

**DANGEROUS CHEMICALS CONTROL ACT**

Act 16 of 2004 – 5 November 2004

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FOURTEENTH SCHEDULE  
FIFTEENTH SCHEDULE  
SIXTEENTH SCHEDULE

SEVENTEENTH SCHEDULE  
EIGHTEENTH SCHEDULE

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## **DANGEROUS CHEMICALS CONTROL ACT**

### **PART I – PRELIMINARY**

#### **1. Short title**

This Act may be cited as the Dangerous Chemicals Control Act.

#### **2. Interpretation**

In this Act—

“Board” means the Dangerous Chemicals Control Board established under section 6;

“chemical substance” means any chemical element, product or preparation, and its compounds in the natural or manufactured state;

“Committee” means the Enforcing Agencies Coordination Committee referred to in section 9;

“Council” means the Dangerous Chemicals Advisory Council established under section 4;

“dangerous chemical” means a chemical substance specified in the First Schedule and includes an extremely dangerous chemical and any pesticide;

“employer” has the same meaning as in the Occupational Safety and Health Act;

“enforcing agency” means any agency specified in the Third Schedule;

“extremely dangerous chemical” means a chemical specified in the Second Schedule;

“import” has the same meaning as in the Customs Act;

“information” includes any labelling, safety data sheet, application, notification or other kind of written material supplied by an importer, a manufacturer or an employer under this Act;

“licence” means a licence issued under section 10;

“Minister” means the Minister to whom responsibility for the subject of health is assigned;

“Ministry” means the Ministry responsible for the subject of health;

“Permanent Secretary” means the Permanent Secretary of the Ministry;

“permit” means a permit granted under section 11;

“pesticide” —

- (a) means any chemical substance or biological agent other than a fertiliser and soil conditioner, which—
  - (i) is designed to prevent, destroy or control any pest including vectors of human or animal diseases, unwanted species of plants or animals causing harm during or interfering with the processing, production, storage, transport or marketing of food, agricultural commodities, wood and wood products or animal foodstuffs;
  - (ii) may be administered to animals for the control of insects, arachnids or other pests on their bodies;
- (b) includes any substance—
  - (i) intended for use as a plant growth regulator, defoliant, desiccant, fruit thinning agent or as an agent for preventing the premature fall in fruit;
  - (ii) applied to crops either before or after harvest to prevent deterioration during storage or transport;

“mixture” means any mixture of 2 or more chemical substances in the solid, liquid or gaseous state;

“Registrar” means the Registrar of the Dangerous Chemicals Control Board, designated under section 6 (9);

“responsible person”, in relation to any dangerous chemical, means the owner, or the person having the charge, management or control of the import, supply, manufacture, retailing, distribution, sale or use, of the dangerous chemical.

### 3. Application of Act

(1) This Act shall not apply to—

- (a) pharmaceutical products as defined in the Pharmacy Act;
- (b) substances as defined in the Dangerous Drugs Act;
- (c) prepared, processed or cooked foodstuff;
- (d) manufactured cosmetics;
- (e) explosives as defined in the Explosives Act;
- (f) radioactive substances as defined in the Radiation Protection Act;
- (g) biological agents, other than biological agents used as pesticides;
- (h) a veterinary drug.

(2) Notwithstanding any other enactment, this Act shall apply to any freeport zone as defined in the Freeport Act.

## PART II – ADMINISTRATION

### 4. Establishment of Council

(1) There is established for the purposes of this Act a Dangerous Chemicals Advisory Council.

(2) The Council shall consist of—

- (a) a Chairperson, who shall be an officer of the Ministry, not below the grade of Principal Medical Officer, who shall be appointed by the Minister;
- (b) a representative of the Attorney-General's Office;
- (c) a representative of the Ministry responsible for the subject of agriculture;
- (d) a representative of the Ministry responsible for the subject of co-operatives;
- (e) a representative of the Ministry responsible for the subject of environment;
- (f) a representative of the Ministry responsible for the subject of industry;
- (g) a representative of the Ministry responsible for the subject of labour and industrial relations;
- (h) a representative of the Ministry responsible for the subject of public infrastructure;
- (i) a representative of the Ministry responsible for the subject of local government;
- (j) the Director of the Pharmaceutical Services of the Ministry;
- (k) a representative of the Commissioner of Police;
- (l) a representative of the Customs and Excise Department;
- (m) a representative of the Fire Services;
- (n) a representative of the Forensic Science Laboratory;
- (o) a representative of the University of Mauritius;
- (p) a representative of the Mauritius Chamber of Commerce and Industry;
- (q) a representative of the Mauritius Ports Authority;
- (r) a representative of the Vegetables Growers' Association who shall be appointed by the Minister to whom responsibility for the subject of co-operatives is assigned;
- (s) a representative of the Health and Safety Officers' Association, who shall be appointed by the Minister; and
- (t) 3 members of the public, having knowledge in chemicals, who shall be appointed by the Minister.

(3) Every appointed member of the Council shall hold office for a period of 2 years and shall be eligible for reappointment.

(4) Every member of the Council shall be paid such fees and allowances as the Minister may determine.

(5) The Council shall regulate its meetings and proceedings in such manner as it thinks fit.

(6) The Council shall meet at least once every 4 months.

(7) The Registrar shall act as Secretary to the Council.

## **5. Functions of Council**

The Council shall—

- (a) advise and make recommendations to the Minister on matters relating to dangerous chemicals;
- (b) advise the Minister on the implementation of international conventions relating to dangerous chemicals;
- (c) consult with and advise the Board on any matter pertaining to this Act.

## **6. Dangerous Chemicals Control Board**

(1) There is established for the purposes of this Act a Dangerous Chemicals Control Board which shall consist of—

- (a) a Chairperson, who shall be the head of the Occupational Health Unit of the Ministry;
- (b) a representative of the Ministry responsible for the subject of labour and industrial relations;
- (c) a representative of the Ministry responsible for the subject of environment;
- (d) a representative of the Ministry responsible for the subject of local government;
- (e) the Chief Government Analyst;
- (f) the Principal Research and Development Officer (Entomology) of the Ministry responsible for the subject of agriculture;
- (g) the Principal Research and Development Officer (Agricultural Chemistry) of the Ministry responsible for the subject of agriculture;
- (h) the Principal Research and Development Officer (Plant Pathology) of the Ministry responsible for the subject of agriculture;
- (i) a Government Pharmacist appointed by the Minister;
- (j) a representative of the Mauritius Cane Industry Authority;
- (k) a representative of the Mauritius Chamber of Agriculture;
- (l) a representative of the Central Water Authority;
- (m) a representative of the Mauritius Standards Bureau;
- (n) a representative of the Food and Agricultural Research and Extension Institute;
- (o) the Chief Health Inspector of the Ministry;

- (p) a representative of the Commissioner of Police; and
- (q) a representative of the Mauritius Fire and Rescue Service.

(2) At a meeting of the Board, 9 members shall constitute a quorum.

(3) In the absence of the Chairperson, the Board shall elect from amongst themselves a member to preside over the meeting.

(4) The decision of the Board shall be by majority vote, provided that in the event of an equality of votes, the Chairperson shall have a second or casting vote.

(5) Every member of the Board shall hold office for a period of 2 years.

(6) Every member of the Board shall be paid such fees and allowances as the Minister may determine.

(7) Subject to this section, the Board shall regulate its meetings and proceedings in such manner as it thinks fit.

(8) The Board shall meet at least once every month and on such occasions as the Chairperson may consider appropriate to convene a meeting.

(9) (a) There shall be a Registrar to the Board who shall be an officer of the Ministry, designated by the Permanent Secretary.

(b) The Registrar shall act as Secretary to the Board and shall have custody of all the records and registers of the Board.

(10) Service of any process by or on the Board shall be sufficient if made by or on the Registrar.

(11) The Permanent Secretary may delegate such number of public officers posted at the Ministry as may be necessary to assist the Board in the discharge of its functions.

[S. 6 amended by s. 22 (2) of Act 21 of 2013 w.e.f. 14 February 2014.]

## **7. Functions of Board**

(1) The Board shall—

- (a) classify dangerous chemicals in accordance with the Fifth Schedule, after consultation with the Council;
- (b) disseminate to other law enforcement agencies and public departments information relating to dangerous chemicals;
- (c) ensure coordination and co-operation amongst the law enforcement agencies, Government departments and other institutions for the effective control of dangerous chemicals;
- (d) develop such policies and administrative measures as are necessary to ensure prompt and effective consultation on matters relating to dangerous chemicals;
- (e) consider applications for the grant of licences, permits and authorisations under this Act;

- (f) issue any prohibition notice under section 30;
- (g) consider any request for the advertisement of a dangerous chemical after consultation with the Council;
- (h) register dangerous chemicals in such manner as may be prescribed;
- (i) carry out such other duties as may be necessary for the control of dangerous chemicals.

(2) The Board may set up such committees as appropriate for such purposes as it may determine.

(3) The Board shall keep such registers as may be necessary for the control of dangerous chemicals.

(4) The Board shall keep the Council informed of its activities at such intervals as the Council may direct.

### **PART III – ENFORCING AGENCIES**

#### **8. Enforcing agencies**

(1) There shall be for the purposes of this Act such enforcing agencies as are specified in the Third Schedule.

(2) The enforcing agencies shall have the functions, duties and powers specified in the Third Schedule.

#### **9. Enforcing Agencies Coordination Committee**

(1) There shall be for the purposes of this Act an Enforcing Agencies Co-ordination Committee which shall consist of—

- (a) the Registrar, who shall be the Chairperson;
- (b) an officer of each enforcing agency; and
- (c) such other officer of the Ministry as may be designated by the Permanent Secretary.

(2) The Committee shall—

- (a) recommend to the Board such policies and administrative measures as are necessary to ensure prompt and effective consultation on matters relating to dangerous chemicals;
- (b) ensure that information on dangerous chemicals is shared and that there is prompt consultation, amongst the enforcing agencies;
- (c) ensure proper coordination amongst enforcing agencies in an investigation relating to dangerous chemicals carried out under this Act.

(3) The Committee shall regulate its meetings and proceedings in such manner as it thinks fit.

(4) The Committee shall meet at least once every month.

(5) Every member of the Committee shall be paid such fees and allowances as the Minister may determine.

**PART IV – LICENCE, PERMIT, NOTIFICATION  
AND DUTY TO PROVIDE INFORMATION**

**10. Trading in dangerous chemicals**

(1) No person shall—

- (a) import or export;
- (b) manufacture, sell, store, distribute or trade in, a dangerous chemical,

unless he holds a licence issued for such purposes.

(2) Every application for a licence shall be made to the Board in such form as the Board may approve.

(3) The Board may require the applicant to furnish such additional information as may be required to determine the application.

(4) The Board may grant or renew a licence subject to such terms and conditions as it thinks fit and on payment of the prescribed fee.

**11. Permits for pesticides and extremely dangerous chemicals**

(1) No person shall import or export a pesticide or an extremely dangerous chemical, unless he is the holder of a permit under this section.

(2) Every application for a permit shall be made to the Board in such form as may be approved by the Board.

(3) The Board may require the applicant to furnish such additional information as may be required to determine the application.

(4) The Board may grant or renew a permit subject to such terms and conditions as it thinks fit and on payment of the prescribed fee.

(5) Where an application under subsection (2) for a permit is pending before the Board and—

- (a) the pesticide or extremely dangerous chemical is given a new trade name;
- (b) the pesticide or extremely dangerous chemical is to be imported from a different supplier; or
- (c) there is any change in the specification or composition of the original product,

the applicant shall make a new application under subsection (2).

**12. Notification**

Every holder of a licence issued under section 10 shall, prior to the import or export of a dangerous chemical, give notice of the import or export to the Board, in writing and in such other manner and form as may be determined by the Board.



### 13. Duty to provide information

(1) Every manufacturer or importer of a chemical substance shall, prior to its manufacture or import, communicate to the Board all particulars necessary to determine the nature and characteristics of the chemical substance.

(2) Every person who has in his possession any chemical substance which may be used for trade, commercial or industrial purposes shall communicate to the Board all the particulars necessary to determine the nature and characteristics of the chemical substance.

(3) The Board shall not disclose any information communicated to it under this section, unless—

- (a) the approval of the Minister is obtained; or
- (b) so ordered by a Court.

## PART V – CLASSIFICATION, LABELLING AND SALE

### 14. Classification of chemicals

The Board shall, after consultation with the Council, classify every chemical substance in accordance with the Fifth Schedule.

### 15. Classification and labelling

Every person who imports, exports, manufactures, sells, stores, distributes or trades in any chemical substance shall ensure that the chemical substance is classified and labelled in accordance with the classification and labelling requirements specified in the Fifth, Sixth, Seventh, Eighth and Ninth Schedules.

### 16. Packaging

(1) No person shall import, export, manufacture, sell or distribute any dangerous chemical unless it is packaged in accordance with requirements set out in the Tenth Schedule.

(2) Where imported dangerous chemicals are not packaged in accordance with the Tenth Schedule, the importer shall forthwith cause the dangerous chemicals to be packaged in accordance with the requirements set out in the Tenth Schedule.

### 17. Sale of dangerous chemicals

(1) No person shall sell any dangerous chemical on retail where the dangerous chemical—

- (a) is likely to give users false and misleading information as to its use or as to the risk it may present;
- (b) is presented under a name or in a form resembling that of food-stuff, animal feed, pharmaceutical or cosmetic;
- (c) is packaged in a manner that may encourage handling by a child;
- (d) bears an ambiguous, vague or confusing label or indication.

(2) No person shall advertise a dangerous chemical otherwise than in the manner approved by the Board.

## **PART VI – SAFETY DATA SHEETS**

### **18. Duty of importer, exporter or manufacturer**

(1) Any person who imports, exports, manufactures, sells, distributes or otherwise handles, in the course of a business activity, a dangerous chemical shall ensure that—

- (a) the dangerous chemical marketed in any form or quantity is provided with a safety data sheet free of charge when delivered to a user;
- (b) the information on the safety data sheet is compiled in accordance with the Eleventh Schedule.

(2) Every importer, exporter or manufacturer of a dangerous chemical shall, when the dangerous chemical is imported, exported or manufactured, as the case may be, for the first time, forward to the Board a copy of the safety data sheet.

## **PART VII – PROTECTION AGAINST DANGEROUS CHEMICALS**

### **19. Substitution of dangerous chemicals**

(1) Subject to subsection (2), no person shall, as far as practicable, place on the local market a dangerous chemical which can be substituted by a less harmful or less dangerous chemical.

(2) Where the use of a substitute chemical may lead to differences in technical properties or costs which are not immaterial, the user, importer, manufacturer of the dangerous chemical or any interested party shall submit an overall report on the technical and economic consequences with regards to health and safety and the effect on environment.

(3) The Board shall evaluate whether the substitute chemical should be used and may request the user, importer, manufacturer or any interested party, such additional information as it deems appropriate.

### **20. Duties of an employer**

Every employer shall comply with the requirements specified in the Twelfth Schedule where any of his employees uses or is exposed to any dangerous chemical in the course of employment.

### **21. Register of employees**

(1) Every employer shall keep a register of employees working or being exposed with extremely dangerous chemicals and pesticides in the course of employment, in the manner provided for in the Thirteenth Schedule.

(2) The register under subsection (1) shall be made available upon request to the Board.

(3) Every employee shall be entitled to receive relevant particulars of the register relating to him and shall, on entering the employment of another employer, deliver to his new employer the copy of particulars.

## **22. Duties of an employee**

Every employee working with a dangerous chemical shall—

- (a) comply with the requirements of the Fourteenth Schedule;
- (b) comply with any instructions given by his employer; and
- (c) forthwith notify his employer of any problem or adverse effect caused by the dangerous chemical.

## **23. Safeguards for the public**

(1) Every person who imports, produces, manufactures or sells any commodity for human or animal consumption shall ensure that—

- (a) the commodity marketed or sold by him presents no danger to the health of consumers by reason of toxic residues contained in or on such commodity through the use of pesticides or other dangerous chemicals on crops or otherwise; and
- (b) the safe interval since the last application of a pesticide on a crop and the harvesting of such crop has been strictly observed.

(2) For the purpose of determining the safe interval under subsection (1) (b), in the event of the intercropping of various types of produce coming to maturity at different times, the application of a pesticide on one crop so intercropped shall be considered as an application of such pesticide on all crops so intercropped.

(3) (a) The Minister may, on the advice of the Council, order any importer or manufacturer to withdraw at his own expense, from any dealer or user any dangerous chemical which is deemed by the Council to be a serious hazard to health, safety or the environment.

(b) The dealer or user shall forthwith return to the manufacturer or importer, any dangerous chemical subject-matter of the order, on being so notified by the importer or manufacturer.

## **PART VIII – TRANSPORT AND STORAGE**

### **24. Transport**

(1) The Minister may, by regulations, prescribe standards for the transport of any dangerous chemical.

(2) Every dangerous chemical shall be transported in accordance with the Fifteenth Schedule and in compliance with such regulations as may be made by the Minister under subsection (1).

## **25. Storage**

(1) No person shall store or handle a dangerous chemical except in accordance with the Sixteenth Schedule.

(2) No person shall store any extremely dangerous chemical without an authorisation issued by the appropriate enforcing agency.

(3) (a) The authorisation may be granted for such time and subject to such conditions as the enforcing agency may determine.

(b) Before granting any authorisation, the enforcing agency shall consider matters such as the risk of damage from explosion, fire or other hazards.

(4) Every holder of an authorisation under subsection (3) shall comply with all the conditions attached to such authorisation.

(5) No enforcing agency shall issue an authorisation under this section, unless the clearance of the Board has been obtained.

## **26. Waste storage and handling of dangerous chemicals**

Every person manufacturing or using any dangerous chemical shall comply with the requirements relating to waste storage and handling of dangerous chemicals, as specified in the Seventeenth Schedule.

## **PART IX – PROHIBITED CHEMICALS**

### **27. Prohibited chemicals**

(1) Every chemical substance specified in the Eighteenth Schedule shall be a prohibited chemical.

(2) No person shall import, manufacture, use or possess a prohibited chemical without the written authorisation of the Board.

(3) The Board shall not issue any authorisation referred to in subsection (2), unless a favourable recommendation from the Council has been obtained.

(4) Notwithstanding any criminal prosecution that may be instituted under this Act, any prohibited chemical found in possession of a person in breach of this section may be forfeited and destroyed by the Board.

## **PART X – ENFORCEMENT**

### **28. Enforcement notice**

(1) Where the competent enforcing agency has reasonable grounds to believe that a person has contravened or is likely to contravene this Act, it may cause an enforcement notice to be served on that person.

(2) Every enforcement notice shall—

(a) state the opinion of the enforcing agency;

- (b) specify the measures to be taken to remedy the contravention;  
and
- (c) specify the period within which those measures shall be implemented.

(3) Every person upon whom an enforcement notice has been served shall comply with the notice.

(4) The enforcing agency shall forthwith notify the Board of any notice it has issued under this section.

(5) Notwithstanding any criminal prosecution that may be instituted under this Act, where a person upon whom an enforcement notice has been served refuses or fails to comply with it, the enforcing agency may take such measures as may be necessary to enforce the notice and any cost so incurred may be recovered from the person against whom the notice has been issued.

### **29. Variation and revocation of enforcement notice**

(1) Any person on whom an enforcement notice has been served or any enforcing agency may apply to the Board for a variation or revocation of an enforcement notice.

(2) The Board may, on good cause shown, vary or revoke the enforcement notice.

### **30. Prohibition notice**

(1) Where the Board is satisfied that the use of a dangerous chemical involves an imminent risk to public health, public safety or the environment, it may issue a prohibition notice.

(2) The prohibition notice shall—

- (a) specify the name and address of the person against whom it is directed;
- (b) state the opinion of the competent enforcing agency; and
- (c) specify—
  - (i) the risk involved;
  - (ii) the measures to be taken;
  - (iii) the activity that is prohibited; and
  - (iv) any condition subject to which the activity may be carried out.

(3) Every person issued with a prohibition notice shall forthwith comply with the notice.

(4) Notwithstanding any criminal prosecution that may be instituted under this Act, where a person to whom a prohibition notice has been issued refuses or fails to comply with it, the Board may take such measures as may

be necessary to enforce the prohibition notice, and any cost so incurred may be recovered from the person against whom the notice has been issued.

### **31. Powers of entry**

(1) Subject to subsections (2) and (3), where it reasonably suspects that a person has breached this Act or any regulations made under this Act, an enforcing agency may enter any premises other than residential premises, for the purposes of—

- (a) requiring the responsible person to produce any record, document, licence, permit or certificate for the purpose of examining or the taking of any copy or extract;
- (b) obtaining any evidence;
- (c) carrying out any test, or taking any measurement and sample;
- (d) requesting a medical examination of any employee;
- (e) carrying out any inspection of such premises;
- (f) verifying whether any order, enforcement notice or prohibition notice issued under section 23 (3), 28 or 30 as the case may be, has been complied with.

(2) No enforcing agency shall enter any premises without giving prior notice to the responsible person, unless it has reasonable grounds to believe that there is imminent danger to public health, public safety or the environment.

(3) Where it reasonably suspects that any person has contravened this Act or any regulations made under this Act, an enforcing agency may, after obtaining a warrant duly signed by a Magistrate, enter the residential premises for any of the purposes specified in subsection (1).

(4) In the discharge of its duties under this section, the enforcing agency shall seek and obtain the assistance of the Commissioner of Police.

## **PART XI – MISCELLANEOUS**

### **32. Offences**

(1) Any person who contravenes section 10 (1), 11 (1), 12, 13, 15, 16, 17, 18, 19, 20, 21, 23, 24, 25, 26, 27, 28 or 30 (3) shall commit an offence.

(2) (a) Subject to paragraphs (b) and (c), any person who commits an offence under subsection (1) shall, on conviction, be liable to a fine not exceeding 75,000 rupees and imprisonment for a term not exceeding 2 years.

(b) Subject to paragraph (c), any importer who commits an offence under section 12 shall, on conviction, in addition to the penalty provided under paragraph (a), be liable to a fine not exceeding 3 times the duty paid value of the goods as determined under the Customs Act.

(c) Any body corporate which commits an offence under this Act shall, on conviction, be liable to a fine which shall be not less than 10,000 rupees.

(3) Subject to subsections (1) and (2), any person who contravenes this Act or any regulations made under this Act, shall commit an offence and shall, on conviction, be liable to a fine not exceeding 5,000 rupees and imprisonment for a term not exceeding 2 years.

(4) Where a person is convicted under this Act, the Court may, in addition to any penalty provided under subsections (2) and (3), cancel any licence, permit or authorisation issued to that person under this Act.

(5) Notwithstanding section 114 of the Courts Act, a District Court shall have jurisdiction to hear and determine any prosecution, and inflict any penalty provided under this Act.

(6) Nothing in this Act shall be construed as limiting the jurisdiction of the Industrial Court in matters where it enjoys exclusive jurisdiction.

### **33. Protection from liability**

No civil or criminal liability shall attach to the Minister, the Permanent Secretary, the Board, any officer of any enforcing agency or any member of the Council in respect of any act done in good faith in the execution of their duties or the exercise of their powers under this Act.

### **34. Powers of Minister**

(1) The Minister shall issue national standards for dangerous chemicals.

(2) The Minister may, after consultation with the Council, issue codes of practice for the purpose of providing practical guidance in the manipulation of dangerous chemicals.

### **35. Regulations**

(1) The Minister may make such regulations as he thinks fit for the purposes of this Act.

(2) Any regulations made under this section may provide for—

- (a) the issue, amendment and revocation of licences;
- (b) standards for the transport of dangerous chemicals;
- (c) the regulation of the categories of employees that may be employed to work with dangerous chemicals, including requirements of age of the employee and restriction on the number of hours that an employee may be exposed to dangerous chemicals;
- (d) the taking of fees and levying of charges; and
- (e) the amendment of the Schedules.

36. —

**37. Savings and transitional provisions**

(1) The coming into operation of this Act shall not affect the rights or liabilities of any party to any judicial proceedings already commenced before any Court before this Act comes into operation.

(2) All proceedings in respect of offences committed or alleged to have been committed against an enactment repealed by this Act may be commenced or continued as if this Act has not come into operation.

(3) (a) —

(b) Any licence or permit issued or authorisation given under any of the enactments repealed by this Act and which has not expired at the commencement of this Act shall remain valid until a licence, permit or authorisation is issued under this Act.

38. —

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**FIRST SCHEDULE**

[Section 2]

**LIST OF DANGEROUS CHEMICALS**

1. Acetaldehyde
2. Acetaminophen
3. Acetic Acid (Glacial)
4. Acetic Anhydride
5. Acetone
6. Acetonitrile
7. Acetyl Chloride
8. Acetylene
9. Acridine,9-Amino-Hydrochloride
10. Acrolein
11. Acrylamide
12. Acrylonitrile
13. Adiponitrile
14. Allyl Alcohol
15. Allyl Chloride
16. Allyl Glycidyl Ether
17. Aluminium and compounds
18. Alyl - Amine
19. Aminoazotoluene
20. 4 - Amino Diphenyl
21. 4-Aminobenzene
22. 2-Aminopyridine



**FIRST SCHEDULE—continued**

23. Ammonia
24. Ammonium Hydroxide
25. Ammonium Nitrate
26. Ammonium Phosphate Dibasic
27. Amphetamine Sulfate
28. N-Amylacetate
29. Sec-Amylacetate
30. Aniline
31. Antimony and compounds
32. Anthraquinone, 1-Amino-2,4-Dibromo
33. Arsenic and compounds
34. Arsine
35. Asbestos Crocidolite
36. Asbestos Anthophyllite
37. Asbestos, Amosite
38. Asbestos, Chrysotile
39. Asbestos, Tremolite
40. Auramine
41. Azodicarbonamide
42. Barium and compounds
43. Bendectin
44. Benz (A) Anthracene 7,12 Dimethyl
45. Benzal Chloride
46. Benzaldehyde
47. Benzene
48. Benzene Arsonic Acid
49. Benzethonium Chloride
50. Benzidine
51. Benzo (F) Quinoline
52. Benzo (A) Anthracene
53. Benzo Fluoranthene
54. 2,3 Benzofuran
55. Benzoic Acid
56. Benzo (A) Pyrene
57. Benzotrichloride
58. Benzoyl Peroxide
59. Benzyl Acetate
60. Benzyl Alcohol
61. Benzyl Chloride
62. O-Benzyl-P-Chlorophenol
63. Beryllium and compounds

**FIRST SCHEDULE—continued**

66. Biphenyl
67. Bis (2 Chloroethyl) Sulfide
68. Bis (2 Ethylhexyl) Phthalate
69. Bisphenol Ap
70. Boric Acid
71. Boron Tribromide
72. Boron Trifluoride
73. Bromine
74. Bromobenzene
75. Bromodichloromethane
76. Bromoform
77. Bromomethane (See Methyl Bromide)
78. 1,3-Butadiene
79. 1,4-Butanediol Diglycidyl Ether
80. 1-Butanethiol
81. 1-Butanol
82. 2-Butanol
83. Tert-Butanol
84. 2-Butanone
85. 2-N -Butoxyethanol
86. N-Butyl Glycidyl Ether
87. Butyraldehyde
88. Cadmium and compounds
89. Caprolactam
90. Carbon Dioxide
91. Carbon Monoxide
92. Carbon Tetrachloride
93. Carbon Disulfide
94. Ceramic Fibres
95. Chloral Hydrate
96. Chloramine
97. Chlordimeform Hydrochloride
98. Chlorendic Acid
99. Chlorpheniramine Maleate
100. Chlorinated Trisodium Phosphate
101. Chlorine
102. Chlorine Dioxide
103. 2-Chloro-1-Nitrobenzene
104. 4-Chloro-Meta-Cresol
105. Chloroacetic Acid Mono-Di-Tri

**FIRST SCHEDULE—continued**

106. 2-Chloroacetophenone
107. 2,3,4, -Chloroaniline
108. Chlorobenzene
109. Chlorodifluoromethane
110. Chlorodinitromomethane
111. Chloroethane
112. Chloroethanol
113. Chloroform
114. Chloromethane
115. Bis-Chloromethyl Ether
116. Chloromethyl Methyl Ether
117. Chloropicrin
118. Chloroprene
119. Chlorothalonil
120. Chlorpromazine Hcl
121. Chromium and compounds
122. Chrysene
123. Chrysene, 6-Nitro
124. Cobalt
125. Copper and compounds
126. O-Cresol
127. P - Cresol
128. O-Cresyl Glycidyl Ether
129. Crotonaldehyde
130. Cutting Oils – Cutting Fluids
131. Cyanamide
132. Cyanogen Bromide
133. Cyclohexane
134. Cyclohexanethiol
135. Cyclohexanol
136. Cycloheximide
137. Cyclohexylamine
138. Cyclopentane
139. 1-Decanethiol
140. Di-N-Butylinoxide
141. Di-(2,3-Epoxypropyl) Ether
142. Di-(2-Ethylhexyl) Phthalate
143. Di-N-Butyl Phthalate
144. 1,3-Diamino-2-Methylbenzene
145. Diazomethane
146. Dibenzo (A, H) Anthracene
147. 1,2-Dibromo-3-Chloropropane (Dbcp)

**FIRST SCHEDULE—continued**

- 148. Dibromoneopentyl Glycol
- 149. Dibutyl Phthalate
- 150. 2,3-Dichloro-1-Nitrobenzene
- 151. 1,3-Dichloro-2-Nitrobenzene
- 152. 1,2-Dichloro-4-Nitrobenzene
- 153. 1,3-Dichloro-5nitrobenzene
- 154. 2,3-Dichloroaniline
- 155. 2,4-Dichloroaniline
- 156. 2,5-Dichloroaniline
- 157. 2,6-Dichloroaniline
- 158. 3,4-Dichloroaniline
- 159. Dichlorobenzene and Isomers
- 160. Dichlorobenzidine
- 161. Dichlorodifluoromethane
- 162. Dichloroethane
- 163. Dichloroethene
- 164. Dichlorophenol
- 165. 2,4-Dichlorophenoxyacetic Acid
- 166. Dichlorprop
- 167. 1,2,3,4-Diepoxy Butane
- 168. Diethyl Ether
- 169. Diethyl Phthalate
- 170. Diethyl Sulphate
- 171. 1,2-Diethylaminoethanol
- 172. Diethylene Glycoldiglycidyl Ether
- 173. Diethylene Glycol Monoethyl Ether
- 174. Diethylene Glycol Monomethyl Ether
- 175. N-Dimethyl Acetamide
- 176. Dimethyl Hydrazine
- 177. Dimethyl Phthalate
- 178. Dimethyl Sulfate
- 179. Dimethyl Terephthalate
- 180. Dimethylamine
- 181. 4-Dimethylamino Benzene
- 182. 1,1-Dimethylhydrazine
- 183. Dimethylnitrosamine
- 184. 2,4 Dimethylphenol
- 185. 2,6 - Dinotrotoluene
- 186. 4,6 Dinitro 2-Methylphenol
- 187. 2,4 Dinitrophenol
- 188. Dinitrotoluene
- 189. 2-4 Diaminotoluene

**FIRST SCHEDULE—continued**

- 190. 1,4 Dioxane
- 191. Diphenylhydrazine (122)
- 192. Diphenylol Propane Diglycidyl Ether
- 193. 1-Dodecanethiol
- 194. Dodecanoyl Peroxide
- 195. Dodecylbenzene
- 196. Epichlorohydrin
- 197. 1,2-Epoxy Propane
- 198. 2,3-Epoxy-1-Propanol
- 199. Ethanol
- 200. Ethanolamine
- 201. 2-Ethoxyethanol
- 202. Ethyl Benzene
- 203. Ethyl Acrylate
- 204. Ethyl Methacrylate
- 205. Ethylamine
- 206. Ethylene Diamine
- 207. Ethylene Dibromide
- 208. Ethylene Glycol
- 209. Ethylene Oxide
- 210. Ethylene Thiourea
- 211. Ethylene Imine
- 212. Ethylmethyl Sulphonate
- 213. Fluoranthene
- 214. Fluoranthene, 3-Nitro
- 215. Fluoren-9-One 2,4,7-Trinitro
- 216. Fluorine
- 217. Fluoroacetic Acid
- 218. Fluorotrichloromethane
- 219. Formaldehyde
- 220. Furfural
- 221. Gamma Butyrolactone
- 222. Glass Wool
- 223. Glutaraldehyde
- 224. Gum Tragacanth
- 225. Halothane (Anaesthetic)
- 226. Hexachlorobutadiene
- 227. Hexachloroethane
- 228. Hexachlorophene
- 229. 1-Hexadecanethiol
- 230. Hexamethyl Phosphoric Triamide
- 231. Hexamethylene Disocyanate

**FIRST SCHEDULE—continued**

- 232. N-Hexane
- 233. Hexanediol
- 234. Hydrazine
- 235. Hydrogen
- 236. Hydrogen Bromide
- 237. Hydrogen Chloride
- 238. Hydrogen Fluoride
- 239. Hydrogen Peroxide
- 240. Hydrogen Selenide
- 241. Hydrogen Sulphide
- 242. Hydroquinone
- 243. Indenol (1,2,3-Cd) Pyrene
- 244. Indole, 4-Chloro
- 245. Indole, 5-Chloro
- 246. Iron Carbonyl
- 247. Iron and compound
- 248. Isoamyl Acetate
- 249. Isobutanolamine
- 250. Isobutyl Chloride
- 251. Isobutyl Alcohol
- 252. Isophorone
- 253. Isopropyl Chloroformate
- 254. Isopropyl Glycidyl Ether
- 255. Isopropylbenzene
- 256. Lead and compounds
- 257. Magenta
- 258. Magnesium
- 259. Malononitrile, -Ochloro-Benzylidene
- 260. Manganese and compounds
- 261. Mercury and compounds
- 262. Methacrylic Acid
- 263. Methane
- 264. Methanol
- 265. 2-Methoxyethanol
- 266. Methyl Bromide (Bromomethane)
- 267. Methyl Dichlorosilane
- 268. Methyl Ethyl Ketone
- 269. Methyl Di Isocyanate
- 270. Methyl Mercaptan
- 271. Methyl Methacrylate Monomer Inhibitor
- 272. Methyl Methane Sulphonate
- 273. Methyl Nitrosourea

**FIRST SCHEDULE—continued**

- 274. Methyl Trichlorosilane
- 275. 2-Methyl-2-Propanethiol
- 276. 1-Methylcyclohexanol
- 277. Methylcyclohexanol (Mixed Isomers)
- 278. Methyl Chloromethyl Ether
- 279. Methylene Bis-O-Chloraniline
- 280. Methylene Bisphenyl Isocyanate
- 281. Methylene Chloride
- 282. Methylhydrazine
- 283. Monochloroethane or Chloroethane
- 284. Methylamine
- 285. Morpholine
- 286. N-Butyl Chloride
- 287. N-N-Diacetylbenzidine
- 288. N-Nitrosodi-N-Propylamine
- 289. N-Nitrosodiphenylamine
- 290. N-Nitrosodimethylamine
- 291. Naphthalene
- 292. Naphthylamine (Alpha, Beta, Isomers)
- 293. Neopentyl Glycol
- 294. Neopentyl Glycol Diglycidyl Ether
- 295. Nickel and compounds
- 296. Nitric Acid
- 297. 2,3,4 -Nitroaniline
- 298. Nitrobenzene
- 299. 4-Nitrodiphenyl
- 300. Nitrogen Dioxide
- 301. Nitroglycerine
- 302. 2-Nitrophenol
- 303. 2-Nitropropane
- 304. Nitrous Oxide
- 305. Nonyl Phenol
- 306. Octamethylcyclotetrasiloxane
- 307. N-Octane
- 308. Oxirane
- 309. Ozone
- 310. P-Chloro-M-Cresol
- 311. P-Chloroaniline
- 312. P-Dioxin
- 313. P-Phenylenediamine
- 314. Pentachloroanisole
- 315. Pentachlorophenol

**FIRST SCHEDULE—continued**

- 316. 2-Pentanone.4-Methyl
- 317. Perchloric Acid
- 318. Perchloromethyl Mercaptan
- 319. Perylene
- 320. Phenanthrene
- 321. Pheno, 2 Methyl
- 322. Phenol
- 323. Phenol, 2-Amino-4-Nitro
- 324. Phenol, 2-Amino-5-Nitro
- 325. Phenyl Glycidyl Ether
- 326. Phosgene
- 327. Phosphonic Acid Methyl, Dimethyl Ester
- 328. Phosphoric Acid
- 329. Phosphorus Oxychloride
- 330. Phthalic Anhydride
- 331. Piperidine
- 332. Polybrominated Biphenyls
- 333. Polychlorinated Biphenyls
- 334. Polychlorinated Triphenyls
- 335. Polydimethylsiloxane
- 336. Polyvinyl Chloride
- 337. Potassium Chlorate
- 338. Potassium Cyanide
- 339. Potassium Dichromate
- 340. Potassium Hydroxide
- 341. Potassium Nitrate
- 342. 1,3-Propane Sultone
- 343. Propene, 3-Chloro-2-Methyl
- 344. Propionitrile
- 345. Propyleneimine
- 346. Pyrene
- 347. Pyrene, 1-Nitro
- 348. Pyridine
- 349. Quartz
- 350. Quinoline
- 351. Resorcinol Diglycidyl Ether
- 352. Rhodamine Wt
- 353. Rock Wool
- 354. Selenium and compounds
- 355. Silver and compounds, except fine silver metals used by jewellers
- 356. Slag Wool
- 357. Sodium Arsenate



**FIRST SCHEDULE—continued**

- 358. Sodium Bromate
- 359. Sodium Chlorate
- 360. Sodium Cyanide
- 361. Sodium Dichromate
- 362. Sodium Hydroxide
- 363. Sodium Metasilicate Anhydrous
- 364. Sodium Nitrate
- 365. Stoddard Solvent
- 366. Strychnine
- 367. Strychnine Sulphate
- 368. Styrene
- 369. Styrene Oxide
- 370. Sulphamic Acid
- 371. Sulphur Dioxide
- 372. Sulphuric Acid
- 373. Sulphuryl Chloride
- 374. Talc (non-fibre containing)
- 375. Terephthalic Acid
- 376. Terephthaloyl Chloride
- 377. Tert-Butyl Alcohol
- 378. 1,1,2,2 Tetrachloroethane
- 379. Tetrachloroethene
- 380. Tetraethyl Lead
- 381. Tetraethyl Silicate
- 382. Tetra-Hydrofuran
- 383. Tetramethyl Lead
- 384. Tetrapropylene Benzene Sulphonic Acid
- 385. Thallium and compounds
- 386. Thioacetamide
- 387. Thio-Diethanol
- 388. Thiourea
- 389. Thorium and compounds
- 390. Tin and compounds
- 390A. Titanium Dioxide
- 391. Toluene
- 392. Toluene Diisocyanate
- 393. M-Toluidine
- 394. O-Toluidine
- 395. P-Toluidine
- 396. O-Toluidine, 4-Chloro-Hydrochloride
- 397. Xylenes
- 398. Toxaphene

**FIRST SCHEDULE—continued**

- 399. Triallate
- 400. 1,2,4-Trichlorobenzene
- 401. 1,3,5-Trichlorobenzene
- 402. 1,1,1-Trichloroethane
- 403. 1,1,2-Trichloroethane
- 404. Trichloroethene
- 405. Trichlorophenol
- 406. 2,4,5-Trichlorophenoxyacetic Acid
- 407. Trietazine
- 408. Triethylamine
- 409. Triethylene Glycol Diglycidyl Ether
- 410. 1,1,2-Trifluoro Ethane
- 411. Trimellitic Anhydride
- 412. Trimethylamine
- 413. Triphenyl Phosphate
- 414. Tris (2,3 Dibromopropyl) Phosphate
- 415. Urethane
- 416. Valeric Acid
- 417. Vanadium and compounds
- 418. Vinyl Acetate (Monomer)
- 419. Vinyl Chloride
- 420. 4-Vinyl Cyclohexene
- 421. Vinylidene Chloride
- 422. Zinc and compounds

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**SECOND SCHEDULE**

[Section 2]

**LIST OF EXTREMELY DANGEROUS CHEMICALS (RESTRICTED)**

**PART I – INDUSTRIAL CHEMICALS**

- 1. Auramine
- 2. Asbestos products
- 3. Arsenic and compounds
- 4. Antimony and compounds
- 5. P-Aminoazobenzene
- 6. P-Phenylenediamine
- 7. Benzene
- 8. Benzotrichloride
- 9. Beryllium and compounds
- 10. 4 Bromo Phenyl Phenyl Ether

**SECOND SCHEDULE—continued**

11. Cadmium and compounds
12. Chlorofluorocarbons (CFC's)
13. Chloroform
14. Chromium and compounds
15. Cyanide
16. Dibutyl Phthalate
17. 1,2 Dichlorobenzene
18. 1,3 Dichlorobenzene
19. 1,4 Dichlorobenzene
20. 1,1 Dichloroethane
21. Dianisidine
22. Diazomethane
23. Dichlorobenzidine
24. Di Ethyl Hexyl Phthalate
25. Diethyl Sulphate
26. Dimethyl Sulphate
27. Dimethyl Nitrosamine
28. Epichlorohydrin
29. Formaldehyde
30. Hexa Chloro Butadine
31. Hexa Chloro Benzene
32. Lead and Lead compounds
33. Magenta
34. Mercury and compounds
35. Nickel and compounds
36. Nitrites in cutting oils and fluids
37. Nitro Benzene
38. Octa Chloro Styrene
39. Penta Chloro Benzene
40. Pentachlorophenol
41. Phenol
42. Polyvinyl Chloride (PVC)
43. Selenium and compounds
44. 1,2,4,5, Tetra Chloro Benzene
45. 1,2,4, Trichloro Benzene
46. 1,1,1, Trichloro Ethane
47. Thioacetamide
48. Thiourea
49. Tin and compounds
50. Urethane
51. Vinyl Chloride
52. Zinc

**SECOND SCHEDULE—continued**

**PART II – AGRICULTURAL CHEMICALS**

1. Abamectin
2. Acetamiprid
3. Acetochlor
4. Aluminium phosphide
5. 2,4-D Amine Salts and Esters
6. Aminocarb
7. Amitraz
8. Asulam
9. Atrazine
10. Azamethiphos
11. Azinphos – methyl
12. Azocyclotin
13. Bacillus Thuringiensis
14. Benfuracarb
15. Benomyl
16. Bentazone
17. Brodifacoum
18. Bromadiolone
19. Bromoxynil + Terbutylazine
20. Butralin
21. Butyl Propionate
22. Carbaryl
23. Carbofuran
24. Cartap
25. Chloralose
26. Chlorophacinone
27. Chlorothalonil
28. Chlorothalonil + Metalaxyl
29. Chlorpyrifos
30. Copper Hydroxide
31. Copper Oxychloride
32. Coumachlor
33. Coumatetralyl
34. Cymoxanil
35. Cyfluthrin
36. Cyhalothrin
37. Cypermethrin
38. Cyromazine
39. Deltamethrin
40. Diazinon

**SECOND SCHEDULE—continued**

41. Dichlorprop
42. Dichlorvos
43. Diethyl Toluamide
44. Difenconazole
45. Difenacoum
46. Difethialione
47. Dimethoate
48. Dimethomorph
49. Diuron
50. Ethephon
51. Ethoprophos
52. Fenazaquin
53. Fenthion
54. Fipronil
55. Fluazifop-p-butyl
56. Fluroxypyr
57. Fonofos
58. Formetanate
59. Fosetyl
60. Glufosinate Ammonium
61. Glyphosate
62. Halosulfuron
63. Hexaconazole
64. Hexazinone
65. Hydramethylnon
66. Imidacloprid
67. Imiprothrin
68. Indoxycarb
69. Ioxynil
70. Ioxynil + 2,4-D
71. Iprodione
72. Iprovalicarb + Propineb
73. Linuron
74. Lufenuron
75. Malathion
76. Mancozeb
77. Metaldehyde
78. Metalaxyl
79. Metalaxyl + Mancozeb
80. Metam Sodium
81. Methamidophos
82. Methiocarb

**SECOND SCHEDULE—continued**

- 83. Methiodicarb
- 84. Methomyl
- 85. Methyl bromide
- 86. Metolachlor
- 87. Metribuzin
- 88. Metsulfuron Methyl
- 89. Nabam
- 90. Oxyfluorfen
- 91. Phosphamidon
- 92. Picloram + 2,4-D
- 93. Pochloraz
- 94. Profenofos
- 95. Propamocarb
- 96. Propamocarb + Mancozeb
- 97. Propoxur
- 98. Quinalphos
- 99. Spinosad
- 100. Sulphur
- 101. Tebuconazole
- 102. Tebuthiuron
- 103. Tefluthrin
- 104. Temephos
- 105. Thiodicarb
- 106. Thiophanate methyl
- 107. Thiram
- 108. Triclopyr
- 109. Trichlorfon
- 110. Trichloroacetic acid
- 111. Trifluralin
- 112. Zinc phosphide

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**THIRD SCHEDULE**

[Section 8]

**ENFORCING AGENCIES**

1. In this Schedule—

“record” means a record of inspections, compliance control and information obtained as a result of research and investigation;

“sphere of responsibility” means the functions exercisable by an enforcing agency as specified in paragraph 7.

2. (1) Subject to subparagraph (2), the enforcing agency shall—
- (a) in relation to the planning and coordination of the enforcement as a whole, the granting of import permits and licences, any notification, information or educational programme, or the keeping of any register, be the Dangerous Chemicals Control Board;
  - (b) in relation to the presence and the professional use, at place of work, of dangerous chemicals, be the Occupational Safety and Health Inspectorate of the Ministry responsible for labour and industrial relations;
  - (c) in relation to the adverse effects on humans likely to be caused by dangerous chemicals, be the Ministry responsible for the subject of health;
  - (d) in relation to adverse effects on the environment likely to be caused by dangerous chemicals, be the Ministry responsible for the subject of environment;
  - (e) in relation to disposal of hazardous wastes, be the Ministry responsible for the subject of local government;
  - (f) in relation to transport by road of dangerous chemicals and emergency planning, be the Police;
  - (g) in relation to the spreading of dangerous gases, vapours, fumes, aerosols, explosions and fires, spillage of dangerous chemicals and emergency planning, be the Government Fire Services;
  - (h) in relation to the proper and safe use of pesticides by farmers, control of pesticides residues on vegetables and fruits, be the Ministry responsible for the subject of agriculture.

(2) Where no enforcing agency is specifically designated, the Board shall be deemed to have responsibility for exercising the functions of an enforcing agency.

3. An enforcing agency shall in respect of its sphere of responsibility—
- (a) assist in and supervise the enforcement of—
    - (i) national standards and regulations on dangerous chemicals; and
    - (ii) any order and notice issued under this Act;
  - (b) verify compliance with this Act;
  - (c) conduct such inspection, monitoring, sampling and testing so as to ensure compliance with this Act;
  - (d) provide such assistance as may be required for assessing classification, labelling, safety data sheets and substitution, and intervene in case of a spill or emergency caused by or involving dangerous chemicals;
  - (e) carry out directions issued by the Minister on the recommendation of the Dangerous Chemicals Advisory Council.

4. (1) An enforcing agency shall have all the powers conferred by sections 28, 29 and 30 to issue and to revoke any notice.

- (2) An enforcing agency shall—
- (a) have all the powers conferred on it by the Act, and may delegate in writing the powers to any officer posted under his authority;

- (b) keep a record of all inspections, compliance monitoring exercises and information and other data obtained;
- (c) on request, provide the Board with a copy of its record.

5. An enforcing agency shall report, as soon as is practicable, to the Board, any contravention of this Act relating to its sphere of responsibility.

6. Where an enforcing agency suspects or detects any contravention of this Act, beyond its sphere of responsibility, it shall forthwith inform the Board and the relevant enforcing agency.

7. (1) The Board shall be the executive body for—

- (i) the Council and any *ad hoc* committees;
- (ii) the Committee;
- (iii) the issuing of a licence under section 10;
- (iv) the granting of a permit under section 11;
- (v) receiving any notification and information under sections 12 and 13;
- (vi) keeping any register of dangerous chemicals under section 7;
- (vii) receiving the safety data sheets under section 18;
- (viii) planning and coordination under section 7;
- (ix) information and education programmes under section 7.

(2) The Ministry responsible for the subject of labour and industrial relations shall exercise such powers and perform such duties as are conferred upon it by this Act for inspection and investigation of the use of dangerous chemicals at a place of work regarding—

- (a) technical and organisational precautions, including substitution, engineering measures such as enclosure, ventilation, participation of occupational health and safety committees and inventory of dangerous chemicals;
- (b) internal audits of dangerous chemicals;
- (c) the storage, handling and internal transport of dangerous chemicals;
- (d) risk analysis and assessment on loss of containment or explosion of dangerous chemicals;
- (e) accidents caused by dangerous chemicals.

(3) The Ministry responsible for the subject of health shall exercise such powers and perform such duties as are conferred upon it by this Act for inspection, information, guidance and control on—

- (a) health effects of accidental, occupational or environmental exposure to dangerous chemicals;
- (b) medical surveillance and regular medical examinations and service under section 34;
- (c) investigation and evaluation of occupational diseases or work-related diseases following exposure to or use of dangerous chemicals.

(4) The Ministry responsible for the subject of local government shall exercise such powers and perform such duties as are conferred upon it by this Act for inspection, information, guidance and control on the—

- (a) collection and storage of chemical wastes;



- (b) transport of chemical wastes;
- (c) treatment and disposal of chemical wastes.

(5) The Police shall exercise such powers and perform such duties as are conferred upon it by this Act, and which relate to—

- (a) the transport on a public road of dangerous chemicals and wastes, including road checking;
- (b) the training of drivers involved in the transport of dangerous chemicals;
- (c) emergency planning and preparedness relating to accidents that may arise from the use, manipulation or storage of dangerous chemicals;
- (d) rescue activities following an accident relating to the use, manipulation or storage of dangerous chemicals;
- (e) information to the public;
- (f) evacuation and cordoning activities following an accident where dangerous chemicals may pose a threat to humans, animals or the environment.

(6) The Fire Services shall exercise such powers and perform such duties as are conferred to it by this Act for activities in connection with—

- (a) the issue of a fire clearance and enforcement of fire safety measures in respect of storage, use and transport of dangerous chemicals;
- (b) loss of containment of dangerous chemicals;
- (c) spillage clean-up following release of dangerous chemicals in the environment;
- (d) explosions and fire involving dangerous chemicals;
- (e) emergency planning and preparedness following an accident involving dangerous chemicals.

(7) The Customs and Excise Department shall exercise such powers and perform such duties as are conferred to it by this Act, concerning statistics and registration of—

- (a) the nature and amount of dangerous chemicals imported;
- (b) export of dangerous chemicals, including transit;
- (c) the exchange of computerised information relating to the importation and exportation of dangerous chemicals.

(8) The Ministry responsible for the subject of agriculture shall exercise such powers and perform such duties as are conferred to it by this Act, for inspection, information, guidance and control on—

- (a) the proper and safe use of pesticides by farmers;
- (b) pesticides residues on vegetables, fruits and any other agricultural material such as soil, livestock feed or fodder.

## FOURTH SCHEDULE

[Section 12]

### NOTIFICATION

#### A: *Explanatory Notes*

##### 1. Introduction

(1) As part of the protection against the harmful effects of dangerous chemicals, section 12 provides that importers and manufacturers shall submit notifications to the Board.

##### (2) *What is understood by dangerous chemicals*

Dangerous chemicals is the common name for dangerous substances, dangerous mixtures and pesticides, as defined under section 2 of this Act.

##### (3) The notification arrangement includes—

- (a) substances, which are to be classified in accordance with the rules on classification laid down by the Ministry responsible for the subject of health;
- (b) mixtures, which are to be classified in accordance with the rules on classification laid down by the Ministry responsible for the subject of health.

(4) Pesticides are regulated in accordance with the rules laid down by the Ministry responsible for the subject of health.

##### (5) *Who is to submit notifications*

(a) Any person who is licensed to manufacture or import a dangerous chemical other than a pesticide or extremely dangerous chemical that the said person has manufactured or imported before, shall, prior to the subsequent manufacture or importation, submit a notification to the Board;

(b) The notification shall be made on a special form which can be obtained from the Board.

##### (6) *What happens after submission of a notification*

When the Board receives a notification, it is examined, and the notifier may be requested to submit missing information.

##### 2. Notes on points in notification form

(1) **Re II** The trade name assigned to the chemical under which the notifier intends to sell it.

(2) **CAS No.** (abbreviation of the Chemical Abstract Service Registry Number) shall be stated if possible. "Chemical Abstract Service" is a documentation department used worldwide. Every chemical substance is given a number referring unambiguously to the substance irrespective of name or the different chemical nomenclature systems.

(3) For dangerous mixtures, all substances included shall be stated. If possible, CAS No. shall be stated for substances in the chemicals.

(4) Percentage of each substance shall be stated in relation to the total weight of the material.

**FOURTH SCHEDULE—continued**

(5) The technical functions of the substances shall be stated, e.g. adhesive, binding agents and fillers.

(6) **Re III** Give the estimated production or import in tonnes for the calendar year of notification.

(7) **Re IV** Indicate the general use category, such as dyestuff, solvent, and stabiliser.

(8) **Re V** This section should include the classification and labelling proposed by the notifier in accordance to the criteria laid down in the Act.

**B: Notification Form for Dangerous Chemicals****I The notifier**

|                                               |  |
|-----------------------------------------------|--|
| 1.1 Name of the company                       |  |
| 1.2 Address                                   |  |
| 1.3 Telephone number<br>1.4 Fax number        |  |
| 1.5 Name of person filling in the form        |  |
| 1.6 Designation of person filling in the form |  |

**II The chemical**

|                                                    |  |
|----------------------------------------------------|--|
| 2.1 Trade name<br>2.2 Synonyms                     |  |
| 2.3 EINECS Name or<br>Name in IUPAC nomenclature   |  |
| 2.4 CAS-number<br>2.5 Molecular formula            |  |
| 2.6 Structural formula                             |  |
| 2.7 Degree of purity percentage<br>by Weight (w/w) |  |
| 2.8 Significant impurities or additives            |  |

**III Amounts**

|                                                |  |
|------------------------------------------------|--|
| 3.1 Estimated import or production<br>per year |  |
| 3.2 Amount imported/manufactured               |  |

**IV Proposed uses**

|                                    |  |
|------------------------------------|--|
| 4.1 Proposed use<br>4.2 Known uses |  |
|------------------------------------|--|

**V Classification and labelling**

|                               |  |
|-------------------------------|--|
| 5.1 Proposal for hazard class |  |
|-------------------------------|--|

**FOURTH SCHEDULE—continued**

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**V Classification and labelling**

|                                                                    |  |
|--------------------------------------------------------------------|--|
| 5.2 Proposal for hazard category/<br>division/type                 |  |
| 5.3 Proposal for hazard symbol<br>5.4 Proposal for signal word     |  |
| 5.5 Proposal for hazard statements<br>5.6 Precautionary statements |  |
| 5.7 Precautionary pictograms                                       |  |

Note: (1) The safety data sheet is enclosed.  
(2) The form shall be forwarded to the Board.

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**FIFTH SCHEDULE**

[Sections 7 (1) (a), 14 and 15]

**CLASSIFICATION**

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  - 2.1 Explosives
  - 2.2 Flammable gases
  - 2.3 Flammable aerosols
  - 2.4 Oxidising gases
  - 2.5 Gases under pressure
  - 2.6 Flammable liquids
  - 2.7 Flammable solids
  - 2.8 Self-reactive substances
  - 2.9 Pyrophoric liquids
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  - 2.11 Self-heating substances
  - 2.12 Substances which, in contact with water, emit flammable gases
  - 2.13 Oxidising liquids
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    - 3.5.1 Definition

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- 3.5.3 Respiratory sensitisers
- 3.5.4 Skin sensitisers
- 3.5.5 Classification criteria for mixtures
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- 3.6 Germ cell mutagenicity
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  - 3.6.2 Classification criteria for substances
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- 3.8 Reproductive toxicity
  - 3.8.1 Definitions and general considerations
    - 3.8.1.1 Reproductive toxicity
    - 3.8.1.2 Adverse effects on reproductive ability or capacity
    - 3.8.1.3 Adverse effects on the development of the offspring
  - 3.8.2 Classification criteria for substances
    - 3.8.2.1 Hazard categories
  - 3.8.3 Classification criteria for mixtures
  - 3.8.4 Hazard communication
- 3.9 Specific target organ systemic toxicity
  - 3.9.1 Single exposure
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    - 3.9.1.2 Classification criteria for substances
    - 3.9.1.3 Classification criteria for mixtures
    - 3.9.1.4 Hazard communication
  - 3.9.2 Specific target organ systemic toxicity-repeated exposure
    - 3.9.2.1 Definition and general consideration
    - 3.9.2.2 Classification criteria for substances
    - 3.9.2.3 Classification criteria for mixtures
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  - 4.1 Hazardous to the aquatic environment
    - 4.1.1 Definition
    - 4.1.2 Classification criteria
    - 4.1.3 Hazard communication
- 5. CHOICE OF PRECAUTIONARY STATEMENTS AND PRECAUTIONARY PICTOGRAMS**

**FIFTH SCHEDULE—continued**

**1. INTRODUCTION**

(1) Chemical substances and mixtures are evaluated (classified) to determine the hazard they present.

(2) Classification includes both determination of hazard category and assignment of hazard indication (hazard statements) specifying the hazard of the substance or mixture, as in paragraphs 2 to 4, and of precautionary advice (precautionary statements) specifying required safety precautions, as in paragraph 5.

(3) Substances or mixtures classified as dangerous shall be labelled as per the Sixth Schedule.

(4) Chemical substances shall be classified in accordance with the criteria in paragraphs 2 (physical hazards), 3 (health hazards), and 4 (environmental hazards).

**2. CLASSIFICATION OF PHYSICAL HAZARDS**

**2.1 EXPLOSIVES**

**2.1.1 Definitions and general considerations**

An explosive substance (or mixture) is a solid or liquid substance (or mixture of substances) which is in itself capable by chemical reaction of producing gas at such a temperature and pressure and at such a speed as to cause damage to the surroundings. Pyrotechnic substances are included even when they do not evolve gases.

A pyrotechnic substance (or mixture) is a substance or mixture of substances designed to produce an effect by heat, light, sound, gas or smoke or a combination of these as the result of non-detonative self-sustaining exothermic chemical reactions.

An explosive article means an article containing one or more explosive substances or mixtures.

A pyrotechnic article means an article containing one or more pyrotechnic substances or mixtures.

**2.1.2** The class of explosives shall comprise—

- (a) explosive substances and mixtures;
- (b) explosive articles, except devices containing explosive substances or mixtures in such quantity or of such a character that their inadvertent or accidental ignition or initiation shall not cause any effect external to the device either by projection, fire, smoke, heat or loud noise; and
- (c) substances, mixtures and articles not mentioned under (a) and (b) above which are manufactured with a view to producing a practical, explosive or pyrotechnic effect.

**2.1.3 Classification criteria**

Substances, mixtures and articles of this class shall be assigned to one of the following 6 divisions depending on the type of hazard they present—

- (a) **Division 1.1** – Substances, mixtures and articles which have a mass explosion hazard (a mass explosion is one which affects almost the entire load virtually instantaneously).

- (b) **Division 1.2** – Substances, mixtures and articles which have a projection hazard but not a mass explosion hazard.
- (c) **Division 1.3** – Substances, mixtures and articles which have a fire hazard and either a minor blast hazard or a minor projection hazard or both, but not a mass explosion hazard—
  - (i) combustion of which gives rise to considerable radiant heat; or
  - (ii) which burn one after another, producing minor blast or projection effects or both.
- (d) **Division 1.4** – Substances, mixtures and articles which present no significant hazard: substances, mixtures and articles which present only a small hazard in the event of ignition or initiation. The effects are largely confined to the package and no projection of fragments of appreciable size or range is to be expected. An external fire shall not cause virtually instantaneous explosion of almost the entire contents of the package.
- (e) **Division 1.5** – Very insensitive substances or mixtures which have a mass explosion hazard: substances and mixtures which have a mass explosion hazard but are so insensitive that there is very little probability of initiation or of transition from burning to detonation under normal conditions.
- (f) **Division 1.6** – Extremely insensitive articles which do not have a mass explosion hazard: articles which contain only extremely insensitive detonating substances or mixtures and which demonstrate a negligible probability of accidental initiation or propagation.

**2.1.4 Hazard communication**

The specific label elements are given below. Appropriate precautionary statements and pictograms shall be included as may be approved by the Board.

**Label Elements for Explosives**

|                         | Division 1.1                     | Division 1.2                        | Division 1.3                                | Division 1.4               | Division 1.5               | Division 1.6               |
|-------------------------|----------------------------------|-------------------------------------|---------------------------------------------|----------------------------|----------------------------|----------------------------|
| <b>Symbol</b>           | Exploding bomb                   | Exploding bomb                      | Exploding bomb                              | 1.4 on orange back-ground* | 1.5 on orange back-ground* | 1.6 on orange back-ground* |
| <b>Signal word</b>      | Danger                           | Danger                              | Danger                                      | Warning                    | Warning                    | No signal word             |
| <b>Hazard Statement</b> | Explosive; mass explosion hazard | Explosive; severe projection hazard | Explosive; fire, blast or projection hazard | Fire or projection hazard  | May explode in fire        | No hazard statement        |

\* Applies to substances, mixtures and articles subject to some regulatory purposes (e.g. transport).

**2.2 FLAMMABLE GASES**

**2.2.1 Definition**

A flammable gas is a gas having a flammable range with air at 20°C and a standard pressure of 101.3 kPa.

**2.2.2 Classification criteria**

A flammable gas is classified in one of the 2 categories for this class according to the table below—

**Criteria for Flammable Gases**

| Category | Criteria                                                                                                                                                                                                                                               |
|----------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1        | Gases, which at 20°C and a standard pressure of 101.3 kPa—<br>(a) are ignitable when in a mixture of 13% or less by volume in air; or<br>(b) have a flammable range with air of at least 12 percentage points regardless of the lower flammable limit. |
| 2        | Gases, other than those of category 1, which, at 20°C and a standard pressure of 101.3 kPa, have a flammable range while mixed with air.                                                                                                               |

**2.2.3 Hazard communication**

Specific label elements for flammable gases are given below. Appropriate precautionary statements and pictograms shall be included as may be approved by the Board.

**Label Elements for Flammable Gases**

|                         | Category 1              | Category 2     |
|-------------------------|-------------------------|----------------|
| <b>Symbol</b>           | Flame                   | No symbol used |
| <b>Signal word</b>      | Danger                  | Warning        |
| <b>Hazard statement</b> | Extremely flammable gas | Flammable gas  |

**2.3 FLAMMABLE AEROSOLS**

**2.3.1 Definition**

Aerosols means aerosol dispensers, or any non-refillable receptacles made of metal, glass or plastics and containing a gas compressed, liquefied or dissolved under pressure, with or without a liquid, paste or powder, and fitted with a release device allowing the contents to be ejected as solid or liquid particles in suspension in a gas, as a foam, paste or powder or in a liquid state or in a gaseous state.

**2.3.2 Classification criteria**

Aerosols should be considered for classification as flammable if they contain any component which is classified as flammable according to the Globally Harmonised System (GHS) criteria, i.e. —

- Flammable liquids
- Flammable gases
- Flammable solids.

A flammable component does not cover pyrophoric, self-heating or water-reactive substances because such components are never used as aerosol contents.



A flammable aerosol is classified in one of the 2 categories for this Class on the basis of its components, of its chemical heat of combustion and, if applicable, of the results of the foam test (for foam aerosol) and of the ignition distance test and enclosed space test (for spray aerosols).

**2.3.3 Hazard communication**

Specific elements of the label are given below. Appropriate precautionary statements and pictograms shall be included as may be approved by the Board.

|                         | Category 1                  | Category 2        |
|-------------------------|-----------------------------|-------------------|
| <b>Symbol</b>           | Flame                       | Flame             |
| <b>Signal word</b>      | Danger                      | Warning           |
| <b>Hazard statement</b> | Extremely flammable aerosol | Flammable aerosol |

**2.4 OXIDISING GASES**

**2.4.1 Definition**

An oxidising gas is any gas which may, generally by providing oxygen, cause or contribute to the combustion of other material more than air does.

**2.4.2 Classification criteria**

An oxidising gas shall be classified in a single category for this class according to the following table—

**Criteria for Oxidising Gases**

| Category | Criteria                                                                                                                      |
|----------|-------------------------------------------------------------------------------------------------------------------------------|
| 1        | Any gas which may, generally by providing oxygen, cause or contribute to the combustion of other material more than air does. |

**2.4.3 Hazard communication**

Specific elements of the label are given below. Precautionary statements and pictograms shall be included as may be approved by the Board.

|                         | Category 1                            |
|-------------------------|---------------------------------------|
| <b>Symbol</b>           | Flame over circle                     |
| <b>Signal word</b>      | Danger                                |
| <b>Hazard statement</b> | May cause or intensify fire; oxidiser |

**2.5 GASES UNDER PRESSURE**

**2.5.1 Definition**

Gases under pressure means gases which are contained in a receptacle at a pressure not less than 280 kPa at 20°C or as a refrigerated liquid.

They comprise compressed gases, liquefied gases, dissolved gases or refrigerated liquefied gases.

### 2.5.2 Classification criteria

Gases shall be classified, according to their physical state when packaged, in one of 4 groups in the following table—

**Criteria for Gases under Pressure**

| Category                          | Criteria                                                                                                                                                                                                                                                                                                      |
|-----------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Compressed gas</b>             | A gas which when packaged under pressure is entirely gaseous at -50°C, including all gases with a critical temperature $\leq$ -50°C.                                                                                                                                                                          |
| <b>Liquefied gas</b>              | A gas which when packaged under pressure, is partially liquid at temperature above -50°C. A distinction is made between—<br>(a) high pressure liquefied gas: a gas with a critical temperature between -50°C and +65°C; and<br>(b) low pressure liquefied gas: a gas with a critical temperature above +65°C. |
| <b>Refrigerated liquefied gas</b> | A gas which when packaged is made partially liquid because of its low temperature.                                                                                                                                                                                                                            |
| <b>Dissolved gas</b>              | A gas which when packaged under pressure is dissolved in a liquid phase solvent.                                                                                                                                                                                                                              |

The critical temperature is the temperature above which a pure gas cannot be liquefied, regardless of the degree of compression.

### 2.5.3 Hazard communication

Specific elements of the label are given below. Precautionary statements and pictograms shall be included as may be approved by the Board.

**Label Elements for gases under Pressure**

|                         | <b>Compressed gas</b>                              | <b>Liquefied gas</b>                               | <b>Refrigerated liquefied gas</b>                             | <b>Dissolved gas</b>                               |
|-------------------------|----------------------------------------------------|----------------------------------------------------|---------------------------------------------------------------|----------------------------------------------------|
| <b>Symbol</b>           | Gas cylinder                                       | Gas cylinder                                       | Gas cylinder                                                  | Gas cylinder                                       |
| <b>Signal word</b>      | Warning                                            | Warning                                            | Warning                                                       | Warning                                            |
| <b>Hazard statement</b> | Contains gas under pressure; may explode if heated | Contains gas under pressure; may explode if heated | Contains refrigerated gas may cause cryogenic burns or injury | Contains gas under pressure; may explode if heated |

## 2.6 FLAMMABLE LIQUIDS

### 2.6.1 Definition

A flammable liquid means a liquid having a flash point of not more than 93°C.

**2.6.2 Classification criteria**

A flammable liquid shall be classified in one of the 4 categories for this class according to the following table—

**Criteria for Flammable Liquids**

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

**2.6.3 Hazard communication**

Specific label elements are given below. Precautionary statements and pictograms shall be included in the label as may be approved by the Board.

**Label Elements for Flammable Liquids**

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

**2.7 FLAMMABLE SOLIDS**

**2.7.1 Definitions**

A flammable solid means a solid which is readily combustible, or may cause or contribute to fire through friction.

Readily combustible solids means powdered, granular, or pasty substances which are dangerous if they can be easily ignited by brief contact with an ignition source, such as a burning match, and if the flame spreads rapidly.

**2.7.2 Classification criteria**

A flammable solid shall be classified in one of the 2 categories according to the table below—

**Criteria for Flammable Solids**

| Category | Criteria                                         |
|----------|--------------------------------------------------|
| 1        | Burning rate test—                               |
|          | Substances or mixtures other than metal powders— |
|          | (a) wetted zone does not stop fire; and          |

| Category | Criteria                                                                                                                                                                                                                                                       |
|----------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|          | (b) burning time <45 seconds or burning rate >2.2 mm/second<br>Metal powders: burning time ≤5 minutes                                                                                                                                                          |
| <b>2</b> | Burning rate test—<br>Substances or mixtures other than metal powders—<br>(a) wetted zone stops the fire for at least 4 minutes; and<br>(b) burning time <45 seconds or burning rate >2.2 mm/second<br>Metal powders:— burning time <5 minutes and ≤10 minutes |

### 2.7.3 Hazard communication

Label elements for flammable solids are given below. Precautionary statements and pictograms shall be included as may be approved by the Board.

#### Label Elements for Flammable Solids

|                         | Category 1      | Category 2      |
|-------------------------|-----------------|-----------------|
| <b>Symbol</b>           | Flame           | Flame           |
| <b>Signal word</b>      | Danger          | Warning         |
| <b>Hazard statement</b> | Flammable solid | Flammable solid |

## 2.8 SELF-REACTIVE SUBSTANCES

### 2.8.1 Definitions

Self-reacting substance or mixture means a thermally unstable liquid or solid substance or mixture liable to undergo a strongly exothermic decomposition even without participation of oxygen (air). This definition excludes substances and mixtures classified under the UN Globally Harmonised System (GHS) as explosives, organic peroxides or as oxidising.

A self-reactive substance or mixture is regarded as possessing explosive properties when in laboratory testing the formulation is liable to detonate, to deflagrate rapidly or to show a violent effect when heated under confinement.

### 2.8.2 Classification criteria

Self-reactive substances and mixtures are classified in one of the 7 categories given below—

- (a) **TYPE A** – Any self-reactive substance or mixture which can detonate or deflagrate rapidly, as packaged.
- (b) **TYPE B** – Any self-reactive substance or mixture possessing explosive properties and which, as packaged, neither detonates nor deflagrates rapidly, but is liable to undergo a thermal explosion in that package.
- (c) **TYPE C** – Any self-reactive substance or mixture possessing explosive properties when the substance or mixture as packaged cannot detonate or deflagrate rapidly or undergo a thermal explosion.

- (d) **TYPE D** – Any self-reactive substance or mixture which in laboratory testing—
  - (i) detonates partially, does not deflagrate rapidly and shows no violent effect when heated under confinement; or
  - (ii) does not detonate at all, deflagrates slowly and shows no violent effect when heated under confinement; or
  - (iii) does not detonate or deflagrate at all and shows a medium effect when heated.
- (e) **TYPE E** – Any self-reactive substance or mixture which, in laboratory testing, neither detonates nor deflagrates at all and shows low or no effect when heated under confinement.
- (f) **TYPE F** – Any self-reactive substance or mixture which in laboratory testing, neither detonates in the cavitation state nor deflagrates at all and shows only a low or no effect when heated under confinement as well as low or no explosive power.
- (g) **TYPE G** – Any self-reactive substance or mixture which in laboratory testing, neither detonates in the cavitated state nor deflagrates at all and shows no effect when heated under confinement nor any explosive power, provided that it is thermally stable (self-accelerating decomposition temperature is 60°C to 75°C for a 50 kg package), and, for liquid mixtures, a diluent having a boiling point not less than 150°C is used for desensitisation.

**2.8.3 Hazard communication**

Specific elements of label are given below. Precautionary statements and pictograms shall be included in the label as may be approved by the Board.

**Label Elements for Self-reactive Substances and Mixtures**

|                         | Type A                         | Type B                                | Types C and D            | Types E and F            | Type G                                                        |
|-------------------------|--------------------------------|---------------------------------------|--------------------------|--------------------------|---------------------------------------------------------------|
| <b>Symbol</b>           | Exploding bomb                 | Exploding bomb and flame              | Flame                    | Flame                    | There are no label elements allocated to this hazard category |
| <b>Signal word</b>      | Danger                         | Danger                                | Danger                   | Warning                  |                                                               |
| <b>Hazard statement</b> | Heating may cause an explosion | Heating may cause a fire or explosion | Heating may cause a fire | Heating may cause a fire |                                                               |

**2.9 PYROPHORIC LIQUIDS**

**2.9.1 Definition**

A pyrophoric liquid means a liquid which, even in small quantities, is liable to ignite within 5 minutes after coming into contact with air.

**2.9.2 Classification criteria**

A pyrophoric liquid shall be classified in a single category as given below.

**Criteria for Pyrophoric Liquids**

| Category | Criteria                                                                                                                                                       |
|----------|----------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1        | The liquid ignites within 5 min when added to an inert carrier and exposed to air, or it ignites or chars a filter paper on contact with air within 5 minutes. |

**2.9.3 Hazard communication**

Specific elements of the label are given below. Precautionary statements and pictograms shall be included in the label as may be approved by the Board.

**Label Elements for Pyrophoric Liquids**

|                  | Category 1                                   |
|------------------|----------------------------------------------|
| Symbol           | Flame                                        |
| Signal word      | Danger                                       |
| Hazard statement | Catches fire spontaneously if exposed to air |

**2.10 PYROPHORIC SOLIDS**

**2.10.1 Definition**

A pyrophoric solid means a solid which, even in small quantities, is liable to ignite within 5 minutes after coming into contact with air.

**2.10.2 Classification criteria**

A pyrophoric solid shall be classified in a single category according to the following table—

**Criteria for Pyrophoric Solids**

| Category | Criteria                                                            |
|----------|---------------------------------------------------------------------|
| 1        | The solid ignites within 5 minutes of coming into contact with air. |

**2.10.3 Hazard communication**

Specific label elements are given below. Precautionary statements and pictograms shall be included as may be approved by the Board.

**Label Elements for Pyrophoric Solids**

|                  | Category 1                                   |
|------------------|----------------------------------------------|
| Symbol           | Flame                                        |
| Signal word      | Danger                                       |
| Hazard statement | Catches fire spontaneously if exposed to air |

## 2.11 SELF-HEATING SUBSTANCES

### 2.11.1 Definition

A self-heating substance or mixture means a solid substance or mixture, other than a pyrophoric liquid or solid, which, by reaction with air and without energy supply, is liable to self-heat; substances or mixture differs from a pyrophoric liquid or solid in that it will ignite only when in large amounts (kilograms) and after long periods of time (hours or days).

### 2.11.2 Classification criteria

A substance or mixture shall be classified in one of 2 categories as self-heating substance if the test result meets the following criteria—

- (a) a positive result is obtained using a 25 mm cube sample at 140°C;
- (b) a positive result is obtained in a test using a 100 mm cube sample at 140°C and a negative result is obtained in 100 mm cube sample at 120°C and the substance or mixture is to be packed in packages with a volume of more than 3 m<sup>3</sup>;
- (c) a positive result is obtained in a test using 100 mm cube sample at 140°C and a negative result is obtained in a test using a 100 mm cube sample at 100°C and the substance or mixture is to be packed in packages with a volume of more than 450 litres;
- (d) a positive result is obtained in a test using a 100 mm cube sample at 140°C and a positive result is obtained using a 100 mm cube sample at 100°C.

### 2.11.3 Hazard communication

Specific elements of label are given below. Precautionary statements and pictograms shall be included as may be approved by the Board.

**Label Elements for Self-heating Substances and Mixtures**

|                         | Category 1                   | Category 2                                       |
|-------------------------|------------------------------|--------------------------------------------------|
| <b>Symbol</b>           | Flame                        | Flame                                            |
| <b>Signal word</b>      | Danger                       | Warning                                          |
| <b>Hazard statement</b> | Self-heating; may catch fire | Self-heating in large quantities; may catch fire |

## 2.12 SUBSTANCES WHICH, IN CONTACT WITH WATER, EMIT FLAMMABLE GASES

### 2.12.1 Definition

Substances or mixtures which, in contact with water, emit flammable gases are solid or liquid substances or mixtures which, by interaction with water, are liable to become spontaneously flammable or to give off flammable gases in dangerous quantities.

### 2.12.2 Classification criteria

A substance or mixture which, in contact with water, emits flammable gases is classified in one of the 3 categories for this class, according to the following table—

**Criteria for Substances and Mixtures which, in contact with Water, emit Flammable Gases**

| Category | Criteria                                                                                                                                                                                                                                                                                                                                                                 |
|----------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>1</b> | Any substance or mixture which reacts vigorously with water at ambient temperatures and demonstrates generally a tendency for the gas produced to ignite spontaneously, or which reacts readily with water at ambient temperatures such that the rate of evolution of flammable gas is equal to or greater than 10 litres per kilogram of substance over any one minute. |
| <b>2</b> | Any substance or mixture which reacts readily with water at ambient temperatures such that the maximum rate of evolution of flammable gas is equal to or greater than 20 litres per kilogram of substance per hour, and which does not meet the criteria for category 1.                                                                                                 |
| <b>3</b> | Any substance or mixture which reacts slowly with water at ambient temperatures such that the maximum rate of evolution of flammable gas is equal to or greater than one litre per kilogram of substance per hour, and which does not meet the categories 1 and 2.                                                                                                       |

### 2.12.3 Hazard communication

Specific label elements for substances and mixtures which, in contact with water, emit flammable gases are given below. Precautionary statements and pictograms shall be included as may be approved by the Board.

**Label Elements for Substances and Mixtures, which in contact with Water, emit Flammable Gases**

|                         | Category 1                                                                    | Category 2                                     | Category 3                                     |
|-------------------------|-------------------------------------------------------------------------------|------------------------------------------------|------------------------------------------------|
| <b>Symbol</b>           | Flame                                                                         | Flame                                          | Flame                                          |
| <b>Signal word</b>      | Danger                                                                        | Danger                                         | Warning                                        |
| <b>Hazard statement</b> | In contact with water releases flammable gases which may ignite spontaneously | In contact with water releases flammable gases | In contact with water releases flammable gases |

## 2.13 OXIDISING LIQUIDS

### 2.13.1 Definition

An oxidising liquid is a liquid which, while in itself not necessarily combustible, may, generally by yielding oxygen, cause, or contribute to, combustion of other material.



**2.13.2 Classification criteria**

An oxidising liquid shall be classified in one of the 3 categories for this class, according to the following table—

**Criteria for Oxidising Liquids**

| Category | Criteria                                                                                                                                                                                                                                                                                                                                           |
|----------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>1</b> | Any substance or mixture which, in the ratio of 1:1 mixture, by mass, of substance (or mixture) and cellulose tested, spontaneously ignites; or the mean pressure rise time of a ratio of 1:1 mixture, by mass, of substance and cellulose is less than that of a ratio of 1:1 mixture, by mass, of 50% perchloric acid and cellulose.             |
| <b>2</b> | Any substance or mixture which, in the ratio of 1:1 mixture, by mass, of substance (or mixture) and cellulose tested, exhibits a mean pressure rise time less than or equal to the mean pressure rise time of a ratio of 1:1 mixture, by mass, of 40% aqueous sodium chlorate solution and cellulose; and the criteria for category 1 are not met. |
| <b>3</b> | Any substance or mixture which, in the ratio of 1:1 mixture, by mass, of substance (or mixture) and cellulose tested, exhibits a mean pressure rise time less than or equal to the mean pressure rise time of a ratio of 1:1 mixture, by mass, of 65% aqueous nitric acid and cellulose; and the criteria for category 1 and 2 are not met.        |

**2.13.3 Hazard communication**

Specific label elements for oxidizing liquids are given below. Precautionary statements and pictograms shall be included as may be approved by the Board.

**Label Elements for Oxidising Liquids**

|                         | Category 1                                   | Category 2                   | Category 3                   |
|-------------------------|----------------------------------------------|------------------------------|------------------------------|
| <b>Symbol</b>           | Flame over circle                            | Flame over circle            | Flame over circle            |
| <b>Signal word</b>      | Danger                                       | Danger                       | Warning                      |
| <b>Hazard statement</b> | May cause fire or explosion; strong oxidiser | May intensify fire; oxidiser | May intensify fire; oxidiser |

**2.14 OXIDISING SOLIDS****2.14.1 Definition**

An oxidising solid means a solid which, while in itself is not necessarily combustible, may, generally by yielding oxygen, cause, or contribute to, the combustion of other material.

### 2.14.2 Classification criteria

An oxidising solid shall be classified in one of the 3 categories for this class, according to the following table—

**Criteria for Oxidising Solids**

| Category | Criteria                                                                                                                                                                                                                                                                                                  |
|----------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1        | Any substance or mixture which, in the ratio of 4:1 or 1:1 sample-to-cellulose ratio (by mass) tested, exhibits a mean burning time less than the mean burning time of a ratio of 3:2 mixture, by mass, of potassium bromate and cellulose.                                                               |
| 2        | Any substance or mixture which, in the ratio of 4:1 or 1:1 sample-to-cellulose ratio (by mass) tested, exhibits a mean burning time equal to or less than the mean burning time of a ratio of 2:3 mixture (by mass) of potassium bromate and cellulose and the criteria for category 1.                   |
| 3        | Any substance or mixture which, in the ratio of 4:1 or 1:1 sample-to-cellulose-ratio (by mass) tested, exhibits a mean burning time equal to or less than the mean burning time of ratio of 3:7 mixture (by mass) of potassium bromate and cellulose and the criteria for categories 1 and 2 are not met. |

### 2.14.3 Hazard communication

Specific label elements for oxidising solids are given below. Precautionary statements and pictograms shall be included in the label as may be approved by the Board.

**Label Elements for Oxidising Solids**

|                         | Category 1                                   | Category 2                   | Category 3                   |
|-------------------------|----------------------------------------------|------------------------------|------------------------------|
| <b>Symbol</b>           | Flame over circle                            | Flame over circle            | Flame over circle            |
| <b>Signal word</b>      | Danger                                       | Danger                       | Warning                      |
|                         | Category 1                                   | Category 2                   | Category 3                   |
| <b>Hazard statement</b> | May cause fire or explosion: strong oxidiser | May intensify fire; oxidiser | May intensify fire; oxidiser |

## 2.15 ORGANIC PEROXIDES

### 2.15.1 Definition

Organic peroxides are liquid or solid organic substances which contain the bivalent-O-O-structure and may be considered derivatives of hydrogen peroxide, where one or both of the hydrogen atoms have been replaced by organic radicals. The term also includes organic peroxide formulations (mixtures). Organic peroxides are thermally unstable substances or mixtures, which may undergo exothermic self-accelerating decomposition. In addition, they may have one or more of the following properties—

- (a) be liable to explosive decomposition;
- (b) burn rapidly;
- (c) be sensitive to impact or friction;

- (d) react dangerously with other substances.

An organic peroxide is regarded as possessing explosive properties when in laboratory testing the formulation is liable to detonate, deflagrate rapidly or to show a violent effect when heated under confinement.

### 2.15.2 Classification criteria

Organic peroxides are classified in one of the 7 categories of "Types A to G" for this class, according to the following principles—

- (a) **TYPE A** – Any organic peroxide which, as packaged, can detonate or deflagrate rapidly.
- (b) **TYPE B** – Any organic peroxide possessing explosive properties and which, as packaged, neither detonates nor deflagrates rapidly, but is liable to undergo a thermal explosion in that package.
- (c) **TYPE C** – Any organic peroxide possessing explosive properties when the substance or mixture as packaged cannot detonate or deflagrate rapidly or undergo a thermal explosion.
- (d) **TYPE D** – Any organic peroxide which in laboratory testing—
  - (i) detonates partially, does not deflagrate rapidly and shows no violent effects when heated under confinement; or
  - (ii) does not detonate at all, deflagrates slowly and shows no violent effects when heated under confinement; or
  - (iii) does not detonate or deflagrate at all and shows a medium effect when heated under confinement.
- (e) **TYPE E** – Any organic peroxide which, in laboratory testing, neither detonates nor deflagrates at all and shows low or no effect when heated under confinement.
- (f) **TYPE F** – Any organic peroxide which, in laboratory testing, neither detonates in the cavitated state nor deflagrates at all and shows only a low or no effect when heated under confinement as well as low or no explosive power.
- (g) **TYPE G** – Any organic peroxide which, in laboratory testing, neither detonates in the cavitated state nor deflagrates at all and shows no effect when heated under confinement nor any explosive power, provided that it is thermally stable (self-accelerating decomposition temperature is 60°C or higher for a 50 kg package), and, for liquid mixtures, a diluent having a boiling point of not less than 150°C is used for desensitisation.

If the organic peroxide is not thermally stable or a diluent having a boiling point less than 150°C is used for desensitisation, it shall be defined as organic peroxide Type F.

### 2.15.3 Hazard communication

Specific label elements for organic peroxides are given below. Precautionary statements and pictograms shall be included in the label as may be approved by the Board.

**Label Elements for Organic Peroxides**

|                         | Type A                         | Type B                                | Types C and D            | Types E and F            | Type G                                                        |
|-------------------------|--------------------------------|---------------------------------------|--------------------------|--------------------------|---------------------------------------------------------------|
| <b>Symbol</b>           | Exploding bomb                 | Exploding bomb and flame over circle  | Flame over circle        | Flame over circle        | There are no label elements allocated to this hazard category |
| <b>Signal word</b>      | Danger                         | Danger                                | Danger                   | Warning                  |                                                               |
| <b>Hazard statement</b> | Heating may cause an explosion | Heating may cause a fire or explosion | Heating may cause a fire | Heating may cause a fire |                                                               |

**2.16 CORROSIVE TO METALS**

**2.16.1 Definition**

A substance or a mixture that is corrosive to metal means a substance or a mixture which by chemical action will materially damage, or even destroy metals.

**2.16.2 Classification criteria**

A substance or a mixture which is corrosive to metal shall be classified in a single category, according to the following table—

**Criteria for Substances and Mixtures Corrosive to Metal**

| Category | Criteria                                                                                                |
|----------|---------------------------------------------------------------------------------------------------------|
| 1        | Corrosion rate on steel or aluminium surfaces exceeding 6.25 mm per year at a test temperature of 55°C. |

**2.16.3 Hazard communication**

Specific label elements are given below. Precautionary statements and pictograms shall be included as may be approved by the Board.

**Label Elements for Substances and Mixtures Corrosive to Metals**

|                         | Category 1                 |
|-------------------------|----------------------------|
| <b>Symbol</b>           | Corrosive                  |
| <b>Signal word</b>      | Warning                    |
| <b>Hazard statement</b> | May be corrosive to metals |

**3. CLASSIFICATION OF HEALTH HAZARDS**

**3.1 Introduction**

Classification of health hazards is concerned with both the acute and long term effects of substances and mixtures, whether resulting from a single instance of exposure or from a repeated exposure.

### 3.2 Acute toxicity

**3.2.1 Definition:** Acute toxicity refers to those adverse effects occurring following oral or dermal administration of a single dose of a substance, or multiple doses given within 24 hours, or an inhalation exposure of 4 hours.

#### 3.2.2 Classification criteria for substances

Chemicals can be allocated to one of 5 toxicity categories based on acute toxicity by the oral, dermal or inhalation route according to the numeric criteria expressed as (approximate) LD 50 (oral, dermal) or LC 50 (inhalation) values as shown in the table below.

**Acute Toxicity Hazard Categories and (approximate) LD50/LC50 Values defining the respective Categories**

| Exposure route                             | Category 1 | Category 2 | Category 3 | Category 4 | Category 5 |
|--------------------------------------------|------------|------------|------------|------------|------------|
| Oral (mg/kg) bodyweight                    | 5          | 50         | 300        | 2000       | 2000-5000  |
| Dermal (mg/kg) bodyweight                  | 50         | 200        | 1000       | 2000       | "          |
| Gases (ppm V) parts per million per volume | 100        | 500        | 2500       | 5000       | "          |
| Vapours (mg/l)                             | 0.5        | 2.0        | 10         | 20         | "          |
| Dusts and mists (mg/ l)                    | 0.05       | 0.5        | 1.0        | 5          | "          |

Classification of mixtures where acute toxicity test data are available for the complete mixture, it will be classified according to the same criteria as those used for substances presented in the above table. Where acute toxicity test data are not available, the bridging principles are used.

#### 3.2.3 Hazard Communication

Specific label elements for substances and mixtures that are classified into acute toxicity Categories 1 to 5 are given below. Precautionary statements and pictograms shall be used as may be approved by the Board.

**Acute Toxicity Label Elements**

|                                | Category 1                 | Category 2                 | Category 3                 | Category 4                   | Category 5                          |
|--------------------------------|----------------------------|----------------------------|----------------------------|------------------------------|-------------------------------------|
| <b>Symbol</b>                  | Skull and crossbones       | Skull and crossbones       | Skull and crossbones       | Exclamation mark             | No symbol is used                   |
| <b>Signal word</b>             | Danger                     | Danger                     | Danger                     | Warning                      | Warning                             |
| <b>Hazard statement (oral)</b> | Fatal if swallowed         | Fatal if swallowed         | Toxic if swallowed         | Harmful if swallowed         | May be harmful if swallowed         |
| <b>Dermal</b>                  | Fatal in contact with skin | Fatal in contact with skin | Toxic in contact with skin | Harmful in contact with skin | May be harmful in contact with skin |
| <b>Inhalation</b>              | Fatal if inhaled           | Fatal if inhaled           | Toxic if inhaled           | Harmful if inhaled           | May be harmful if inhaled           |

### 3.3 SKIN CORROSION/IRRITATION

#### 3.3.1 Definition

Skin corrosion is the production of irreversible damage to the skin, namely, visible necrosis through the epidermis and into the dermis, following the application of a test substance for up to 4 hours. Corrosive reactions are typified by ulcers, bleeding, bloody scabs, and, by the end of observation at 14 days, by discolouration due to blanching of the skin, complete areas of alopecia, and scars.

Skin irritation is the production of reversible damage to the skin following the application of a test substance for up to 4 hours.

#### Skin Corrosive Category and Sub-categories

| Category 1:<br>Corrosive                | Corrosive sub-categories                | Corrosive in <1 of<br>3 animals |                    |
|-----------------------------------------|-----------------------------------------|---------------------------------|--------------------|
| (Applies when not using sub-categories) | (Applies where sub-categories are used) | <b>Exposure</b>                 | <b>Observation</b> |
| Corrosive                               | 1A                                      | <3 minutes                      | <1 hour            |
|                                         | 1B                                      | >3 minutes                      | <14 days           |
|                                         | 1C                                      | >1 hour-<4 hours                | <14 days           |

#### Skin Irritation Categories

| Categories                                                   | Criteria                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
|--------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Irritant (Category 2)</b><br>(applies to all chemicals)   | (a) Mean value of $\geq 2.3$ - $< 4.0$ for erythema/eschar or for oedema in at least 2 of 3 tested animals from gradings at 24,48,72 hours after patch removal or, if reactions are delayed, from grades on 3 consecutive days after onset of skin reactions; or<br>(b) inflammation that persists to the end of the observation period normally 14 days in at least animals, particularly taking into account alopecia (limited area), hyperkeratosis, hyperplasia and scaling; or<br>(c) in some cases where there is pronounced variability of response among animals, with very definite positive. |
| <b>Mild irritant (Category 3)</b><br>(applies to pesticides) | Mean value of $\geq 1.5$ - $< 2.3$ for erythema/eschar or for oedema from gradings in at least 2 of 3 tested animals from grades at 24, 48 and 72 hours or, if reactions are delayed, from grades on 3 consecutive days after the onset of skin reactions (when not included in the irritant category above).                                                                                                                                                                                                                                                                                          |

#### 3.3.2 Hazard communication

The table below presents specific label elements for substances and mixtures that are classified as irritating or corrosive to the skin. Precautionary statements and pictograms shall be included as may be approved by the Board.

## Label Elements for Skin Corrosion/Irritation

|                         | Category 1                              |                                         |                                         | Category 2             | Category 3                  |
|-------------------------|-----------------------------------------|-----------------------------------------|-----------------------------------------|------------------------|-----------------------------|
|                         | 1A                                      | 1B                                      | 1C                                      |                        |                             |
| <b>Symbol</b>           | Corrosion                               | Corrosion                               | Corrosion                               | Exclamation mark       | No symbol is used           |
| <b>Signal word</b>      | Danger                                  | Danger                                  | Danger                                  | Warning                | Warning                     |
| <b>Hazard statement</b> | Causes severe skin burns and eye damage | Causes severe skin burns and eye damage | Causes severe skin burns and eye damage | Causes skin irritation | Causes mild skin irritation |

## 3.4 SERIOUS EYE DAMAGE/EYE IRRITATION

## 3.4.1 Definitions

Serious eye damage is the production of tissue damage in the eye, or serious physical decay of vision, following application of a test substance to the anterior surface of the eye, which is not fully reversible within 21 days of application.

Eye irritation is the production of changes in the eye following the application of test substance to the anterior surface of the eye, which are fully reversible within 21 days of application.

## 3.4.2 Classification criteria for substances

**Category 1 eye irritant (irreversible effects on the eye)** is a test material that produces:— at least in one animal effects on the cornea, iris or conjunctiva that are not expected to reverse or have not fully reversed within an observation period of normally 21 days; and/or at least in 2 of 3 tested animals, a positive response of corneal opacity  $\geq 3$  and/or iris  $> 1.5$  calculated as the mean score following grading at 24, 48 and 72 hours after installation of the test material.

**Category 2 eye irritant (reversible effects on the eye)**

A single category is adopted for substances that have the potential to induce reversible eye irritation. However an optional sub-category is provided for substances inducing eye irritant effects reversing within an observation time of 7 days.

**Category 2A (irritating to eyes)** is a test material that produces—

- at least in 2 of 3 tested animals a positive response of: corneal opacity  $\geq 1$  and/or iritis  $\geq 1$ , and/or conjunctival redness  $\geq 2$ , and/or conjunctival oedema (chemosis)  $\geq 2$ ;
- calculated as the mean scores following grading at 24, 48 and 72 hours after installation of the test material; and
- which fully reverses within an observation period of normally 21 days.

**Category 2B (mildly irritating to eyes)** – within this category an eye irritant considered mildly irritating to eyes when the effects listed above are fully reversible within 7 days of observation.

### 3.4.3 Hazard communication

The table below presents specific label elements for substances and mixtures that are classified for serious eye damage/eye irritation.

**Label Elements for Serious Eye Damage/Irritation**

|                         | Category 1               | Category 2                   | Category 3            |
|-------------------------|--------------------------|------------------------------|-----------------------|
| <b>Symbol</b>           | Corrosive symbol         | Exclamation mark             | No symbol is used     |
| <b>Signal word</b>      | Danger                   | Warning                      | Warning               |
| <b>Hazard statement</b> | Causes severe eye damage | Causes severe eye irritation | Causes eye irritation |

## 3.5 RESPIRATORY OR SKIN SENSITISATION

### 3.5.1 Definitions

A respiratory sensitiser means a substance that will induce hypersensitivity of the airways following inhalation of the substance.

A skin sensitiser means a substance that will induce an allergic response following skin contact.

### 3.5.2 Classification criteria for substances

#### Respiratory sensitisers

Hazard category

**Category 1** – substances shall be classified as respiratory sensitisers category 1 in accordance with the criteria given below –

- if there is evidence in humans that the substance can induce specific respiratory hypersensitivity;
- if there are positive results from an appropriate animal test.

Human evidence of hypersensitivity is normally seen as asthma, and also as rhinitis/conjunctivitis and alveolitis.

Other evidence could be clinical data, medical and occupational history supported by lung function tests, immunological tests and data from positive bronchial challenge tests. Other aggravating factors at home and at the workplace, medical and family history should also be considered.

#### Skin sensitisers

Hazard category

**Category 1** – substances shall be classified as contact sensitisers (category 1) in accordance with the criteria given below –

- if there is evidence in humans that the substance can induce sensitisation by skin contact in a substantial number of persons;
- if there are positive results from an appropriate animal test.

Evidence should include –

- positive data from patch testing;



- epidemiological studies showing allergic contact dermatitis caused by the substance;
- positive data from appropriate animal studies;
- positive data from experimental studies in man;
- well documented episodes of allergic contact dermatitis obtained in dermatology clinics.

### 3.5.3 Classification criteria for mixtures

Mixtures shall be classified as a respiratory or skin sensitiser when at least one ingredient has been classified as a respiratory or skin sensitiser and is present at or above the cut-off value/concentration limit given below.

#### Cut-off Values/Concentration Limits of Ingredients of a Mixture Classified as either Skin Sensitisers or Respiratory Sensitisers that would trigger Classification of the Mixture

| Ingredient classified as | Cut-off/concentration limits | Respiratory Sensitiser solid/liquid gas |       |
|--------------------------|------------------------------|-----------------------------------------|-------|
|                          |                              |                                         |       |
| Skin sensitiser          | ≥0.1%                        | ≥0.1%                                   | ≥0.1% |
| Respiratory sensitiser   | ≥1.0%                        | ≥1.0%                                   | ≥0.2% |

### 3.5.4 Hazard communication

The table below presents specific label elements for substances and mixtures that are classified as respiratory and skin sensitisers. Appropriate precautionary statements and pictograms shall be included as prescribed by the Board.

#### Respiratory or Skin Sensitisation Label Elements

|                  | Respiratory sensitisation category 1                                      | Skin sensitisation category 1       |
|------------------|---------------------------------------------------------------------------|-------------------------------------|
| Symbol           | Health hazard                                                             | Exclamation mark                    |
| Signal word      | Danger                                                                    | Warning                             |
| Hazard statement | May cause allergy or asthma symptoms or breathing difficulties if inhaled | May cause an allergic skin reaction |

## 3.6 GERM CELL MUTAGENICITY

### 3.6.1 Definitions and general considerations

This hazard class is primarily concerned with chemicals that may cause mutations in the germ cells of humans that can be transmitted to the progeny.

A **mutation** is defined as a permanent change in the amount or structure of the genetic material in a cell.

The terms **mutagenic** and **mutagen** are used for agents giving rise to an increasing occurrence of mutations in populations of cells and/or organisms.

The terms **genotoxic** and **genotoxicity** apply to agents or processes which alter the structure, information content, or segregation of DNA, including those which cause DNA damage by interfering with normal replication processes, or which in a non-physiological manner (temporarily) alter its replication.

### 3.6.2 Classification criteria for substances

Germ cell mutagens are classified in 2 categories as given below—

#### Hazard Categories for Germ Cell Mutagens

|                                                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|---------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p><b>CATEGORY 1—</b></p> <p><b>Category 1A—</b></p> <p><b>Category 1B—</b></p> | <p><b>Chemicals known to induce heritable mutations or to be regarded as if they induce heritable mutations in the germ cells of humans.</b></p> <p><b>Chemicals known to induce heritable mutations in germ cells of humans.</b><br/>Criterion: Positive evidence from human epidemiological studies.</p> <p><b>Chemicals which should be regarded as if they induce heritable mutations in the germ cells of humans.</b><br/><i>Criteria—</i></p> <ul style="list-style-type: none"> <li>– Positive result(s) from <i>in vivo</i> heritable germs cells mutagenicity tests in mammals; or</li> <li>– positive result(s) from <i>in vivo</i> somatic cell mutagenicity tests in mammals, in combination with some evidence that the substance has potential to cause mutations to germ cells. This supporting evidence may, for example, be derived from mutagenicity/genotoxic tests in germ cells <i>in vivo</i>, by demonstrating the ability of the substance or its metabolite(s) to interact with the genetic material of germ cells; or</li> <li>– positive results from tests showing mutagenic effects in the germ cells of humans, without demonstration of transmission to progeny; for example, an increase in the frequency of aneuploidy in sperm cells of exposed people.</li> </ul> |
| <p><b>CATEGORY 2—</b></p>                                                       | <p><b>Chemicals which cause concern for humans owing to the possibility that they may induce heritable mutations in the germ cells of humans.</b><br/><i>Criteria—</i></p> <p>Positive evidence obtained from experiments in mammals and/or in some cases from <i>in vitro</i> experiments, obtained from—</p> <ul style="list-style-type: none"> <li>– Somatic cell mutagenicity tests <i>in vivo</i>, in mammals; or</li> <li>– other <i>in vivo</i> somatic cell genotoxicity tests which are supported by positive results from <i>in vitro</i> mutagenicity assays.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |

NOTE: Chemicals which are positive in *in vitro* mammalian mutagenicity assays, and which also show chemical structure activity relationship to known germ cell mutagens, should be considered for classification as Category 2 mutagens.

### 3.6.3 Classification of mixtures

The mixture will be classified as a mutagen when at least one ingredient has been classified as a Category 1 or Category 2 mutagen and is present at or above the appropriate cut-off value/concentration limit shown below.

**Cut-off Values/Concentration Limits of Ingredients of a Mixture Classified as Germ Cell Mutagens that would trigger Classification of the Mixture**

| Ingredient classified as— | Cut-off/concentration limits triggering classification of a mixture as— |                    |
|---------------------------|-------------------------------------------------------------------------|--------------------|
|                           | Category 1 mutagen                                                      | Category 2 mutagen |
| Category 1 mutagen        | ≥0.1%                                                                   | —                  |
| Category 2 mutagen        | —                                                                       | ≥1.0%              |

**3.6.4 Hazard communication**

Specific label elements for germ cell mutagenicity are given below. Appropriate precautionary statements and pictograms shall be given as may be approved by the Board.

**Label Elements of Germ Cell Mutagenicity**

|                         | Category 1A                                                                                                                        | Category 1B                                                                                                                        | Category 2                                                                                                                                    |
|-------------------------|------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Symbol</b>           | Health Hazard                                                                                                                      | Health Hazard                                                                                                                      | Health Hazard                                                                                                                                 |
|                         | <b>Category 1A</b>                                                                                                                 | <b>Category 1B</b>                                                                                                                 | <b>Category 2</b>                                                                                                                             |
| <b>Signal word</b>      | Danger                                                                                                                             | Danger                                                                                                                             | Warning                                                                                                                                       |
| <b>Hazard statement</b> | May cause genetic defects (state route of exposure if it is conclusively proven that no other routes of exposure cause the hazard) | May cause genetic defects (state route of exposure if it is conclusively proven that no other routes of exposure cause the hazard) | Suspected of causing genetic defects (state route of exposure if it is conclusively proven that no other routes of exposure cause the hazard) |

**3.7 CARCINOGENICITY**

**3.7.1 Definitions**

A carcinogen is a chemical substance or a mixture of chemical substances which induce cancer or increase its incidence. Substances which have induced benign and malignant tumours in animals are considered also to be presumed or suspected human carcinogens unless there is strong evidence that the mechanism of tumour formation is not relevant for humans.

**3.7.2 Classification criteria for substances**

Chemical substances are classified in 2 categories based on strength of evidence and additional considerations. In certain instances, route specific classification may be warranted.

**Hazard Categories for Carcinogens**

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

**3.7.3 Classification criteria for mixtures**

The mixture shall be classified as a carcinogen when at least one ingredient has been classified as a Category 1 or Category 2 carcinogen and is present at or above the appropriate cut-off value/concentration limit as shown below—

**Cut-off Values/Concentration Limits of Ingredients of a Mixture Classified as Carcinogen that would trigger Classification of the Mixture**

| Ingredient classified as— | Cut-off/concentration limits triggering classification of a mixture as— |                       |
|---------------------------|-------------------------------------------------------------------------|-----------------------|
|                           | Category 1 carcinogen                                                   | Category 2 carcinogen |
| Category 1 carcinogen     | ≥0.1%                                                                   | —                     |
| Category 2 carcinogen     | —                                                                       | ≥0.1%                 |
|                           |                                                                         | ≥1.0%                 |

**3.7.4 Hazard communication**

Specific label elements for carcinogenicity are given below. Appropriate precautionary statements and pictograms shall be included as may be approved by the Board.

**Label Elements of Carcinogenicity**

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

**3.8 REPRODUCTIVE TOXICITY**

**3.8.1 Definitions and general considerations**

**3.8.1.1. Reproductive toxicity**

Reproductive toxicity includes adverse effects on sexual function and fertility in adult males and females, as well as developmental toxicity in the offspring.

In this classification system, reproductive toxicity is subdivided under 2 main headings—

- \* adverse effects on reproductive ability or capacity;
- \* adverse effects on development of offspring.

**3.8.1.2 Adverse effects on reproductive ability or capacity**

Effects of chemicals that would interfere with reproductive ability or capacity include, alterations to the female and male reproductive system, adverse effects on onset of puberty, gamete production and transport, reproductive cycle normality, sexual behaviour, fertility, parturition, premature reproductive senescence, or modifications in other functions that are dependent on the integrity of the reproductive systems.

**3.8.1.3 Adverse effects on development of the offspring**

Developmental toxicity means adverse effects induced during pregnancy, or as a result of parental exposure. These effects can be manifested at any point in the lifespan of the organism. The major manifestations of developmental toxicity shall include (a) death of the developing organism, (b) structural abnormality, (c) altered growth, and (d) functional deficiency.

### 3.8.2 Classification criteria for substances

#### 3.8.2.1 Hazard categories

For the purpose of classification for reproductive toxicity, chemical substances are allocated to one of 2 categories. Effects on reproductive ability or capacity, and on development, are considered as separate issues. In addition, effects on lactation are allocated to a separate hazard category.

#### Hazard Categories for Reproductive Toxicants

|                                                                                                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
|--------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>CATEGORY 1 – Known as presumed human reproductive or development toxicant.</b>                                              | This category includes substances which are known to have produced an adverse effect on reproductive ability or capacity or on development in humans or for which there is evidence from animal studies, possibly supplemented with other information, to provide a strong presumption that the substance has the capacity to interfere with reproduction in humans. For regulatory purposes, a substance can be further distinguished on the basis of whether the evidence for classification is primarily from human data ( <u>Category 1A</u> ) or from animal data ( <u>Category 1B</u> ).                                                                                                                              |
| <b>CATEGORY 1A – Known to have produced an adverse effect on reproductive ability or capacity or on development in humans.</b> | The placing of the substance in this category is largely based on evidence from humans.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| <b>CATEGORY 1B – Presumed to produce an adverse effect on reproductive ability or capacity or on development in humans.</b>    | The placing of the substance in this category is largely based on evidence from experimental animals. Data from animal studies should provide clear evidence of specific reproductive toxicity in the absence of other toxic effects, or if occurring together with other toxic effects the adverse effect on reproduction is considered not to be a secondary non-specific consequence of other toxic effects. However, when there is mechanistic information that raises doubt about the relevance of the effect for humans, classification in Category 2 may be more appropriate.                                                                                                                                        |
| <b>CATEGORY 2 – Suspected human reproductive or development toxicant.</b>                                                      | This category includes substances for which there is some evidence from humans or experimental animal, – possibly supplemented with other information – of an adverse effect on reproductive ability or capacity, or on development, in the absence of other toxic effects, or if occurring together with other toxic effects the adverse effect on reproduction is considered not to be a secondary non-specific consequence of the other toxic effects, and where the evidence is not sufficiently convincing to place the substance in Category 1. For instance, deficiencies in the study may make the quality of evidence less convincing and in view of this Category 2 could be the more appropriate classification. |

**Hazard Category for Lactation Effects**

**EFFECTS ON OR VIA LACTATION**

**Effects on or via lactation** are allocated to a separate single category. It is appreciated that for many substances there is no information on the potential to cause adverse effects on the offspring via lactation. However, substances which are absorbed by women and have shown to interfere with lactation, or which may be present (including metabolites) in breast milk in amounts sufficient to cause concern for the health of a breastfed child, should be classified to indicate this property hazardous to breastfed babies. This classification can be assigned on the basis of—

- (a) absorption, metabolism, distribution and excretion studies that would indicate the likelihood the substance would be present in potentially toxic levels in breast milk; and/or
- (b) results of one or 2 generation studies in animals which provide clear evidence of adverse effect in the offspring due to transfer in the milk or adverse effect on the quality of the milk; and/or
- (c) human evidence indicating a hazard to babies during the lactation period.

**3.8.3 Classification criteria for mixtures**

The mixture will be classified as a reproductive toxicant when at least one ingredient has been classified as a Category 1 or Category 2 reproductive toxicant and is present at or above the appropriate cut-off value/concentration limits as shown in Table 3.8.1.

**Cut-off Values/Concentration Limits of Ingredients of a Mixture Classified as Reproductive Toxicants that would trigger Classification of the Mixture**

| Ingredient classified as—        | Cut-off/concentration limits triggering classification of a mixture as— |                       |
|----------------------------------|-------------------------------------------------------------------------|-----------------------|
|                                  | Category 1 carcinogen                                                   | Category 2 carcinogen |
| Category 1 reproductive toxicant | ≥0.1%                                                                   | —                     |
| Category 2 reproductive toxicant | ≥0.3%                                                                   | ≥0.1%                 |
|                                  | —                                                                       | ≥3.0%                 |

**3.8.4 Hazard communication**

Specific label elements for reproductive toxicity are given below. Appropriate precautionary statements and pictograms shall be included as may be approved by the Board.

**Label Elements for Reproductive Toxicity**

|               | Category 1A   | Category 1B   | Category 2    | Additional category for effects on or via lactation |
|---------------|---------------|---------------|---------------|-----------------------------------------------------|
| <b>Symbol</b> | Health hazard | Health hazard | Health hazard | No symbol                                           |

|                         | <b>Category 1A</b>                                                                                                                                                              | <b>Category 1B</b>                                                                                                                                                              | <b>Category 2</b>                                                                                                                                                                          | <b>Additional category for effects on or via lactation</b> |
|-------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------|
| <b>Signal word</b>      | Danger                                                                                                                                                                          | Danger                                                                                                                                                                          | Warning                                                                                                                                                                                    | No signal word                                             |
| <b>Hazard statement</b> | May damage fertility or the unborn child (state specific effect if known) or (route of exposure if it is conclusively proven that no other routes of exposure cause the hazard) | May damage fertility or the unborn child (state specific effect if known) or (route of exposure if it is conclusively proven that no other routes of exposure cause the hazard) | Suspected of damaging fertility or the unborn child (state specific effect if known) or (route of exposure if it is conclusively proven that no other routes of exposure cause the hazard) | May cause harm to breast-fed children                      |

### 3.9 SPECIFIC TARGET ORGAN SYSTEMIC TOXICITY

#### 3.9.1 SINGLE EXPOSURE

##### 3.9.1.1 Definitions and general considerations

The purpose of this classification is to identify substances that produce specific, non-lethal target organ/systemic toxicity arising from a single exposure. All significant health effects that can impair function, both reversible and irreversible, immediate and/or delayed are included.

It is recognised that human data will be the primary source of evidence for this hazard class.

##### 3.9.1.2 Classification criteria for substances

Substances are classified as Category 1 or Category 2, depending upon the nature and severity of the effect(s).

#### **Categories for Specific Target Organ Systemic Toxicity/Single Exposure**

|                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|--------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>CATEGORY 1—</b> | <p>Substances that have produced significant toxicity in, humans or that, on the basis of evidence from studies in experimental animals can be presumed to have the potential to produce significant toxicity in humans following single exposure.</p> <p>Placing a substance in Category 1 is done on the basis of—</p> <ul style="list-style-type: none"> <li>* reliable and good quality evidence from human cases or epidemiological studies;</li> <li>or</li> <li>* observations from appropriate studies in experimental animals in which significant and/or severe toxic effects of relevance to human health were produced at generally low exposure concentrations. Guidance dose/concentration values are provided below to be used as part of weight-of-evidence evaluation.</li> </ul> |
|--------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|



|                     |                                                                                                                                                                                                                                                                                                                                                 |
|---------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>CATEGORY 2</b> — | Placing a substance in Category 2 is done on the basis of observations from appropriate studies in experimental animals in which significant toxic effects, of relevance to human health were produced at generally moderate exposure concentrations. Guidance dose/concentration values are provided below in order to help in classification. |
|---------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

**Guidance Value Range for Single-dose Exposure**

| Route of exposure               | Units             | Guidance value range for |             |
|---------------------------------|-------------------|--------------------------|-------------|
|                                 |                   | Category 1               | Category 2  |
| Oral (rat)                      | mg/kg body weight | C<300                    | 2000>C>300  |
| Dermal (rat or rabbit)          | mg/kg body weight | C<1000                   | 2000>C>1000 |
| Inhalation (rat) gas            | Ppm               | C<2500                   | 5000>C>2500 |
| Inhalation (rat) vapour         | mg/1              | C<10                     | 20>C>10     |
| Inhalation (rat) dust/mist/fume | mg/1/4h           | C<1.0                    | 5.0>C>1.0   |

**3.9.1.3 Classification criteria for mixtures**

Mixtures are classified using the same criteria as for substances.

**Cut-off Values/Concentration Limits of Ingredients of a Mixture Classified as a Target Organ/Systemic Toxicant that would trigger Classification of the Mixture**

| Ingredient classified as—        | Category 1 | Category 2           |
|----------------------------------|------------|----------------------|
| Category 1                       | >1.0%      | 1.0< ingredient <10% |
| Target organ systematic toxicant | >10%       |                      |
| Category 2                       |            | >1.0%                |
| Target organ systematic toxicant |            | >10%                 |

**3.9.1.4 Hazard communication**

Specific label elements for target organ systemic toxicity after single exposure are given below. Precautionary statements and pictograms should also be included.

**Label Elements for Target Organ Systemic Toxicity after Single Exposure**

|             | Category 1    | Category 2    |
|-------------|---------------|---------------|
| Symbol      | Health hazard | Health hazard |
| Signal word | Danger        | Warning       |

|                         | <b>Category 1</b>                                                                                                                                                           | <b>Category 2</b>                                                                                                                                                                |
|-------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Hazard statement</b> | Cause damage to organs (or state all organs affected, if known) if (state route of exposure if it is conclusively proven that no other routes of exposure cause the hazard) | May causes damage to organs (or state all organs affected, if known) if (state route of exposure if it is conclusively proven that no other routes of exposure cause the hazard) |

**3.9.2 SPECIFIC TARGET ORGAN SYSTEMIC TOXICITY – REPEATED EXPOSURE**

**3.9.2.1 Definitions and general considerations**

The purpose of this classification is to identify substances that produce specific target organ/systemic toxicity arising from a repeated exposure. All significant health effects that can impair function, both reversible and irreversible, immediate and/or delayed are included.

It is recognised that human data will be the primary source of evidence for this hazard class.

**3.9.2.2 Classification criteria for substances**

Substances shall be classified as specific target organ/systemic toxicants on the basis of recommended guidance values which take into account the duration of exposure and the dose/concentration which produce the effects.

The substances are classified as Category 1 or Category 2 depending upon the nature and severity of the effect(s) observed.

**Categories for Specific Target Organ Systemic Toxicity/Repeated Exposure**

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p><b>CATEGORY 1— Substances that have produced significant toxicity in humans, or that, on the basis of evidence from studies in experimental animals can be presumed to have the potential to produce significant toxicity in humans following repeated exposure.</b></p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| <p>Placing a substance in Category 1 is done on the basis of—</p> <ul style="list-style-type: none"> <li>* reliable and good quality evidence from human cases or epidemiological studies—</li> <li>or</li> <li>* observations from appropriate studies in experimental animals in which significant and/or severe toxic effects, of relevance to human health, were produced at generally low exposure concentrations. Guidance dose/concentration values are provided below to be used as part of weight-of-evidence evaluation.</li> </ul> <p><b>CATEGORY 2— Substances that, on the basis of evidence from studies in experimental animals can be presumed to have the potential to be harmful to human health following repeated exposure.</b></p> <p>Placing a substance in Category 2 is done on the basis of observations from appropriate studies in experimental animals in which significant toxic effects, of relevance to human health, were produced at generally moderate exposure concentrations. Guidance dose/concentration values are provided below in order to help in classification.</p> <p>In exceptional cases human evidence can also be used to place a substance in Category 2.</p> |

**Guidance Values to assist in Category 1 Classification**

| Route of exposure               | Units         | Guidance values (dose/concentration) |
|---------------------------------|---------------|--------------------------------------|
| Oral (rat)                      | mg/kg bw/d    | 10                                   |
| Dermal (rat or rabbit)          | mg/kg bw/d    | 20                                   |
| Inhalation (rat) gas            | ppm/6h/d      | 50                                   |
| Inhalation (rat) vapour         | mg/litre/6h/d | 0.2                                  |
| Inhalation (rat) dust/mist/fume | mg/litre/6h/d | 0.02                                 |

NOTE: "bw" is for "body weight", "h" for "hour" and "d" for "day".

**Guidance Values to assist in Category 2 Classification**

| Route of exposure               | Units         | Guidance values (dose/concentration) |
|---------------------------------|---------------|--------------------------------------|
| Oral (rat)                      | mg/kg bw/d    | 10 – 100                             |
| Dermal (rat or rabbit)          | mg/kg bw/d    | 20 – 200                             |
| Inhalation (rat) gas            | ppm/6h/d      | 50 – 250                             |
| Inhalation (rat) vapour         | mg/litre/6h/d | 0.2 – 1.0                            |
| Inhalation (rat) dust/mist/fume | mg/litre/6h/d | 0.02 – 0.2                           |

**3.9.2.3 Classification criteria for mixtures**

Mixtures are classified using the same criteria as for substances. Mixtures are classified as a target organ/systemic toxicant (specific organ specified), following repeated exposure when at least one ingredient has been classified as a Category 1 or Category 2 target organ/systemic toxicant and is present at or above the appropriate cut-off value/concentration limit mentioned below for Category 1 and Category 2 respectively.

**Cut-off Values/Concentration Limits of Ingredients of a Mixture Classified as a Target Organ/Systemic Toxicant that would trigger Classification of the Mixture**

| Ingredient classified as—                   | Cut-off/concentration limits triggering classification of a mixture as— |                      |
|---------------------------------------------|-------------------------------------------------------------------------|----------------------|
|                                             | Category 1                                                              | Category 2           |
| Category 1 Target organ systematic toxicant | ≥1.0%                                                                   | 1.0≤ ingredient <10% |
|                                             | ≥10%                                                                    | 1.0≤ ingredient      |

| Ingredient classified as—                         | Cut-off/concentration limits triggering classification of a mixture as— |            |
|---------------------------------------------------|-------------------------------------------------------------------------|------------|
|                                                   | Category 1                                                              | Category 2 |
| Category 2<br>Target organ<br>systematic toxicant |                                                                         | ≥1.0%      |
|                                                   |                                                                         | ≥10%       |

#### 3.9.2.4 Hazard communication

Specific label elements are given below. Precautionary statements and pictograms should be included as may be required by the Board.

##### Label Elements for Target Organ Systemic Toxicity after Repeated Exposure

|                         | Category 1                                                                                                                                                                                                    | Category 2                                                                                                                                                                                                        |
|-------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Symbol</b>           | Health hazard                                                                                                                                                                                                 | Health hazard                                                                                                                                                                                                     |
| <b>Signal word</b>      | Danger                                                                                                                                                                                                        | Warning                                                                                                                                                                                                           |
| <b>Hazard statement</b> | Causes damage to organs (state all organs affected, if known) through prolonged or repeated exposure (state route of exposure if it is conclusively proven that no other routes of exposure cause the hazard) | May causes damage to organs (state all organs affected, if known) through prolonged or repeated exposure (state route of exposure if it is conclusively proven that no other routes of exposure cause the hazard) |

## 4. CLASSIFICATION ON THE BASIS OF ENVIRONMENTAL EFFECTS

### 4.1 HAZARDOUS TO THE AQUATIC ENVIRONMENT

#### 4.1.1 Definitions

- Acute aquatic toxicity—** means the intrinsic property of a substance to be injurious to an organism in a short-term exposure to that substance;
- Bio-accumulation—** means net result of uptake, transformation and elimination of a substance in an organism due to all routes of exposure (i.e. air, water, sediment/soil and food);
- Bio-concentration—** means net result of uptake, transformation and elimination of a substance in an organism due to waterborne exposure;
- Chronic aquatic toxicity—** means potential or actual properties of a substance to cause adverse effects to aquatic organisms during exposures which are determined in relation to the life-cycle of the organism;
- Degradation—** means the decomposition of organic molecules to smaller molecules and eventually to carbon dioxide, water and salts.

#### 4.1.2 Classification criteria

Substances shall be classified into 3 acute classification categories and 4 chronic classification categories as given below. The criteria for classification of

a substance in acute categories 1 to 111 are defined on the basis of the acute toxicity data only (EC50 or LC50). The criteria for classification of a substance into chronic categories combine 2 types of information, i.e. acute toxicity data and environmental fate data (degradability and bio-accumulation data).

**Categories for Substances Hazardous to the Aquatic Environment**

**Acute toxicity**

|                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p><b>Category: Acute 1</b><br/>                 96 hr LC 50 (for fish) <math>\leq 1</math> mg/ℓ and/or 48 hr EC 50 (for crustacea) <math>\leq 1</math> mg/ℓ and/or 72 or 96 hr ErC 50 (for algae or other aquatic plants) <math>\leq 1</math> mg/ ℓ.<br/>                 Category: Acute 1 may be subdivided for some regulatory systems to include a lower band at L(E)C50 <math>\leq 0.1</math> mg/ ℓ.</p>                            |
| <p><b>Category: Acute II</b><br/>                 96 hr LC50 (for fish) <math>&gt;1 - \leq 10</math> mg/ ℓ and/or 48 hr EC50 (for crustacea) <math>&gt;1 - \leq 10</math> mg/ ℓ and/or 72 or 96 hr ErC50 (for algae or other aquatic plants) <math>&gt;1 - \leq 10</math> mg/ ℓ</p>                                                                                                                                                       |
| <p><b>Category: Acute III</b><br/>                 96 hr LC50 (for fish) <math>&gt;10 - &lt;100</math> mg/ ℓ and/or 48 hr EC 50 (for crustacea) <math>&gt;10 - &lt;100</math> mg/ ℓ and/or 72 or 96 hr ErC50 (for algae or other aquatic plants) <math>&gt;10 - &lt;100</math> mg/ ℓ.<br/>                 Some regulatory systems may extend this range beyond an L(E)C50 of 100 mg/ ℓ through the introduction of another category.</p> |

**Categories for Substances Hazardous to the Aquatic Environment**

**Chronic Toxicity**

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p><b>Category: Chronic 1</b><br/>                 96 hr LC50 (for fish) <math>&lt;1</math> mg/ ℓ and or 48 hr EC50 (for crustacea) <math>&lt;1</math> mg/ ℓ and/or 72 or 96 hr ErC50 (for algae or other aquatic plants) <math>&lt;1</math> mg/ ℓ and the substances is not rapidly degradable and/or the log Kow <math>&gt;4</math> (unless the experimentally determined BCF <math>&lt;500</math>).</p>                                                                                                                                                                                                 |
| <p><b>Category: Chronic II</b><br/>                 96 hr LC50 (for fish) <math>&gt;1</math> to <math>&lt;10</math> mg/ ℓ and or 48 hr EC50 (for crustacea) <math>&gt;1</math> to <math>&lt;10</math> mg/ ℓ and or 72 hr or 96 hr ErC50 (for algae or other aquatic plants) <math>&gt;1</math> to <math>&lt;10</math> mg/ ℓ and the substance is not rapidly degradable and/or the log Kow <math>&gt; 4</math> (unless the experimentally determined BCF <math>&lt;500</math>), unless the chronic toxicity NOECs are <math>&gt;1</math> mg/ ℓ.</p>                                                        |
| <p><b>Category: Chronic III</b><br/>                 96 hr LC50 (for fish) <math>&gt;10</math> to <math>&lt;100</math> mg/ ℓ and or 48 hr EC50 (for crustacea) <math>&gt;10</math> to <math>&lt;100</math> mg/ ℓ and or 72 or 96 hr ErC50 (for algae or other aquatic plants) <math>&gt;10</math> to <math>&lt;100</math> mg/ ℓ and the substance is not rapidly degradable and/or the log Kow <math>&gt; 4</math> (unless the experimentally determined BCF <math>&lt;500</math>), unless the chronic toxicity NOECs are <math>&gt;1</math> mg/ ℓ.</p>                                                    |
| <p><b>Category: Chronic IV</b><br/>                 Poorly soluble substances for which no acute toxicity is recorded at levels up to the water solubility, and which are not rapidly degradable and have a log Kow <math>&gt; 4</math>, indicating a potential to bio-accumulate, will be classified in this category unless other scientific evidence exists showing classification to be unnecessary. Such evidence would include an experimentally determined BCF <math>&lt;500</math>, or a chronic toxicity NOECs <math>&gt;1</math> mg/ ℓ, or evidence of rapid degradation in the environment.</p> |

**4.1.3 Hazard communication**

Specific label elements for substances hazardous to the aquatic environment are given below. Appropriate precautionary statements and pictograms shall be included as may be approved by the Board.

**Label Elements for Hazardous to the Aquatic Environment**

|                         | <b>ACUTE</b>                                         |                                                 |                                                   |                                                        |
|-------------------------|------------------------------------------------------|-------------------------------------------------|---------------------------------------------------|--------------------------------------------------------|
|                         | <b>Category 1</b>                                    | <b>Category 2</b>                               | <b>Category 3</b>                                 |                                                        |
| <b>Symbol</b>           | Fish and tree                                        | No symbol is used                               | No symbol is used                                 |                                                        |
| <b>Signal word</b>      | Warning                                              | No signal word is used                          | No signal word is used                            |                                                        |
| <b>Hazard statement</b> | Very toxic to aquatic life                           | Toxic to aquatic life                           | Harmful to aquatic life                           |                                                        |
| <b>CHRONIC</b>          |                                                      |                                                 |                                                   |                                                        |
|                         | <b>Category 1</b>                                    | <b>Category 2</b>                               | <b>Category 3</b>                                 | <b>Category 4</b>                                      |
| <b>Symbol</b>           | Fish and tree                                        | Fish and tree                                   | No symbol is used                                 | No symbol is used                                      |
| <b>Signal word</b>      | Warning                                              | No signal word is used                          | No signal word is used                            | No signal word is used                                 |
| <b>Hazard statement</b> | Very toxic to aquatic life with long lasting effects | Toxic to aquatic life with long lasting effects | Harmful to aquatic life with long lasting effects | May cause long lasting harmful effects to aquatic life |

**5. Choice of precautionary statements and precautionary pictograms**

Precautionary statements for substance and mixtures classified in accordance with paragraphs 2, 3, 4 or 5—

- (a) precautionary statements and pictograms shall be assigned to substances and mixtures by manufacturers and suppliers;
- (b) the most appropriate precautionary statements and pictograms to the label shall be given;
- (c) the Board may assign additional precautionary statements and pictograms to substances and mixtures;
- (d) examples of precautionary statements and pictograms are given in the Eighth Schedule and Ninth Schedule.

## SIXTH SCHEDULE

[Section 15]

### LABELLING

#### HEADNOTE

A. This Schedule describes labelling rules for chemical substances and mixtures.

B. The rules on labelling under section 15 of the Act with Hazard Class, Categories, Hazard Symbols, Signal Words and Hazard Statements are given in paragraph 1.

C. Special labelling rules are given in paragraph 2.

D. In case of difficulty, the United Nations Recommendations on the Globally Harmonised System of Classification and Labelling of Chemicals (GHS) shall be followed.

#### 1. LABELLING WITH HAZARD CLASS, CATEGORIES, HAZARD SYMBOLS, SIGNAL WORDS, HAZARD STATEMENTS, PRECAUTIONARY STATEMENTS AND PICTOGRAMS

(1) Chemical substances entered on the list of dangerous substances are labelled in accordance with prescriptions given in the list.

(2) The following rules apply to other chemical substances and to chemical mixtures.

(3) Labelling must take into account all potential hazards which are likely to be presented by the chemical substances and mixtures in the form in which they are placed on the market, but not necessarily of hazards presented by the substance or mixture in the form in which they are applied, e.g. diluted.

##### 1.1 Hazard symbols and hazard statements

(1) Labelling with hazard symbols and statements shall be in accordance with the classification contained in the Fifth Schedule.

(2) Hazard symbols and hazard statements denoting the highest degree of hazard relating to danger to health and flammability, are chosen in the following order of decreasing hazard—

- (a) flammability: "Explosive", "Extremely flammable", "Highly flammable", "Oxidising";
- (b) health hazards: "Very toxic", "Toxic", "Corrosive", "Harmful", "Irritant";
- (c) hazard symbols shall be presented in accordance with Seventh Schedule.

##### 1.2 Hazard Statements and Precautionary Statements

###### 1.2.1 General Rules

(1) Labelling with hazard statements and precautionary statements shall be in accordance with classification, contained in the Fifth Schedule.

(2) The wording of Hazard Statements and Precautionary Statements shall be in accordance with the UN Globally Harmonised System (GHS) and as approved by the Board.

(3) Although the final choice of the most appropriate hazard and precautionary statements is primarily governed by the need to give all necessary information, consideration shall also be given to the clarity and impact of the label. With clarity in mind, the necessary information shall be expressed in a minimum number of statements.

(4) As a general rule all hazard statements and precautionary statements on the basis of which the substance or mixture is classified shall be indicated on the label.

(5) (a) Where the classification of flammability and hazards to health results in more than four hazard statements, it is generally possible to eliminate some of the hazard statements which refer to the lowest degree of hazards, provided the overall effectiveness of the warning is not thereby reduced.

(b) The hazard statements which indicate danger for the environment are obligatory.

(6) The final choice of precautionary statements shall have regard to the hazard statements indicated on the label and to the intended use of the substance or mixture.

(7) Certain precautionary statements have particular relevance to substances and mixtures intended to be used by the general public whereas other statements have particular relevance to persons at work.

(8) Statements shall be chosen with the intended use in view.

(9) Particular attention shall be given, in the choice of precautionary statements, to the foreseen conditions of use of certain substances and mixtures, e.g. spraying or other aerosol effects.

(10) As a general rule, a maximum of 4 precautionary statements should suffice to formulate the most appropriate safety advice.

(11) In the case of danger to the environment, a minimum of one and a maximum of 4 precautionary statements shall be used.

(12) Some hazard statements become superfluous if a careful selection is made of precautionary statements *vice versa*.

(13) Precautionary statements which obviously correspond to hazard statements shall appear on the label only if it is intended to emphasise a specific warning.

### 1.2.2 Small packaging

(1) For packagings containing 125 ml or less, labelling with hazard and precautionary statements shall not be required, if the substance or preparation is classified as highly flammable, flammable or oxidising.

(2) This rule also applies to substances and mixtures which are classified as irritant, unless they are classified as skin sensitisers.

(3) The same rule also applies to substances which are classified as harmful, and not retailed to the general public, unless they are classified as respiratory sensitisers.

### 1.2.3 Precedence for the allocation of symbols

For substances and mixtures covered by the UN Recommendations on the Transport of Dangerous Goods, Model Regulations, the precedence of symbols for physical hazards should follow the rules of the UN Model Regulations. In



working situations, the Board may require a number of symbols to be used. For health hazards the following principles of precedence apply—

- (a) if the skull and crossbones applies, the exclamation mark should not appear;
- (b) if the corrosive symbol applies, the exclamation mark should not appear where it is used for eye or skin irritation;
- (c) if the health hazard symbol for respiratory sensitisation appears, the exclamation mark should not appear where it is used for sensitisation or for skin and eye irritation.

#### **1.2.4 Precedence for allocation of signal words**

If the signal word “Danger” applies, the signal word “Warning” should not appear.

#### **1.2.5 Precedence for the allocation of hazard statements**

All assigned hazard statements should appear on the label, the order in which they appear may be specified by the Board.

#### **1.2.6 Presentation of label elements**

##### **1.2.6.1 Location of information on the label**

The hazard pictograms, signal word and hazard statements should be located on the label. The Board may provide guidance for the presentation of information on the label. Precautionary statements and pictograms shall be included as required and approved by the Board.

##### **1.2.6.2 Supplementary information**

Supplementary information, as approved by the Board, may appear on the label to provide additional information on hazards or route of exposure. However supplementary information should not lower standards of protection.

##### **1.2.6.3 Use of colour outside pictograms**

In addition to the use of colour in pictograms, colour can also be used on other areas of the label to implement special labelling requirements such as the use of the pesticide bands in the FAO Labelling Guide, for signal words and hazard statements or as background to them, or as otherwise provided for by the Board.

#### **1.2.7 Special labelling arrangements**

The Board may allow communication of certain hazard information for carcinogens, reproductive toxicity and target organ systemic toxicity repeat exposure on the label and on the SDS or through the SDS alone.

Similarly, for metals and alloys, the Board may allow communication of the hazard information through the SDS alone when they are supplied in the massive, non-dispersible, form.

##### **1.2.7.1 Workplace labelling**

Products supplied to the workplace should carry the appropriate label, and that label should be maintained on the supplied container in the workplace. The Board may allow employers alternative means of giving workers the same information in a different written or displayed format when such a format is more appropriate to the workplace and communicates the information as effectively as the label.

### **1.2.7.2 Consumer product labelling**

The Board shall provide guidance for the labelling of consumer products. The information on consumer products shall be based on an assessment of risk and the likelihood of injury occurring from exposure to these products. Information on chronic health hazards may be provided after considering additional information regarding potential exposure to consumers under normal conditions of use or the foreseeable misuse.

## **2. SPECIAL LABELLING RULES**

The following labelling requirements shall apply whether or not the substances and mixtures involved are classified as dangerous or not.

### **2.1 Very toxic, toxic and corrosive mixtures**

Chemical mixtures retailed to the general public and classified as very toxic, toxic or corrosive, shall, where the directions for use cannot in practice be affixed to the packaging, be accompanied by accurate and easily legible directions for use where required, with information as to the destruction of the empty packaging.

### **2.2 Chemical mixtures containing lead**

(1) Chemical mixtures intended for use as paints or varnishes, the lead content of which – calculated in accordance with ISO standard 6503 – 1984 – exceeds 0.15% (expressed in metal weight) of the total weight of the preparation shall be labelled as follows—

“Contains lead. Do not use in objects likely to be chewed or sucked by children.”.

(2) Where the packaging contains less than 125ml of lead, the following precautionary statement shall be given on the label—

“Warning: Contains lead”.

### **2.3 Mixtures containing cyanoacrylates**

(1) Adhesives on the basis of cyanoacrylates shall be labelled as follows—

“Cyanoacrylate”

“Danger”

“Adheres to skin and eyes in few seconds”

“Keep out of reach of children”.

(2) The packaging shall be accompanied with the required precautionary statements.

### **2.4 Mixtures containing isocyanates**

Chemical mixtures containing isocyanates (monomers, oligomers, prepolymers, etc., single or in mixtures) shall be labelled as follows—

“Contains isocyanates”

“See manufacturer’s information”.

**2.5 Mixtures containing epoxy compounds**

Chemical mixtures containing epoxy compounds with an average molecular weight less than or equal to 700 shall be labelled as follows—

“Contains epoxy compounds”

“See manufacturer’s information”.

**2.6 Mixtures containing active chlorine**

Chemical mixtures sold to the general public and containing more than 1% active chlorine shall be labelled as follows—

“Warning: do not use together with other mixtures, as dangerous gases may be released (chlorine)”.

**2.7 Mixtures containing cadmium**

Chemical mixtures (alloys) containing cadmium and used for soldering and welding shall be labelled as follows—

“Warning!”

“Contains cadmium”

“In use, may form dangerous vapours”

“See manufacturer’s information”

“Observe prescribed safety precautions”.

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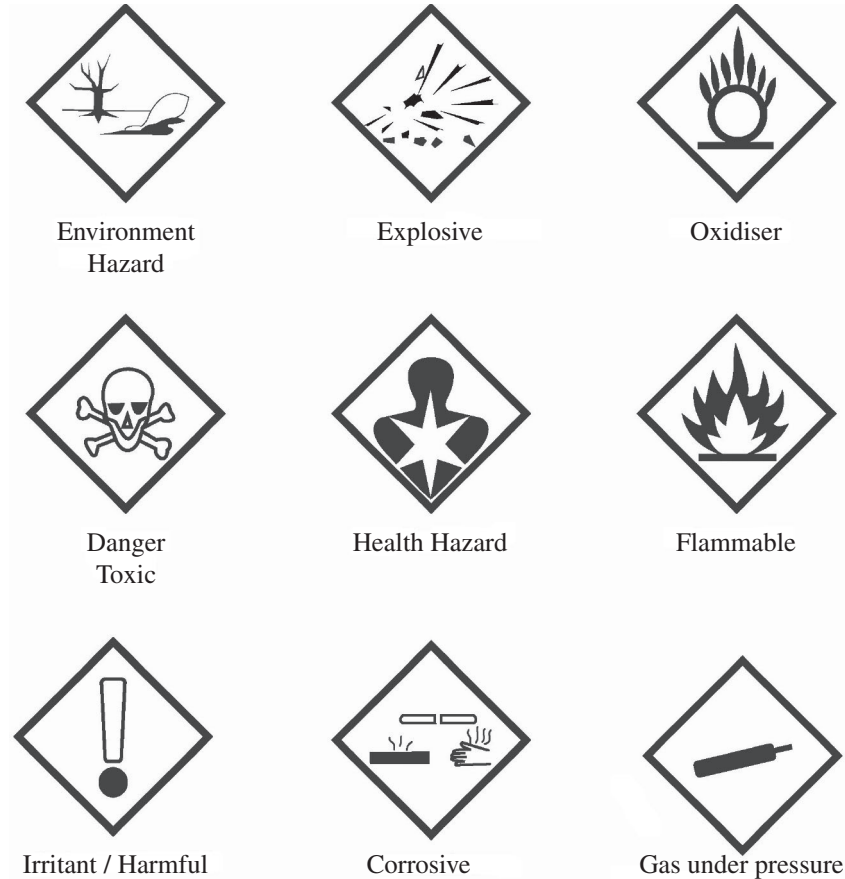
**continued on page D1 — 76**

**SEVENTH SCHEDULE**

[Section 15]

**HAZARD SYMBOLS**

The presentation of the hazard symbols prescribed on the label in accordance with the Act, shall be as follows—



Hazard symbols shall have a black symbol on a white background with a red frame sufficiently wide to be clearly visible.

For transport, hazard symbols prescribed by the UN Model Regulations on the Transport of Dangerous Goods should be used.

Hazard statements shall be according to classification of the substance or mixture.

## EIGHTH SCHEDULE

[Section 15]

### PRECAUTIONARY STATEMENTS

A list of precautionary statements are given below. This list is not exhaustive. Importers, manufacturers and suppliers shall make use of the most appropriate precautionary statements on the label provided for the specific substance and mixture.

#### 1. STATEMENTS FOR PHYSICAL HAZARDS

##### 1.1 Flammable liquids, solids and gases

(a) Avoidance of ignition sources:

Keep away from fire –{No Smoking};

Keep away from heat, {sparks} {and flame} – {No Smoking};

Keep away from heat and ignition sources – {No Smoking};

Keep away from sources of ignition – No Smoking Avoid contact with heat and ignition sources {and Oxidisers} – {No Smoking};

No open flames, no sparks and no smoking;

Take precautionary measures against static charges;

Do not use sparking tools;

Keep from direct sunlight;

Keep away from fire, sparks and heated surfaces;

Do not use or store near heat or open flame.

(b) Precautions regarding the container:

Keep container closed;

Keep container tightly closed;

Keep container closed when not in use;

Store in a tightly closed container;

Keep only in the original container.

(c) Storage of the container or package:

Keep in a cool place;

Keep at a temperature not exceeding {...} °C;

Decomposes below boiling point at {...} °C;

Decomposes below melting point {...} °C;

Keep container/package in a well-ventilated place;

Keep container/package tightly closed in a cool well-ventilated place;

Keep only in the original container/package in a cool well-ventilated place;

Keep container/package tightly closed and in a well-ventilated place;

Store in a cool/low-temperature, well-ventilated {dry} place {away from heat and ignition sources};

Store and transport according to packing list of dangerous chemicals;  
Explosive limit ranges.

Exposure to temperature about 130 degrees F may cause bursting.

- (d) Storage separately from incompatible materials:

Do not store and transport with oxidisers etc.;

Separate from oxidisers {oxygen}, {explosives}, {halogens}, {compressed air}, {acids}, {bases}, {and food chemicals}, etc., in transport {and storage};

Do not store and transport with oxidizers, {acids} {and bases}, etc.

- (e) Fire-fighting:

Use CO<sub>2</sub>, dry chemical, or foam;

in case of fire, use {...}.

### **1.2 Pyrophoric liquids and solids**

Use any combination of the phrases in 1.1 plus one or more of the following—

Keep under {insert name of inert gas};

Do not allow contact with air;

Protect from light, moisture and damage.

### **1.3 Self-heating substances**

Use any combination of the phrases in 1.1, in particular phrases relating to storage separately from incompatible materials, plus the following—

Keep at a temperature not exceeding {...}.

### **1.4 Substances which, in contact with water, emit flammable gases**

Use any combination of the phrases in 1.1 as appropriate, plus one or more of the following—

Keep away from water;

Keep container dry;

Never add water to this product;

Keep from any possible contact with water;

No contact with water;

Do not add water to contents while in a container because of violent reaction and possible flash fire;

Store in a dry place, {protect from moisture};

Protect from moisture and damage;

Handle under nitrogen, {protect from moisture}.

### **1.5 Oxidising liquids, solids and gases**

Use any combination of the phrases in 1.1 relating to precautions regarding the container and storage of the container or package as appropriate, plus one or more of the following—

Keep away from combustible material;

Keep away from (incompatible material to be specified by manufacturer);

Keep from contact with clothing and other combustible materials to avoid fire;  
Prevent contamination with readily oxidisable materials and polymerisation accelerators.  
Do not store near combustible materials;  
Drying of this product on clothing or combustible materials may cause fire;  
Put safety caps and shockproof rubber rings on cylinders in transport;  
Do not store and transport with flammable/combustible materials, etc.;  
Isolate from reducers and flammable/combustible materials, etc. in storage;  
Do not store and transport with halogens and acids, etc.;  
Separate from reduces and finely powdered metals, etc. in storage and transport.

#### **1.6 Organic peroxides**

Use any combination of the phrases in 1.1 relating to precautions regarding the container and storage of the container or package as appropriate, plus one or more of the following—

Keep away from heat;  
Keep away from combustible material;  
Keep away from (incompatible material to be specified by manufacturer);  
Keep from contact with clothing and other combustible materials to avoid fire;  
Prevent contamination with readily oxidisable materials and polymerisation accelerators;  
Do not store near combustible materials;  
Drying of this product on clothing or combustible materials may cause fire;  
Put safety caps and shockproof rubber rings on cylinders in transport;  
Do not store and transport with flammable/combustible materials, etc.;  
Isolate from reducers and flammable/combustible materials, etc., in storage;  
Do not store and transport with halogens and acids, etc.;  
Separate from reducers and finely powdered metals, etc., in storage and transport.

#### **1.7 Self reactive substances**

Keep away from heat;  
Keep at temperature not exceeding ..... °C;  
Keep away from fire;  
Keep away from heat, {sparks} {and flame};  
Keep away from heat and ignition sources;  
Keep away from sources of ignition;  
Avoid contact with heat and ignition sources;  
No open flames, no sparks and no smoking;  
Keep away from combustible material;  
Keep away from (incompatible material to be specified by manufacturer);

Keep from contact with clothing and other combustible materials to avoid fire;  
Prevent contamination with readily oxidisable materials and polymerisation accelerators;  
Do not store near combustible materials;  
Drying of this product on clothing or combustible materials may cause fire;  
Put safety caps and shockproof rubber rings on cylinders in transport;  
Do not store and transport with flammable/combustible materials, etc.

### **1.8 Explosives**

Use any combination of the phrases in 1.1 relating to avoidance of sources of ignition, plus one or more of the following—  
Avoid shock, {impact}, {friction} {and rough handling};  
Keep away from fire;  
No open flames, no sparks and no smoking;  
Keep away from sources of ignition – No smoking;  
Do not use sparking tools;  
Store and transport according to packing list of dangerous chemicals;  
Above { } explosive vapour/air mixtures may be formed;  
Gas/air or vapour/air mixtures are explosive;  
Finely dispersed particles from explosive mixtures with air;  
Do not use compressed air for filling, discharging or handling.

### **1.9 Corrosive to metal**

Store to transport according to packing list of dangerous chemicals.  
Suitable materials for containment (storage and transport) are listed in the SDS.  
Avoid contact with skin and eyes.  
Do not get on skin.  
Do not get in eyes.

## **2. STATEMENTS TO PREVENT MISUSE AND EXPOSURE TO HEALTH**

### **2.1 Ventilation controls**

Use only in well ventilated areas.  
Use only with adequate ventilation {or closed system ventilation}.  
Do not enter areas where used or stored until adequately ventilated.  
Use only with adequate ventilation to keep exposures (airborne levels of dust, fume, vapour, etc.) below recommended exposure limits.  
Use adequate ventilation to remove vapours (fumes, dust, etc.).  
Use adequate ventilation and/or engineering controls in high temperature processing to prevent exposure to vapours.  
Prevent vapour build up by providing adequate ventilation during and after use.  
{Use with} {ventilation}, local exhaust ventilation {or breathing protection}.



Do not use in areas without adequate ventilation.

Do not breathe (dust, vapour or spray mist).

## 2.2 Hygiene measures

When using do not {smoke} {eat} {or drink}.

Do not eat, drink or smoke during work.

Wash hands before eating {drinking} {or smoking}.

Wash thoroughly after handling.

Avoid all contact. Strict hygiene.

Avoid contact with skin and eyes.

Do not get on skin.

Do not get in eyes.

Wash thoroughly with soap and water after handling and before eating, drinking, or using tobacco.

Wash thoroughly with soap and water after handling.

Avoid contact with skin, eyes or clothing.

Avoid contact with skin (eyes or clothing).

Do not get in eyes (skin) or on clothing.

## 2.3 Personal protective equipment

Wear suitable {protective clothing} {gloves} {and eye/face protection}.

Wear protective clothing and gloves (specify protective clothing and type of gloves).

Wear protective eyewear (goggles, face shield, or safety glasses).

Wear appropriate personal protective equipment, avoid direct contact.

## 2.4 Respiratory protective equipment

In case of insufficient ventilation, wear suitable respiratory equipment.

During fumigation/spraying, wear suitable respiratory equipment (appropriate wording to be specified by the manufacturer).

Have available emergency self-contained breathing apparatus or full-face airline respirator when using the chemicals.

Always use a self-contained breathing apparatus or full-face respirator when using this chemical.

Wear a mask or pesticide jointly approved by the Mine Safety and Health Administration and NIOSH {US EPA}.

Wear (identify specific respiratory device approved by the Mine Safety and Health Administration and NIOSH). {US EPA}/

Use NIOSH approved respiratory protection (US requirements).

### **3. STATEMENTS EXPLAINING APPROPRIATE ACTION IN THE EVENT OF AN ACCIDENT**

#### **3.1 Spills**

In event of a spill, evacuate danger area.

In event of a spill, consult an expert.

To clean the floor and all objects contaminated by this material use (to be specified by manufacturer).

Cover with absorbent or contain. Collect and dispose.

Cover the spilled material with {...}.

Absorb remaining liquid in sand or inert absorbent and remove to safe place.

Treat remaining liquid with {...}.

Wash away spilled liquid {remainder} with plenty of water.

DO NOT wash away into sewer.

Avoid run-off to waterways and sewers.

Clean up spill immediately.

Allow product to cool/solidify and pick up as a solid.

Sweep up and remove immediately.

Use non-sparking equipment when picking up flammable spill, {remove all ignition sources}.

Ensure adequate ventilation to remove vapours, fumes, dust, etc.

Collect leaking liquid in sealable (metallic/plastic) containers.

Cautiously neutralise spilled liquid.

Collect leaking and spilled liquid in sealable (metal/plastic) containers as far as possible.

Do not place spilled materials back in the original container.

Vacuum spilled material.

Sweep spilled substances into { } containers.

Sweep spilled substances into { } containers; if appropriate moisten first to prevent dusting.

Cautiously neutralise remainder. Then wash with plenty of water.

Carefully collect remainder.

Wipe up remainder in { } then remove to safe place.

DO NOT absorb in saw-dust or other combustible absorbents.

NEVER direct water jet on liquid.

#### **3.2 Fire-fighting**

In case of fire, use (indicate the precise type of fire fighting equipment).

If water increases the risk, never use water.

Use CO<sub>2</sub>, dry chemical, or foam.

Water can be used to cool and protect exposed material.

Allow gas to burn if flow cannot be shut off.

Shut off supply; if not possible and no risk to surroundings, let the fire burn itself out, in other cases, extinguish with (select appropriate medium from list).

In case of fire in the surroundings; all extinguishing agents allowed.

In case of fire in the surroundings; (use the appropriate agent).

Fire fighters should wear complete protective clothing including self-contained breathing apparatus.

### **3.3 First aid**

#### **3.3.1 General**

In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).

Have the product container or label with you when calling a poison control center or doctor, or going for treatment.

#### **3.3.2 Accident caused by inhalation**

In case of accident by inhalation, remove casualty to fresh air and keep at rest.

Obtain medical attention immediately if inhaled.

{Remove person to} fresh air, {rest}.

Remove to fresh air immediately. Get medical attention immediately.

If signs/symptoms continue, get medical attention.

If breathing has stopped, apply artificial respiration.

If breathing is laboured, administer oxygen.

Half upright position.

Artificial respiration if indicated.

No mouth-to-mouth respiration.

If inhaled, give oxygen or artificial respiration, call a physician.

If inhaled, give *amylis nitris*, call a physician.

Move person to fresh air.

If person is not breathing, call 114 or an ambulance, then give artificial respiration, preferably mouth-to-mouth if possible.

Call a poison control centre or doctor for further treatment advice.

#### **3.3.3 Accident caused by ingestion**

Obtain medical attention immediately if ingested.

If swallowed, do not induce vomiting; seek medical advice immediately and show this container or label.

If swallowed, seek medical advice immediately and show this container or label.

If swallowed, rinse mouth with water (only if the person is conscious).

If swallowed, and the victim is conscious and alert, induce vomiting immediately, as directed by medical personnel.

{Do not induce vomiting}. {If conscious, give 2 glasses of water}. Get immediate medical attention}.

Drink (1 glass) (2 glasses) of water. Call a physician (or poison control center immediately).

Rinse mouth.

Give a slurry of activated charcoal in water to drink.

Induce vomiting (only if conscious persons).

DO NOT induce vomiting.

Give nothing to drink.

Give plenty of water to drink.

Rest.

Wear protective gloves when inducing vomiting.

If ingested, drink lukewarm water, induce vomiting, gastric irrigate, call a physician.

If ingested, drink lukewarm water, induce vomiting, gastric irrigate, catharsis, call a physician.

If ingested, drink plant oil, induce vomiting, call a physician.

If ingested, wash out mouth with water, drink milk or egg white.

If ingested, flush the material in stomach with 5% sodium thiosulfate.

If ingested, flush the material in stomach with 1% sodium thiosulfate.

If ingested, induce vomiting, flush the material in stomach with sodium bicarbonate solution.

If ingested, induce vomiting, clyster and flush the material in stomach with plant oil.

If ingested, flush the material in stomach immediately with 2% copper sulfate.

If ingested, flush the material in stomach with sodium sulfate solution, catharsis.

If ingested, induce vomiting, flush the material in stomach with potassium permanganate solutions.

If ingested, drink milk or egg white, gastric irrigate, call a physician.

If ingested, call control center or doctor immediately for treatment advice.

Have person sip a glass of water if able to swallow.

Do not induce vomiting, wash out mouth with water. Flush with water the material in stomach of victim, which has no corrosion symptoms.

If ingested, induce vomiting, flush the material in stomach with 60ml of 1% potassium iodide.

Call a poison control center or doctor.

Do not give anything by mouth to an unconscious person.

### 3.3.4 Accident caused by skin contact

After contact with skin, take off immediately all contaminated clothing and wash immediately with plenty of (to be specified by manufacturer). {If irritation develops and persists, get medical attention}.

If irritation develops and persists, get medical attention.

Immediately wash with tincture of green soap in flowing water for 15 minutes. Flush skin with large amounts of water. {If irritation develops and persists, get medical attention}.

Immediately flush skin with large amounts of water. Remove contaminated clothing. If irritation (redness, rash, blistering) develops, get medical attention.

Wash contaminated clothing before reuse.

Remove clothing and wash thoroughly before use.

Remove contaminated clothing and wash clothing before reuse. Flush the contaminated area of body with large amounts of water.

Wash the contaminated area of body with soap and fresh water.

If contact with body directly, immediately obtain medical attention.

Flush with fresh water if contact with skin or eyes.

If frostbite, call a physician.

If skin contact, spread immediately with 2% silver nitrate.

Take off contaminated clothing.

Rinse skin immediately with plenty of water for 15-20 minutes.

### 3.3.5 Accident caused by contact with eyes

In case of contact with eyes, rinse immediately with plenty of water (to be specified by manufacturer).

Immediately flush eyes for at least 15 minutes. Get medical attention.

Flush eyes with water for at least 15 minutes. Get medical attention if eye irritation develops and persists.

Hold eyelids apart and flush eyes with plenty of water for at least 15 minutes. Get medical attention.

Flush eyes with water for at least 15 minutes while holding eyelids open.

Remove contact lenses if worn. Get medical attention immediately.

First rinse with plenty of water for several minutes (remove contact lenses if easily possible) then take to a doctor.

If contact with eyes directly, flush with gently flowing fresh water thoroughly.

Hold eye open and rinse slowly and gently with water for 15-20 minutes. Remove contact lenses, if present, after the first 5 minutes, then continue rinsing eye.

## 4. STATEMENTS FOR ENVIRONMENTAL PROTECTION AND APPROPRIATE DISPOSAL

### 4.1 Environmental protection

Use appropriate containment to avoid environmental contamination.

Avoid release to the environment. Refer to special instructions/safety data sheet.

Avoid release to the environment.

Prevent release to the environment.

Use appropriate containment.

Do not let this chemical/product enter the environment.

Do not apply directly to water, or to areas where surface water is present or to inter-tidal areas below the mean high water mark.

Do not contaminate water when cleaning equipment or disposing of equipment washwaters.

Do not apply directly to water.

This chemical has properties and characteristics associated with chemicals detected in ground water. The use of this chemical in areas where soils are permeable, particularly where the water table is shallow, may result in ground-water contamination.

This chemical is known to leach through soil into ground water under certain conditions.

Use of this chemical in areas where soils are permeable, particularly where the water table is shallow, may result in ground-water contamination.

#### **4.2 Disposal**

Dispose of this container to hazardous or special waste collection point.

Dispose of this material and its container as hazardous waste.

This material and its container must be disposed of as hazardous waste.

Do not dispose of with household waste, trash or other solid waste.

Dispose of wastes in an approved waste disposal facility.

Do not empty into drains.

Do not empty into drains; dispose of this material and its container in a safe way.

Do not empty into drains; dispose of this material and its container to hazardous or special waste collection point.

This material and its container must be disposed of in a safe way.

Do not contaminate water, food, or feed by storage disposal.

Do not allow into any sewer on the ground, or into any body of water.

Refer to manufacturer/supplier for information on recovery/recycling.

The (preferred) waste management option(s) is (are) to (select the appropriate statement listed below) —

Reuse;

Recycle;

Reuse or recycle;

Send to a licensed recycler, reclaimer or incinerator;

Burn;

Burn in a municipal incinerator;

Dispose of in an approved landfill.

Call your local solid waste agency or (toll free phone number) for disposal information.

Never place unused product down any indoor or outdoor drain.

#### 5. SPECIAL STATEMENTS FOR CONSUMER PRODUCTS

Keep locked up.

Keep out of the reach of children.

Keep locked up and out of the reach of children.

Keep away from food, drink, and animal feedstuffs.

Keep out of the reach of children.

Avoid exposure during pregnancy.

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### NINTH SCHEDULE

[Section 15]

#### PRECAUTIONARY PICTOGRAMS

The appropriate precautionary pictogram(s) as approved by the Board shall be included in the label.

Importers, manufacturers and suppliers may choose appropriate precautionary pictograms given below—

1. From the European Union (COUNCIL DIRECTIVE 92/58/EEC of 24 June 1992)



2. From the South African Bureau of Standards (SABS 0265: 1999)



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### TENTH SCHEDULE

[Section 16]

#### PACKAGING OF DANGEROUS CHEMICALS

1. Packages containing dangerous chemicals shall meet the following requirements—

- (a) the packaging shall be so designed and constructed as to preclude accidental loss of the contents;
- (b) the material constituting the packaging shall not be susceptible to attack by the contents or liable to form harmful compounds with the contents;
- (c) the packaging and fastening shall be strong and solid throughout to ensure that it will safely withstand normal handling;
- (d) packaging fitted with replaceable fastening devices shall be so designed that the packaging can be repeatedly refastened without accidental loss of the contents;
- (e) the packaging shall be so designed that complete or partial emptying may be achieved in a safe way.

2. (1) Packages containing dangerous chemicals or substances or preparations shall, in addition, bear a label with the following information—

- (a) the trade name or designation of the chemical;
- (b) the nominal mass or nominal volume of the contents in the case of substances or mixtures sold to the general public;
- (c) the name and full address including the telephone number of the person or corporate body established in Mauritius who is responsible for placing the chemical on the market, whether it be the manufacturer, the importer or the distributor;



- (d) the chemical name of a dangerous chemical in accordance with the list of Dangerous Chemicals;
- (e) the chemical name of the substance or substances present in a mixture in accordance with the following detailed rules—
  - (i) in the case of mixtures classified as Very Toxic, Toxic or Irritant in accordance with the Fifth Schedule only Very Toxic, Toxic and Irritant substances present in concentrations equal to or in excess of the lowest limit (Irritant limit) for each of them laid down in the Fifth Schedule or the list of Dangerous Chemicals shall be taken into consideration;
  - (ii) in the case of mixtures classified as Corrosive in accordance with the Fifth Schedule only Corrosive substances present in concentrations equal to or in excess of the lowest limit (Irritant limit) laid down in the Fifth Schedule or the list of Dangerous Chemicals shall be taken into consideration;
  - (iii) in the case of mixtures to which are assigned Hazard Statements in accordance with the Fifth Schedule, only substances to which those statements are assigned and which are present in concentrations equal to or in excess of the limit laid down in the Fifth Schedule or the List of Dangerous Chemicals shall be taken into consideration;
  - (iv) as a general rule a maximum of 4 chemical names shall be sufficient to identify the substances primarily responsible for the major health hazards which have given rise to the classification and the choice of the corresponding statements referring to the hazards involved, but in some cases, more than four chemical names may be necessary;
  - (v) if the mixture is assigned in accordance with the Fifth Schedule one of the standard Hazard Statements, the name of the substance or substances shall be mentioned;
  - (vi) the chemical name shall be one of the designations listed in the List of Dangerous Chemicals or an internationally recognised designation if it is not yet listed therein;
  - (vii) where a manufacturer can demonstrate that the disclosure of the chemical identity of a harmful substance not assigned, one or more of the Hazard Statements mentioned on the label of a mixture will put at risk the confidential nature of his property, he shall be permitted to refer to that substance either by means of a name that identifies the most important functional chemical groups or by means of an alternative name;
  - (viii) the manufacturer shall inform the Board of the use of an identifying or alternative name under subparagraph (vii);
  - (ix) any confidential information brought to the attention of the Board shall be treated in accordance with section 9;
- (f) the symbols for indicating the hazards involved in the use of a chemical, where more than one hazard symbol has to be assigned to a mixture in accordance with the following rules—
  - (i) the obligation to apply the symbol “Health Hazard” shall make the symbols “Corrosive” and “Harmful” optional;

- (ii) the obligation to apply the symbol "Corrosive" shall make the symbol "Harmful" optional;
- (iii) the obligation to apply the symbol "Explosive" shall make the symbols "Flammable" and "Oxidizer" optional;
- (g) standard statements indicating the special hazards arising from such dangers (Hazard Statements) in accordance with the following rules—
  - (i) the indications concerning special hazards. Hazard Statements shall be provided by the manufacturer or any other person or corporate body placing the substance or mixture on the market, in accordance with the Fifth Schedule or the List of Dangerous Chemicals;
  - (ii) as a general rule a maximum of 4 hazard statements suffice to describe the hazards;
  - (iii) where the mixture falls within more than one hazard category, however, these standard statements shall cover all the principal hazards associated with the mixture and for example where a mixture is classified as both harmful and irritant, it shall be labelled "harmful" and attention shall be drawn to its twin harmful and irritant characteristics by the appropriate Hazard Statements;
  - (iv) the standard statements "extremely flammable" or "highly flammable" need not appear if they repeat an indication of danger used pursuant to subparagraph (f);
- (h) one or more standard precautionary statements indicating the precautionary advice relating to the use of the chemical in accordance with the following rules—
  - (i) the precautionary statement giving the precautionary advice shall conform to the wording in the Eighth Schedule and shall be provided by the manufacturer or any other person placing the substance or preparation on the market, in accordance with the Fifth Schedule or the list of Dangerous Chemicals;
  - (ii) as a general rule, a maximum of 4 precautionary statements shall be sufficient to formulate the most appropriate precautionary advice;
  - (iii) the package shall be accompanied by precautionary advice on the use of the chemical where it is physically impossible to include the advice on the label or package itself;
  - (iv) in the case of—
    - (A) highly flammable, flammable and oxidising preparations;
    - (B) irritant preparations, except where such irritant preparations may cause sensitisation,there is no need to give a reminder of the special hazards or precautionary advice if the contents of the package do not exceed 125 ml.

(2) The special provisions applicable to certain mixtures are set out in paragraph 2 of the Sixth Schedule.

(3) Packages containing pesticides shall bear the following information—

- (a) the trade name of the chemical, pesticide or mixture;

- (b) the name and address of the holder to whom approval was granted;
- (c) the name and content of each of the active ingredients in the product—
  - as a percentage by weight for pesticides in the form of solids, aerosols, volatile liquids (boiling points maximum 50°C) or viscous liquids (lower limit 1 Pa.s. at 20°C);
  - as a percentage by weight and in g/l at 20°C for other liquids;
  - as a percentage by volume for gases;
  - in g/board for impregnated objects;
- (d) the name of each of the very toxic, toxic, harmful and corrosive substances which in addition to the active ingredients are contained in the chemical in concentrations exceeding 0.2% for very toxic and toxic substances, 5% for harmful substances, and 5% for corrosive substances;
- (e) the net quantity of the chemical;
- (f) the batch number or date of manufacture;
- (g) hazard indications, symbols and pictograms and hazard and precautionary statements in accordance with the provisions of the Sixth Schedule in respect of dangerous pesticides;
- (h) the statement “The package must not be reused”, for any container not specifically designed for reuse or refilling by the manufacturer or the importer, in the case of toxic, very toxic and harmful pesticides;
- (i) the crops on which its use is recommended;
- (j) the pests against which its use is recommended;
- (k) the antidote to be used in case of poisoning as well as a brief description of the treatment to be given;
- (l) the safety interval between applications on crops;
- (m) the method of disposal of empty containers;
- (n) the appropriate protective equipment and clothing to be used.

4. (1) On the label of chemicals which are very toxic, toxic or harmful, the constituents classified as very toxic, toxic or harmful and present in concentrations exceeding or equal to the lower concentration limit for classification of the substance as harmful in accordance with the Fifth Schedule, shall be indicated.

(2) On the label of chemicals which are corrosive the constituents classified as corrosive and present in concentrations exceeding or equal to the lower concentration limit of the substance for classification as irritant, shall be indicated.

(3) On the label of chemicals classified with one or several of the hazard statements, the constituents resulting in such classification shall be indicated.

5. (1) Where the label of a chemical bears the name of an ingredient, internationally recognised nomenclature shall be used, primarily the name used in EINECS (European Inventory of Existing Commercial Chemical Substances).

(2) For chemicals included in the List of Dangerous Chemicals, the name appearing from the list shall be used.

6. (1) The information under paragraph 2 or 3 shall appear together on a hazard label which may form part of a larger label, provided the rules under subparagraph (2) are observed.

(2) The text of the label shall be expressed in English or French for instance in a box clearly separated from other information, including labelling in other languages.

(3) The hazard label shall be at least of the following dimensions—

Capacity of the package

Dimension (in mm)

- (a) 3 L and less – 52 x 74 (mm);
- (b) greater than 3 L, but not exceeding 50 L – 74 x 105 (mm);
- (c) greater than 50 L, but not exceeding 500L – 105 x 148 (mm);
- (d) greater than 500 L – 148 x 210 (mm).

(4) The dimensions of the hazard label are intended solely for the information required and for any additional health and safety indications.

(5) Each hazard symbol shall cover at least one-tenth of the surface of the label.

(6) The colour and presentation of the label – or, in the instances specified in paragraph 9, of the packaging – shall be such that the hazard symbol and its white background stand out clearly with the text in easily legible and indelible lettering.

7. (1) (a) The label shall be affixed to the packaging so that it can be read horizontally when the packaging is put down normally.

(b) The entire area of the label shall adhere to the package immediately containing the chemical, in such a manner that it remains on the packaging until the chemical is fully used.

(2) Where the chemical is packed in an outer package containing an inner package, both packages shall bear the information required.

8. (1) (a) The labelling text may be put on a separate tag if the dimensions of the package are so small that a 52 x 74 mm label cannot be used and the text cannot be expressed clearly on a smaller label;

(b) a separate tag may also be used if the nature of the package makes the use of a label inappropriate;

(c) the separate tag shall in all cases meet the requirements as to dimensions, text and colour, and shall remain attached to the packaging until the contents are fully used.

(2) Where a small label is used, the area of the hazard symbol shall be at least 1 cm<sup>2</sup>.

9. A label shall not be required where the particulars are clearly shown on the packaging itself in accordance with the above rules.

10. For the purpose of the Act labelling requirements shall be deemed to be satisfied where—

- (a) one or more inner packages labelled in accordance with this Schedule are contained in an outer packaging, and the outer packaging is

labelled at least in accordance with international or national rules on transport of dangerous chemicals; or

- (b) a single package is used and it is labelled in accordance with international or national rules on transport of dangerous chemicals, and with the provisions of paragraph 2 (1) (a), (c), (d), (e) and (f) and paragraph 3 (a), (c), (d), (e) and (f).

11. (1) Subject to subparagraphs (2) and (3), mobile gas holders containing chemicals shall comply with this Schedule.

(2) The dimensions and design of the label may not observe the requirements of paragraph 6, but instead follow the prescriptions of ISO standard ISO/DP 7225.

(3) In this case the label can bear the generic name or the industrial/commercial name of the product, provided that the dangerous ingredients are shown on the body of the gas cylinder in a clear and indelible way.

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## ELEVENTH SCHEDULE

[Section 18 (1) (b)]

### HAZARD COMMUNICATION: SAFETY DATA SHEETS (SDS)

#### A. Role of the Safety Data Sheet (SDS)

The Safety Data Sheet should provide comprehensive information about a chemical substance or mixture for use in a workplace. Both employers and workers use it as a source of information about hazards, including environmental hazards, and to obtain advice on safety precautions.

The Safety Data Sheet is an important source of information for those involved in the transport of dangerous goods, emergency responders (including poison centres), those involved in the professional use of pesticides and consumers.

Additional information may prove necessary in some cases in view of the wide range of properties of the substances and mixtures and where it appears that the information from certain properties is of no significance or that it is technically impossible to provide such information, the reasons for the non-compliance shall be clearly stated.

When a Safety Data Sheet has been revised, the new and significant information shall be brought to the attention of the recipient.

#### B. Criteria for producing an SDS

An SDS should be produced for all substances and mixtures which meet the criteria for physical, health or environmental hazards under the Globally Harmonised System (GHS) and for all mixtures which contain substances that meet the criteria for carcinogenic, toxic to reproduction or target organ systemic toxicity in concentrations exceeding the cut-off limits for SDS specified by the criteria for mixtures.

**C. General guidance for compiling a Safety Data Sheet cut-off values/concentration limits**

An SDS should be provided based on the generic cut-off values/concentration limits as indicated below—

**Cut-off Values/Concentration Limits for each Health and Environmental Hazard Class**

| <b>Hazard Class</b>                              | <b>Cut-off value/concentration limit</b> |
|--------------------------------------------------|------------------------------------------|
| Acute toxicity                                   | >1.0%                                    |
| Skin corrosion/irritation                        | >1.0%                                    |
| Serious damage to eyes/eye irritation            | >1.0%                                    |
| Respiratory/Skin sensitisation                   | >1.0%                                    |
| Mutagenicity: Category 1                         | >0.1%                                    |
| Mutagenicity: Category 2                         | >1.0%                                    |
| Carcinogenicity                                  | >0.1%                                    |
| Reproductive toxicity                            | >0.1%                                    |
| Target organ systemic toxicity(single exposure)  | >1.0%                                    |
| Target organ systemic toxicity (repeat exposure) | >1.0%                                    |
| Hazardous to the environment                     | >1.0%                                    |

**Safety data sheet format**

The minimum information in the SDS should be presented under the following 16 headings in the order given below.

**1. Identification of the substance or mixture and of the supplier—**

(1) Identification of the substance or mixture—

- (a) the term used for identification shall be identical to that provided on the label;
- (b) other means of identification available may also be indicated.

(2) Identification of supplier—

- (a) identification of the supplier established within Mauritius responsible for placing the substance or mixture on the market whether it is the manufacturer, importer or distributor;
- (b) supplier's details (including name, address, telephone number etc);
- (c) in addition to the above-mentioned information, the emergency telephone number of the supplier and/or official contact person shall be given.

## 2. Hazards identification

(1) Describe clearly and briefly the most important hazards the substance or mixture presents according to the Globally Harmonised System (GHS), in particular the critical hazards to man or environment.

(2) Indicate the GHS label elements, including precautionary statements. (Hazard symbols may be provided as a graphical reproduction of the symbols in black and white or the name of the symbol e.g. flame, skull and crossbones.

(3) Describe other hazards which do not result in classification (e.g. dust explosion hazard) or are not covered by GHS.

(4) The information should be compatible with that shown on the product label but need not repeat it.

## 3. Composition/information on ingredients

(1) The following information shall be given to enable the recipient to identify readily the substance—

- (a) chemical identity;
- (b) common name, synonyms, etc.;
- (c) CAS number, EC number, etc.;
- (d) impurities and stabilising additives which are themselves classified and which contribute to the classification of the substance.

(2) In case of a mixture it is necessary to give the chemical identity and concentration or concentration ranges of all ingredients which are hazardous within the meaning of the Globally Harmonised System and are present above their cut-off levels.

(3) Where information on certain ingredients is to be kept confidential, their chemical nature shall be described in order to ensure the health and safety of workers or consumers, or the protection of the environment.

(4) (a) Confidential business information (CBI) shall be disclosed to the Board and to Health and Safety professionals in emergencies.

(b) Confidential business information shall be protected in accordance with national law and practice.

## 4. First aid measures

(1) Describe the first aid measures in case of an accident.

(2) The instructions should be brief and easy to understand.

(3) Describe the most important symptoms/effects, acute and delayed.

(4) Describe the necessary measures, subdivided according to the different routes of exposure, i.e. inhalation, skin and eye contact and ingestion.

(5) Indicate whether immediate medical attention and special treatment is needed or advisable.

(6) For some substances or preparations it may be important to emphasise that special means to provide specific and immediate treatment must be available at the workplace.

## 5. Fire-fighting measures

Refer to requirements for fighting a fire caused by the substance or preparation, or arising in its vicinity by indicating—

- (a) suitable extinguishing media;
- (b) extinguishing media which must not be used for safety reasons;
- (c) specific hazards arising from the chemical substance or preparation e.g. nature of any hazardous combustion products and resulting gases;
- (d) special protective equipment and protective clothing for fire-fighters and precautions.

## 6. Accidental release measures

(1) Depending on the substance or preparation involved, information may be needed on—

- (a) personal precautions such as—
  - (i) removal of ignition sources;
  - (ii) provision for sufficient ventilation or respiratory protection;
  - (iii) control of dust;
  - (iv) prevention of skin and eye contact;
  - (v) emergency procedures;
- (b) environmental precautions such as—
  - (i) keeping away from drains, surface and ground water and soil;
  - (ii) possible need to alert the neighbourhood;
- (c) methods and materials for containment and cleaning up such as—
  - (i) use of absorbent material (such as sand, kieselguhr, acid binder, universal binder, sawdust or like material);
  - (ii) reduction of gases/fumes with water, dilution.

(2) Also consider the need for indications such as – “never use, neutralise with....”

N.B If appropriate refer to paragraphs 8 and 13.

## 7. Handling and storage

### (1) *Precautions for safe handling*

Consider precautions for safe handling including advice on technical measures such as local and general ventilation; measures to prevent aerosol and dust generation and fire; specific requirements and rules relating to the substance or preparation (e.g. procedures or equipment which are prohibited or recommended) and if possible give a brief description.

### (2) *Conditions for safe storage*

(a) Consider the conditions for safe storage such as: specific design for storage rooms or vessels (including retention walls and ventilation), incompatible materials, conditions of storage (temperature and humidity limit/range, light, inert gas...) special electrical equipment and prevention of static electricity;



(b) give advice if relevant on quantity limits under storage conditions. In particular indicate any special requirements such as the material used in the packaging/containers of the substance or preparation.

**8. Exposure controls/personal protection**

(1) For the purpose of this document exposure control means the full range of precautionary measures to be taken during use in order to minimise worker exposure.

(2) Give additional information to that already given at paragraph 7 (1) on the system design e.g. enclosure so that engineering measures may be taken before personal protection equipment is necessary.

(3) Indicate, with their reference, any specific control parameters such as occupational exposure limit values or biological limit values and give information on the recommended monitoring procedures and indicate the reference.

(4) Where personal protection is needed, specify the type of personal protective clothing and equipment to provide adequate and suitable protection—

- (a) for respiratory protection in the case of dangerous gases, vapours or dust, consider the need for appropriate protective equipment, such as self-contained breathing apparatus, appropriate masks and filters;
- (b) for hand protection specify the type of gloves to be worn when handling the substance or preparation. If necessary indicate any additional skin and body protection measures;
- (c) for eye protection, specify the type of eye protection required such as safety glasses, safety goggles and face shield;
- (d) for skin protection, where it is necessary to protect a part of the body other than the hands, specify the type and quality of protective equipment and clothing required, such as apron, boots and full protective suit. If necessary, indicate specific hygiene measures.

**9. Physical and chemical properties**

This paragraph includes the following information, where applicable, on the substances or preparation.

|                                         |                                                                                                                                        |
|-----------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------|
| Appearance                              | Indicate the physical state (solid, liquid, gas) and the colour of the substance or preparation supplied.                              |
| Odour and odour threshold               | If odour is perceptible, give a brief description of it.                                                                               |
| pH                                      | Indicate the pH of the substance or preparation as supplied or of an aqueous solution; in the latter case, indicate the concentration. |
| Initial boiling point and boiling range |                                                                                                                                        |
| Melting point/freezing point            |                                                                                                                                        |
| Flash point                             |                                                                                                                                        |
| Evaporation rate                        |                                                                                                                                        |
| Flammability (solid, gas)               |                                                                                                                                        |

|                                              |                                                                                                |
|----------------------------------------------|------------------------------------------------------------------------------------------------|
| Upper/lower flammability or explosive limits |                                                                                                |
| Vapour pressure                              |                                                                                                |
| Vapour density                               |                                                                                                |
| Relative density                             |                                                                                                |
| Solubility(ies) water/fat                    |                                                                                                |
| Oxidising properties                         |                                                                                                |
| (Solvent – oil (to be specified))            |                                                                                                |
| Partition coefficient: n-octanol/water       |                                                                                                |
| Auto-ignition temperature                    |                                                                                                |
| Decomposition temperature                    |                                                                                                |
| Other data                                   | Indicate other important safety parameters, such as miscibility, conductivity, viscosity, etc. |

The above properties shall be determined in accordance with the specifications of the Ninth Schedule.

#### 10. Stability and reactivity

(1) State the stability of the substance or preparation and the possibility of hazardous reactions occurring under certain conditions.

(2) *Conditions to avoid*

List those conditions such as static discharge, vibration, temperature, light, shock, etc., which may cause a dangerous reaction and if possible give a brief description.

(3) *Incompatible materials*

List materials such as water, air, acids, bases, oxidising agents or any other specific substance which may cause a dangerous reaction and if possible give a brief description.

(4) *Hazardous decomposition products*

List hazardous materials produced in dangerous amounts upon decomposition to address specifically—

- (a) the need for and the presence of stabilisers;
- (b) the possibility of a hazardous exothermic reaction;
- (c) safety significance, if any, of a change in physical appearance of the substance or preparation;
- (d) hazardous decomposition products, if any, formed upon contact with water;
- (e) possibility of degradation to unstable products.

## 11. Toxicological information

(1) This paragraph deals with the need for a concise but complete and comprehensive description of the various toxicological health effects which can arise if the user comes into contact with the substance or preparation.

(2) Include dangerous-to-health effects from exposure to substance or preparation, based on both experiences and conclusions from scientific experiments and the available data used to identify those effects.

(3) Include information on the likely routes of exposure (inhalation, ingestion, skin and eye contact), and describe the symptoms related to the physical, chemical and toxicological characteristics.

(4) Include known delayed and immediate effects and also chronic effects from short and long term exposure: for example sensitisation, carcinogenicity, germ cell mutagenicity and reproductive toxicity including adverse effects on reproductive ability or capacity and adverse effects on development of the offspring.

(5) Taking account of the information already provided under paragraph 2 'Composition/information on ingredients', it may be necessary to make reference to specific health effects of certain components in preparations.

(6) Include numerical measures of toxicity (such as acute toxicity estimates).

## 12. Ecological information

(1) Give an assessment of the possible effects, behaviour and environmental fate of the substance or preparation.

(2) Describe the most important characteristics likely to have an effect on the environment owing to the nature of the substance or preparation and likely methods of use—

- (a) ecotoxicity (aquatic and terrestrial, where available);
- (b) persistence and degradability;
- (c) bioaccumulative potential;
- (d) mobility in soil;
- (e) other adverse effects.

### Remarks

Pending criteria for the evaluation of the environmental impact of a preparation, information relating to the above properties shall be given for substances classified as dangerous for the environment which are present in the preparation.

## 13. Disposal considerations

(1) If the disposal of the substance or preparation (surplus or waste resulting from the foreseeable use) presents a danger, a description of these residues and information on their safe handling shall be given.

(2) Indicate the appropriate methods of disposal of both the substance or preparation and of any contaminated packaging (incineration, recycling, land-filling, etc.).

#### **14. Transport information**

(1) Indicate any special precautions which a user needs to be aware of or needs to comply with in connection with transport or conveyance either within or outside his premises.

(2) Additional information provided for by the United Nations Recommendations and other international agreements on the transport and packaging of dangerous goods may also be given.

(3) The following information should be given—

- (a) UN number;
- (b) UN proper shipping name;
- (c) transport hazard class(es);
- (d) packing group, if applicable;
- (e) marine pollutant (Yes/No);
- (f) special precautions which a user needs to be aware of or needs to comply with in connection with transport or conveyance either within or outside their premises.

#### **15. Regulatory information**

(1) Give the information on the label according to the Schedules relating to the classification, packaging and labelling of dangerous substances and preparations.

(2) If the substance or preparation covered by this safety data sheet is the subject to special provisions in relation to protection of man or the environment (e.g. restrictions on marketing and use, limit values for exposure at the place of work) these provisions should, as far as possible, be stated. The attention of recipients should also be drawn to existence of national laws that implement these provisions.

(3) It is also recommended that the data sheet should remind recipients to refer to any other national measures that may be relevant.

#### **16. Other information**

Indicate any other information which might be of importance for safety and health, for example—

- (a) training advice;
- (b) recommended uses and restrictions;
- (c) further information (written references and/or technical contact point);
- (d) sources of key data used to compile the data sheet;
- (e) give the date of issue of the data sheet, if not stated elsewhere.

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**TWELFTH SCHEDULE**

[Section 20]

**PROTECTION OF WORKERS**

1. In this Schedule—

“scheduled operation” means any activity specified in the Fourteenth Schedule.

2. **Examination of worker**

(1) No person shall be employed in the manufacture or processing of any dangerous chemical or on a scheduled operation, unless that person is in possession of a medical certificate indicating—

- (a) his physical fitness to be so employed;
- (b) the level of cholinesterase in his blood or any other appropriate test result.

(2) (a) The Board may require a person employed in the manufacture or processing of any dangerous chemical or on a scheduled operation—

- (i) to be examined by a medical officer designated by the Board;
- (ii) to undergo any investigation that the Board thinks necessary.

(b) Any examination or investigation required under paragraph (a) shall be paid for by the employer and may be carried out during working hours at such place as may be fixed by the Board.

(3) The result of any examination or investigation carried out for the purposes of paragraph (1) or at the request of the Board under paragraph (2) shall, as soon as possible, be communicated in writing by the medical officer who carried out the examination or investigation to—

- (a) the Board; and
- (b) the person in respect of whom the examination or investigation was conducted.

(4) Where the level of cholinesterase in the blood of an employee is less than 60% of the highest level recorded for that employee in the preceding 12 months, the employer shall not cause or permit that employee to be exposed to a pesticide or to any other cholinesterase inhibiting substance unless—

- (a) the authorised officer has certified in writing that the employee is fit to be exposed to such pesticide and other cholinesterase inhibiting substance; and
- (b) not less than 2 weeks have elapsed since the employee was last so exposed.

(5) Where an employer reasonably believes that a person employed by him in the manufacture or processing of any dangerous chemical or on a scheduled operation may be suffering from exposure to a dangerous chemical he shall forthwith notify the Board.

(6) (a) Where, as a result of an examination or investigation carried out under subsection (2), it appears to the Board that any person employed in the manufacture or processing of dangerous chemicals or on a scheduled operation is likely to suffer from exposure to any dangerous chemical, the Board may, by

notice in writing, direct that the employer shall not employ that person in the manufacture or processing of any dangerous chemical or on a scheduled operation for such a period as the Board thinks necessary.

(b) The Board shall forward a copy of any notice given by it under subparagraph (a) to the person in respect of whom the notice has been given.

(c) No employer shall employ a person in respect of whom a direction has been given under paragraph (a) in breach of the terms of the direction.

### **3. Scheduled operation**

No worker shall carry out and no person shall cause a worker to carry out any scheduled operation unless the worker wears the appropriate protective clothing mentioned in the second column of the Fourteenth Schedule.

### **4. Protective clothing to be worn**

(1) Subject to subsection (2), no worker shall enter, or be present, and no person shall cause or permit a worker to enter or to be present, in a building in which a dangerous chemical is being used or has been used unless the worker wears—

- (a) an overall, a hood, gloves and a respirator where the specified chemical substance is used by means of an aerosol dispenser or a smoke generator;
- (b) an overall, a hood, gloves, boots and a respirator or any other suitable and appropriate protective equipment as indicated in the label and Safety Data Sheet where no aerosol dispenser or smoke generator is used and the substance is a dangerous chemical specified in the Second Schedule;
- (c) an overall, a hood, gloves, boots and a face shield or any other suitable and appropriate protective equipment as indicated on the label and safety data sheet, in all other cases where a dangerous chemical specified in the First Schedule is used.

(2) No protective clothing shall be required to be worn where the doors and windows representing at least 10% of a floor area of the building have been opened during the seventh hour after the use of the specified substance.

### **5. Employer to provide appropriate equipment and clothing**

(1) Where a worker is employed on a scheduled operation, his employer shall provide him with—

- (a) suitable, personal and appropriate protective equipment and clothing required, under this Act, to be worn for the scheduled operation;
- (b) adequate accommodation for the safekeeping of the worker's personal clothing and equipment not used during the scheduled operation so as to prevent the contamination by a specified chemical substance;
- (c) adequate accommodation for the safekeeping of a contaminated protective clothing and equipment by a specified chemical substance so as to prevent the risk of contamination;
- (d) subject to subparagraph (2), adequate and suitable washing facilities, including a shower fixture, where possible, and soap and towels;

- (e) a supply of wholesome drinking water, clean drinking vessels and containers in which the worker may keep any food or drink free from the risk of contamination from any specified chemical substance.

(2) Where tap water cannot be provided, the employer shall put at the disposal of the worker clean water in containers on which shall be conspicuously written "Personal washing only".

**6. Employer to maintain equipment**

Every employer shall ensure that—

- (a) all protective clothing and equipment are kept in good and serviceable order;
- (b) all protective clothing and equipment are thoroughly washed and decontaminated after use;
- (c) any spraying apparatus and the exterior of all tanks and containers which contain or have contained any specified chemical substance are decontaminated;
- (d) the openings of all tanks and containers in which a specified chemical substance is stored, are securely closed and covered when not in use;
- (e) overalls, hoods and boots showing stains from any specified chemical substance are properly washed before being worn by a worker.

**7. Where spraying apparatus is required**

No worker shall repair and no person shall cause or permit a worker to repair any contaminated spraying apparatus unless the worker wears the protective clothing and equipment required to be worn in relation to a scheduled operation with such spraying apparatus.

**8. Restriction on hours of work for pesticide workers**

No worker shall be employed on a scheduled operation for more than—

- (a) 6 hours in one day;
- (b) 36 hours in a period of 14 days.

**9. Employment of minors**

No person under the age of 18 shall be employed on a scheduled operation or on an operation involving the used of a smoke generator.

**10. Training and supervision of workers**

An employer shall not cause or permit any person to work on a scheduled operation unless he is satisfied that the worker has been thoroughly trained in the precautions to be observed and is under adequate supervision.

**THIRTEENTH SCHEDULE**

[Section 21]

**REGISTER OF EMPLOYEES**

**1. Register of workers where dangerous chemicals, excluding pesticides, are used**

(1) Every employer shall keep a register specifying—

- (a) the names and addresses of all workers employed by him;
- (b) the specified chemical substance with which the worker has worked;
- (c) the particular operation on which the worker was employed.

(2) The employer shall keep the register for a period of at least 5 years after the date of the last entry.

**2. Register of workers where pesticides are used**

(1) Every employer, other than a person cultivating less than 10 hectares of land, employing workers to carry out any scheduled operation, listed in the Fourteenth Schedule, on his land, shall keep a register specifying—

- (a) the names and addresses of all workers employed by him on a scheduled operation;
- (b) the number of hours worked on any scheduled operation listed in the Fourteenth Schedule, by any worker on any particular day;
- (c) the specified chemical substances with which the worker has worked;
- (d) the particular operation on which the worker was employed.

(2) The employer shall keep the register for a period of at least 5 years after the date of the last entry.

**3. Particulars of last employment**

Every employer shall give to every worker who ceases to be employed by him a copy of the relevant particulars of the register kept by him in respect of the worker's employment during 6 months immediately preceding the day on which the worker's employment ceases.

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**FOURTEENTH SCHEDULE**

[Section 22]

**1. PROTECTIVE CLOTHING AND EQUIPMENT FOR WORKERS ON SCHEDULED OPERATIONS**

|    | Scheduled operation                                                                                                                                     | Protective clothing and equipment required to be worn or used   |
|----|---------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------|
| 1. | Opening a package containing or diluting, mixing, or transferring from one container to another—<br>(a) any substance mentioned in the Second Schedule; | overall, boots, gloves and respirator with appropriate filters; |



|    | Scheduled operation                                                                                                                                                                   | Protective clothing and equipment required to be worn or used                                              |
|----|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------|
|    | (b) any substance mentioned in the First Schedule.                                                                                                                                    | overall, boots, gloves and face-shield.                                                                    |
| 2. | Spraying any ground crop, except when carried out in a greenhouse, with—<br>(a) any substance mentioned in the Second Schedule;<br>(b) any substance mentioned in the First Schedule. | overall, boots, gloves and respirator with appropriate filters;<br>overall, boots, gloves and face-shield. |
| 3. | Washing or cleaning any spraying apparatus that has been used with any substance mentioned in the First or Second Schedules.                                                          | Overall or mackintosh, boots and face-shield.                                                              |
| 4. | Spraying trees, bushes or creepers with any substance mentioned in the First or Second Schedules.                                                                                     | Overall or mackintosh, boots, gloves, hood and respirator with appropriate filters.                        |
| 5. | Spraying, fogging or applying aerosols in a greenhouse or building with any substance mentioned in the First and Second Schedules.                                                    | Overall, gloves, hood and respirator with appropriate filters.                                             |

Notwithstanding paragraphs 1 2, 3, 4 and 5, other protective equipment indicated on the label and the Safety Data Sheets of the chemical substance used shall also be used.

## 2. Worker to take precautions

A worker employed on a scheduled operation shall—

- (a) deposit his personal clothing and equipment not worn in the course of the operation in a special closed container provided by his employer for that purpose;
- (b) at the end of any operation—
  - (i) deposit his protective clothing and equipment in a specially closed container provided by his employer for that purpose;
  - (ii) wash his hands, face and neck;
- (c) not eat, drink or smoke unless he has removed all protective clothing and equipment, other than his overall and boots, and washed his hands and face, and is outside an area in which he may be poisoned or injured by any specified chemical substance that has been, is being, or is about to be used or by any protective clothing and equipment that has been used in connection with the use of any specified chemical substance;
- (d) not make use of the water stored in any container not marked "Personal Washing Only" for any other purpose;
- (e) not make use of the water stored in any container not marked "Personal Washing Only" to wash himself;

- (f) not make use of any drinking vessel provided by his employer otherwise than to drink from it;
- (g) not blow, suck or apply his mouth to any jet, sprinkler, nozzle or other spraying equipment which contains or has contained a specified chemical substance whether for the purpose of removing an obstruction or otherwise.

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**FIFTEENTH SCHEDULE**

[Section 24]

**TRANSPORT OF DANGEROUS CHEMICALS**

1. In this Schedule—

“authorised officer” means a police officer or a road transport inspector;

“dangerous goods registration plate” means a metal plate of 400 mm in length and 300 mm in height of orange and red colours with a 15 mm border in black;

“goods vehicle” has the same meaning as in the Road Traffic Act;

“internal transport” means the transport within a confined area not open to the public;

“safety data sheet” means an information sheet according to the Eleventh Schedule;

“transport” means the transport carried out in all areas accessible to the public and includes restricted areas such as the harbour, the aerodrome and the premises of larger companies with mixed traffic.

2. Safe transport of dangerous chemicals shall be based on the information given in the safety data sheets in paragraphs 3, 5, 6, 7, 8, 13 and 14 of the Eleventh Schedule.

3. The safety data sheet shall be used for—

- (a) information to the transporter for his choice of vehicle, containers and auxiliary equipment;
- (b) information, instruction and training of qualified drivers;
- (c) transport document to be brought in the vehicle through the entire transport route;
- (d) information of emergency services and authorities.

4. In case of any difficulty arising from this procedure the principles laid down in the United Nations – Recommendations on the Transport of Dangerous Goods shall be followed.

5. Goods vehicles used for the transport of dangerous goods shall be in compliance with the provisions of the Road Traffic Act or any regulations made under the Road Traffic Act.

6. The vehicle shall have, attached to both its front and its rear and the rear of any trailer it is towing "DANGEROUS GOODS" plates, in such a way so as not to interfere with the registration number plates issued under the Road Traffic Act and obstruct any light or visual warning of the vehicle, thus enabling reliable identification in case of road checks or emergency and indicate the presence in the vehicle of safety data sheets.
7. The driver shall be in possession of a valid driver's licence and relevant safety data sheets and shall be informed, and instructed with respect to the content of the safety data sheets, the use of fire-extinguishers, chokes and personal protective equipment.
8. The transport of extremely dangerous goods shall be restricted to limited periods of time.
9. Transport of dangerous chemicals shall be the responsibility of—
- (a) the manufacturer, importer or supplier until the goods are handed over to a transporter or buyer, if he himself carries out the transports;
  - (b) the transporter during the entire transport until the goods have been delivered in good condition;
  - (c) the buyer or employer when he has received the goods.
10. Internal transport and handling shall be the responsibility of the owner of the dangerous goods, normally the employer.
11. The control of transport of dangerous chemicals in public areas shall be under the responsibility of the Police.
12. The control of internal transport shall be under the responsibility of the Ministry responsible for the subject of labour and industrial relations.

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## SIXTEENTH SCHEDULE

[Section 25]

### STORAGE AND HANDLING OF DANGEROUS CHEMICALS

#### 1. Site

Before any decision is taken on the localisation of stores for dangerous chemicals, an assessment and a simple risk analysis shall be carried out comprising at least the following elements—

- (a) the site, geographically and physically (nature, building, dwellings and other facilities);
- (b) safe distances or flame-resistant wall and/or sprinkling or water-curtains in case of flammable volatile liquids or gases and possibly steam-curtains in case of toxic volatile liquids or gases;
- (c) the possibility of using fire-resistant buildings or compartments (possibly with ventilation) also considering unexpected release of dust, vapour, gases and flames;

- (d) lay-out and design avoiding subterranean location and pits;
- (e) selection of materials and construction methods;
- (f) access, transport routes, stands for vehicles, water and sewer installations;
- (g) avoidance of obstacles and the need for crash barriers along the routes or around the tanks, containers or packaged chemicals.

## **2. Construction**

(1) The storage facility shall have an even, impenetrable surface to facilitate transport and handling operations by car, fork-lift, crane or other auxiliary equipment for instance, pumps or compressed air in connection with closed systems.

(2) The drainage system shall allow any precipitation to drain off a closed sewer-system enabling separation of clean water and spills or dissolved or emulsified chemicals for later treatment, collection, neutralisation or separation.

(3) The safety conditions set out hereunder shall be satisfied—

- (a) impenetrable, easy to clean surface, not reacting with spilled chemicals such as solvents or oxygen on a bituminous material;
- (b) safe and fixed foundations based on the total weight of containers and the content for which they are intended;
- (c) secondary containment in case of loss of primary containment in the form of barriers, reservoirs or tank-pits with a volume calculated in accordance with the possibility of an unwanted event and its consequences;
- (d) supports or racks to facilitate the lifting and internal transport of goods;
- (e) electric installations and equipment in accordance with regulatory requirements depending on the risk of presence of flammable dusts, gases or vapours combining explosion zones and the choice of spark-protected equipment to avoid ignition;
- (f) conductive installations preventing the formation of electrostatic charges and lightning conductors and installation of swan's neck outlets from venting-tubes and flame-arresters;
- (g) safety valves, bursting devices or blow-down system, explosion relief devices if necessary leading blow-out into safe direction;
- (h) fencing and gates provided with locks.

(4) Dangerous chemicals shall always be stored in a place not open to the public.

(5) Very toxic and toxic chemicals shall always be stored separately and be kept locked up.

(6) If needed, the store or compartment shall also have a solid roof.

## **3. Open air installations**

In open air installations there shall be—

- (a) shade from the sun to avoid dangerous temperature increase;
- (b) a roof to protect containers against precipitation to avoid disintegration, dissolving or corrosion;
- (c) flame-resistant walls between compartments.

#### 4. Indoor installations

(1) Access shall always be as easy as practicably possible, and stores shall normally be placed at ground level with doors and gates without any steps to facilitate internal transport.

(2) Depending on the properties of the chemicals, the doors shall give access directly to the open, for instance when storing highly flammable or volatile chemicals.

(3) The following precautions shall be taken—

- (a) the temperature of the store shall not exceed 40 degrees centigrade and cooling shall be provided if necessary;
- (b) necessary equipment to keep the humidity of the store within specific allowed range and for drying the air shall be provided;
- (c) sufficient natural or adequate mechanical ventilation shall be provided to prevent the formation of dangerous vapour-concentrations or odour;
- (d) if loss of containment may be expected and the vapours are toxic or potent to health, the ventilation shall be started automatically using a suitable detector or operated from outside;
- (e) lighting devices according to standards shall be installed depending on operations to be carried out.

#### 5. Separate storage of chemicals

(1) Certain especially potent or reactive chemicals shall not be stored in the same place or compartment.

(2) Reactive chemicals as for instance, peroxides and other oxidising substances shall always be stored separately.

(3) Flammable and oxidising agents even in cylinders under pressure, acids and bases shall be stored separately or if applicable in compartments with flame-resistant walls of prescribed height.

(4) All measures shall be taken to reduce the consequences in case of loss of containment.

#### 6. Packing, containers and tanks

(1) Packaging should follow the regulations in the Tenth Schedule and such other national standards as are in force.

(2) Where no national standard is in force, relevant internationally recognised standards, recommendations or norms should be referred to while indicating the specific norm used for—

- (a) atmospheric containers or tanks for liquids or powders;
- (b) pressure-tanks for compressed gases or liquefied gases;
- (c) cryogenic tanks;
- (d) casks, vats, flasks or drums;
- (e) palletised containers for certain liquids;
- (f) other packaging materials.

(3) When opening, packing or emptying containers, care shall be taken to avoid spilling or dust raising.

(4) After use the packing shall be closed or covered tightly.

## **7. Preventive provisions**

(1) Storage facilities shall be equipped with—

- (a) warning signs using the Hazard Symbols in the Seventh Schedule supplemented by relevant Hazard Statements in the Eighth Schedule and Precautionary Statements in the Ninth Schedule; or
- (b) notice boards stating the hazards and giving sufficient information in case of emergency, for instance removal of cylinders under pressure.

(2) The internal use of fork-lifts and other self-propelled vehicles shall be shown by warning signs.

(3) Electrically powered equipment shall be preferred so as to prevent ignition and occurrence of exhaust-gases.

(4) An inventory of the store shall be kept to show the actual kind and amount of dangerous chemicals at all times.

(5) The amount of flammable or toxic substances may be restricted by the enforcing agencies according to specific regulation based on a risk assessment.

(6) To prevent leakages during handling and the use of dangerous gases, fixed tube-installations shall be preferred to which any apparatus or device and pressure tanks, cylinders or bottles shall be connected.

(7) Depending on the flammability and the ignition energy required and possibly other properties, an assessment shall be carried out evaluating if areas or enclosures shall be classified explosion zones and consequently spark free tools and protected equipment shall be used.

(8) During the transport or pumping of flammable liquids and powders the occurrence and possible discharge of electrostatic charges shall be prevented through the use of conductive connections or earthing.

## **8. Handling**

(1) To prevent spillage, generation of dust and to assure ergonomically correct working conditions, handling equipment and auxiliaries shall be used as much as possible.

(2) Adequate handling equipment include—

- (a) vehicles with crane or other lifting equipment;
- (b) fork-lifts;
- (c) conveyors;
- (d) pneumatic transport of liquids or powders using compressed air in closed systems;
- (e) pumps and syphons for vats, drums and casks;
- (f) syphons and pipettes;
- (g) sack-trucks manually manoeuvred for smaller containers;
- (h) tilting racks for drums, vats and bottles;

- (i) any device allowing bottom-emptying into closed containers of powders so as to avoid dust generation;
- (j) flow-measuring-devices for volume and weight replacing open weighting and apportioning by hand.

#### 9. Waste and waste disposal

(1) Where the process or production generates any chemical waste or residue, a plan covering the internal transport, storage and disposal shall always be prepared before starting up operation in accordance with the Seventeenth Schedule.

(2) The storage facilities being the same as for the pure chemicals involved, possible unintended reactions, that may take place when the chemicals used are deliberately mixed should be taken into consideration.

(3) The containers used for waste shall be clearly marked and the employees instructed to dispose certain chemicals at certain places pointed out within the premises.

(4) The capacity of containers used shall suit the planned production and the collecting scheme for waste shall be transported for treatment if not treated in the plant using chemical reactions, incineration or distillation.

#### 10. Emergency planning and precautions

Considerations shall be given to the presence, within or nearby the storage facility, of the following—

- (a) tap water, hose or shower-installation with fast actuation;
- (b) where no tap water is available, a water reservoir with pumps;
- (c) fire extinguishers with relevant extinguishing agent;
- (d) in case of difficult access or vast areas, a stretcher, absorbents, agents and equipment for cleaning up and neutralising spillage;
- (e) adequate and appropriate personal protective equipment such as gloves, goggles, masks and breathing apparatus and protective clothing.

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### SEVENTEENTH SCHEDULE

[Section 26]

#### WASTE STORAGE AND HANDLING OF DANGEROUS CHEMICALS

1. Waste containing residues or reactants of dangerous chemicals used as well as by-products having dangerous properties when assessed according to the classification criteria in the Fifth Schedule shall be collected, stored and handled until treated or disposed of in accordance with the applicable law.

2. In this Schedule—

“collection” means gathering of superfluous, used, contaminated or partly processed dangerous chemicals either automatically or manually into suitable containers;

“dangerous waste” means waste containing dangerous chemicals, their residues or reactants classified according to the classification criteria for dangerous preparations;

“handling” means pumping, manual moving and transport within any premises;

“storage” means the placing of dangerous waste in a store which is used or intended to be used for the storage of such waste;

“treatment” means adequate processes for the regenerating, cleaning, neutralising, burning or converting of the dangerous chemicals within the waste;

“waste” includes any substance which constitutes a scrap material or other unwanted substance arising from the application of any process;

“waste producer” means any plant, installation or person responsible for processes resulting in the formation of dangerous chemical waste.

3. (1) Dangerous waste shall not be allowed to accumulate in any place not designed for the purpose of waste storage.

(2) Soil, water and air shall not be affected by dangerous waste and adequate precautions shall be taken during planning, construction and operation of a plant.

4. Any store shall be sited, constructed and equipped depending on the characteristics and properties of any dangerous waste a plant may produce.

5. According to the nature and reactivity of the dangerous chemicals involved, waste with different properties shall be collected and stored separately in accordance with the Sixteenth Schedule.

6. An updated inventory of dangerous chemical wastes containing the amount and properties of any such waste shall always be kept by the waste producer.

7. The updated inventory shall once a year be sent to the Board, to the Ministry responsible for the subject matter of environment and to the enforcing agency.

8. The safety data sheets in respect of all dangerous chemicals used shall follow the inventory giving information needed on the collection, storage, handling, transport and precautions in case of spillage and other incidents.

9. Waste shall not be disposed of within the curtilage of the premises where it is produced unless approved by the enforcing agency.

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**EIGHTEENTH SCHEDULE**

[Section 27]

**LIST OF PROHIBITED CHEMICALS**

**PART I – INDUSTRIAL CHEMICALS**

1. Dimethylaminoazobenzene
2. Acetic Anhydride
3. Acetyl Chloride
4. 2-Acetylaminofluorene
5. p-Aminoazobenzene
6. O-Aminoazotoluene
7. Aminobiphenyl and its salts
8. Asbestos Fibres Actinolite
9. Asbestos Fibres Amosite
10. Asbestos Fibres Anthophyllite
11. Asbestos Fibres Crocidolite
12. Asbestos Fibres Chrysotile
13. Asbestos Fibres Tremolite
14. Auramine
15. Benzidine and its salts
16. Benzotrichloride
17. Bis (2-chloroethyl) sulphide
18. Bis (chloroethyl) ether
19. Bis (Chloromethyl) ether
20. Carbon Tetrachloride
21. Chlornaphazine
22. 2,4-Diaminoanisol
23. Diaminotoluene
24. 1,2-Dibromo-3-Chloropropane (DBCP)
25. Dichlorobenzidine
26. 1,2-Dichloroethane
27. Dioxins
28. Dimethylnitrosamine (DMNA)
29. Ethyl Methyl Sulphonate (EMS)
30. Ethylene Dibromide (EDB)
31. Ethylene Thiourea
32. Ethylenimine
33. Furans
34. Hexamethylphosphotriamide (HMPA)
35. Hydrazine
36. Lead – tetraethyl and tetramethyl
37. Methyl Chloromethyl Ether

**EIGHTEENTH SCHEDULE—continued**

38. Methyl Nitrosourea
39. 3-Methylcholanthrene
40. Methylenbis-O-chloraniline
41. Methylmethane Sulphonate
42. N,N'Diacetylbenzidine
43. alpha-Naphthylamine
44. 2-Naphtylamine and its salts
45. 4-Nitrobiphenyl
46. 2-Nitropropane
47. Pentachlorophenol, its salts and esters
48. Phenyl beta Naphthylamine
49. Polybrominated Bipenyls (PBBs)
50. Polychlorinated Biphenyls (PCBs)
51. Polychlorinated Terphenyls (PCTs)
52. Beta-Propiolactone
53. Propylene imine
54. 2,3,7,8-Tetrachlorodibenzo-p-dioxin (TCDD)
55. O-Tolidine
56. O-Toluidine Hydrochloride
57. Tris (2,3 Dibromopropyl) Phosphate
58. Tris-(1-aziridinyl) Phosphine Sulphide

**PART II – AGRICULTURAL CHEMICALS**

1. Aldrin
2. Amitrole
3. Arsenic and Compounds
4. Binapacryl
5. Bitertanol
6. Campheclor
7. Captafol
8. Carbosulfan
9. Chlordane
10. Chlordecone
11. Chlordimeform
12. Chlorobenzilate
13. Chloropicrin
14. Chlorthiophos
15. Choline, potassium and sodium salts of maleic hydrazide containing more than one mg/kg of free hydrazine
16. Cyhexatin
17. Cyanazine
18. D.D.T

**EIGHTEENTH SCHEDULE—continued**

19. 1,2 Dibromoethane (EDB)
20. 1,2 Dibromo-3-chloropropane (DBCP)
21. Demeton methyl
22. Demeton O and S
23. Dicrotophos
24. Dicofol
25. Dieldrin
26. Dimefox
27. Dinoseb and Dinoseb salts
28. Disulfoton
29. DNOC and its salts
30. Endosulfan – Alpha and Beta
31. Endrin
32. Ethylene dibromide
33. Ethylene dichloride
34. Ethylene oxide
35. Fensulfothion
36. Fluoroacetamide
37. Hexachlorocyclohexane (HCH) (mixed isomers)
38. Heptachlor
39. Hexachlorobenzene
40. Kadetrine
41. Kelevan
42. Lead arsenate
43. Leptophos
44. Lindane
45. Mercury compounds
46. Methamidophos
47. Methazole
48. Metoxychlor
49. Mevinphos
50. Mirex
51. Monocrotophos
52. Monuron
53. Nitrofen
54. Parathion and methyl parathion
55. Pentachlorophenol (PCP)
56. Phorate
57. Phosphamidon
58. Prothoate
59. Quintozene
60. Tetraethyl pyrophosphate (TEPP)

**EIGHTEENTH SCHEDULE—*continued***

61. Tecnazene
  62. Toxaphene
  63. Schradan
  64. Sodium fluoroacetate
  65. Strobane
  66. Strychnine
  67. Thallium and compounds
  68. Toxafene
  69. Vinclozolin
  70. Vinyl chloride
  71. Warfarin
  72. Zineb
  73. 2,4,5 Trichlorophenol
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