HAZARDOUS MICRO-ORGAMSMS AND GENETICALLY MODIFIED ORGANISMS (MANUFACTURE, USE, IMPORT, EXPORT AND STORAGE) RULES, 1999

CONTENTS

HAZARDOUS MICRO-ORGAMSMS AND GENETICALLY MODIFIED ORGANISMS (MANUFACTURE, USE, IMPORT, EXPORT AND STORAGE) RULES, 1999

[1]1. The following rules are Draft Ruies in supersession of' the Rules for Manufacture. Use. Import. Export and Storage of Hazardous Micro-Organisins/Genetically Modified Organisms or Cells, 1993. G.S.R. 9S (E), dated 9th February, 19992.-In exercise of the powers conferred by Section 6, Section 8, Section 10 and Section 25 of the Environment (Protection) Act, 1986 (29 of 1986), the Central Government hereby publishes the following draft of certain rules in supersession of the Rules for Manufacture, Use, Import, Export and Storage of Hazardous Micro- Organisms/Genetically Modified Organisms or Cells 1993 except as respect things done or omitted to be done before such supersession for the information of all persons likely to be affected thereby and notice is hereby given

that the said draft rules will be taken into consideration after the expiry of a period of 60 days from the date on which the Gazette copies containing this notification are made available to the public. G.S.R. No.-In exercise of the powers conferred by Sees. 6, 8, 10 and 25 of the Environment (Protection) Act, 1986 (29 of 1986), the Central Government hereby makes the following ruies, namely :-

1. Short title and commencement :-

(1) These ruies may be called the Hazardous Micro-Organisms and Gcnetically Modified Organisms (Manufacture, Use, Import, Export and Storage) Rules, 1999.

(2) They shall come into force on the date of their publication in the Official Gazette.

2. Application :-

(1) These ruies shall be applicable to :

(a) hazardous micro-organisms and genetically modified organisms including their products for the purpose of :

(i) Import and export;

(ii) manufacture, use and storage. if the capacity is of 20 litres and above culture volume.

(b) new gene technologies apart from those referred to in Cl. (h) of rule 3 and to micro-organisms gencrated by the utilisation of such other gene technologies and to substances and products of which such organisms form part.

(2) These ruies shall not apply to the pesticides governed by the Insecticides Act, 1968 .

3. Definitions :-
In these ruies. unless' the context otherwise requires :-

(a) "accident" has the meaning assigned to it by Cl. (a) of S.2 of the Public Liability Insurance Act, 1991 ;

(b) "Act" means the Environment (Protection) Act, 1986 (29 of 1986);

(c) "biotechnology" means the exploitation of biological processcs for industrial and other purposes, especially genetic manipulation of micro- organisms (for the production of antibiotics, hormones and

the like;

(d) "contained use" means any Operation in which micro-organisms are genetically modified or in which such genetically modified micro- organisms are cultured, stored, used, transported, destroyed or disposed of and for which physical barriers or a combination of physical barriers together with chemical and/or biological barriers, are used to limit contact with the environment;

(e) "deliberate release" means any international introduction into the environment of hazardous micro-organisms or genetically modified organisms or their combination without provisions for Containment such as physical barriers or a combination of physical barriers together with chemical and/or biological barriers used to limit their contact with the general population and the environment;

(f) "export" with its grammatical variations and cognate expressions : means taking out of India to a place outside India;

(g) "Form" means a form annexed to these ruies :

(h) "genetically modified micro-organisms (GMOs)" means a micro-organisms in which the genetic material has been altered, in a way that does not occur naturally by mating and/or recombination by genetic modification through the use of the techniques listed in Part I of Schedule I but does not include a modification through a technique listed in Part II or Part III of the said Schedule;

(i) "hazardous micro-organisms" means any microscopic living entity- cellular or non-cellular capablc of replication or of transferring genetic material hazardous to health and environment as listed in Schedule II.

(j) "import", with its grammatical variations and cognate expression, means bringing into India from a place outside India;

(k) "product" means a preparation consisting of or containing a hazardous micro-organisms or GMO or a combination of these and the resulting material placed on the market;

(l) "Schedule" means a schedule annexed to these ruies.

4. Expert Committees :-

(1) Recombinant DNA Advisory Committee (RDAC),-

(i) The Central Government may, by order, constitute a committee to be called the Recombinant DNA Advisory Committee (RDAC), in the Department dealing with biotechnology.

(ii) The RDAC shall review developments in biotechnology at national and international levels and recommend appropriate safety guidelines for India in recombinant research, use and applications from time to time.

(2) Review Committee on Genetic Manipulation (RCGM).-

(i) The Review Committee on Genelic Manipulation (RCGM) shall consist of-

(a) representatives of-

(1) Department dealing with Biotechnology.

(2) Indian Council of Medical Research.

(3) Indian Council of Agricultural Research.

(4) Council of Scientific and Industrial Research. and

(b) other expert or experts nominated by the Department dealing with biotechnology in his or their individual capacity.

(ii) The RCGM shall function in the Department dealing with Biotechnology to monitor the safety related aspect in respect of on-going research projects and activities involving hazardous micro-organisms or GMOs.

(iii) The RCGM shall bring out Manuals or Guidelines specifying the procedure for regulatory process with respect to activities involving genetically modified organisms in research and their use and applications in industry and other areas with a view to ensure environmental safety.

(iv) The RCGM shall also review all on-going projects involving high risk category and controlled field experiments to ensure that adequate precautions and Containment conditions are followed as per its guidelines.

(v) The RCGM shall lay down procedures restricting or prohibiting production, sale, importation and use of such hazardous micro-organisms or GMOs as mentioned in Schedule II.

(vi) On the recommendation of the RCGM, the Central Government

may, by notification in the official Gazette :-

(a) recognise one or more laboratories or institutes for conducting tests on hazardous micro-organisms or GMOs; and

(b) prescribe special tests to be conducted for hazardous micro-organisms or GMOs.

(3) Institutional Bio-safety Committee (IBSC).-

(i) The Institutional Bio-safety Committee (IBSC) shall be constituted by an occupier including research institutions handling hazardous micro- organisms or GMOs.

(ii) The IBSC shall be constituted as required under para (i) of this sub-rule :-

(a) in case of a new activity before the activity is commenced; and

(b) in case of an existing activity, within ninety days of coming into Operation of these ruies.

(iii) The IBSC in respect of an institution shall consists of head of that institution, scientists engaged in the work on hazardous micro-organisms or GMOs, a medical expert and a nominee of the Department dealing with biotechnology.

(iv) The occupier including research institutions handling hazardous micro- organisms or GMOs, shall prepare, with the assistance of IBSC. an up- to-date on-site emergency plan according to the guidelines issued from time-to-time.

(v) The occupier including research institutions shall make available copies of its plan to the concerned District Level Committee and State Biotechnology Co-ordination Cominittee.

(vi) The occupier including research institutions handling hazardous micro-organisms or GMOs shall prepare on-site plan required under para (v)

(a) in case of a new industrial or research activity before that activity is commenced; and

(b) in case of an existing industrial or research activity, within ninety days of coming into Operation of these rules.

(4) Genetic Engineering Approval Committee (GEAC) :-

(i)The Central Government may constitute a Committee to be called

the Genetic Engineering Approval Committee (GEAC) in the Ministry of Environment and Forests consisting of the following, namely :-

1. Additional Secretary or Joint Secretary, Ministry of Environment and Forests - Chairman.

2. Nominee of the Department of Biotechnology-Co-Chairman.

3. A representative each of the Ministry of Industrial Development and the Department dealing with Biotechnology and the Department dealing with Atomic Energy-Members

4.

(a) A representative of :-

(1) Director-General, Indian Council of Medical Research;

(2) Director-General, Indian Council of Agricultural Research;

(3) Director-General, Council of Scientific and Industrial Research;

(4) Director-General, Health Services;

(5) Plant Protection Adviser, Directorate of Plant Protection, Quarantine and Storage,

(6) Chairman, Centrai Pollution Control Board; and

(b) three outside experts in biotechnology nominated by the Central Government in individual capacity-Members

5. An officer of the Ministry of Environment and Forests-Member-Secretary.

(ii) The GEAC may, with the approval of its Chairman may, co-opt members/experts.

(iii) The GEAC shall be responsible for approval of activities involving large-scale (20 liters and above culture volume) manufacture, use and storage of hazardous micro-organisms or GMOs in research and industry froin environmental angle.

(iv) The GEAC shall also be responsible for environmental approval of proposals relating to large-scale release (20 litres and above culture volume) of hazardous micro-organisms or GMOs and products including deliberate release in the environment including experimcntal or field trials.

(v) The GEAC shall also be responsible for ;environmental approval

of proposals relating to import and export of hazardous micro-organisms or GMOs.

(5) State Biotechnology Co-ordination Committee (SBCC) :

(i) The State Government may constitute a State Biotechnology Co-ordination Committee (SBCC) consisting of-

(a) Chief Secretary -Chairman,

(b) Secretary, -Member, Department of Environment

(c) Secretary, -Member, Department of Agriculture

(d) Secretary, -Member, Department of Agriculture

(e) Secretary, -Member, Department of Industries

(f) Secretary, -Member, Department of Labour

(g) Secretary, -Member, Department of Forests

(h) Secretary, -Member, Department of Public Works

(i) State Microbiologist and Pathologist -Member,

(j) Member Secretary, - Member-Secretary State Pollution Control Board or an officer of SPCB authorized by it.

(ii) The SBCC shall coordinate and monitor the inspection and investigation of violations of the provisions of the Act and these rules and advise the concerned State Pollution Control Board to take necessary corrective steps.

(iii) The SBCC shali review periodically the safety and control measures in various industries and institutions ^handling hazardous micro-organisms or GMOs.

(iv) The SBCC may, with the approval of its Chairman, co-opt members/ experts.

(6) District Level Committee (DLC):

(i) The District Level Committee shall consist of such members as the State Government may deem fit.

(ii) In such districts where installations engaged in the activity involving hazardous micro-organisms or GMOs are located, the State Government may constitute a District Level Committee to monitor the safety regulations in installations engaged in the use of

hazardous microorganisms or GMOs and its applications in the environment.

(iii) The DLC may, with the permission of the occupier, visit the installations engaged in the activity involving hazardous microorganisms or GMOs, collect information, find out hazards and risks associated with each of these installations and co-ordinate activities with a view to meet any emergency.

5. Classification of hazardous micro-organisms or GMOs :-

(i) The hazardous micro-organisms or GMOs shall, for the purpose of these rules, be classified to the risk group(s) as specified in Schedule II.

(ii) If any of the hazardous micro-organisms or GMOs falls within the limits of more than one risk group as specified in Schedule II, it shall be deemed to be of the higher order of such groups.

6. Containment measures :-

(1) In order to ensure safety in handing hazardous micro-organisms or GMOs, principles of good micro-biological practices, occupational safety and hygiene and other containment measures as provided in the guidelines issued by the Government from time to time shall he applied.

(2) The safety practices and containment measures applied shall be periodically reviewed by the occupier/Biosafety Committee or the person handling hazardous microorganisms or GMOs to take into account new scientific and technical knowledge related to risk assessment treatment and disposal of wastes.

7. Hazardous micro-organisms or GMOs not to be handled without approval :-

(1) No person shall manufacture, use, import, export, store or undertake deliberate release of any hazardous micro-organisms or GMOs without obtaining the approval of GEAC.

(2) A person seeking approval of GEAC, as required under sub-rule (1), shall submit his application in Form I for clinical, veterinary and food products, in Form II for transgenic plants and in Form III for other products including products used in pollution control.

(3) An application for approval shall be disposed of by the GEAC after considering all material facts : Provided that no such

application shall be rejected without giving the applicant a reasonable opportunity of being heard.

(4) The data to be generated by a person before undertaking a deliberate release of hazardous micro-organisms or GMOs or any combination of them shall follow slepby-step principle that is where the scale of release increases, evaluation of the earlier step becomes necessary.

(5) The experiments for generation of data referred to in sub-rule (4) shall be done sequentially from controlled laboratory conditions to the growth chamber and the green-house testing to small-scale fields trials and finally to large-scale field trials. The GEAC/RCGM shall if necessary carry out tests in the approved laboratories or inspections for control purposes.

(6) In the event of any modification of the deliberate release of hazardous micro-organisms or GMOs or a combination of any two or more of them which could have consequence with regard to the risks of human health or the environment or if new information has become available on such risks, either while the data is being examined by the GEAC or after thc GF.AC has given the environmental clearance, the person seeking approval shall immediatcly-

(a) revise the measures specified in the report;

(b) inform the GEAC of any modification and as soon as the new information is available and

(c) take the measure necessary to protect human health and the environment.

(7)

(a) An application for approval, complete in all respects shall be disposed of by the GEAC with 90 days.

(b) Where the GEAC requires any additional information in case of an application of the application is incomplete in any respect, it shall require the applicant to supply such additional information or complete the application form in all respects within a period specified by it, before such application is disposed of.

Exploitation.- The approval under this sub-rule shall not be construed as a clearance, approval or licence as rnay be required

under any other law.

(8) The GEAC may give directions to the occupier to determine and take measures concerning the discharge of hazardous micro-organisms or GMOs mentioned in Schcdule II including prohbition of such discharges and laying down measures to be taken to prevent such discharges.

8. Terms and conditions of Approval :-

(1) In connection with the granting of approval under rule 7, the terms and conditions shall be stipulated, including terms and conditions relating to the control to be exercised by the applicant, supervision, restriction on use, layout of the enterprise and the information to be furnished to the RCGM, SBCC and to the DLC.

(2) The environment approval of GEAC shall be for a specified period not exceeding four years at the first instance, renewahle for two years at a time. The GEAC shall have powers to revoke such approval in the following cases, namely : -

(a) if there is any information as to the harmful effects of the hazardous micro-organisms organisms or GMOs; or

(b) if the hazardous micro-organisms or GMOs cause such damage to the environment, nature or health as could not be envisaged when the approval was given; or

(c) non-compliance of any of the terms and conditions stipulated by the GEAC.

9. Supervision :-

(1) The GEAC shall supervise the implementation of the terms and conditions laid down in connection with thc approval accorded by it.

(2) The GEAC may carry out the supervision with the assistance of SBCC or the Central or State Pollution Control Board, RCGB or DLC.

10. Responsibility to notify interruption or accidents :-

(1) Any person who under rule 7 and Rule 8 is responsible for complying with the terms and conditions of the approval shall immediatcly notify thc GEAC, DLC and SBCC and the State Pollution Control Board of any interruptions or accidents that may lead to discharge of hazardous micro-organisms or GMOs which may be harmful to the environment.

(2) Any notice given under sub-rule (1) shall not absolve the person who is responsible to minimise or prevent the effects of interruptions of operations or accidents from such responsibilities.

11. Preparation of off-site Emergency Plan by the DLC :-

(1) It shall be the duty of the DLC to prepare an off-site emergency plan detailing how emergencies relating to possible major accident at a site will be dealt with and in preparing the plan the DLC shall see that there are adequate containment facilities with the occupier.

(2) The DLC shall prepare the off-site emergency plan required under sub-rule (1), in the case of,-

(a) a new activity before that activity has commenced; and

(b) an existing activity within nine months of coming into operation of these rules.

(3) For the purpose of enabling the DLC to prepare the off-site emergency plan required under sub-rule (1) the copier shall provide the DLC with such information relating to the steps taken for containment and handling of hazardous micro-organisms or GMOs under his control as the DLC may require including the nature, extent and likely off-site effects of a possible major accident and the preventive steps and the DLC shall provide the occupier with any information from the off-site emergency plan which relates to his duties under rule 10.

12. Inspections :-

(1) Any member of the SBCC, GEAC or DLC dulyempowered under Sec. 10 of the Act may, at all reasonable times, enter and inspect any premises for carrying out the functions assigned to the committee to which he is a member.

(2) The SBCC or GEAC or DLC may call from theoccupier information, data or report about its activities relating to manufacture, use, import, export and storage of any hazardous micro-organisms or GMOs.

13. Maintenance of Record :-

The occupier or any person handling hazardous micro-organisms or GMO shall be required to keep records of the work carried out by him and be made available to the concerned authority or request.

14. Appeal :-

(1) Any person aggrieved by a decision made by the GEAC or SBCC or DLC in pursuance of these rules may within thirty days from the date on which the decision is communicated to him prefer an appeal to the Central Government :

Provided that an appeal may be admitted after expiry of the said period if the appellant has sufficient reasons for not preferring the appeal within stipulated time but no such appeal shall be admitted after 45 days.

(2) An appeal under sub-rule (1) shall be addressed and sent to the Secretary to the Government of India, Ministry of Environment and Forests, New Delhi, and shall clearly and precisely specify the grounds on which the appeal is preferred. The appeal shall after giving an opportunity of being heard to the appellant, be disposed of as expeditiously as possible.

SCHEDULE 1
SCHEDULE

[See rule 3(h)] Part I Techniques of genetic modification are : (1) recombinant DNA techniques involving in-vitro introduction of different segments of DNA (one being the vector and others normally unrelated DNA sequences) that are capable of replication in a host cell either autonomously or as an integral part of host's genome and maintenance of their continued propagation; (2) techniques involving the direct introduction into a micro-organism of heritable material prepared outside the micro-organisms including micro- injection, macro-injection and micro-encapsulation; (3) cell fusion or hybridization techniques where live cells with new combinations of heritable genetic material are formed through the fusion of two or more cells by means of methods that do not occur naturally; (4) genetic engineering including self-cloning and deletion, transformation and other types of virus or pathogen introduction into unnatural hosts. Part II Techniques which are not considered to result in genetic modification, on condition that they do not involve the use of recombinant-DNA molecules or genetically modified organisms : (1)in-vitro fertilization : (2) conjugation, transaction, transformation or any other natural process; and (3) polyploidy induction. Part III Techniques of genetic modification to be excluded from the Rules on condition that theydo not involve the use of genetically modified micro-organisms as recipient or parental organisms : (1) mutagenesis; (2) the construction and use of somatic animal hybridoma cells (e.g., for the production of monoclonal antibodies); (3) cell fusion (including protoplast fusion) of cells from plants which can be produced by traditional breeding methods; and (4) self-cloning of non-pathogenic naturally occurring micro-organisms.

SCHEDULE 2
SCHEDULE

(See rule 3(i) and Rule 5) Part I Animal and Human Pathogens A BACTERIAL

AGENTS (a) Risk Group II 1. Acinetobacter calcoacctius 2. Aclinobacillus-all species except A mallei which is in Risk Group III 3. Aeromonas hydrophila 4. Arizona hinshawil-all serotypes 5. Bacillus anthracis 6. Bordelella all species 7. Borrella recurrentis B. Vincenti 8. Compylobacter fetus 9. Campylobacter jejuni 10. Chlamydia psittaci 11. Chlamydia trachomatis 12. Clostridium chauvoel. C. difficile, C. fallax, C. haemolyticum, C. histolyticum, C. novyi, (= C. oedematiens), C. perfringen, C. septicum, C. sordellii 13. Corynebacterium diphlheriae, C. equi, C. haemolyticum, C. pseudotuberuculosis. C. pyogenes, C. renale 14. Diplococcus (Streptococcus) pneumoniae 15. Edwardsiela tarda 16. Erysipelothrix insidiosa 17. Escherichia Coli-all enteropathogenic serotypes, enterotoxigenic 18. Heamophilus ducreyi, H. influenzae, H. pneumoniae 19. Herellea vaginicola 20. Klabsiella-all species and all serotypes 21. Legionella pneumophilla 22. Lettonella 23. Leptospira intcrrogans all serotypes reported in India 24. Listeria-all species 25. Mima polymorpha 26. Moraxella-all species 27. Mycobacteria-all species including Mycobacterium avium 28. M. bovis, M tuberculosis, M. leprae 29. Mycoplasma-all species except M. mycoides and M. agalactiae 30. Neisseria gonorrhoeae, N. meningitis 31. Pasteurella-all species except those listed in Risk Group III 32. Salmonella-all species and all serotypes 33. Shigella-all species and all serotypes 34. Sphaerophorus necrophorus 35. Staphylococcus aureus 36. Sireptobacillus moniliformis 37. Stcptococcus pneumoniae 38. Streptococcus pyogcnes, S. equal 39. Streptomyces madurae, S. pelletierii, S. somaliensis 40. Treponema carateum, T. pailidium and T. pertenue 41. Vibrio foetus 42. V. parahaemolyticus 43. Vibro cholorae (or V. comma, including two biotypes-eltor (= EL Tor) and cholerae (= classical biotype) (b) Risk Group III 44. Actinobacillusmallei 45. Bartonella-all species 46. Brucella-all species 47. Clostridium botuline, Cl. tetani 48. Francisella tularensis 49. Mycobacterium avium, M. bovis, M. tuberculosis, M. Ieprae 50. Pasteurella multocida type B ("buffalo" and other foreign virulent strains) 51. Pseudomonas pseudomallei 52. Yersinia pestis 53. Actinomycetes (including Nocardia SP, Actinomyces species and Arachnia propionica) FUNGAL AGENTS (a) Risk Group 11 54. Aspergillus fumigatus 55. Blastomyces dennatitidis 56. Cryptococcus neoformans, C. fersiminosos 57. Epidermophyton madurella, Microsporum 58. Paracoccidioides brasilliensis 59. Sporothrix 60. Trichoderma 61. Trichophyton (b) Risk Group III 62. Coccidioides immitis 63. Histoplasma capsulatum 64. Histoplasma capsulatum var duboisii C. PARASITIC AGENTS (a) Risk Group II 65. Entamoeba histolylica 66. Lieshmania species 67. Naegleria gruberi 68. Plasmodium theilera, P fabesia,. falciparum 69. Plasmodium fabesia 70. Schislosoma 71. Toxoplasma gendii 72. Toxocara canis 73. Trichinella spiralis 74. Trichomonas 75. Trypanosoma cruzi (b) Risk Group III 76. Schistosoma mansoni D. VIRAL RICKETTSIAL AND CHLAMYDIAL AGENTS (a) Risk Group II 77. Adenoviruses-Human, all types 78. Avian leukosis 79. Cache Valey virus 80. CELO (avian adenovirus) 81. Coxsackie A and B viruses 82. Corona viruses 83. Cytomegalo viruses (CMV) 84. Dengue virus, when used for transmission experiments 85. Echo viruses-all types 86. Encephalomyocarditis virus (EMCV) 87. Flanders virus 88. Hart Park virus 89. Hepatitis associated antigen material-hepatitis A and B virucs, non- A and non-B hepatitis virues, HDV (Delta virus) 90. Herpes viruses-except herpesvirus simiae (monkey B virus) which is in Risk Group IV 91. Infectious Bovine Rhinotracheitis virus (IBR) 92. Infectious Bursal diseases of poultry and infectious Bronchitis 93. Infectious Laryngotracheitis (ILT) 94. Influenza virus-all types, except A/PR8/34 which is in Risk Group I 95. Langur virus Leucosis Complex 96. Lymphogranuloma venereum agent 97. Mareks, Disease virus 98. Measles virus 99. Mumps virus 100. Newcastle

disease virus (other than licensed strain for vaccine use) 101. Parainfluenza viruses-all types except parainfluenza virus 3, SF4 strain, which is in Risk Group I 102. Polio viruses-all types, wild and attenuated 103. Pox viruses-all types except Alastrim, monkey-pox, sheep pox and white pox, which depending on experiments are in Risk Group III or IV 104. Rabies virus-all strains except rabies street virus, which should be classified in Risk Group III when inoculated into cornivores 105. Reo viruses-all types 106. Respiratory synytial virus 107. Rhinoviruses-all types 108. Rinderpest (other than vaccine strain in use) 109. Rubella virus 110. Stimian viruses-all types except herpesvirus similae (Monkey Virus) which is in Risk Group IV 111. Simian virus 40 Ad 7 SV 40 (Defective) 112. Sindbis virus (SIN Virus) 113. Tensaw virus 114. Turlock virus 115. Vaccinia virus 116. Varicella virus 117. Vole rickettsia 118. Yellow fever virus, 17 D vaccine strain (b) Risk Group III 119. African Horse Sickness (attenuated strain except animal passage) 120. Alastrim, monkey pox and white pox, when used in vitro 121. Arboviruses-All strains except those in Risk Group II and IV 122. Blue-tongue virus (only serotypes reported in India) 123. Ebola fever virus 124. Epstein-Barr virus (EBV) 125. Feline Leukaemia Virus (Pel V) 126. Feline sarcoma viruses 127. Foot and mouth Disease virus (all serotypes and subtypes) 128. Gibbon Ape Lymphosarcoma 129. Herpesvirus ateles 130. Herpesvirus saimiri 131. Herpes simplex 2 132. HIV-1 and H1V-2 and strains of SIV 133. Infectious Equine Anaemia 134. Lymphocytic choriomeningitis virus (LCM) 135. Monkey pox, when used in vitro 136. Non-defective Adeno-2 SV-40 hybrids 137. Psittacosis-ornithosis-trachoma group of agents 138. Pseudorabies virus 139. Rabies street virus, when used inoculations of carnivores 140. Rickettsia-all species except Vole rickettsia and Coxiella burnetii, when used for vector transmission or animal inoculation experiments 141. Sheep pox (field strain) 142. Swine Fever virus 143. Vasicular stomatitis virus 144. Wooly monkey Fibrosarcoma 145. Yoba Pox virus (c) Risk Group IV 146. Alastrim monkeypox, whitepox, when used for transmission or animal inoculation experiments 147. Haemorrhagic fever agents including Crimean haemorrhagic fever (con go) 148. Korean haemorrhagic fever and others as yet undefined 149. Herpesvirus simiae (monkey B virus) 150. Tick-borne encephalitis virus complex, including-Russian Spring- Summer Encephalitis, Kyasanur Forest Disease, omsk haemorrhagic fever and Central European encephalitis viruses E. SPECIAL CATEGORY (a) Bacterial 151. Contagious Equine Metritis (H. equigenitalis) 152. Peste des-petits ruminants (b) Viral, Rickettsial and Chlamydial : 153. African'Horse Sickness virus (serotypes not reported in India and challenge strains) 154. African Swine Fever 155. Bat rabies virus 156. Blue-tongue virus (serotypes not reported in India) 157. Exotic FMD virus types and sub-types 158. Junin and Machupo viruses 159. Lassa virus 160. Marburg virus 161. Murray valley encephalitis virus 162. Rift Valley fever virus 163. Smallpox virus-Archieval storage and propagation 164. Swine Vesicular Disease 165. Venezuelan equine encephalitis virus-epidemic strains 166. Western Equine encephalitis virus 167. Yellow fever virus-Wild strain 168. Other Arboviruses causing epizootics and so far not recorded in India Part II Plant Pests Any living stage (including active and dormant forms) of insects, mites, nematodes, slugs, snails, bacteria, fungi, protozoa, other parasitic plants or reproductive parts thereof, viruses; or any organisms similar to or allied with any of the foregoing; or any infectious agents or substances, which can directly or indirectly injure or cause disease or damage in or to any plants or parts thereof, or any processed, manufactured, or other products of plants are considered plant pests. Organisms belonging to all lowertaxa, contained within the group listed are also included. A. VIRUSES All Viroids All bacterial, fungal, algal, plant, insect and nematode viruses,

special care should be taken for- (i) Geminiviruses (ii) Caulimoviruses (iii) Nuclear Polyhedrosis viruses (iv) Granulosis viruses (v) Cytoplasmic polyhedrosis viruses B. BACTERIA 1. Family Pseudomonadaceae (i) Genus Pseudomonas (ii) Genus Xanthomonas 2. Family Azotobacteriaceae (i) Genus Azotobacter 3. Family Rhizobiaceae (i) Genus Rhizobium/Azorhizobium (ii) Genus Bradyrhizobium (iii) Genus Agrobacterium (iv) Genus Phyllobacterium 4. Family Enterobacteriaceae (i) Genus Erwinia (ii) Genus Enterobacter (iii) Genus Klebsiellea 5. Family Spirillaceae (i) Genus Azospirillum (ii) Genus Aquaspirillum (iii) Genus Oceanospirillum 6. Family Steptomycetaceae (i) Genus Streptomyces (ii) Genus Nocardia 7. Family Actinomycetaceae (i) Genus Actinomyces 8. Coryneform Group (i) Genus Clavibacter (ii) Genus Arthrobacter (iii) Genus Curtobacterium (iv) Genus Bdellovibrio 9. Family Rickettsiaceae (i) Rickettsial-like organisms associated with insect diseases (ii) Gram-negative phloem-limited bacteria associated with plant diseases (iii) Gram-negative xylem-limited bacteria associated with plant diseases (iv) Cyanobacteria-All members of blue-green algae (v) Mollicutes 10. Family Sptroplasmataceae (i) Mycoplasma-like organisms associated with plant diseases (ii) Mycoplasma-like organisms associated with insect diseases C. ALGAE 11. Family Chlorophyceae 12. Family Euglenophyceae 13. Family Pyrrophyceae 14. Family Chrysophyceae 15. Family Phacophyceae 16. Family Rhodophyceae D. FUNGI 17. Family Plasmodiophoraceae 18. Family Chytridiaceae 19. Family Olpidiopsidaceae 20. Family Synchytriaceae 21. Family Catenariaceae 22. Family Coelomycetaccae 23. Family Saprolegniaceae 24. Family Zoopagaceae 25. Family Albuginaceae 26. Family Peronosporaceae 27. Family Phythiaceae 28. Family Mycoraceae 29. Family Choaneophoraceae 30. Family Mortierellaceae 31. Family Endogoniaceae 32. Family Syncephalastraceae 33. Family Dimargaritaceae 34. Family Kickxellaceae 35. Family Saksenaeaceae 36. Family Entomophythoraceae 37. Family Ecerinaceae 38. Family Taphrinaceae 39. Family Endomycetaceae 40. Family Saccharomycetaceae 41. Family Eurotiaceae 42. Family Gymnoascaceae 43. Family Ascosphaeriaceae 44. Family Onygenaceae 45. Family Micgoascaceae 46. Family Protomycetaceae 47. Family Elsinoaceae 48. Family Myriangiaceae 49. Family Dothidiaceae 50. Family Chaetothyrlaceae 51. Family Pannulariaceae 52. Family Phillipslellaceae 53. Family Hysterlaceae 54. Family Pleosporaceae 55. Family Melanomataceae 56. Family Ophiostomataccae 57. Family Ascosphaeriaceae 58. Family Erysiphaceae 59. Family Meliolaceae 60. Family Xylariaceae 61. Family Diaporthaceac 62. Family Hypocreaceae 63. Family Ciavicipitaceae 64. Family Phacidiaceae 65. Family Ascocorticiaceae 66. Family Hemiphacidiaceae 67. Family Dermataceate 68. Family Sclerotiniaceae 69. Family Cyttariaceae 70. Family Helotiaceae 71. Family Sarcosomataceae 72. Family Sarcoscyphaceae 73. Family Auriculariaceae 74. Family Ceratobasidiaceae 75. Family Corticiaceae 76. Family Hymenochaeteceae 77. Family Echinodontiaceae 78. Family Fistulinaceae 79. Family Clavariaceae 80. Family Polyporaceae 81. Family Tricholomataceae 82. Family Ustilaginaceae 83. Family Sporobolomycetaceae 84. Family Uredirraceae 85. Family Agaricaceae 86. Family Graphiolaceae 87. Family Pucciniaceae 88. Family Mclampsoraceae 89. Family Gandodeniatiaceae 90. Family Laboulbeniaceae 91. Family Sphaeropsidaceae 92. Family Melanconlaceae 93. Family Tubcrculariaceae 94. Family Domattaceae 95. Family Moniliaceae 96. Family Aganomycetaceae E. PARASITIC WEEDS 97. Family Balanosporaceae parasitic species 98. Family Cuscutaceae paraslic species 99. Family Ttydonoraceae-parastic species 100. Family Lauraceae-parasitic species Genus Cassytha 101. Family Lauraceae-parasitic species 102. Family

Loranthaceae-parastic species 103. Family Myzodendraceae-parasitic species 104. Family Olacaceae-parasitic species 105. Family Orobanchaeceae-parasitic species 106. Family Rafflesiaceac-parasitic species 107. Family Santalaceae-parasitic species 108. Family Scrophulariaceae-parasitic species F. PROTOZOA 109. Genus Phytomonas (Family Trypanasomatidae) 110. All Protozoa associated with insect diseases G. NEMATODES 111. Family Anguinidae 112. Family Belonolaimidae 113. Family Caloosiidae 114. Family Criconematidae 115. Family Dolichodoridae 116. Family Fergusobiidae 117. Family Hemicycliophoridae 118. Family Heteroderidae 119. Family Haplolaimidae 120. Family Meloidogynidae 121. Family Neothylenchidae 122. Family Nothotylenchidae 123. Family Paidlylenchidae 124. Family Pratylonchidae 125. Family Tyienchidae 126. Family Tyienchulidae 127. Family Aphelenchodiae 128. Family Longidoridae 129. Family Trichodoridae H. MOLLUSCA 130. Superfamily Planorbacea 131. Superfamily Achatinacea 132. Superfamily Arionaceae 133. Superfamily Limacacea 134. Superfamily Helicacea 135. Superfamily Veronicclacea I. ARTHROPODA 136. Superfamily Ascoidca 137. Superfamily Dcrmanyssoidea 138. Superfamily Eriophyoidea 139. Superfamily Tetrancychoidea 140. Superfamily Eupodoidca 141. Superfamily Tydeoidea 142. Superfamily Erythraenoidea 143. Superfamily Tromhidioidea 144. Superfamily Hydryphantoidea 145. Superfamily Tarsoncmoidea 146. Superfamily Pyemotoidea 147. Superfamily Hemisarcoptoidea 148. Superfamiiy Acaroidea 149. Order Polydesmida 150. Family Sminthuridae 151. Family Forficulidac 152. Order Isoptera 153. Family Thysanoptera 154. Family Acrididyca 155. Family Gryilidae 156. Family Gryllacrididae 157. Family Gryllotalpidae 158. Family Phymatidae 159. Family Ronaleidae 160. Family Tettigoniidae 161. Family Tetrigidae 162. Family Thaumastocoridae 163. Superfamily Piesmotoidea 164. Superfamily Lygacoidca 165. Superfamily Idiostoloidea 166. Superfamily Coreoidea 167. Superfamily Pentatomoidea 168. Superfamily Pyrrhocoroidea 169. Superfamily Tingoidea 170. Superfamily Miroidea 171. Order Homoptera 172. Family Anobiidae 173. Family Apionidae 174. Family Anthribidae 175. Family Bostrichidae 176. Family Brenthidae 177. Family Bruchidae 178. Family Buprestidae 179. Family Byturidae 180. Family Cantharidae 181. Family Carabidae 182. Family Ccrambycidae 183. Family Chrysomelidae 184. Family Coccinellidae 185. Family Curculionidae 186. Family Dermestidae 187. Family Elaleridae 188. Family Hydrophilidae 189. Family Lyctidae 190. Family Meloidac 191. Family Mordellidae 192. Family Platypodidae 193. Family Scarabaeidae 194. Family Scolylidae 195. Family Scblytidae 196. Family Lepidoptera 197. Family Agromyzidae 198. Family Anthomyiidae 199. Family Ceeidomyidae 200. Family Chloropidae 201. Family Ephydridae 202. Family Lonchaeidae 203. Family Muscidae 204. Family Otitidae 205. Family Syrphidae 206. Family Tephritidae 207. Family Tipulidae 208. Family Apidae 209. Family Cephidae 210. Family Chaloididae 211. Family Cynipidae 212. Family Eurytomidae 213. Family Formicidae 214. Family Psilidae 215. Family Siricidae 216. Family Tenthredinidae 217. Family Torymidae 218. Family Xylocopdiae and also unclassified organisms and/or organisations whose classification is unknown and all other organisms associated with plant and insect diseases. Note : The risk groups given in this schedule conform to the World Health Organisation classification.