	—	24	28	40(M3)	23	36/37	45		
Phosphine	7803-51-2	2199	—	—	—	—	—								
Phosphoric chloride	10026-13-8	1806	—	—	—	5.0eu	10.0X	34	37		7/8	26			
Phosphoric acid	7664-38-2	1805	—	—	—	10.0e	25.0X	34			26				
Phosphoric anhydride	1314-56-3	1807	—	—	—	1.0e	5.0dX	35			22	26			
Phosphoric perchloride	10026-13-8	1806	—	—	—	5.0eu	10.0X	34	37		7/8	26			
Phosphorus (white)	7723-14-0	1381	0.1a	1.0c	7.0J	1.0e	5.0dX	17	26/28	35	5	26	28	45	
Phosphorus (yellow)	7723-14-0	1381	0.1a	1.0c	7.0J	1.0e	5.0dX	17	26/28	35	5	26	28	45	
Phosphorus bromide	7789-60-8	1808	—	—	—	5.0e	10.0X	14	34	37	26				
Phosphorus chroride	7719-12-2	1809	—	—	—	5.0eu	10.0X	34	37		7/8	26			
Phosphorus oxychloride	10025-87-3	1810	—	—	—	5.0eu	10.0X	34	37		7/8	26			
Phosphorus pentachloride	10026-13-8	1806	—	—	—	5.0eu	10.0X	34	37		7/8	26			
Phosphorus pentasulphide	1314-80-3	1340	25.0C	—	—	—	—	11	20/22	29					
Phosphorus pentoxide	1314-56-3	1807	—	—	—	1.0e	5.0dX	35			22	26			
Phosphorus sesquisulphide	1314-85-8	1341	25.0C	—	—	—	—	11	22		7	16	24/25		
Phosphorus tribromide	7789-60-8	1808	—	—	—	5.0eu	10.0X	14	34	37	26				
Phosphorus trichloride	7719-12-2	1809	—	—	—	5.0eu	10.0X	34	37		7/8	26			
Phosphoryl chloride	10025-87-3	1810	—	—	—	5.0eu	10.0X	34	37		7/8	26			
Phoxim	14816-18-3		25.0C	—	—	—	—	20/21/22			2	13			
Phthalic anhydride	85-44-9	2214	—	—	—	5.0t	—	36/37/38							
m-Phthalodinitrile	626-17-5		—	—	—	—	—								
Physostigmine	57-47-6		0.1a	1.0c	7.0J	—	—	26/28			1	25	45		
Picloram	1918-02-1		—	—	—	—	—								
alpha-Picoline	109-06-8	2313	25.0C	—	—	20.0t	—	10	20/21/22	36/37	26	36			
gamma-Picoline	108-89-4	2313	3.0k	25.0CH	—	20.0t	—	10	20/22	24 36/37/38	26	36	44		
Picramic acid	96-91-3		25.0C	—	—	20.0t	—	1	20/21/22		35				

Substance Name	CAS Number	UN Number	Conc cut-off Xn %	Conc cut-off T %	Conc cut-off T+%*	Conc cut-off Xi %*	Conc cut-off C %*	Risk Phrases			Safety Phrases				
Picric acid	88-89-1	1344	3.0k	25.0H	—	—	—	2	4	23/24/25	28	35	.37	44	
Picric acid (slats)	N/A		3.0k	25.0H	—	—	—	3	23/24/25		28	35	37	44	
Picryl chloride	88-88-0	0155	0.1a	1.0c	7.0J	—	—	2	26/27/28		35	45			
Pilocarpine	92-13-7		0.1a	1.0c	7.0J	—	—	26/28			1	25	45		
Pinan-2-yl-hydroperoxide	28324-52-9		—	—	—	1.0e	5.0dX	11	35		3/7/9	14	27	37/39	
Pindone	83-26-1	2472	3.0k	25.0H	—	—	—	25			2	13	44		
Piperazine	110-85-0	2579	—	—	—	5.0e	10.0X	34			26	36			
Piperazine dihydrochloride	142-64-3		—	—	—	—	—								
Piperidine	110-89-4	2401	3.0k	25.0H	—	5.0e	10.0X	11	23/24	34	16	26	27	44	
Pirimicarb	23103-98-2		3.0k	25.0H	—	—	—	23/24/25			2	13	44		
Pirimiphos-ethyl	23505-41-1		3.0k	25.0H	—	—	—	23/24/25			2	13	14		
Pirimiphos-methyl	29232-93-7		3.0k	25.0H	—	—	—	23/24/25			2	13	44		
Platinum	7440-06-4		—	—	—	—	—								
Polychlorinated biphenys	1336-36-3	2315	1.0E	—	—	—	—	33			35				
Polyethylene amines	N/A	2734/ 2735	25.0C	—	—	1.0Gn	10.0X	21/22	34	43	26	36/37/39			
Polymethylenepolyphenyl isocyanate	9016-87-9		1.0GY	—	—	20.0t	—	20	36/37/38	42	26	28	38	45	
Potassium	7440-09-7	2257	—	—	—	5.0e	10.0X	14/15	34		5	8	43		
Potassium acid fluoride	7789-29-9	1811	1.0k	10.0H	—	0.1e	1.0X	25	34		22	26	37		
Potassium antimony tartrate	28300-74-5	1551	25.0C	—	—	—	—	20/22			22				
Potassium arsenate	7784-41-0	1677	3.0k	25.0H	—	—	—	23/25			1/2	20/21	28	44	
Potassium arsenite	10124-50-2	1678	3.0k	25.0H	—	—	—	23/25	33		1/2	20/21	28	44	
Potassium bifluoride	7789-29-9	1811	1.0k	10.0H	—	0.1e	1.0X	25	34		22	26	37		
Potassium bromate	7758-01-2		—	0.1QbZ	—	—	—	9	25	45(2)	16	44	53		
Potassium chlorate	3811-04-9	1485	25.0C	—	—	—	—	9	20/22		2	13	16	27	
Potassium chromate	7789-00-6		—	—	—	0.5Gu	—	36/37/38	43		22	28			
Potassium cyanide	151-50-8	1680	0.1a	1.0c	7.0J	—	—	26/27/28	32		1/2	7	28	29	45
Potassium dichromate	7778-50-9		—	—	—	0.5Gu	—	36/37/38	43		22	28			
Potassium dihydrogen arsenate	7784-41-0	1677	3.0k	25.0H	—	—	—	23/25			1/2	20/21	28	44	
Potassium fluoride	7789-23-3	1812	3.0k	25.0H	—	—	—	23/24/25			1/2	26	44		
Potassium fluoroacetate	23745-86-0	2628	0.1a	1.0c	7.0J	—	—	28			1/2	20	22	26	45
Potassium fluorosilicate	16871-90-2	2655	1.0k	10.0H	—	—	—	23/24/25			1/2	26	44		
Potassium hydrogen fluoride	7789-29-9	1811	1.0k	10.0H	—	0.1e	1.0X	25	34		22	26	37		

Potassium hydroxide	1310-58-3	1813/ 1814	—	—	—	0.5e	2.0vX	35					2	26	37/39			
Potassium mercuric iodide	7783-33-7	1643	0.1a	1.0cE	7.0J	—	—	26/27/28	33			1/2	13	28	45			
Potassium nitrite	7758-09-D	1488	1.0k	5.0H	—	—	—	8	25				44					
Potassium perchlorate	7778-74-7	1489	25.0C	—	—	—	—	9	22				2	13	22	27		
Potassium permanganate	7722-64-7	1490	25.0C	—	—	—	—	8	22				2					
Potassium polysulphides	37199-66-9		—	—	—	5.0e	10.0X	31	34				26					
Potassium selenate	7790-59-2	2630	3.0k	25.0H	—	—	—	23/25	33				20/21	28	44			
Potassium silicofluoride	16871-90-2	2655	1.0k	10.0H	—	—	—	23/24/25				1/2	26	44				
Potassium sulphide	1312-73-8	1382	—	—	—	5.0e	10.0X	31	34				26					
Promacyl	34264-24-9		3.0k	25.0H	—	—	—	23/24/25				2	13	44				
Promecarb	2631-37-0		3.0k	25.0H	—	—	—	23/24/25				2	13	44				
Propachlor	1918-16-7		25.0C	—	—	20.0t	—	20/21/22	36			2	13					
Propane sultone	1120-71-4		—	0.1QY	—	—	—	21/22	45(2)				44	53				
Propanil	709-98-8		25.0C	—	—	—	—	20/21/22				2	13					
Propanoyl chloride	79-03-8	1815	—	—	—	5.0e	10.0X	11	14	34			9	16	26			
Propargyl alcohol	107-19-7		3.0k	25.0H	—	5.0e	10.0X	10	23/24/25	34		26	28	36	44			
Propenal	107-02-8	1092	0.1a	1.0bc	7.0JZ	5.0e	10.0X	11	25	26	34		3/9/14	26	36/37/39		38	45
Propenenitrile	107-13-1	1093	—	0.1QAo	—	20.0t	—	11	23/24/25	38	45(2)		16	27	44	53		
Propenoic acid	79-10-7	2218	—	—	—	5.0e	10.0X	10	34				26	36				
2-Propen-1-ol	107-18-6	1098	3.0k	25.0H	—	20.0t	—	10	23/24/25	36/37/38				36/37/39		38	44	
Propenyl alcohol	107-18-6	1098	3.0k	25.0H	—	20.0t	—	10	23/24/25	36/37/38				36/37/39		38	44	
B-Propiolactone	57-57-8		—	0.1QPx	7.0J	20.0t	—	26	36/38	45(2)		45	53					
1, 3-Propiolactone	57-57-8		—	0.1QPx	7.0J	20.0t	—	26	36/38	45(2)			45	53				
Propionaldehyde	123-38-6	1275	—	—	—	20.0t	—	11	36/37/38			9	16	29				
Propionic acid	79-09-4	1848	—	—	—	10.0T	25.0X	34				2	23	26				
Propionic aldehyde	123-38-6	1275	—	—	—	20.0t	—	11	36/37/38			9	16	29				
Propionic anhydride	123-62-6	2496	—	—	—	10.0e	25.0X	34				26						
Propionyl chloride	79-03-8	1815	—	—	—	5.0e	10.0X	11	14	34		9	16	26				
Propoxur	114-26-1		3.0k	25.0H	—	—	—	23/24/25				2	13	44				
Propyl aldehyde	123-38-6	1275	—	—	—	20.0t	—	11	36/37/38			9	16	29				
normal-Propyl benzene	103-65-1	2364	—	—	—	25.0t	—	10	37									
Propyl benzene	103-65-1	2364	—	—	—	25.0t	—	10	37									
Propyl bromide	106-94-5	2344	25.0C	—	—	—	—	10	20			9	24					
Propyl chloride	540-54-5	1278	25.0C	—	—	—	—	11	20/21/22			9	29					
Propyl chlocarbonate	109-61-5	2740	3.0k	25.0H	—	5.0e	10.0X	10	23	34		26	36	44				
normal-Propyl chlocarbonate	109-61-5	2740	3.0k	25.0H	—	5.0e	10.0X	10	23	34		26	36	44				
Propyl chloroformate	109-61-5	2740	3.0k	25.0H	—	5.0e	10.0X	10	23	34		26	36	44				
Propyl cyanide	109-74-0	2411	3.0k	25.0H	—	—	—	23/24/25				44						
Propylene aldehyde	4170-30-3	1143	3.0k	25.0H	—	20.0t	—	11	23	36/37/38		29	33	44				
Propylene chloride	78-87-5	1279	25.0C	—	—	—	—	11	20				9	16	29	33		

Substance Name	CAS Number	UN Number	Conc cut-off Xn %	Conc cut-off T %	Conc cut-off T+%*	Conc cut-off Xi %*	Conc cut-off C %*	Risk Phrases				Safety Phrases					
Propylene dichloride	78-87-5	1279	25.0C	—	—	—	—	11	20			9	16	29	33		
Propylene glycol dinitrate	6423-43-4		—	—	—	—											
Propylene imine	75-55-8	1921	—	0.1QPx	7.0J	5.0f	—	11	26/27/28	41	45(2)	26	45	53			
Propyleneimine (inhibited)	75-55-8	1921	—	0.1QPx	7.0J	5.0f	—	11	26/27/28	41	45(2)	26	45	53			
1, 3-Propylene oxide	503-30-0		25.0C	—	—	—	—	11	20/21/22			9	16	26	29		
Propylene oxide	75-56-9	1280	—	0.1QY	—	20.0t	—	20	/21/22	36/37/38	45(2)		3/7/9	16	33	44	53
Propylidene chloride	78-99-9		25.0C	—	—	—	—	11	20			9	16	29	33		
n-Propyl nitrate	627-13-4	1865	—	—	—	—	—										
Prothoate	2275-18-5		0.1a	1.0C	7.0J	—	—	27/28				28	36/37	45			
Proxan-sodium	140-93-2		25.0C	—	—	20.0t	—	22	38			2	13				
Pyrazine hexahydride	110-85-0	2579	—	—	—	5.0e	10.0X	34				26	36				
Pyrazophos	13457-18-6		0.1a	1.0C	7.0J	—	—	26/27/28				1	13	28	45		
Pyrazoxon	108-34-9		0.1a	1.0C	7.0J	—	—	26/27/28				1	13	28	45		
Pyrethin I	121-21-1		25.0C	—	—	—	—	20/21/22				2	13				
Pyrethin II	121-29-9		25.0C	—	—	—	—	20/21/22				2	13				
Pyrethrum	8003-34-7		25.0C	—	—	—	—	20/21/22				2	13				
Pyridine	110-86-1	1282	25.0C	—	—	—	—	11	20/21/22			26	28				
Pyrogallol	87-66-1		10.0C	—	—	—	—	20/21/22									
Pyromellitic dianhydride	89-32-7		—	—	—	1.0t	—	36/37/38				25					
Pyromucic aldehyde	98-01-1	1199	1.0k	5.0H	—	—	—	23/25				24/25	44				
Pyrosulphuric acid	8014-95-7	1831	—	—	—	1.0eu	5.0dX	14	35	37		26	30				
Quinone	106-51-4	2587	3.0k	25.0H	—	20.0t	—	23/25	36/37/38			26	28	44			
RDX	121-82-4	0072	—	—	—	—	—										
Refrigerant 112	76-12-0		—	—	—	—	—										
Refrigerant 112a	76-11-9		—	—	—	—	—										
Refrigerant 113	76-13-1		—	—	—	—	—										
Refrigerant R10	56-23-5	1846	0.2q	1.0ND	—	—	—	23/24/25	40(3)	48		23	36/37	44			
Refrigerant R114	76-14-2	1958	—	—	—	—	—										
Refrigerant R115	76-15-3	1020	—	—	—	—	—										
Refrigerant R12	75-71-8	1028	—	—	—	—	—										
Refrigerant R13B1	75-63-8	1009	—	—	—	—	—										
Refrigerant R20	67-66-3	1888	1.0Dr	—	—	20.0t	—	20/22	38	40(3)	48		36/37				
Refrigerant R21	75-43-4	1029	—	—	—	—	—										
Refrigerant R22	75-45-6	1018	—	—	—	—	—										
Refrigerant 30	75-09-2	1593	1.0D	—	—	—	—	40(3)				23	24/25	36/37			
Refrigerant R40	74-87-3	1063	1.0Ds	—	—	—	—	20	40(3)	48		9	16	33			

Resorcinol	108-46-3	2876	10.0C	—	—	20.0t	—	22	36/38			26				
Resorcinol diglycidyl ether	101-90-6		0.1k	1.0DH	—	1.0G	—	23/24/25	40	43		23	24	44		
Rhodium	7440-16-6		—	—	—	—	—									
Ronnel	299-84-3		25.0C	—	—	—	—	21/22					25	36/37		
Rotenone	83-79-4		3.0k	25.0H	—	—	—	23/24/25				2	13	44		
Sand acid	16961-83-4	1778	—	—	—	5.0e	10.0X	34					26	27		
Scheele's mineral	10290-12-7	1586	3.0k	25.0H	—	—	—	23/25	33				1/2	20/21	28	44
Schradan	152-16-9		0.1a	1.0c	7.0J	—	—	27/28					36/37	38	45	
Scorodite	10102-49-5	1606	3.0k	25.0H	—	—	—	23/25	33				1/2	20/21	28	44
Selenic acid	7783-08-6	1905	3.0k	25.0H	—	—	—	23/25	33				20/21	28	44	
Selenious acid	7783-00-8		3.0k	25.0H	—	—	—	23/25	33				20/21	28	44	
Selenium	7782-49-2	2658	3.0k	25.0H	—	—	—	23/25	33				20/21	28	44	
Selenium (compounds)	N/A		3.0k	25.0H	—	—	—	23/25	33				20/21	28	44	
Selenium disulphide	7488-34-6	2657	3.0k	25.0H	—	—	—	23/25	33				20/21	28	44	
Selenium hexafluoride	7783-79-1	2194	3.0k	25.0H	—	—	—	23/25	33				20/21	28	44	
Selenium hydride	7783-07-5	2202	3.0k	25.0H	—	—	—	23/25	33				20/21	28	44	
Selenium oxychloride	7791-23-3	2879	3.0k	25.0H	—	—	—	23/25	33				20/21	28	44	
Selenium sulphide	7488-34-6	2657	3.0k	25.0H	—	—	—	23/25	33				20/21	28	44	
Sesone	136-78-7		25.0C	—	—	—	—	20/21/22					2	13		
Silane	7803-62-5	2203	—	—	—	—	—									
Silica (amorphous-precipitated)	7699-41-4		—	—	—	—	—									
Silica (crystaline-cristobalite)	14464-46-1		—	—	—	—	—									
Silica (crystaline fused)	60676-86-0		—	—	—	—	—									
Silica (crystaline quartz)	14808-60-7		—	—	—	—	—									
Silica (crystaline-tridymite)	15468-32-3		—	—	—	—	—									
Silica (crystaline-tripoli)	1317-95-9		—	—	—	—	—									
Silica (diatomaceous earth)	61790-53-2		—	—	—	—	—									
Silicofluoric acid	16961-83-4	1778	—	—	—	5.0e	10.0X	34					26	27		
Silicon (amorphous)	7440-21-3	1346	—	—	—	—	—									
Silicon chloride	10026-04-7	1818	—	—	—	20.0t	—	14	36/37/38				7/8	26		
Silicon tetrachloride	10026-04-7	1818	—	—	—	20.0t	—	14	36/37/38				7/8	26		
Silicon tetrahydride	7803-62-5	2203	—	—	—	—	—									
Silver	7440-22-4		—	—	—	—	—									
Silver nitrate	7761-88-8	1493	—	—	—	5.0e	10.0X	34					2	26		

Substance Name	CAS Number	UN Number	Conc cut-off Xn %	Conc cut-off T %	Conc cut-off T+%*	Conc cut-off Xi %*	Conc cut-off C %*	Risk Phrases			Safety Phrases				
Silver arsenite	7784-08-9	1683	3.0k	25.0H	—	—	—	23/25			1/2	20/21	28	44	
Silver orthoarsenite	7784-08-9	1683	3.0k	25.0H	—	—	—	23/25			1/2	20/21	28	44	
Sodium	7440-23-5	1428	—	—	—	5.0e	10.0X	14/15	34		5	8	43		
Sodium arsanilate	127-85-5	2473	3.0k	25.0H	—	—	—	23/25			1/2	20/21	28	44	
Sodium arsenate	7778-43-0	1685	3.0k	25.0H	—	—	—	23/25			1/2	20/21	28	44	
Sodium arsenite	7784-46-5	1686/ 2027	3.0k	25.0H	—	—	—	23/25			1/2	20/21	28	44	
Sodium azide	26628-22-8	1687	0.1a	1.0c	7.0J	—	—	28	32		28				
Sodium bifluoride	1333-83-1	2439	1.0k	10.0H	—	0.1e	1.0X	25	34		22	26	37		
Sodium binoxide	1313-60-6	1504	—	—	—	1.0e	5.0dX	8	35		8	27	39		
Sodium bisulphite	7631-90-5	2693	—	—	—	—	—								
Sodium cacodylate	124-65-2	1688	3.0k	25.0H	—	—	—	23/25			1/2	20/21	28	44	
Sodium carbonate	497-19-8		—	—	—	20.0t	—	36			22	26			
Sodium chlorate	7775-09-9	1495	25.0C	—	—	—	—	9	20/22		2	13	16	27	
Sodium chromate	7775-11-3		—	—	—	1.0Gu	—	36/37/38	43						
Sodium cyanide	143-33-9	1689	0.1a	1.0c	7.0J	—	—	26/27/28	32		1/2	7	28	29	45
Sodium dichromate	10588-01-9		—	—	—	0.5Gu	—	36/37/38	43		22	28			
Sodium dimethyl arsenate	124-65-2	1688	3.0k	25.0H	—	—	—	23/25			1/2	20/21	28	44	
Sodium dioxide	1313-60-6	1504	—	—	—	1.0e	5.0dX	8	35		8	27	39		
Sodium dithionite	7775-14-6	1384	25.0C	—	—	—	—	7	22	31	7/8	26	28	43	
Sodium fluoride	7681-49-4	1690	3.0k	25.0H	—	—	—	23/24/25			1/2	26	44		
Sodium fluoroacetate	62-74-8	2629	0.1a	1.0c	7.0J	—	—	28			1/2	20	22	26	45
Sodium fluorosilicate	16893-85-9	2674	1.0k	10.0H	—	—	—	23/24/25			1/2	26	44		
Sodium hydrate	1310-73-2	1823	—	—	—	1.0e	5.0dX	35			2	26	37/39		
Sodium hydrogen fluoride	1333-83-1	2439	3.0k	25.0H	—	5.0e	10.0X	25	34		22	26	37		
Sodium hydrosulphite	7775-14-6	1384	25.0C	—	—	—	—	7	22	31	7/8	26	28	43	
Sodium hydroxide	1310-73-2	1823	—	—	—	1.0e	5.0dX	35			2	26	37/39		
Sodium hypochlorite	7681-52-9	1791	—	—	—	5.0e	10.0X	31	34		2	28	50		
Sodium metaarsenite	7784-46-5	1686/ 2027	3.0k	25.0H	—	—	—	23/25			1/2	20/21	28	44	
Sodium metabisulphite	7681-57-4		—	—	—	—	—								
Sodium methyldithiocarbamate	137-42-8		25.0C	—	—	5.0f	—	21/22	31	41	2	26	36/37/39		
Sodium nitrite	7632-00-0	1500	1.0k	5.0H	—	—	—	8	25		44				

Sodium orthoarsenate	7778-43-0	1685	3.0k	25.0H	—	—	—	23/25				1/2	20/21	28	44
Sodium oxalate	62-76-0	2449	25.0C	—	—	—	—	21/22				2	24/25		
Sodium perchlorate	7601-89-0	1502	25.0C	—	—	—	—	9	22			2	13	22	27
Sodium peroxide	1313-60-6	1504	—	—	—	1.0e	5.0dX	8	35			8	27	39	
Sodium polysulphides	1344-08-7		—	—	—	5.0e	10.0X	31	34			26			
Sodium silicofluoride	16893-85-9	2674	3.0k	25.0H	—	—	—	23/24/25				1/2	26	44	
Sodium sulphide	1313-82-2	1385	—	—	—	5.0e	10.0X	31	34			26			
Spirit of ether nitrite	109-95-5	1194	25.0C	—	—	—	—	2	20/21/22						
Spirit of salts	7647-01-0	1789	—	—	—	1.0eu	5.0dX	35	37			7/9	26	44	
Stannic chloride	7646-78-8	1827	—	—	—	5.0eu	10.0X	34	37			7/8	26		
Stibine	7803-52-3	2676	25.0C	—	—	—	—	20/22					22		
Strontium arsenite	91724-16-2	1691	3.0k	25.0H	—	—	—	23/25				1/2	20/21	28	44
Strontium chromate	7789-06-2		—	0.1QY	—	—	—	22	45(2)			44	53		
Strontium ortho-arsenite	91724-16-2	1691	3.0K	25.0H	—	—	—	23/25				1/2	20/21	28	44
Strophanthin-k	11005-63-3		3.0k	25.0H	—	—	—	23/25	33			44			
Strychnine	57-24-9	1692	0.1a	1.0c	7.0J	—	—	26/28				1	13	45	
Styphnic acid	82-71-3		25.0C	—	—	—	—	2	4	20/21/22		35			
Styrene (monomer)	100-42-5	2055	12.5C	—	—	12.5t	—	10	20	36/38		23			
Styrene oxide	96-09-3		—	0.1QY	—	20.0t	—	21	36	45(2)		44	53		
Subtilisins (proteolytic enzyme)	1395-21-7		—	—	—	—									
Succinic anhyride	108-30-5		—	—	—	20.0t	—	36/37				25			
Sugar of lead	301-04-2	1616	—	0.5Qs	—	—	—	22	33	47(1)	48	44	53		
Sulfallate	95-06-7		—	0.1QY	—	—	—	22	45(2)			44	53		
Sulfotep	3689-24-5	1704	0.1a	1.0c	7.0J	—	—	27/28				23	28	36/37	45
Sulphamic acid	5329-14-6	2967	—	—	—	20.0t	—	36/38				2	26	28	
Sulphanilic acid	121-57-3		25.0C	—	—	—	—	20/21/22				25	28		
Sulpholane	126-33-0		25.0C	—	—	—	—	22				25			
Sulphonyl chloride	7791-25-5	1834	—	—	—	5.0eu	10.0X	14	34	37		26			
Sulphur dichloride	10545-99-0	1828	—	—	—	5.0eu	10.0X	14	34	37		26			
Sulphur dioxide	7446-09-5	1079	3.0k	25.0H	—	20.0t	—	23	36/37			7/9	44		
Sulphureted hydrogen	7783-06-4	1053	0.1a	1.0c	7.0J	—	—	26				7/9	25	45	
Sulphur hexafluoride	2551-62-4		—	—	—	—	—								
Sulphuric chloride	7791-25-5	1834	—	—	—	5.0eu	10.0X	14	34	37		26			
Sulphuric acid	7664-93-9	1830	—	—	—	5.0e	15.0KX	35				2	26	30	
Sulphuric acid (fuming)	8014-95-7	1831	—	—	—	1.0eu	5.0dX	14	35	37		26	30		
Sulphuric oxychloride	7791-25-5	1834	—	—	—	5.0eu	10.0X	14	34	37		26			
Sulphuric oxyfluoride	2699-79-8	2191	—	—	—	—									
Sulphur monochloride	10025-67-9	1828	—	—	—	5.0eu	10.0X	14	34	37		26			
Sulphurous oxychloride	7719-09-7	1836	—	—	—	5.0eu	10.0X	14	34	37		26			

Substance Name	CAS Number	UN Number	Conc cut-off Xn %	Conc cut-off T %	Conc cut-off T+%*	Conc cut-off Xi %*	Conc cut-off C %*	Risk Phrases			Safety Phrases						
Sulphur oxychloride	7719	1836	—	—	—	5.oeu	10.0X	14	34	37	26						
Sulphur pentafluoride	5714-22-7		—	—	—	—	—										
Sulphur tetrachloride	13451-08-6		—	—	—	5.0eu	10.0X	14	34	37	26						
Sulphur tetrafluoride	7783-60-0	2418	—	—	—	—	—										
Sulphuryl chloride	7791-25-5	1834	—	—	—	5.0eu	10.0X	14	34	37	26						
Sulphuryl fluoride	2699-79-8	2191	—	—	—	—	—										
Sweet spirit of nitre	109-95-5	1194	25.0C	—	—	—	—	2	20/21/22								
2.4,5-T	93-76-5	2765	25.0C	—	—	20.0t	—	22	36/37/38		24						
2,4,5-T (salts and esters)	N/A		25.0C	—	—	20.0t	—	22	36/37/38		24						
Tantalum	7440-25-7		—	—	—	—	—	—									
TCA	76-03-9	1839	—	—	—	1.0e	5.0dx	35			24/25	26					
TDI	584-84-9	2078	0.5Gk	2.0H	—	20.0t	—	23	36/37/38	42	23	26	28	38	44		
2,6-TDI	91-08-7	2078	0.5Gk	2.0H	—	20.0t	—	23	36/37/38	42		23		26	28	38	44
Tellurium hexafluoride	7783-80-4	2195	—	—	—	—	—										
Temephos	3383-96-8	—	—	—	—	—	—										
TEPP	107-49-3	1705	0.1a	1.0c	7.0J	—	—	27/28			36/37/39	38	45				
1, 1, 2, 2-Tetrabromoethane	79-27-6	2504	0.1a	1.0c	7.0J	20.0T	—	26	36		1	24	27	45			
Tetrabromoethane	558-13-4	2516	—	—	—	—	—										
1, 1, 1, 2-Tetrachloro-1,2,2 difluoroethane	76-11-9		—	—	—	—	—										
1, 1, 2, 2-Tetrachloro-1,2 difluoroethane	76-12-0		—	—	—	—	—										
Tetrachloroethane	79-34-5	1702	0.1a	1.0c	7.0J	—	—	26/27			2	38	45				
1, 1, 2, 2-Tetrachloroethane	79-34-5	1702	0.1a	1.0c	7.0J	—	—	26/27			2	38	45				
Tetrachloroethylene	127-18-4	1897	1.0D	—	—	—	—	40(3)			23		36/37				
Tetrachloromethane	56-23-5	1846	0.2q	1.0ND	—	—	—	23/24/25	40(3)	48		23			36/37	44	
Tetrachlorophthalene	1335-88-2		—	—	—	—	—										
2, 3, 4, 6-Tetrachlorophenol	58-90-2		0.5k	5.0H	—	20.0t	—	25	36/38		26	28	37	44			
Tetrachlorophenol	25167-83-3	2020	3.0k	25.0H	—	20.0t	—	25	36/38		26	28	37	44			
Tetraethyl pyrophosphate	107-49-3	1705	0.1a	1.0c	70J	—	—	27/28			36/37/39	38	45				
Tetraethyl dithiopyrophosphate	3689-24-5	1704	0.1a	1.0c	7.0J	—	—	27/28			23	28		36/37	45		
Tetraethylenepentamine	112-57-2	2320	25.0C	—	—	1.OGn	10.0X	21/22	34	43	26		36/37/39				
Tetraethyl Lead	78-00-2	1649	0.1a	1.0cE	7.0J	—	—	26/27/28	33	13	26		36/37	45			
Tetraethyl ortho-silicate	78-10-4	1292	25.0C	—	—	20.0t	—	10	20	36/37							
Tetraaethyl silicate	78-10-4	1292	25.0C	—	—	20.0t	—	10	20	36/37							

Tetrahydrobenzene	110-83-8	2256	—	—	—	—	—							
Tetrahydrofuran	109-99-9	2056	—	—	—	25.0t	—	11	19	36/37	16	29	33	
Tetrahydrofuran-2, 5-diyldimethanol	104-80-3		—	—	—	10.0t	—	36/37/38			39			
Tetrahydrofurfury alcohol	97-99-4		—	—	—	10.0t	—	36			39			
Tetrahydro-2-furylmethanol	97-99-4		—	—	—	10.0t	—	36			39			
Tetrahydro-1, 4-oxazine	110-91-8	2054	25.0C	—	—	5.0e	10.0X	10	20/21/22	34	23	36		
Tetrahydrophtalic anyhydride	85-43-8		—	—	—	1.0t	—	36/37			25			
Tetralin hydroperoxide	771-29-9	2136	—	—	—	1.0e	5.0dX	11	35		3/7/9	14	27	37/39
Tetramethoxysilane	681-84-5	2606	—	—	—	—								
Tetramethyl lead	75-74-1	1649	0.1a	1.0cE	7.0J	—	—	26/27/28	33		13	26	36/37	45
N, N, N^1, N^1-Tetramethyl-p-phenylene diamine	100-22-1		25.0C	—	—	—	—	20/21/22			28			
Tetramethyl succinonitrile	333-52-6		—	—	—	—	—							
Tetramethylthiuram disulphide	137-26-8		1.0DY	—	—	1.0Gu	—	20/22	36/37	40(M3) 43	2	36/37		
1,2,3,4-Tetranitrocarbazole	28483-24-9		25.0C	—	—	—	—	1	20/21/22		35			
Tetranitromethane	509-14-8	1510	—	—	—	—	—							
1,2,6,8-Tetranitronaphthalene	28995-89-3		25.0C	—	—	—	—	2	20/21/22	33	35			
Tetrasodium pyrophosphate	7722-88-5		—	—	—	—	—							
Tetryl	479-45-8	0208	3.0k	25.0H	—	—	—	2	23/24/25	33	35	44		
Thallic oxide	1314-32-5	1707	0.1a	1.0cE	7.0J	—	—	26/28	33		2	13	28	45
Thallium	7440-28-0		0.1a	1.0cE	7.0J	—	—	26/28	33		2	13	28	45
Thallium (compounds)	N/A	0.1a	1.0cE	7.0J	—	—		26/28	33		2	13	28	45
Thallium chlorate	13453-30-0	2573	0.1a	1.0cE	7.0J	—	—	26/28	33		2	13	28	45
Thallium nitrate	10102-45-1	2727	0.1a	1.0cE	7.0J	—	—	26/28	33		2	13	28	45
Thallium peroxide	1314-32-5	1707	0.1a	1.0cE	7.0J	—	—	26/28	33		2	13	28	45
Thiacetarsamide	531-72-6		3.0k	25.0H	—	—	—	23/25			1/2	20/21	28	44
4.4'-Thiobis (6-tert-butyl-m-cresol)	96-69-5		—	—	—	—	—							
Thiocarbonyl tetrachloride	594-42-3	1670	—	—	—	—	—							
Thiocyanic acid	463-56-9		25.0C	—	—	—	—	20/21/22	32		2	13		
Thiodiglycol	111-48-8		—	—	—	20.0t	—	36						
Thioglycolic acid	68-11-1	1940	0.2k	2.0H	—	5.0e	10.0X	23/24/25	34		2	25	27	28
Thiometon	640-15-3		3.0k	25.0H	—	—	—	23/24/25			2	13	44	
Thionyl chloride	7719-09-7	1836	—	—	—	5.0eu	10.0X	14	34	37	26			
Thiophenol	108-98-5	2337	—	—	—	—	—							
Thioquinox	93-75-4		25.0C	—	—	—	—	20/22			2	13	24	
Thiourea	62-56-6		1.0DY	—	—	—	—	22	40(3)		22	24		
Thiram	137-26-8		1.0DY	—	—	1.0Gu	—	20/22	36/37	40(M3) 43	2	36/37		

Substance Name	CAS Number	UN Number	Conc cut-off Xn %	Conc cut-off T %	Conc cut-off T+%*	Conc cut-off Xi %*	Conc cut-off C %*	Risk Phrases	Safety Phrases
Tin	7440-31-5		—	—	—	—	—		
Tin chloride	7646-78-8	1827	—	—	—	5.0eu	10.0X	34 37	7/8 26
Tin tetrachloride	7646-78-8	1827	—	—	—	5.0eu	10.0X	34 37	7/8 26
Titanic chloride	7550-45-0	1838	—	—	—	5.0eu	10.0X	14 34 37	7/8 26
Titanium tetrachloride	7550-45-0	1838	—	—	—	5.0eu	10.0X	14 34 37	7/8 26
TNT	118-96-7	1356	3.0k	25.0H	—	—	—	2 23/24/25 33	35 44
o-Tolidine	119-93-7		—	0.1QY	—	—	—	22 45(2)	44 53
Toluene	108-88-3	1294	12.5C	—	—	—	—	11 20	16 25 29 33
2,4-Toluenediamine	95-80-7	1709	25.0C	—	—	—	—	20/21/22	28
Toluene-2,4-diisocyanate	584-84-9	2078	0.5Gk	2.0H	—	20.0t	—	23 36/37/38 42	23 26 28 38 44
Toluene diisocyanate (mixed isomers)	26471-62-5	2078	0.5Gk	2.0H	—	20.0t	—	23 36/37/38 42	23 26 28 38 44
Toluene-2,6-diisocyanate	91-08-7	2078	0.5Gk	2.0H	—	20.0t	—	23 36/37/38 42	23 26 28 38 44
p-Toluenesulphonic acid	104-15-4	2585/ 2586	—	—	—	10.0e	25.0X	34	26 37/39
Toluene trichloride	98-07-7	2226	25.0C	—	—	—	—	20	24/25
m-Toluidine	108-44-1	1708	3.0k	25.0H	—	—	—	23/24/25 33	28 36/37 44
o-Toluidine	95-53-4	1708	3.0k	25.0H	—	—	—	23/24/25 33	28 36/37 44
p-Toluidine	106-49-0	1708	3.0k	25.0H	—	—	—	23/24/25 33	28 36/37 44
Toluidine (mixed isomer)	26915-12-8		3.0k	25.0H	—	—	—	23/24/25 33	28 36/37 44
m-Toluidine hydrochloride	638-03-9		3.0k	25.0H	—	—	—	23/24/25 33	28 36/37 44
p-Toluidine hydrochloride	540-23-8		3.0k	25.0H	—	—	—	23/24/25 33	28 36/37 44
Toluol	108-88-3	1294	12.5C	—	—	—	—	11 20	16 25 29 33
Tolylene-2,4-diisocyanate	584-84-9	2078	0.5Gk	2.0H	—	20.0t	—	23 36/37/38 42	23 26 28 38 44
Tolylene diisocyanate	91-08-7	2078	0.5Gk	2.0H	—	20.0t	—	23 36/37/38 42	23 26 28 38 44
Toxaphene	8001-35-2		1.0Db	25.0CH	—	20.0t	—	21 25 37/38 40(3)	36/37 44
Trialkyl boranes	N/A		—	—	—	5.0e	10.0X	17 34	1/2 7 23 26 36/37/39 43 45
Triallate	2303-17-5		25.0C	—	—	—	—	20/22	2 13
Triamiphos	1031-47-6		0.1a	1.0c	7.0J	—	—	27/28	22 28 36/37 45
Triarimol	26766-27-8		25.0C	—	—	—	—	20/22	2 13
Tribromomethane	75-25-2	2515	3.0k	25.0H	—	20.0t	—	23 36.38	28 44
Tributyl phosphate	126-73-8		25.0C	—	—	—	—	22	25
Tributyltin (compounds)	N/A		0.25k	1.0H	—	—	—	23/24/25	26 27 28 44
Tributyltin linoleate	24124-25-2		2.0C	—	—	—	—	20/21/22	26 28
Tributyltin naphthenate	85409-17-2		2.0C	—	—	—	—	20/21/22	26 28
Tributyltin oleate	3090-35-5		2.0C	—	—	—	—	20/21/22	26 28

Tricalcium orthoarsenate	7778-44-1	1573	3.0k	25.0H	—	—	—	23/25					1/2	20/21	28	44
Trichloroacetataldehyde (anhydrous)	302-17-0	2075	3.0k	25.0H	—	20.0t	—	25	36/38				25	44		
Trichloroacetic acid	76-03-9	1839	—	—	—	1.0e	5.0dX	35					24/25	26		
Trichloroacetic acid, sodium salt	650-51-1		25.0C	—	—	—	—	22					24/25			
Trichloroacetonitrile	545-06-2		3.0k	25.0H	—	—	—	23/24/25					44			
Trichloroaniline	18487-39-3		3.0k	25.0H	—	—	—	23/24/25	33				28	36/37	44	
1,2,4-Trichlorobenzene	120-82-1	2321	—	—	—	—	—									
1,1,1-Trichloroethane	71-55-6	2831	25.0C	—	—	—	—	20					24/25			
1,1,2-Trichloroethane	79-00-5		5.0C	—	—	—	—	20/21/22					9			
Trichloroethylene	79-01-6	1710	1.0D	—	—	—	—	40(3)					23	36/37		
Trichlorofluoromethane	75-69-4		—	—	—	—	—									
Trichloroisocyanuric acid	87-90-1	2468	25.0C	—	—	20.0t	—	8	22	31	36/37	8	26	41		
Trichloromethane	67-66-3	1888	1.0Dr	—	—	20.0t	—	20/22	38	40(3)	48	36/37				
Trichloromethane sulphurylchloride	594-42-3	1670	—	—	—	—	—									
Trichloromethyl sulphochloride	594-42-3	1670	—	—	—	—	—									
Trichloronaphthalene	1321-65-9		—	—	—	—	—									
Trichloronate	327-98-0		0.1a	1.0bc	7.0J	—	—	24	28				23	28	36/37	45
trichloro-nitromethane	76-06-2	1580	0.1a	1.0c	7.0J	20.0t	—	26/27/28	36/37/38				26	36	45	
2,4,5-Trichlorophenol	95-95-4	2827	20.0C	—	—	5.0t	—	22	36/38				26	28		
2,4,6-Trichlorophenol	88-06-2		1.0DY	—	—	20.0t	—	22	36/28	40(3)			36/37			
2,4,5-Trichlorophenoxyacetic acid	93-76-5	2765	25.0C	—	—	20.0t	—	22	36/37/38				24			
2,4,5-Trichlorophenoxyacetic acid (salts and esters)	N/A		25.0C	—	—	20.0t	—	22	36/37/38				24			
1,2,3-Trichloropropane	96-18-4		25.0C	—	—	—	—	20/21/22						37/39		
2,4,6-Trichloro-1,3,5-triazine	108-77-0	2670	—	—	—	20.0t	—	36/37/38					28			
1,3,5-Trichloro-S-triazine-2,4,6-trione	87-90-1	2468	25.0C	—	—	20.0t	—	8	22	31	36/37	8	26	41		
1,1,2-Trichloro-1,2,2-trifluoroethane	76-13-1		—	—	—	—	—									
Trichlorphon	52-68-6		25.0C	—	—	—	—	20/21/22					2	13		
Tricresyl phosphates (<1% 0-cresol)	N/A		5.0C	—	—	—	—	21/22					28			
Tricresyl phosphates (>1% 0-cresol)	N/A		0.2j	1.0a	—	—	—	23/24/25	39					20/21	28	44
Tricyanogen chloride	108-77-0	2670	—	—	—	20.0t	—	36/37/38					28			
Tricyclohexyltin (compounds)	N/A		1.0C	—	—	—	—	20/21/22					26	28		
Tridemorph	81412-43-3		25.0C	—	—	—	—	20/21/22					2	13		

Substance Name	CAS Number	UN Number	Conc cut-off Xn %	Conc cut-off T %	Conc cut-off T+%*	Conc cut-off Xi %*	Conc cut-off C %*	Risk Phrases				Safety Phrases			
Triethylaluminium	97-93-8	1102	—	—	—	5.0e	10.0X	14	17	34		16	43		
Triethylamine	121-44-8	1296	—	—	—	20.0t	—	11	36/37			16	26	29	
Triethylene glycol diacrylate	1680-21-3		—	—	—	1.0Gu	—	36/38	43			26	28		
Triethylenetetramine	112-24-3	2259	25.0C	—	—	1.0Gn	10.0X	21	34	43		26	36/37/38		
Triethyl phosphate	78-40-0		25.0C	—	—	—	—	22				25			
Triethyltin (compounds)	N/A		0.05a	0.1c	0.5J	—	—	26/27/28				26	27	28	45
Trifluoroacetic acid	76-05-1	2699	10.0C	—	—	1.0e	5.0dX	20	35			9	26	27	28
Trifluoro-bromomethane	75-63-8	1009	—	—	—	—	—								
Trihexyltin (compounds)	N/A		1.0C	—	—	—	—	20/21/22				26	28		
1,2,3-Trihydroxybenzene	87-66-1		10.0C	—	—	—	—	20/21/22							
Triisobuty aluminium	100-99-2	3051	—	—	—	5.0e	10.0X	14	17	34		16	43		
Trilead bis (orthophosphate)	7446-27-7		—	0.5Qs	—	—	—	22	33	47(1)	48	44	53		
Trimellitic anhydride	552-30-7		0.3G	—	—	10.0t	—	36/37/38	42			22	28		
Trimethoxyborane	121-43-7	2416	25.0C	—	—	—	—	10	21			2	23	25	
Trimethylaluminium	75-24-1	3051	—	—	—	5.0e	10.0X	14	17	34		16	43		
Trimethylamine	75-50-3	2734/ 2735	—	—	—	20.0t	—	36/37				16	26	29	
1,3,5-Trimethylbenzene	108-67-8	2325	—	—	—	25.0t	—	10	37						
Trimethylbenzene (mixed isomers)	25552-13-7		—	—	—	20.0t	—	10	37						
Trimethyl borate	121-43-7	2416	25.0C	—	—	—	—	10	21			2	23	25	
Trimethyl carbinol	75-65-0	1120	25.0C	—	—	—	—	11	20			9	16		
3,5,5-Trimethyl-cyclohex-2-enone	78-59-1		—	—	—	25.0t	—	36/37/38				26			
Trimethyl-hexamethylene	28697-16-5	2328	1.0Gb	25.0H	—	20.0t	—	23	36/37/38	42		26	28	38	45
Trimethylolpropane triacrylate	15625-89-5		—	—	—	1.0Gu	—	36/38	43			39			
Trimethyl phosphite	121-45-9	2329	—	—	—	—	—								
Trimethyltin (compounds)	N/A		0.05a	0.1c	0.5J	—	—	26/27/28				26	27	28	45
2,4,6-	606-35-9		25.0C	—	—	—	—	2	20/21/22			35			

Trinitroanisole															
Trinitroanisole	28653-16-9	0213	25.0C	—	—	—	—	2	20/21/22			35			
1,3,5-Trinitrobenzene	99-35-4	0214	0.1a	1.0cE	7.0J	—	—	2	26/27/28	33		35	45		
Trinitrobenzene (mixed isomers)	25377-32-6		0.1a	1.0cE	7.0J	—	—	2	26/27/28	33		35	45		
Trinitrobenzol	99-35-4	0214	0.1a	1.0cE	7.0J	—	—	2	26/27/28	33		35	45		
Trinitrochloro-benzene	28260-61-9	0155	0.1a	1.0c	7.0J	—	—	2	26/27/28			35	45		
2,4,6-Trinitrochloro-benzene	88-88-0	0155	0.1a	1.0c	7.0J	—	—	2	26/27/28			35	45		
Trinitrocresol	28905-71-7		25.0C	—	—	—	—	2	4	20/21/22		35			
2,4,6-Trinitrophenol	88-89-1	1344	3.0k	25.0H	—	—	—	2	4	23/24/25		28	35	37	44
Trinitrophenyl-methylnitramine	479-45-8	0208	3.0k	25.0H	—	—	—	2	23/24/25	33		35	44		
Trinitroresorcinol	82-71-3		25.0C	—	—	—	—	2	4	20/21/22		35			
Trinitrotoluene	118-96-7	1356	3.0k	25.0H	—	—	—	2	23/24/25	33		35	44		
2,4,6-Trinitrotoluene	118-96-7	1356	3.0k	25.0H	—	—	—	2	23/24/25	33		35	44		
Trinitrotoluol	118-96-7	1356	3.0k	25.0H	—	—	—	2	23/24/25	33		35	44		
Trinitroxylene (mixed isomers)	28852-33-7		25.0C	—	—	—	—	2	20/21/22	33		35			
8,9,10-Trinorborn-2,3-dicarboxylic anhydride	129-64-6		—	—	—	20.0t	—	36/37/38				39			
8,9,10-Trinorborn-2-yl-acrylate	10027-06-2		25.0C	—	—	1.0Gu	—	21	38	43		28			
Trioctyltin (compounds)	N/A		—	—	—	1.0t	—	36/37/38							
Triorthocresyl phosphate	78-30-8		—	—	—	—	—								
1,3,5-Trioxan	110-88-3		25.0C	—	—	—	—	22				24/25			
Trioxymethylene	110-88-3		25.0C	—	—	—	—	22				24/25			
Tripentyltin (compounds)	N/A		1.0C	—	—	—	—	20/21/22			26	28			
Triphenyl phosphite	101-02-0		—	—	—	5.0t	—	36/38				28			
Triphenylamine	603-34-9		—	—	—	—	—								
Triphenyl phosphate	115-86-6		—	—	—	—	—								
Triphenyltin (compounds)	N/A		0.25k	1.0H	—	—	—	23/24/25			26	27	28	44	
Triphenyltin acetate	900-95-8		0.1a	1.0bc	7.0JZ	1.0Gu	—	24/25	26	36/38	43	36/37	45		
Triphenyltin hydroxide	76-87-9		0.1a	1.0bc	7.0JZ	20.0t	—	24/25	26	35/38			36/37	45	
Tripropyltin (compounds)	N/A		0.1k	0.5H	—	—	—	23/24/25				26	27	28	44
Tris (2-chloroethyl) phosphate	115-96-8		25.0C	—	—	20.0t	—	22	36/38						

Substance Name	CAS Number	UN Number	Conc cut-off Xn %	Conc cut-off T %	Conc cut-off T+%*	Conc cut-off Xi %*	Conc cut-off C %*	Risk Phrases				Safety Phrases			
2,4,6-Tris (dimethyl amino methyl phenol)	90-72-2		25.0C	—	—	20.0t	—	22	36/38			26	28		
Trithiocarbonic acid	93-73-4		25.0C	—	—	—	—	20/22				2	13	24	
Tritolyl phosphate	1330-78-5	2574	0.2j	1.0a	—	—	—	23/24/25	39			20/21	28	44	
Tungsten	7440-33-7		—	—	—	—	—								
Turpentine	8006-64-2	1299	25.0C	—	—	—	—	10	20/21/22			2			
Uranium	7440-61-1		0.1a	1.0cE	7.0J	—	—	26/28	33			20/21		45	
Uranium (compounds)	N/A		0.1a	1.0cE	7.0J	—	—	26/28	33			20/21		45	
Uranium hexafluoride	7783-81-5	2977	1.1a	1.0cE	7.0J	—	—	26/28	33			20/21		45	
Urner's liquid	79-43-6	1764	—	—	—	1.0e	5.0dx	35				26			
Valeral	110-62-3	2058	—	—	—	—	—								
n-Valeraldehyde	110-62-3	2058	—	—	—	—	—								
Veleraldehyde	110-62-3	2058	—	—	—	—	—								
Valeric acid	109-52-4		—	—	—	5.0e	10.0x	34				26	36		
Valeric aldehyde	110-62-3	2058	—	—	—	—	—								
Vamidothion	2275-23-2		3.0k	25.0H	—	—	—	23/24/25			2	13	44		
Vanadium	7440-62-2	—	—	—	—	—									
Vanadium pentoxide	1314-62-1	2862	25.0C	—	—	—	—	20				22			
Vienna Green	12002-03-8	1585	3.0k	25.0H	—	—	—	23/25				1/2	20/21	28	44
Villiaumite	7681-49-4	1690	3.0k	25.0H	—	—	—	23/24/25			1/2	26	44		
Vinyl cyclohexene dioxide	106-87-6		0.1k	10DH	—	—	—	23/24/25	40		23	24	44		
Vinyl benzene	100-42-5	2055	12.5C	—	—	12.5t	—	10	20	36/38		23			
Vinyl chloride	75-01-4	1086	—	0.1Q	—	—	—	45(1)				9	16	44	53
Vinyl cyanide	107-13-1	1093	—	0.1QAo	—	20.0t	—	11	23/24/25	38	45(2)	16	27	44	53
Vinylidene chloride	75-35-4	1303	1.0DL	—	—	—	—	20	40				7	16	29
2-Vinyl toluene	611-15-4		25.0C	—	—	—	—	20					24		
Warfarin	81-81-2	2588	—	0.5QpN	—	—	—	25	47(1)	48			44	53	
Wood alcohol	67-56-1	1230	3.0k	20.0H	—	—	—	11	23/25				2	7	16	24
Xanthinol nicotinate	437-74-1		0.1a	1.0c	7.0J	—	—	26/27/28				1	13	28	45	
0-Xylene	95-47-6	1307	12.5C	—	—	20.0t	—	10	20/21	38			16	25	29	
m-Xylene	108-38-3	1307	12.5C	—	—	20.0t	—	10	20/21	38			25			
p-Xylene	106-42-3	1307	12.5C	—	—	20.0t	—	10	20/21	38			25			
Xylene (mixed isomers)	1330-20-7	1307	12.5C	—	—	20.0t	—	10	20/21	38			16	25	29	
m-Xylene a,a-diamine	1477-55-0		—	—	—	—	—								

2,3-Xylenol	**526-75-0**	**2261**	**3.0k**	**25.0H**	—	**5.0e**	**10.0X**	**24/25**	**34**		**2**	**28**	**44**		
2,4-Xylenol	105-67-9	2261	3.0k	25.0H	—	5.0e	10.0X	24/25	34		2	28	44		
2,5-Xylenol	95-87-4	2261	3.0k	25.0H	—	5.0e	10.0x	24/25	34		2	28	44		
Xylenol (mixed isomers)	1300-71-6	2261	3.0k	25.0H	—	5.0e	10.0x	24/25	34		2	28	44		
2,3-Xylidine	87-59-2	1711	3.0k	25.0H	—	—	—	23/24/25	33		28	36/37	44		
2,4-Xylidine	95-68-1	1711	3.0k	25.0H	—	—	—	23/24/25	33		28	36/37	44		
2,5-Xylidine	95-78-3	1711	3.0k	25.0H	—	—	—	23/24/25	33		28	36/37	44		
Xylidine (mixed isomers)	1300-73-8	1711	3.0k	25.0H	—	—	—	23/24/25	33		28	36/37	44		
Yttrium	7440-65-5		—	—	—	—	—								
Zinc alkyls	N/A		—	—	—	5.0e	10.0x	14	17	34		16	43		
Zinc arsenate	1303-39-5	1712	3.0k	25.0H	—	—	—	23/25				1/2	20/21	28	44
Zinc chloride	7646-85-7				—	5.0e	10.0x	34				7/8	28		
Zinc ethyl	557-20-0	1366	—	—	—	5.0e	10.0x	14	17	34		16	43		
Zinc arsenite	10326-24-6	1712	3.0k	25.0H	—	—	—	23/25	33			1/2	20/21	28	44
Zinc bis domethyldithio-carbamate	137-30-4		1.0DY	—	—	20.0t	—	22	36/37/38	40(M3)		2	36/37		
Zinc chromates	N/A		—	0.1QY	—	1.0G	—	22	43	45(1)		44	53		
Zinc diethyl	557-20-0	1366	—	—	—	5.0e	10.0x	14	17	34		16	43		
Zinc dimethyl	544-97-8	1370	—	—	—	5.0e	10.0x	14	17	34		16	43		
Zinc fluorosilicate	16871-71-9	2855	10.0C	—	—	—	—	22				2	13	24/25	
Zinc oxide	1314-13-2		—	—	—	—	—								
Zinc phosphide	1314-84-7	1714	0.1a	1.0c	7.0J	—	—	15/29	28	32		3/9/14	30	36/37	45
Zinc silicofluoride	16871-71-9	2855	25.0C	—	—	—	—	22				2	13	24/25	
Ziram	137-30-4		1.0DY	—	—	20.0t	—	22	36/37/38	40(M3)		2	36/37		

KEY: Xn = Harmful T = Toxic T+ = Toxic Xi = Irritant
C = Corrosive C+ = Very Corrosive (see "Explanations No. 1")

* see "Footnotes to concn cut-off levels" & "Abbreviations and explanations".