

FEDERAL ENVIRONMENTAL PROTECTION AGENCY ACT

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FEDERAL ENVIRONMENTAL PROTECTION AGENCY ACT

**An Act to establish the Federal Environmental Protection Agency with its functions and the powers for the effective implementation of such functions.**

[1988 No. 58. 1992 No. 59. 1999 No. 14.]

[30th December, 1988]

[Commencement. ]

PART I

*Establishment, membership, functions and powers of the Federal*

*Environmental Protection Agency*

**1. Establishment of the Federal Environmental Protection Agency**

(1) There is hereby established a body to be known as the Federal Environmental Protection Agency (in this Act referred to as "the Agency") which under that name shall be a body corporate with perpetual succession and a common seal, and may sue and be sued in its corporate name.

(2) The Agency shall be an integral part of the Presidency.

[1992 No. 59.]

**2. Governing Council of the Agency**

(1) There shall be, as the governing body of the Agency, a Council which shall consist of a chairman to be appointed by the President and the following other members, that is-

(a) the Permanent Secretaries charged with responsibility for-

(i) Agriculture and Natural Resources;

(ii) Commerce and Tourism;

(iii) Communications;

(iv) Culture and Tourism;

(v) Education;

(vi) Finance;

(vii) Health;

(viii) Industry;

(ix) Petroleum Resources;

(x) Science and Technology;

(xi) Solid Minerals;

(xii) Transport;

(xiii) Works and Housing;

(xiv) Youth and Sports;

- (b) two other persons from the private sector who shall have distinguished themselves in environmental matters.

(2) .....

[1999 No. 14.]

(3) The supplementary provisions contained in the Schedule to this Act shall have effect with respect to the proceedings of the Agency and the other matters therein mentioned.

[Schedule.]

### **3. Establishment and functions of the Technical Committee**

(1) There is hereby established for the Agency, a technical committee to be known as the Federal Environmental Protection Agency Technical Committee (in this Act referred to as "the Technical Committee").

(2) The Technical Committee shall consist of the following members, that is-

- (a) a chairman who shall be the Director-General and chief executive of the Agency;
- (b) three distinguished persons having wide knowledge and possessing such skills and expertise in environmental matters;
- (c) one representative each of the following Ministries not below the rank of a Director, that is-
  - (i) Agriculture, Water Resources and Rural Development;
  - (ii) Finance;
  - (iii) Health and Human Services;
  - (iv) Industries and Technology;
  - (v) Petroleum and Mineral Resources;
  - (vi) Works and Housing;
  - (vii) Transport and Communications;
  - (viii) Education and Youth Development; and
- (d) a representative each of-
  - (i) the Manufacturers' Association of Nigeria; and
  - (ii) the Nigerian Conservation Foundation.

(3) The functions of the Technical Committee shall be-

- (a) to assist and advise the Council and the Agency in the performance of their functions under this Act; and
- (b) to give technical opinion on issues referred to it or delegated by the Council.

[1992 No. 59.]

#### **4. Removal from office of member of the Agency**

The office of a member who is not a public officer shall become vacant if he resigns his office by a letter addressed by him to the President, or if the President is satisfied that it is not in the interest of the Agency for the person appointed to continue in office as a member, in which case the President shall notify the member in writing to that effect.

#### **5. Functions of the Agency**

The Agency shall, subject to this Act, have responsibility for the protection and development of the environment and biodiversity conservation and sustainable development of Nigeria's natural resources in general and environmental technology, including initiation of policy in relation to environmental research and technology; and without prejudice to the generality of the foregoing, it shall be the duty of the Agency to-

[1992 No. 59.]

- (a) prepare a comprehensive national policy for the protection of the environment and conservation of natural resources, including procedure for environmental impact assessment for all development projects;
- (b) prepare, in accordance with the National Policy on the Environment, periodic master plans for the development of environmental science and technology and advise the Federal Government on the financial requirements for the implementation of such plans;
- (c) advise-
  - (i) the Federal Government on national environmental policies and priorities, the conservation of natural resources and sustainable development, and scientific and technological activities affecting the environment and natural resources;
  - (ii) the President on the utilisation of the one per cent Ecological Fund for the protection of the environment;
- (d) promote co-operation in environmental science and conservation technology with similar bodies in other countries and with international bodies connected with the protection of the environment and the conservation of natural resources;
- (e) co-operate with Federal and State Ministries, local governments, statutory bodies and research agencies on matters and facilities relating to the protection of the environment and the conservation of natural resources; and
- (f) carry out such other activities as are necessary or expedient for the full discharge of the functions of the Agency under this Act.

[1992 No. 59.]

**6. Power of the Agency to give grants, etc.**

In carrying out the functions prescribed in section 5 of this Act and in other provisions of this Act, it shall be lawful for the Agency to-

(a) make grants to suitable authorities and bodies with similar functions for demonstration and for such other purposes as may be determined appropriate to further the purposes and provision of this Act;

(b) collect and make available, through publications and other appropriate means and in co-operation with public or private organisations, basic scientific data and other information pertaining to pollution and environmental protection matters and the degradation of natural resources;

[1992 No. 59.]

(c) enter into contracts with public or private organisations and individuals for the purpose of executing and fulfilling its functions and responsibilities pursuant to this Act;

(d) establish, encourage and promote training programmes for its staff and other appropriate individuals from public or private organisations;

(e) enter into agreements with public or private organisations and individuals to develop, utilise, co-ordinate and share environmental monitoring programmes, research effects, basic data or chemical, physical and biological effects of various activities on the environment and other environmentally related activities as appropriate;

(f) establish advisory committees composed of administrative, technical or other experts in such environmental areas as the Agency may consider useful and appropriate to assist it in carrying out the purposes and provisions of this Act;

[1992 No. 59.]

(g) establish such environmental criteria, guidelines, specifications or standards for the protection of the nation's air and inter-State waters as may be necessary to protect the health and welfare or the population from environmental degradation;

(h) establish such procedures for industrial or agricultural activities in order to minimise damage to the environment and natural resources from such activities;

[1992 No. 59.]

(i) maintain a programme of technical assistance to bodies (public or private) concerning implementation of natural resources conservation, environmental criteria, guidelines, regulations and standards and monitoring enforcement of the regulations and standards thereof; and

[1992 No. 59.]

(j) develop and promote such processes, methods, devices and materials as may be useful or incidental in carrying out the purposes and provisions of this Act.

## **7. Power of the President to give directions**

Subject to this Act, the President may give to the Agency directions of a general nature or relating generally to particular matters, but not to any particular individual or case with regard to the performance by the Agency of its functions under this Act and it shall be the duty of the Agency to comply with the directions.

## **8. Director-General and other staff of the Agency**

(1) There shall be appointed by the President a Director-General of the Agency.

(2) The Director-General shall be the chief executive of the Agency and shall hold office in the first instance for five years, and thereafter, shall be eligible for re-appointment for one further term of five years only, on terms and conditions as may be specified in his letter of appointment.

(3) The Agency may appoint such other persons to be employees of the Agency as it may deem fit, on such terms and conditions as may be determined by the Agency.

(4) The Agency shall, with the approval of the President, make staff regulations governing conditions of service of its employees.

(5) The Agency may grant loans to its employees for purposes approved by the President.

## **9. Pensions**

(1) It is hereby declared that service in the Agency shall be public service for the purposes of the Pensions Act and accordingly officers and other such staff of the Agency shall in respect of their services be entitled to such pensions, gratuities and other retirement benefits as are prescribed thereunder.

[Cap. P4.]

(2) For the purposes of the application of the provisions of the Pensions Act, any powers exercisable thereunder by a Minister or other authority of the Government of the Federation (not being the power to make regulations under section 23 thereof) are hereby vested in and shall be exercisable by the Agency and not by any other person or authority.

## **10. Power of the Director-General**

The Director-General shall, subject to the policies laid down by the Agency, develop programmes to carry out the purposes and provisions of this Act and, without prejudice to the generality of the foregoing, shall, in particular and in consultation with appropriate agencies-

[1992 No. 59.]

(a) establish programmes for the prevention, reduction and elimination of pollution of the nation's air, land and inter-State waters, as well as national programmes for restoration and enhancement of the nation's environment and natural resources;

[1992 No. 59.]



(b) encourage and promote the co-ordination of the conservation of natural resources and environmentally related activities at all levels;

[1992 No. 59.]

(c) utilise and promote the expansion of research, experiments, surveys and studies by public or private agencies, institutions and organisations concerning causes, effects, extent, prevention, reduction and elimination of pollution and such other matters related to environmental protection and natural resources conservation as the Agency may, from time to time, determine necessary and useful; and

[1992 No. 59.]

(d) conduct public investigations on pollution and the degradation of natural resources.

[1992 No. 59.]

#### **11. Power to accept gifts, etc.**

(1) Subject to subsection (2) of this section, the Agency may accept gifts of land, money, books or other property upon such terms and conditions, if any, as may be specified by the person making the gift.

(2) The Agency shall not accept any gift if the conditions attached thereto by the person making the gift are inconsistent with the functions of the Agency under this Act.

#### **12. Residence, offices and premises**

(1) For the purposes of providing residential accommodation for its staff, offices and premises as may be considered necessary for the performance of its functions under this Act, the Agency may-

(a) purchase or take on lease any interest in land; and

(b) build, furnish, equip and maintain residential quarters, offices and premises.

(2) Subject to the Land Use Act, the Agency may, with the approval of the President, sell or lease any residential quarters, land, offices or premises held by it and no longer required for the performance of its functions.

[Cap. L5.]

#### **13. Fund of the Agency**

(1) The Agency shall establish and maintain a fund from which there shall be defrayed all expenses incurred by the Agency in the performance of the Agency's duties and functions under this Act.

(2) The fund established under subsection (1) of this section shall consist of the following, that is-

(a) 25 per cent of the one per cent Ecological Fund of the Federation Account;

- (b) such sums as may, from time to time, be granted to the Agency by the Government of the Federation;
- (c) all money raised for the purposes of the Agency by way of gifts, grants-in-aid, testamentary dispositions and sale of publications;
- (d) subscriptions, fees and charges for services rendered by the Agency and all other sums that may accrue to the Agency from any other source.

[1992 No. 59.]

#### **14. Borrowing power**

(1) The Agency may, with the consent of the President or in accordance with the general authority given by the Federal Government, borrow by way of loan or overdraft from any source any moneys required by the Agency to meet its obligations and its functions under this Act, so however that no such consent or authority shall be required where the sum or aggregate of the sums involved at any time does not exceed such amount as is for the time being specified in relation to the Agency by the Federal Government.

(2) The Agency may, subject to the provisions of this Act and the conditions of any trust in respect of any property, invest all or any of its funds with the like consent or general authority.

(3) The Agency may invest any of its surplus funds in such securities as may be permitted by law.

#### **15. Annual estimates, accounts, and audit**

(1) The Agency shall cause to be prepared not later than six months before the end of each year an estimate of the expenditure and income of the Agency during the next succeeding financial year and, when prepared, they shall be submitted to the Minister.

(2) The Agency shall cause to be kept proper accounts and proper records in relation thereto and, when certified by the Agency, such accounts shall be audited as provided in subsection (3) of this section.

(3) The accounts of the Agency shall be audited as soon as may be practicable after the end of each year by auditors appointed from the list and in accordance with the guidelines supplied by the Auditor-General for the Federation.

### **PART II**

#### *National environmental standards*

##### *Water quality*

#### **16. Federal water quality standards**

(1) The Agency shall make recommendations to the President for the purpose of establishing water quality standards for the inter-State waters of Nigeria to protect the public health or welfare and enhance the quality of water to serve the purposes of this Act.

(2) In establishing such standards, the Agency shall take into consideration the use and value for public water supplies, propagation of fish and wildlife, recreational purposes, agricultural, industrial and other legitimate uses.

(3) The Agency shall establish different water quality standards for different uses.

### **17. Effluent limitations**

(1) The Agency shall, as soon as possible after the commencement of this Act, establish effluent limitations for new point sources which shall require application of the best control technology currently available and implementation of the best management practices.

(2) The Agency shall, as soon as possible after the commencement of this Act, establish effluent limitations for existing point sources which shall require the application of the best management practices under circumstances as determined by the Agency, and shall include schedules of compliance for installation and operation of the best practicable control technology as determined by the Agency.

### *Air quality and atmospheric protection*

### **18. Air quality, etc.**

(1) The Agency shall establish more criteria, guidelines, specifications and standards to protect and enhance the quality of Nigeria's air resources so as to promote the public health or welfare and the normal development and productive capacity of the nation's human, animal or plant life, and include in particular-

- (a) minimum essential air quality standards for human, animal or plant health;
- (b) the control of concentration of substances in the air which separately or in combination are likely to result in damage or deterioration of property or of human, animal or plant health;
- (c) the most appropriate means to prevent and combat various forms of atmospheric pollution;
- (d) controls for atmospheric pollution originating from energy sources, including that produced by aircraft and other self-propelled vehicles and in factories and power generation stations;
- (e) standards applicable to emission from any new mobile source which in the Agency's judgement causes or contributes to air pollution which may reasonably be anticipated to endanger public health or welfare; and
- (f) the use of appropriate means to reduce emission to permissible levels.

(2) The Agency may establish monitoring stations or networks to locate sources of atmospheric pollution and determine their actual or potential danger.

### **19. Ozone protection**

(1) The Agency shall undertake to study data and recognise developments in international force and other countries regarding the cumulative effect of all substances, practices, processes and activities which may affect the stratosphere, especially ozone in the stratosphere.

(2) The Agency may make recommendations and programmes for the control of any substance, practice, process or activity which may reasonably be anticipated to affect the stratosphere, especially ozone in the stratosphere, when such effect may reasonably be anticipated to endanger public health or welfare.

(3) For the purposes of this section, "stratosphere" means that part of the atmosphere above the troposphere.

#### *Noise*

### **20. Noise control**

(1) The Agency shall, as soon as practicable after the commencement of this Act, in consultation with appropriate authorities-

- (a) identify major noise sources, noise criteria and noise control technology; and
- (b) establish such noise abatement programmes and noise emission standards as it may determine necessary to preserve and maintain public health or welfare.

(2) Any noise criteria identified under this section shall reflect the scientific knowledge most useful in indicating the kind and extent of all identifiable effects on the public health or welfare which may be expected from differing qualities and quantities of noise.

(3) The Agency shall make recommendations to control noise originating from industrial, commercial, domestic, sports, recreational, transportation or other similar activities.

#### *Hazardous substances*

### **21. Discharge of hazardous substances**

(1) The discharge in such harmful quantities of any hazardous substance into the air or upon the land and the waters of Nigeria or at the adjoining shorelines is prohibited, except where such discharge is permitted or authorised under any law in force in Nigeria.

(2) Any person who violates the provisions of subsection (1) of this section commits an offence and shall on conviction be liable to a fine not exceeding ₦100, 000 or to imprisonment for a term not exceeding ten years or to both such fine and imprisonment.

(3) Where an offence under subsection (1) of this section is committed by a body corporate it shall on conviction be liable to a fine not exceeding ₦500, 000 and an additional fine of ₦1, 000 for every day the offence subsists.

(4) Where any offence under this Act has been committed by a body corporate, the body corporate and every person who at the time the offence was committed was in charge of, or was responsible to the body corporate for the conduct of the business of the body corporate, shall be deemed to be guilty of such offence and shall be liable to be proceeded against and punished accordingly:

Provided that nothing contained in this subsection shall render any person liable to any punishment, if he proves that the offence was committed without his knowledge or that he exercised all due diligence to prevent the commission of such offence.

(5) The Agency shall, as soon as possible after the commencement of this Act, determine for the purposes of this section what substances are hazardous substances and such hazardous substances, the discharge of which shall be harmful under the circumstances to public health or welfare and, for this purpose, the Agency shall take into account such special circumstances including locations, quantity and climatic conditions relating to discharge as it may determine appropriate.

(6) Notwithstanding the provisions of this section or of any other sections of this Act the provisions of the Harmful Waste (Special Criminal Provisions, etc.) Act shall apply in respect of any hazardous substance constituting harmful waste as defined in section 15 thereof.

[Cap. HI.]

## **22. Spiller's liability**

(1) Except where an owner or operator can prove that a discharge was caused solely by a natural disaster or an act of war or by sabotage, such owner or operator of any vessel or onshore or offshore facility from which the hazardous substance is discharged in violation of section 21 of this Act, shall in addition to the penalty specified in that section be liable for-

- (a) the cost of removal thereof, including any costs which may be incurred by any Government body or agency in the restoration or replacement of natural resources damaged or destroyed as a result of the discharge; and
- (b) costs of third parties in the form of reparation, restoration, restitution or compensation as may be determined by the Agency from time to time.

(2) The owner or operator of a vessel or onshore or offshore facility from which there is a discharge in violation of section 21 of this Act shall, to the fullest extent possible, act to mitigate the damage by-

- (a) giving immediate notice of the discharge to the Agency and any other relevant agencies;
- (b) beginning immediate clean-up operations following the best available clean-up practice and removal methods as may be prescribed by regulations made under section 23 of this Act; and
- (c) promptly complying with such other directions as the Agency may, from time to time, prescribe.

## **23. Removal methods, etc.**

The President for purposes of this Part of this Act may, by regulations, prescribe any specific removal methods, national contingency plans, financial responsibility levels for owners or operators of vessels, or onshore or offshore facilities, notice and reporting requirements, penalties and compensation as he may determine necessary to minimise pollution by any hazardous substance.

## **24. Co-operation with the Ministry of Petroleum Resources**

The Agency shall co-operate with the Ministry of Petroleum Resources (Department of Petroleum Resources) for the removal of oil-related pollutants discharged into the Nigerian environment and play such supportive role as the Ministry of Petroleum Resources (Department of Petroleum Resources) may, from time to time, request from the Agency.

### PART III

#### *Establishment of State and local government environmental protection bodies*

#### **25. Establishment of State and local government bodies**

The President shall, as soon as possible after the commencement of this Act, encourage States and local government councils to set up their own environmental protection bodies for the purpose of maintaining good environmental quality in the areas of related pollutants under their control, subject to the provisions of this Act.

### PART IV

#### *Supplementary and miscellaneous*

#### *Enforcement powers*

#### **26. Powers to inspect, etc.**

For the purposes of enforcing this Act, any authorised officer may, without a warrant-

- (a) require to be produced, examine and take copies of, any licence, permit, certificate or other document required under this Act or any regulations made thereunder;
- (b) require to be produced and examine any appliance, device or other item used in relation to environmental protection.

#### **27. Powers to search, seize and arrest**

(1) Any authorised officer, where he has reasonable grounds for believing that an offence has been committed against this Act or any regulations made thereunder, may without a warrant-

- (a) enter and search any land, building, vehicle, tent, vessel, floating craft or any inland water or other structure whatsoever, in which he has reason to believe that an offence against this Act or any regulations made thereunder has been committed;
- (b) perform tests and take samples of any substances relating to the offence which are found on the land, building, vehicle, tent, vessel, floating craft or any inland water or other structure whatsoever, searched pursuant to paragraph (a) of this subsection;
- (c) cause to be arrested any person who he has reason to believe has committed such offence; and
- (d) seize any item or substance which he has reason to believe has been used in the commission of such offence or in respect of which the offence has been committed.

(2) A written receipt shall be given for any article or thing seized under subsection (1) of this section and the grounds for such seizure shall be stated on such receipt.

#### **28. Obstruction of authorised officers**

Any person who-

(a) wilfully obstructs any authorised officer in the exercise of any of the powers conferred on him by this Act; or

(b) fails to comply with any lawful enquiry or requirements made by any authorised officer in accordance with the provisions of section 26 of this Act,

commits an offence and shall on conviction be liable to a fine not exceeding N500,000 or to imprisonment for a term not exceeding ten years or to both such fine and imprisonment.

### **29. Authorised officers to disclose identity**

(1) Any authorised officer, not in uniform when acting under the provisions of this Act, shall, on demand, declare his office and produce to any person against whom he is taking action such identification or written authority as may reasonably be sufficient to show that he is an authorised officer for the purposes of this Act.

(2) It shall not be an offence for any person to refuse to comply with any request, demand or order made by any authorised officer not in uniform, if such authorised officer refuses, on demand being made by such person, to declare his office or produce such identification or written authority.

### **30. Procedure in respect of suits against the Agency**

(1) No suit against the Agency, a member of the Agency or any employee of the Agency for any act done in pursuance or execution of any law, or of any public duties, or in respect of any alleged neglect or default in the execution of such law, duties or authority, shall lie or be instituted in any court unless it is commenced within twelve months next after the act, neglect or default complained of or, in the case of a continuance of damage or injury, within twelve months next after the ceasing thereof.

(2) No suit shall be commenced against the Agency before the expiration of a period of one month after written notice of intention to commence the suit shall have been served upon the Agency by the intending plaintiff or his agent; and the notice shall clearly and explicitly state-

(a) the cause of action;

(b) the particulars of the claim;

(c) the name and place of abode of the intending plaintiff; and

(d) the relief which he claims.

### **31. Service of documents**

The notice referred to in section 30 (2) of this Act and any summons, notice or other document required or authorised to be served upon the Agency under the provisions of this Act or any other law, may be served by delivering the same to the chairman or the Director-General, or by sending it by registered post addressed to the Director-General, at the Secretariat of the Agency.

### **32. Restriction on execution against the property of the Agency**

In any action or suit against the Agency, no execution or attachment or process in the nature thereof shall be issued against the Agency, but any sums of money which by judgment of the court are awarded against the Agency shall, subject to any directions given by the Agency, be paid from the general reserve fund of the Agency.

### **33. Indemnity of members of the Agency and employees of the Agency**

Every member of the Agency, or agent, auditor or employee for the time being of the Agency, shall be indemnified out of the assets of the Agency against any liability incurred by him in defending any proceeding, whether civil or criminal, if any such proceeding is brought against him in capacity as such member, agent, auditor or employee as aforesaid.

### **34. Annual report**

The Agency shall, not later than 30 September in each year, submit to the Minister a report on the activities of the Agency and its administration during the immediately preceding year and shall include in such report the audited accounts of the Agency.

#### *General penalties and legal proceedings*

### **35. Material misrepresentation and impersonation**

(1) If a person knowingly or recklessly makes any statement in purported compliance with a requirement to furnish information, which is false in a material particular, he commits an offence and shall on conviction be liable to a fine not exceeding ₦200 or imprisonment for a term not exceeding one year or to both such fine and imprisonment.

(2) Any person who falsely represents himself to be an authorised officer of the Agency and assumes to do any act or to attend in any place for the purpose of doing any act on behalf of the Agency, shall be guilty of an offence under this Act and on conviction shall be liable to imprisonment for a term not exceeding two years.

### **36. General penalties**

Any person who contravenes any provisions of this Act or any regulation made thereunder commits an offence and shall on conviction, where no specific penalty is prescribed therefor, be liable to a fine not exceeding ₦20,000 or to imprisonment for a term not exceeding two years or to both such fine and imprisonment.

### **37. Companies and firms liable**

Where any offence against this Act or any regulations made thereunder has been committed by a body corporate or by a member or a partnership or other firm or business, every director or officer of that body corporate or any member of the partnership or other person concerned with the management of such firm or business shall, on conviction, be liable to a fine not exceeding ₦500,000 for such offence and, in addition, the body corporate, firm or partnership shall be directed to pay compensation for any damage resulting from such breach thereof or to repair and restore the polluted environmental area to an acceptable level as approved by the Agency.

[1992 No. 59.]

*Miscellaneous*

### **38. Delegation of functions, etc.**



(1) The Council may delegate any of its functions and duties under this Act to the Technical Committee or the Director-General, as the case may be.

[1992 No. 59.]

(2) Nothing contained in subsection (1) of this section shall preclude the exercise by the Council of any of the functions or duties delegated by it to the Technical Committee or the Director-General.

[1992 No. 59.]

### **39. Repeal, etc.**

(1) The Natural Resources Conservation Act is hereby repealed.

[1992 No. 59.]

(2) The repeal of the enactment referred to in subsection (1) of this section shall not affect anything done or purported to have been done under the repealed enactment.

[1992 No. 59.]

### **40. Power to make regulations**

The Director-General may, with the approval of the Council, make regulations generally for the purposes of this Act and without prejudice to the generality of the foregoing, the Director-General may, in particular, prescribe standards for-

- (a) water quality;
- (b) effluent limitations;
- (c) air quality;
- (d) atmospheric protection;
- (e) ozone protection;
- (f) noise control; and
- (g) control of hazardous substances and removal control methods.

[1992 No. 59.]

### **41. Interpretation**

In this Act, unless the context otherwise requires-

**"appropriate agencies"** means any government agencies which have jurisdiction over the land or water affected by the pollution or any government agencies which ordinarily have jurisdiction over the operation which led to the pollution;

**"authorised officer"** means any employee of the Agency, any police officer not below the rank of an Inspector of Police, or any customs officer;

**"court"** means the Federal High Court;

**"Director"** means the Director of the Federal Environmental Protection Agency;

**"disposal"** includes both land-based disposal and dumping in waters and airspace of Nigeria;

**"effluent limitation"** means any restriction established by the Agency of quantities, rates and concentration of chemical, physical, biological or other constituents which are discharged from point sources into the waters of Nigeria;

**"environment"** includes water, air, land and all plants and human beings or animals living therein and the inter-relationships which exist among these or any of them;

**"hazardous substance"** includes any substance designated as such by the President by order published in the Federal Gazette;

**"new source"** means any source, the construction of which is commenced after the publication of any regulations prescribing a standard of performance under this Act, which are applicable to such source;

**"offshore facility"** means any facility of any kind located over, in, or under any of the waters of Nigeria;

**"onshore facility"** means any facility (including, but not limited to motor vehicles and rolling stock) of any kind located over, in, or under any land within Nigeria other than submerged land;

**"owner"** or **"operator"** means-

- (a) in the case of a vessel, any person owning, operating or chartering by demise such vessel;
- (b) in the case of an onshore facility or an offshore facility, any person owning or operating such onshore facility or offshore facility; and
- (c) in the case of any abandoned offshore facility, the person who owned or operated such facility immediately prior to such abandonment; from which pollutants are or may be discharged;

**"point source"** means any discernible, confined and discrete conveyance, including but not limited to any pipe; ditch, channel, tunnel, conduit, well, discrete fissure, container, rolling stock, concentrated animal feeding operation or vessel or other floating craft from which pollutants are or may be discharged;

**"pollution"** means man-made or man-aided alteration of chemical, physical or biological quality of the environment to the extent that is detrimental to that environment or beyond acceptable limits and **"pollutant"** shall be construed accordingly;

**"removal"** means removal of hazardous substances from waters of Nigeria, including shorelines or the taking of such other action as may be necessary to minimise or mitigate damage to the public health or welfare, ecology and natural resources of Nigeria;

**"waters of Nigeria"** means all water resources in any form, including atmospheric, surface and subsurface, and underground water resources where the water resources are inter-State, or in the Federal Capital Territory, territorial waters, Exclusive Economic Zone or in any other area under the jurisdiction of the Federal Government.

#### **42. Short title**

This Act may be cited as the Federal Environmental Protection Agency Act.

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### SCHEDULE

[Section 2 (3).]

#### SUPPLEMENTARY PROVISIONS RELATING TO THE AGENCY

##### *Proceedings*

1. Subject to this Act and section 27 of the Interpretation Act (which provides for decisions of a statutory body to be taken by a majority of its members and for the person presiding to have a second or casting vote), the Council may make standing orders regulating the proceedings of the Council or any committee thereof.

[Cap. 123.]

2. Every meeting of the Council shall be presided over by the chairman or in his absence the members present at the meeting shall elect one of their number to preside at the meeting.

3. The quorum at a meeting of the Council shall consist of the chairman (or in an appropriate case the person presiding at the meeting pursuant to paragraph 2 of this Schedule) and six other members.

4. Where upon any special occasion the Council desires to obtain the advice of any person on any particular matter, the Council may co-opt that person to be a member for as many meetings as may be necessary; and that person while so co-opted shall have all the rights and privileges of a member except that he shall not be entitled to vote.

##### *Committees*

5. (1) Subject to its standing orders, the Council may appoint such number of standing and ad hoc committees as it thinks fit to consider and report on any matter with which the Council is concerned.

(2) Every committee appointed under the foregoing provisions of this paragraph shall be presided over by a member of the Council and shall be made up of such number of other persons, not necessarily members of the Council, as the Council may determine in each case.

(3) The quorum of any committee set up by the Council shall be as may be determined by the Council.

6. Where standing orders made pursuant to paragraph 1 of this Schedule provide for a committee of the Council to consist of co-opted persons who are not members of the Council, the committee may advise the Council on any matter referred to it by the Council and the members thereof may attend any meeting of the Council for that purpose.

*Miscellaneous*

7. The fixing of the seal of the Agency shall be authenticated by the signature of the Director-General of the Agency.

[1992 No. 59.]

8. Any contract or instrument which, if made by a person not being a body corporate, would not be required to be under seal, may be made or executed on behalf of the Agency by the Director or by any other person generally or specially authorised to act for that purpose by the Council.

9. Any document purporting to be a contract, instrument or other document duly signed or sealed on behalf of the Agency shall be received in evidence and shall, unless the contrary is proved, be presumed without further proof to have been so signed or sealed.

10. The validity of any proceedings of the Council or of a committee thereof shall not be adversely affected-

- (a) by any vacancy in the membership of the Council or any committee thereof; or
- (b) by any defect in the appointment of a member of the Council or any committee thereof.

11. Any member of the Council or a committee thereof who has a personal interest in any contract or arrangement entered into or proposed to be considered by the Agency or committee thereof shall forthwith disclose his interest to the Council or the committee and shall not vote on any question relating to the contract or arrangement.

12. No member of the Council shall be personally liable for any act done or omission made in good faith while engaged on the business of the Agency.

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FEDERAL ENVIRONMENTAL PROTECTION AGENCY ACT

**SUBSIDIARY LEGISLATION**

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List of Subsidiary Legislation

1. National Environmental Protection (Effluent Limitation) Regulations.
2. National Environmental Protection (Pollution Abatement in Industries and Facilities Generating Wastes) Regulations.

3. National Environmental Protection (Management of Solid and Hazardous Wastes) Regulations.

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NATIONAL ENVIRONMENTAL PROTECTION (EFFLUENT LIMITATION) REGULATIONS

[S.I. 8 of 1991.]

under section 40

[15th August, 1991]

[Commencement. ]

**1. Installation of anti-pollution equipment**

(1) Every industry shall install anti-pollution equipment for the detoxification of effluent and chemical discharges emanating from the industry.

(2) An installation made pursuant to paragraph (1) of this regulation shall be based on the Best Available Technology (BAT), the Best Practical Technology (BPT) or the Uniform Effluent Standards (UES).

**2. Waste water parameters**

(1) The selected waste water parameters for the industries specified in column 1 of the First Schedule to these Regulations are set out in columns 2 and 3 respectively of the Schedule.

[First Schedule.]

(2) The parameters shall be continuously monitored to ensure compliance with these Regulations.

**3. Treatment of effluent**

(1) An industry which discharges effluent shall treat the effluent to a uniform level as specified in the Second Schedule to these Regulations to ensure assimilation by the receiving water into which the effluent is discharged.

[Second Schedule.]

(2) The nearest office of the Federal Environmental Protection Agency shall be furnished from time to time with the composition of any effluent treated as specified in paragraph (1) of this regulation.

**4. Additional sectoral effluent limitation treatment**

An industry specified in column 1 of the Third Schedule to these Regulations shall be subject to the additional sectoral effluent limitations set out in columns 2 and 3 respectively of the Schedule.

[Third Schedule.]

**5. Penalty**

A person who contravenes a provision of these Regulations is guilty of an offence and liable on conviction to the penalty specified in section 36 or 37 of the Federal Environmental Protection Agency Act.

**6. Short title**

These Regulations may be cited as the National Environmental (Effluent Limitation) Regulations.

SCHEDULES

FIRST SCHEDULE

[Regulation 2.]

*Important waste water parameters for selected industrial classifications*

<i>Column 1</i>	<i>Column 2</i>	<i>Column 3</i>
<i>Industry</i>	<i>*Group 1</i>	<i>*Group 11</i>
(A) Aluminium industry	Suspended Solids, Free Chlorine Fluoride, phosphorus, oil and Grease, PH	Total Dissolved phenol, Aluminium
Automobile industry	Suspended Solids, Oil and Crease, BOD <sub>5</sub> Chromium, Tin, Phosphorus, Cyanide, Copper, Nickel, Iron, Zinc and Phenol	COD, Chlorides, Nitrate, Ammonia, Sulphates, Tin, Lead, Cadmium, Total Dissolved Solids
(C) Cane Sugar Processing Industry	BOD <sub>5</sub> , pH, Suspended Solids, Settleable Solids, Total Coliform, Oil and Grease, Toxic Materials	Alkalinity, Nitrogen, Total Temperature, Total Dissolved Solids, Colour, Turbidity, Foam.
(D) Canned and Preserved Fruits and Vegetables Industry	BOD <sub>5</sub> , COD, pH	Colour, Faecal Coliforms, Phosphorus, Total Suspended Solids, Temperature, Total Dissolved Solids, Total Inorganic Carbon.

(E)	Confined Livestock Feeding Industry	BOD <sub>5</sub> COD	Faecal Coliforms, Nitrogen, Total Solids, phosphate, pH, TOC.
(F)	Beverage Industry	BOD <sub>5</sub> pH, Suspended Solids, Settleable Solids, Total Coliform, Oil and Grease, Toxic Materials	Alkalinity, Nitrogen, Phosphorus, Temperature, Total Dissolved Solids, Colour, Turbidity, Foam.
(G)	Dairy Industry	BOD <sub>5</sub> , COD, pH, Suspended Solids	Chlorides, Colour, Nitrogen, Phosphorus, Temperature, Total Organic Carbon, Toxicity, Turbidity.
(H)	Fertilizer Industry: Nitrogen Fertilizer Industry	Ammonia, Chloride, Chromium, Total Dissolved Solids, Nitrate, Sulphate, Suspended Solids, Urea and other	Calcium, COD, Gas Purification Chemicals, Iron, Total Oil and Greases, pH, Phosphate, Sodium, Temperature.
(I)	Phosphate Fertilizer Industry	Organic Nitrogen Compounds, Zinc Calcium, Dissolved Solids, Fluoride, pH, phosphorus Phosphorus, Suspended Solids, Temperature	Acidity, Aluminium, Arsenic, Iron, Mercury, Nitrogen, Sulphate, Uranium.
(J)	Flat Glass, Cement Lime, Sulphate, Gypsum and industries	COD, pH, Phosphorus, Suspended Solids, Temperature	BODS, Chromates, Zinc, Copper, Chromium, Iron, Tin, Silver Nitrate, Organic and Asbestos Inorganic Water Breaking Chemicals, Synthetic Resins, Total Dissolved Solids.
	Cement, Concrete Lime and Gypsum	COD, pH, Suspended Solids, Temperature	Alkalinity, Chromates, Zinc, Sulphite, Total Dissolved Solids.
	Asbestos	COD, pH, TOC, Suspended Solids	Chromates, Phosphates, Zinc, Sulphite, Total Dissolved, Solids.
(J)	Grain Milling Industry	BOD <sub>5</sub> , Suspended Solids, Temperature	COD, pH, TOC, Total Dissolved Solids.
(K)	Inorganic Chemicals; Alkaline and Chlorine Industry	Acidity/Alkalinity, Total Solids, Total Suspended Solids, Chlorides, Sulphates	BOD <sub>5</sub> , COD, TOC, Chlorinated Benzeniods, Polynuclear Aromatics, Phenols, Fluorides, Silicates, Total Phosphorus, Cyanide, Mercury, Chromium, Lead, Titanium, Iron, Aluminium, Boron, Arsenic, Temperature.

(L)	Leather Tanning and Finishing	BOD <sub>5</sub> , COD, Chromium, Oil Grease, PH, Suspended Solids, Total Solids	Alkalinity, Colour, Hardness, Nitrogen Sodium Chloride Industry Temperature Toxicity.
(M)	Meat Product	BOD <sub>5</sub> , pH, Suspended Solids, Settleable Solids, Oil and Grease, Total Coliform, Toxic Materials.	Ammonia, Turbidity, Total Dissolved Solids, Phosphates, Colour. Industry
(N)	Metal Finishing	COD, Oil and Grease, Heavy, Metals, Suspended Solids, Cyanide	None Specified.
(O)	Organic Chemicals Industry	BOD <sub>5</sub> , COD, pH, Total Suspended Solids, Free- Floating Oil	TOC, Organic Chloride, Total I Phosphorus, Heavy Metals, Phenols, Cyanides, Total Nitrogen, Other Pollutants.
(P)	Petroleum Refining Industry	Ammonia, BOD <sub>5</sub> , Chromium, COD, Oil, pH, Phenols, Sulphides Suspended Solids, Temperature Total Dissolved Solids	Chloride, Colour, Copper, Cyanide, , Iron, Lead Mercaptans, Nitrogen, Odour, Total Phosphorus, Sulphate, TOC, Toxicity, Turbidity, Volatile Suspended Solids, Zinc.
(Q)	Plastic Materials and Synthetics Industry	BOD <sub>5</sub> , COD, pH, Total Suspended Solids, Oil and Grease, Phenols	Total Dissolved Solids, Sulphates, Phosphorus, Nitrate, , Organic Nitrogen, Ammonia, Cyanides, Toxic Additives and Materials, Chlorinated Benzenoids and Polynuclear Aromatics, Zinc, Mercaptans.
(R)	Pulp and Paper Industry and Grease	BOD <sub>5</sub> , COD, TOC, pH, Total Suspended Solids, Coliform, Faecal Coliform, Colour, Heavy Metals, Toxic Materials, Turbidity Ammonia, Oil Phenols, Sulphide	Nutrients (Nitrogen and Phosphorus), Total Dissolved Solids.
(S)	Steam Generation and Steam Electric Power Generation	BOD <sub>5</sub> , Chlorine, Chromate Oil, pH, Phosphate, Suspended Solids, Temperature	Boron, Copper, Iron Non- degradable Organics, Total Dissolved Solids, Zinc.
(T)	Steel Industry	Oil and Grease, pH, Chloride, Sulphates, Ammonia, Cyanides, Phenols, Suspended Solids, Iron, Tin, Temperature, Chromium, Zinc	None specified.
(U)	Textile Mill Products Industry	BOD <sub>5</sub> , COD, pH, Suspended Solids, Chromium, Phenolics, Sulphide, Alkalinity	Heavy Metals, Colour, Oil and Grease, Total Dissolved Sulphides, Temperature, Toxic Materials.



\*Group I : Most significant parameters for which effluent limit will most often be set

. \*Group II : Additional parameters.

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SECOND SCHEDULE

[Regulation 3.]

*Effluent limitation guidelines in Nigeria for all categories of industries*

*Units in milligram per litre*

*(mg/l) unless otherwise stated*

<i>Parameters</i>	<i>Limit for discharge into surface water</i>	<i>Limit for land water</i>
<i>Temperature</i>	<i>Less than 40°C within 15 metre of outfall</i>	<i>Less than 40 °C</i>
<i>Colour (Lovibond Units)</i>	7	---
PH .....	6-9	6-9
BOD5 at 20°C .....	30 (30)	50 (50)
Total suspended solids.....	30	----
Total dissolved solids .....	2,000	2,000
Chloride (as Cl) .....	600	600
Sulphate (as SO <sub>4</sub> <sup>2-</sup> ) .....	500	1,000
Sulphide (as S <sup>2-</sup> ).....	0.2	----
Cyanide (as CN-).....	0.1	---
Detergents (Linear alkylate sulphonate as methylene blue active substance) .....	15	15
Oil and grease.....	10	20 (20)
Nitrate (as NO <sub>3</sub> ).....	20	--
Phosphate (as PO <sub>4</sub> <sup>3-</sup> ) .....	5	10
Arsenic (as As).....	0.1	--

Barium (as Ba) .....	5	5
Tin (as Sn) .....	10	10
Iron (as Fe) .....	20	--
Manganese (as Mn) .....	5	--
Phenolic compounds (as phenol) .....	.02	-
Chlorine (free) .....	1.0	-
Cadmium, Cd .....	Less than 1	-
Chromium (trivalent and hexavalent) .....	Less than 1	-
Copper.....	Less than 1	-
Lead .....	Less than 1	-
Mercury.....	0.05	-
Nickel.....	Less than 1	-
Selenium .....	Less than 1	-
Silver .....	0.1	-
Zinc .....	Less than 1	-
Total metals.....	3	-
Calcium (as Ca <sup>2+</sup> ) .....	.200	-
Magnesium (as Mg <sup>2+</sup> ) .....	200	-
Boron (as B) .....	5	5
Alkyl mercury compounds.....	Not detectable	Not detectable
Polychlorinated Biphenyl (PCBs) .....	0.003	0.003
Pesticides (Total).....	Less than 0.01	Less than 0.01
Alpha emitters, uc/ml.....	10 <sup>-7</sup>	-
Beta emitters, uc/ml.....	10 <sup>-6</sup>	-
Coliform (daily average) .....	.400 MPN/100ml	500 MPN/100ml
Suspended fibre .....	-	-

Third Schedule

[Regulation 4.]

NATIONAL EFFLUENT LIMITATIONS AND GASEOUS EMISSIONS GUIDELINES IN NIGERIA FOR SPECIFIC INDUSTRIES

<i>Industry</i>	<i>Problems</i>	<i>Guidelines for concentration charge into</i>	<i>Maximum allowed for dis-inland waters</i>
<i>Agricultural Chemicals</i>	<i>Phosphate Fertilizer</i>		<i>Effluent (mg/l)</i>
(Waste Water).....	Gypsum sludge.....	Suspended solids .....	15
	Acid waste water.....	Phosphate (P043 _).....	3
	High fluoride.....	Fluorides (F-) .....	1
	High phosphate.....	pH .....	8-9

*Nitrogenous Fertilizer*

Similar problem .....	Free Ammonia (as NH <sub>4</sub> <sup>+</sup> ) .....	0.1
	Arsenic (as As) .....	0.1
	PH .....	6-9
	N03 .....	20

*Urea Fertilizer*

Similar problem.....	Ammonia (as N) .....	0.6
	PH .....	6-9
Pesticides	Total Pesticides Less than Emission (mg/m <sup>3</sup> ).....	0.1

<i>Industry</i>	<i>Problems</i>	<i>Guidelines for concertration charge into</i>	<i>Maximum allowed for disland waters</i>
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<i>Agricultural Chemicals</i>	<i>Phosphate Fertilizer</i>		<i>Effluent (mg/l)</i>
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*Brewery*

(Gaseous Emission).....	Particulate matter from blend-ing and mixing .....	Particulate.....	100
	Fluorides .....	Fluoride .....	9.0

Ammonia vapours.....	Ammonia .....	3,600
Pesticide vapours.....	Total Pesticides .....	100

(Solid Wastes)..... High volume gypsum from fertilizer manufacture

*Effluent (mg/l)*

*Automotive Battery*

Total suspended solids

(TSS) ..... 28

(Waste Water)..... Acid Waste Water ..... Oil and grease..... 10

pH ..... 6-9

Iron ..... 0.20

Cadmium ..... 0.01

Nickel ..... 0.05

Copper..... 0.06

Lead ..... 0.01

Cobalt..... 0.5

Arsenic..... 0.1

(Gaseous Emission)..... Lead particulate

(Solid Wastes) ..... Defective battery casing

Defective lead plates Brewery

<i>Industry</i>	<i>Problems</i>	<i>Guidelines for concentration charge into</i>	<i>Maximum allowed for disland waters</i>
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<i>Agricultural Chemicals</i>	<i>Phosphate Fertilizer</i>		<i>Effluent (mg/l)</i>
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*Brewery*

	Alkaline effluent .....	Suspended solids .....	15
	High suspended solids.....	BODs .....	30
(Waste Water) .....	High BOD.....	pH .....	6-9
	High COD .....	COD.....	80
(Solid Wastes).....	Spent grain		
	Defective packaging materials		
	and labels		
	Broken bottles		

*Effluent (mg/l)*

*Dyestuffs and Dye Intermediates*

	Coloured effluent .....	Suspended solids .....	5.0
	High suspended solids		
(Waste Water).....	High BOD .....	Zinc (as Zn).....	3.0
	High COD .....	BOD <sub>5</sub> .....	15
		Oil and grease .....	15
(Gaseous Emission).....	Organic vapour		
(Solid Wastes).....	Sludge		

*Effluent (mg/l)*

*Food Processing*

High BODs .....	BOD <sub>5</sub> .....	15
	Oil and grease .....	15
Oil and grease.....	Suspended solids.....	15

<i>Industry</i>	<i>Problems</i>	<i>Guidelines for concentration charge into</i>	<i>Maximum allowed for disland waters</i>
<i>Agricultural Chemicals</i>	<i>Phosphate Fertilizer</i>		<i>Effluent (mg/l)</i>

*Brewery*

(Waste Water) ..... High suspended solids..... Particulate..... 100  
 Particulate matter from  
 grain elevators, starch  
 manufacturing, feed  
 and flour mills.

(Gaseous Emission)..... Odours from meat packing,  
 fish processing coffee roasting,  
 starch manufacturing and rend-  
 ering some solid wastes.

(Solid Wastes)

*Inorganic Chemicals*

Acid waste waters from  
 acid plants..... Suspended solids ..... 15

Gypsum sludge from soda ash  
 plants ..... Chlorides ..... 100  
 Chlorides from soda ash ..... Sulphates ..... 100

Plant and electrolytic Chlorine  
 plant, mercury from electrolytic  
 chlorine plants..... pH ..... 6-9

*Emission (ug/rn<sup>3</sup>)*

Particulate matter from ce-  
 ment, soda ash and brick  
 plants ..... Particulates ..... 100

Fluorides ..... Acetic acid ..... 2,500  
 (Gaseous Emission)..... Acid mist ..... Fluorides..... 100  
 SO<sup>2</sup> ..... Hydrochloric acid..... 100  
 Chlorine (as Cl<sub>2</sub>) ..... Nitric acid ..... 100  
 No<sub>x</sub> from acid plants ..... Hydrogen sulphide ..... 30

<i>Industry</i> <i>Maximum allowed</i> <i>for disland waters</i>	<i>Problems</i>	<i>Guidelines for concerntration</i> <i>charge into</i>
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*Agricultural*  
*Chemicals*

*Phosphate Fertilizer*

*Effluent (mg/l)*

*Brewery*

SO<sub>2</sub>..... 830

No<sub>x</sub> ..... 500

(Solid Wastes).....Sludges

*Effluent (mg/l)*

*Iron and Steel*

(Waste water) ..... High suspended solids..... pH ..... 55-9.0

High phenols..... Suspended solids..... 15

High ammonia..... Ether solubles .....10

High cyanides ..... Phenol..... 0.020

Spent pickle liquors ..... NH<sub>3</sub> as N..... 10

Rolling mill oils .....Cyanide (CN) .....0.1

Oil and grease.....1.5

Fe less than .....1.0.

Suspended particulate ..... Particulate.....100.

Sulphur dioxide fromboilers,  
sinter plant, coke ovens and  
blast furnace..... SO<sub>x</sub> ..... 8.30

(Gaseous Emission)..... Furnace..... NO<sub>x</sub> ..... .500

(Solid Wastes).....Flue dust  
Slag Sludges

*Effluent (mg/l)*

*Metal Working, Plating and Finishing*

Acids ..... Hg .....0.01.

	Cyanides .....	Cu .....	1.0.
(Waste Water) .....	Toxic metals .....	Ni.....	1.0.
	Cutting and machine .....	Cr.....	1.0
		Zn .....	1.0.
		Pb .....	0.01
		Cd .....	0.01
		Sn .....	1.0
		TSS .....	1.5.0
		pH .....	5.5-9.5.

*Emission (ug/m<sup>3</sup>)*

(Gaseous Emission).....	Acid mist.....	Chromic acid .....	30
	Alkaline mist.....	Cyanide .....	1.150.
	Cyanides, fumes from anodizing, rust- proofing, cleaning, strpping, etc., operations.....	Hydrogen chloride .....	100.
		Fluorides.....	806.
		Nitric acid .....	100.
		Phosphoric acid .....	100.

(Solid wastes)..... Sludges containing metals

*Mining and Metallurgy*

(Waste water).....	High volume of suspended solids from milling of ores ( tailing).....	Suspended solids .....	15
		pH.....	5.5-9.0 Acid
wastes.....	Cu.....	less than .....	1
	Dissolved metals from high.....	Zn less than.....	1
	Sulphide ores processing.....	Ni less than .....	1
	Radionuc1ide .....	Nd less than .....	1
	Radioactive effluent from .....	Pb less than .....	1



Uranium mining tailings disposal..... Ra<sup>226</sup> ..... 226/3pCiL

*Emission (ug/m<sup>3</sup>)*

Airborne dust crushing, grinding, etc generation of arsine, acid fumes, ammonia vapour radon

gas and radioactivity

during uranium ..... Particulate ..... 100  
 Silica ..... 15  
 SO<sub>2</sub>..... 830  
 Ni ..... 5  
 Fe ..... 10  
 Cu ..... 100

(Gaseous Emission)..... Milling operations and dust during yellow cake handling  
 SO<sub>2</sub> generation from smelting

operation..... Arsine..... 10.  
 H<sub>2</sub>SO<sub>4</sub>..... 100  
 RNO<sub>3</sub>..... 100  
 NH<sub>3</sub> ..... 600

(Solid Wastes)..... Generation of waste rock and mine/mill waste

*Petroleum Refinery*

(Waste Water) ..... High waste volumes containing:.....

Temperatur (OC)..... 30.  
 pH ..... 6.5-8.5  
 phenolics..... Oil and grease..... 10  
 sulphides ..... Phenol (Total)..... 0.5  
 oil and oil products ..... Ammonia as NH<sub>4</sub><sup>+</sup>..... 0.20  
 (waste water) ..... Sulphide (as H<sub>2</sub>S) ..... 0.20  
 Total suspended solids..... 30

BOD <sup>5</sup> .....	10
COD .....	40
Total chromium .....	0.3
Chromium (VI) less than.....	0.01
Lead as pb <sup>2+</sup> .....	0.05
Cadmium less than.....	0.01
Cyanide less than .....	0.01

*Emission (ug/m<sup>3</sup>)*

(Gaseous Emission).....	Particulates.....	Particulate.....	500
	Sulphur dioxide (SO <sub>2</sub> ) .....	SO <sub>2</sub> .....	830
	NO <sub>x</sub> .....	NO <sub>x</sub> .....	500
	H <sub>2</sub> S-vapours .....	CO.....	5,000
	NH <sub>3</sub> .....	H <sub>2</sub> S.....	30
	Hydrocarbon vapours .....	Hydrocarbon.....	5,000
		Volatile Organic Carbon(VOC).....	6,000

(Solid Wastes)..... Oily chemical sludges, spent catalyst, discarded packaging materials.

*Effluent (mg/l)*

*Petrochemicals*

(Waste Water).....	High volume waste matter.....	Temperature (OC).....	30
	Storm water.....	pH.....	6.5-8.5
	Cooling water.....	oil and grease .....	1
		Phenol .....	0.5.
		Ammonia (NH <sub>4</sub> <sup>+</sup> ) .....	0.2
		Sulphide as H <sub>2</sub> S .....	0.2
		Total suspended solids .....	30

BOD <sub>5</sub> .....	10
COD .....	40
Lead as Pb <sup>2+</sup> .....	0.05
Chromium (VI) .....	<0.1
Cadmium as Cd <sup>2+</sup> .....	<0.1

*Emission (ug/m<sup>3</sup>)*

(Gaseous Emission).....	Particulate.....	Particulate.....	500.
	Carbon black dusts .....	Hydrocarbon.....	5,000
	SO <sub>x</sub> .....	Volatile organic carbon	
	NO <sub>x</sub> .....	(VOC) .....	6,000
	CO .....	Benzene.....	1,500
	Hydrocarbons (HC).....	Xylene.....	2,300
(Solid Wastes).....	Benzene.....	Toluene.....	2,300

Xylene

Oily chemical sludges Off speck  
products: (carbon black:  
polypropylene chunks)

Spent catalyst

Discarded packaging Material

*Effluent (mg/l)*

*Petroleum Exploration and Production Industry*

(Waste Water.....)	Produced formation .....	Temperature (OC).....	35
	Water.....	pH.....	6.5-8.5
	Oily waste waters .....	Oil and grease.....	10
	Drilling fluids .....	Total suspended solids .....	30
	Accidental spill of oil.....	BOD <sub>5</sub> .....	10
		COD .....	40
		Lead as Pb <sup>2+</sup> .....	0.05

Cr (VI) less than.....	0.1
Zinc as Zn <sup>2+</sup> .....	1.0
Copper as Cu <sup>2+</sup> .....	1.5
Cadmium as Cd <sup>2+</sup> .....	<0.5

*Emission (ug/m<sup>3</sup>)*

(Gaseous Emission)..... Hydrocarbon vapours drilling mud,  
drilling cuttings, produced sand,  
domestic wastes,  
oily sludges..... Hydrocarbon ..... 5,000

(Solid Wastes)

<i>Industry</i>	<i>Problems</i>	<i>Guidelines for concentration charge into</i>	<i>Maximum allowed for disland waters</i>
<i>Agricultural Chemicals</i>	<i>Phosphate Fertilizer</i>		

*Effluent (mg/l)*

*Pharmaceuticals*

(Waste Water) .....	None specified.....	BOD <sub>5</sub> .....	30
		Total suspended solids.....	25
		pH .....	6-9

*Plastic and Synthetics*

(Waste Water).....	High BOD .....	BOD <sub>5</sub> .....	10.
	High COD containing mercury, plasticiser and PCBs.....	Total suspended solids.....	30
		(TSS)	
		COD .....	40

Phenolics less than.....	0.50
Zinc less than.....	1.0
Chromium less than .....	0.10
Oils and grease .....	10.0
Fluoride (F-) less than .....	1.0
Copper (Cu <sup>2+</sup> ) less than .....	0.05

(Gaseous Emission)..... Volatile organic  
Hydrocarbons

(Solid Wastes) ..... Waste plastic products

*Pulp and Paper*

(Waste Water)..... High waste volumes containing:  
suspended bark and fibre from  
debaking and paper operations;  
fibres; spent liquors; wash waters  
from bleaching process; taste and  
odour producing wastes ..... BOD<sub>5</sub> .....15

COD .....100.

Suspended Solids .....30 .

Bleaching agent should not  
be detectable

Settleable matter..... 30.

*Emission (ug/m<sup>3</sup>)*

Particulates..... Particulate ..... 100.

(Gaseous Emission)..... Sulhur dioxide ..... Hydrogen sulphide (H<sub>2</sub>S) ..... 100

NOx from power boilers..... Sulphur dioxide (SO<sub>2</sub>) ..... 830

Calcium oxide, Calcium sulphate  
particulate from lime kilns, Foul  
gases from digester blow tanks,  
Particulate and sulphur compo  
unds from recovery bodies..... Nitrogen oxides (No<sub>x</sub>) ..... 500

(Solid Wastes)..... High volume of bark, sawdust and clarifier sludge

*Rubber Manufacturing*

*Effluent (mg/l)*

BOD ..... BOD<sup>5</sup> ..... 15.

Suspended solids

(Waste Water) ..... Toxic metals ..... Total suspended solids ..... 30

pH .....6-9

Lead (Pb) less than ..... 1

Chromium less than .....1.

Zinc (Zn) less than .....0.1.

(Gaseous Emission)..... Foul Gases..... Volatile Organic Carbon (VOC) .....2,000

(Solid wastes).....Waste latex

*Effluent (mg/l)*

*Service Industries*

Oily waste waters from maintainance shops fueling depots and washing platforms..... BOD<sub>5</sub>.....15.

Oil and grease .....10

COD .....40

Lead less than ..... 1.

(Waste Water) ..... High BOD wastes from tank car washing ..... Total Chromium less than..... 0.3

Zinc (Zn) less than ..... 0.1

Emission (ug/m<sup>3</sup>)

(Gaseous Emission).....	Exhaust fumes from idling containing SO <sub>2</sub> , NO <sub>2</sub> par ticulate .....	Particulate .....	100
		Sulphur dioxide (SO <sub>2</sub> ) .....	830
	Exhaust air from maintenance shops containing particulate, welding fumes, solvents, and paint spray booths, etc .....	Nitrogen oxides(NO <sub>x</sub> ).....	500
		Toluene .....	2,000
		Xylene .....	2,300
		VOC .....	6,000
		Benzene .....	1,500
	CO .....		5,000
	(hydrocarbons) .....		500

(Solid Wastes) .....Rags, wood, soil impregnated  
with oil or oily wastes due to  
spills or accidents.

*Effluent (mg/l)*

*Soap and Detergent*

(Waste Water) .....	High pH .....	COD .....	40
	Oil and grease .....	BODs .....	15
		Total suspended solids .....	<10
		Oil and grease .....	<10
		pH .....	6-9

*Emission (ug/m<sup>3</sup>)*

(Gaseous Emission).....	Particulate matter .....	Particulate .....	100
	Sulphur oxide .....	Sulphur dioxide .....	830

(Solid Wastes) ..... Packaging material

*Effluent (mg/l)*

*Sugar Processing*

(Waste Water).....	High BOD <sup>5</sup> .....	BOD <sub>5</sub> .....	30.
		Suspended solids.....	5

pH.....6-9.

Emission (ug/m<sup>3</sup>)

(Gaseous Emission)..... Bagasse dust..... Particulate ..... 500.

Press Cake Bagasse Bagasse ash

Effluent (mg/l)

Tannery

	Parameter	Chrome	Vegetable
(Waste Water)..... High BOD <sub>5</sub>	BOD <sub>5</sub> .....	50 (15)*	100 (30)
	COD .....	164(40)*	80(19)
Suspended solid wastes from hide washing .....	Suspended Solids.....	30 (10)	40 (19)

\*Discharge into small streams High PHTotal..... Total..... 6-9. .... 6-9

High sulphide Solid wastes from lime sulphide treatment of Spent vegetable and chrome tanning liquors Grease from rendering operations

Chromium..... (iii) 0.3 2.0

Chromium..... (vi) .. 0.1 0.1

Floating matter ..... Not to be visible to naked eye.

Oil and grease ..... 10

Chlorides (as Cl-) ..... 50.

pH ..... 6-9.

Sulphide ..... 1.

Odour None None

Colour None None

Emission (ug/m<sup>3</sup>)



(Gaseous Emission).....Particulate odour in  
 boiler emissions ..... Particulate..... 100  
 Odour from plant process..... Hydrogen Sulphide..... 30  
 (Solid Wastes) ..... Solids from screening, sludge

*Effluent (mg/l)*

*Textile Mills*

(Waste Water)..... High pH.....PH.....69  
 High suspended solids..... BOD<sub>5</sub> ..... 20.  
 Colour ..... COD ..... 8.  
 Suspended solids ..... 30  
 Chromium (vi) ..... <0.10  
 Phenols..... 0.01  
 Sulphide ..... 0.20  
 Coliform 400MPN/..... 100ml  
 Colour ..... None  
 Odour ..... None

*Emission (ug/m<sup>3</sup>)*

(Gaseous Emission).....Particulate matter..... Particulate..... 100.  
 (Solid Wastes) .....Sludge

Textile wastes

\*For discharge into small streams.

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**NATIONAL ENVIRONMENTAL PROTECTION (POLLUTION ABATEMENT IN INDUSTRIES AND FACILITIES  
 GENERATING WASTES) REGULATIONS**

[S.1. 9 of 1991.]

under section 37

[15th August, 1991]

[Commencement. ]

**1. Restriction on the release of toxic substances**

No industry or facility shall release hazardous or toxic substances into the air, water or land of Nigeria's ecosystems beyond limits approved by the Agency.

**2. Monitoring pollution units**

An industry or a facility shall-

- (a) have a pollution monitoring unit within its premises;
- (b) have on site a pollution control; or
- (c) assign the responsibility for pollution control to a person or body corporate accredited by the Agency.

**3. Discharge monitoring report**

A discharge, including solid, gaseous and liquid waste from any industry or facility shall be analysed and reported to the nearest office of the Agency every month, through a Discharge Monitoring Report.

**4. Unusual or accidental discharges**

An unusual discharge or accidental discharge of waste from any industry facility shall be reported to the nearest office of the Agency not later than 24 hours of the discharge.

**5. List of chemicals**

An industry or facility shall submit to the nearest office of the Agency-

- (a) a list of the chemicals used in the manufacture of its products;
- (b) details of stored chemicals and storage conditions;
- (c) where chemicals are bought, sold or obtained, the name of any secondary buyer.

**6. Pollution Response Centre**

The State and zonal offices of the Agency shall serve as Pollution Response Centres for co-ordinating pollution response activities.

**7. Contingency plan**

An industry or a facility shall have a contingency plan approved by the Agency against accidental release of pollutants.

**8. Machinery for combating pollution, etc.**

(1) An industry or a facility shall set up a machinery for combating pollution hazard and maintain equipment in the event of an emergency.

(2) An industry or a facility shall, for the purposes of paragraph (1) of this regulation, have a stock of pollution response equipment which shall be readily accessible and available to combat pollution hazards in the event of accidental discharges.

#### **9. Pollution emergency**

If there is a case of pollution emergency, the nearest office of the Agency shall serve as an "On-the-Scene Co-ordinator" to co-ordinate all response activities.

#### **10. Storage treatment and transport of harmful toxic waste**

(1) No person or body corporate shall engage in the storage treatment and transportation of harmful toxic waste within Nigeria without a permit issued by the Agency.

(2) The permit shall be in such form as may be determined by the Agency.

#### **11. Generator's liability**

The collection, treatment, transportation and final disposal of waste shall be the responsibility of the industry or facility generating the waste.

#### **12. Industrial layouts in each State**

(1) Each State of the Federation shall-

- (a) designate industrial layouts which shall be separate from residential areas; and
- (b) provide buffer zones between industrial layouts and residential areas.

(2) A buffer zone shall-

- (a) be rigidly kept away from developers;
- (b) be monitored to prevent developing encroachment by developers.

#### **13. Strategies for waste reduction**

An industry or a facility, including those to be established after the commencement of these Regulations, shall adopt in-plant waste reduction and pollution prevention strategies.

#### **14. Restriction on new source of pollution**

(1) No new industry or facility shall commence production without compliance with the provisions of these Regulations.

(2) The Agency shall prevent an industry or facility from commencing operation where the Agency believes that such industry or facility may constitute a new point source of pollution.

#### **15. Permissible limits of discharge into public drains, etc.**

(1) No effluent with constituents beyond permissible limits shall be discharged into public drains, rivers, lakes, sea or underground injection without a permit issued by the Agency or any organisation designated by the Agency.

(2) No oil, in any form, shall be discharged into public drains, rivers, lakes, sea, or underground injection without a permit issued by the Agency or any organisation designated by the Agency.

(3) Application for a permit and the permit shall be in the Forms set out in the schedule to these Regulations or as specified by the Agency.

(4) The Agency may revoke a permit issued under paragraph (1) of this regulation if the Agency is satisfied, after the due enquiry, that the industry or facility has not complied with any of the conditions specified in the permit.

(5) Revocation of a permit shall be in the Forms C and D set out in the Schedule to these Regulations or as specified by the Agency.

(6) An industry or a facility with a new point source of pollution or a new process line with a new point source shall apply to the Agency for discharge permit not later than 180 days before commencing the discharge of any effluent arising from any operation.

#### **16. Solid wastes to be disposed of in environmentally safe manner**

(1) Solid wastes generated by any industry or facility, including sludge and all by-products, resulting from the operation of pollution abatement equipment, shall be disposed of in an environmentally safe manner.

(2) No industrial solid waste shall be disposed of in any municipal landfill.

#### **17. Release of gaseous matters**

An industry or a facility which is likely to release gaseous, particulate, liquid or solid untreated discharges shall install, into its system, appropriate abatement equipment in such manner as may be determined by the Agency.

#### **18. Surroundings of factories**

The surroundings of a factory or facility shall be maintained to preserve their aesthetic and sanitary conditions.

#### **19. Safety of workers**

No industry shall expose an employee to any hazardous condition in his place of work.

#### **20. Forms**

The Forms set out in the Schedule to these Regulations shall be used for the purposes specified therein with or without modification by the Agency.

#### **21. Environmental impact assessment, etc.**

The Agency shall demand environmental audit from existing industries and environmental impact assessment from new industries and major developmental projects and the industries shall comply within 90 days of the receipt of the demand.

**22. Penalty**

A person or body, whether corporate or unincorporate, who contravenes any provision of these Regulations shall be guilty of an offence and liable on conviction to the penalty specified in section 35 or 36 of the Act.

**23. Short title**

These Regulations may be cited as the National Environmental Protection (Pollution Abatement in Industries and Facilities Generating Wastes) Regulations 1991.

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SCHEDULE

[Regulations 15 (3) and 20.]

FORM A

*Application for Waste Discharges/Disposal Permit*

1. Name of company requesting permit .....  
.....
2. Year of incorporation and Registration Number of business name .....  
.....
3. Location(s) of business premises (*i.e. State, local government area, etc.*) .....  
.....  
.....
4. Result of quantitative and qualitative sampling of liquid, gaseous and solid effluent from factory .....  
.....  
.....
5. Description of plant facilities, out fall location(s), effluent characteristic(s) and production figures (*please attach engineering drawings of layout of factory and process line*) .....  
.....  
.....

6. A listing of all toxic substances used or manufactured on the site (*For guidance, refer to Parts II and III of FEPA 's Interim Guidelines*)

.....

7. Does the factory have any other permit issued to the facility? (*State type*) .....

.....

.....

8. Description of pollution abatement/monitoring facilities on site (including details of year of installation, capacity, etc.) .....

.....

9. Name and brief resume of FEPA accredited consultant(s), contractors involved with pollution control at the facility (attach r sum  if possible)

.....

.....

10. Number and range of qualification and experience of staff involved with pollution control programme at the facility .....

.....

.....

11. A listing of all chemicals in use at the facility (trade names not acceptable)

.....

.....

12. For new sources: A submission of an environmental impact assessment report is mandatory. Request for permit system must be made 180 days before discharge commences, (*attach photocopies of the relevant documents*).....

.....

13. A listing of all intermediates and final products at facility including details of storage condition( s)

.....

.....

.....

14. Any safety/contingency plan? (*submit details*) .....

.....

.....

.....

15. Distance of facility from residential area (include map) .....

- .....
16. Distance from any other industry (*state name of industry and direction*)  
 .....
17. Present discharge (*outfall*) locations (*illustrate*) and position of inspection tap for compliance monitoring  
 .....
18. Volume of raw water consumption .....
19. Source of energy at facility and quantitative estimate of consumption on a monthly basis  
 .....
20. Detailed description of waste disposal methods .....
21. Any other information? .....

*Declaration*

I declare that all the foregoing information is correct to the best of my knowledge.

22. ....  
*Name of applicant or his attorney*

23. ....  
*Designation*

24. ....  
*Signature*

DATE .....20.....

NOTE.-

Every application form for permit must be accompanied with ₦50.00 bank draft administration fee in the name of the Federal Environmental Protection Agency.

This Notice is for all private and public enterprises or facilities intending or already discharging any form of wastes (solid, liquid or gaseous) into Nigeria's ecosystem (including waste disposal boards and mining and mineral prospecting companies, on and off farm processing facilities, etc.).

All applications duly processed will be issued with the discharge permit on or before 1 October 1991.

Non-possession of Federal Environmental Protection Agency Discharge Permit by 1 October 1991 shall be tantamount to criminal violation of Federal Environmental Protection Agency Act.

A permit shall be valid for two (2) years effective from 1 October, of the year of issue.

FORM B

P/No .....

Industrial Waste Discharge/Disposal Permit

The Director of the Federal Environmental protection Agency (FEPA), hereby grants an Industrial Waste Disposal Permit, pursuant to an application for registration.

DATED..... day of.....20 .....

in respect of the following-

Full name and address of permit holder .....

Location of site to which Permit relates .....

Mode of discharge of disposal to which this Permit relates .....

Type/volume/quality of waste/wastes/waste stream of which discharge or disposal is authorised .....

This Permit is granted subject to the following conditions-

.....

.....

*Date*

*Name and Signature*

NOTES.-



1. The following conditions shall apply to industrial solid waste-
  - (a) appropriate site preparation; and
  - (b) pre-determination of-
    - (i) depth to groundwater;
    - (ii) direction of groundwater flow;
    - (iii) groundwater characteristics; available provisions for leachate containment;
    - (iv) available provision for leachate containment, sampling and analysis.

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FORM C

*Notice of Revocation of Permit*

To: .....

WHEREAS the Federal Environmental Protection Agency on.....20.....

granted you a waste Disposal/Discharge Permit relating to.....

AND WHEREAS the Federal Environmental Protection Agency is satisfied that the following condition(s) specified in the Permit is/are not being complied with, namely-

.....

NOW THEREFORE the Federal Environmental Protection Agency hereby requires you to comply with the said condition(s) before .....

Failure to do so shall result in the revocation of the Permit.

<i>Date</i>	<i>Name and signature</i>
<i>Name</i>	<i>Designation</i>

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FORM D

Revocation Order

To: .....

WHEREAS the Federal Environmental Protection Agency on..... 20.....

granted you a waste Disposal Permit No..... relating to.....

AND WHEREAS it appears to the Agency that the continuation of activities to which the permit relates would cause pollution or danger to public health or would be so seriously detrimental to the amenities of the locality affected by the activities that the continuation of them ought not to be permitted and that the pollution , danger or detriment cannot be avoided by modifying the conditions specified in the permit;

WHEREAS the Federal Enviromental Protection Agency dated.....20.....

requiring you to comply with the following condition (s).....

before..... 20 .....was reserved upon you on .....20.....

and you have not complied with the said conditions within the said period-

NOW THEREFORE the Federal Protection Agency hereby revokes the permit with effect from.....

*Signature*

*Name*

*Designation*

FORM E

*Certificate of Sampling*

This is to certify that .....

*(Name of Registered Plant)*

discharging treated waste/storm water/solid waste into .....

*(identify point of discharge)*

from a treatment plant .....  
(identify unit/code)

has collected water sample(s)/solid wastes samples from/at .....  
.....  
(idenufy point of source)

on .....  
Date Time

Sample(s) has/have been taken to.....  
(identify laboratory)

for the analyses of the following parameters-

(i) ..... (vi) .....

(ii)..... (vii) .....

(iii) ..... (viii) .....

(iv)..... (ix) .....

(v) ..... (x) .....

Sample Preservation Method .....

Name and Signature of Sample Collector.....

.....

Official

.....

.....

Name and Signature of Company/  
Officer in Charge

\_\_\_\_\_

**NATIONAL ENVIRONMENTAL PROTECTION (MANAGEMENT OF SOLID AND  
HAZARDOUS WASTES)**

**REGULATIONS**

[S.1. 15 of 1991.]

under section 37

[30th December, 1991]

[Commencement. ]

**PART 1**

*Objectives and designation of dangerous waste*

**1. Objectives of management of solid and hazardous waste**

The objectives of solid and hazardous waste management shall be to-

- (a) identify solid, toxic and extremely hazardous wastes dangerous to public health and environment;
- (b) provide for surveillance and monitoring of dangerous and extremely hazardous wastes and substances until they are detoxified and safely disposed of;
- (c) provide guidelines necessary to establish a system of proper record keeping, sampling and labelling of dangerous and extremely hazardous wastes;
- (d) establish suitable and provide necessary requirements to facilitate the disposal of hazardous wastes;
- (e) research into possible re-use and recycling of hazardous waste.

## **2. Functions of appropriate Governmental agencies**

(1) All industries shall inform the Agency of all toxic, hazardous and radioactive substances which they keep in their premises and/or which they discharge during their production process.

(2) The Agency shall maintain an up-to-date register of all industries which keep toxic, hazardous and radioactive substances or discharge toxic, hazardous and radioactive wastes.

(3) The Agency shall prescribe to the relevant industries, factories or other institutions methods of controlling the generation of toxic, hazardous and radioactive wastes.

(4) The Agency shall maintain a register of banned toxic, hazardous and radioactive substances and inform relevant industries, factories or institutions of the substances.

(5) For the purpose of the disposal of toxic solid and hazardous wastes, the Agency shall-

- (a) monitor and ensure that industries, factories or other institutions which discharge toxic, hazardous and radioactive waste as listed in column of the First Schedule to these regulations, shall treat such hazardous wastes in the manner prescribed in the Second Schedule to these regulations;
- (b) request from any industry on its register, information relating to the generation, handling, disposal of toxic, hazardous and radioactive wastes; it shall be unlawful for any industry to withhold any such information;
- (c) employ scientific and human resources to monitor and control all phases of life cycle of all substances likely to have an adverse effect on human health and environment;
- (d) determine and use the most advanced technology available for the disposal of toxic, hazardous and radioactive wastes;
- (e) set up regional bodies or committees to serve as "dump watch" for transboundary movement of toxic, hazardous and radioactive waste. The Agency shall prescribe necessary guidelines to the committees set up pursuant to paragraph (e) of this regulation.

(4). A solid waste shall be determined to be a dangerous waste or extremely hazardous waste if it conforms with the provisions of regulation 6 of these Regulations and it is out of waste specified as dangerous in the list of dangerous wastes specified in Schedule 6 to these Regulations.

## *PART 2*

### **Dangerous Waste List**

5. A waste shall be designated as discharged chemical product, if it is handled in any of the manners described in Schedule 4 to these Regulations.

### **6. Dangerous waste source**

(1) A waste shall be deemed to be dangerous waste if the waste appears in the list of dangerous waste contained in F AC-000-000-9903 as listed in Schedule 12 to these Regulations.

(2) A waste shall be regarded as dangerous if it is-

(a) waste which appears in the dangerous waste source list as listed in Schedule 12 to these Regulations;

(b) waste which is a residue from the management of a waste listed in the dangerous waste source list in Schedule 12 to these Regulations and identified as "D.W"; and

(c) described in the footnotes of FAC-000-000-9904 as an extremely hazardous waste in the hazardous and dangerous waste sources list in Schedule 13 to these Regulations.

(3) Any waste appearing in the dangerous waste list shall be designated as exclusively hazardous waste (EHW).

### **7. Dangerous waste mixtures**

Infectious dangerous wastes shall include but not be limited to infectious waste specified in Schedule 5 to these Regulations.

8. (1) Any waste whose constituents and concentration are known and which has not been designated as-

(a) a discarded chemical product;

(b) an infectious dangerous waste;

(c) a dangerous waste source,

shall be deemed as a dangerous waste mixture to which the provisions of these Regulations shall apply.

(2) A dangerous waste mixture shall also be determined as dangerous if-

(a) the category or degree of toxicity for each known constituent in the waste is known; or

(b) each known constituent in the waste is a halogenated hydrocarbon or a polycyclic aromatic hydrocarbon with greater than three rings and less than seven rings; or

(c) each known constituent of the waste is regarded by the International Agency for Research on Cancer (IARC) as human or animal positive or a suspected carcinogen.

(3) Any person who has a dangerous waste material shall use data available to him to determine the extent of toxicity in the waste.

(4) Where the data available to the person who has the dangerous waste is inadequate to determine the extent of toxicity, the person concerned shall apply to the Agency or its employees to determine whether the waste is contained in the Exclusive List of Registered Dangerous Substances in the Register with the Agency.

## **9. Determination of toxicity in waste**

(1) The toxicity category for each toxic constituent in a waste shall be determined by referring to the FEPA Register and by checking this data against Schedule 6 to these Regulations.

(2) Where the toxic constituent classified under more than one of the four toxicity categories (Aquatic, Oral, Inhalation or Dermal), the toxic constituent shall be assigned to the most acutely toxic category represented.

(3) The category of toxicity in a waste shall be determined in accordance with the toxicity category table in Schedule 6 to these Regulations.

## **10. Categorisation of toxic waste**

(1) The degree of toxicity shall be categorised according to the formula prescribed in the Schedule 6 to these Regulations.

(2) If a person has established the toxicity of his waste by means of the Bioassay test methods and has determined his waste toxicity's range, then he shall designate his waste according to the Toxic Dangerous Waste Designation in Schedule 7 to these Regulations.

## **11. Persistent hazardous dangerous wastes**

(1) Wastes which contain halogenated hydrocarbons (HH) and/or polycyclic aromatic hydrocarbons with more than three rings and less than seven rings (PAH) shall be determined by the procedure specified in these Regulations.

(2) A person shall determine the concentration of (HH) and/or (PAH) in his waste by either testing his waste as specified in (a) of this sub-paragraph or by the calculation procedures described in (b) of this sub-paragraph, that is-

(a) concentration tests: A person shall test his waste to determine its concentration level as stated in sampling and testing method below;

(b) concentration calculations: if a person can demonstrate to FEPA beyond a reasonable doubt that any remaining persistent constituents for which he does not know the concentrations of would not contribute significantly to the total persistent concentration of his waste then he may calculate this concentration as follows:

(3) A person whose waste contains one or more halogenated hydrocarbons for which the concentrations are known shall determine his total halogenated hydrocarbon concentration by summing the concentration percentages for all of his waste's significant halogenated hydrocarbons.

## **12. Carcinogenic dangerous wastes**

(1) A substance listed as an IARC (International Agency for Research on Cancer) human or animal positive or suspected carcinogen and is an inorganic, respiratory, carcinogen shall be a carcinogenic substance provided it occurs in a triable format (that is, if it is a waste which easily crumbles and forms dust which can be inhaled).

(2) Any person whose waste contains one or more IARC carcinogen(s) and if-

- (a) the monthly or batch waste quantity exceeds 100kg; or
- (b) the concentration of anyone positive (human or animal) carcinogen exceeds 1.0 per cent of the waste quantity-
  - (i) shall designate such waste as EHW (and such designation shall be determined by (i), (ii), (iii));
  - (ii) the concentration of anyone IARC positive (human or animal) carcinogen exceeds 0.01 per cent of the waste quantity, such waste shall be designated DW; or
  - (iii) the total concentration summed for all IARC positive and suspected (human or animal) carcinogens exceeds (1.0 per cent of the waste quantity) such waste shall be designated DW;
- (c) a substance shall not be carcinogenic if it is rated as IARC human or animal positive or suspected carcinogen merely because of studies involving implantation of the substance into the animals as site cause for the IARC rating.

## **13. Characteristic to determine solid waste as a dangerous waste**

A solid waste shall be regarded as dangerous waste by determining any of the following parameters-

- (a) ignitability;
- (b) corrosivity;
- (c) reactivity;
- (d) extraction procedure toxicity (EPTOX);
- (e) halogenated hydrocarbons concentration;
- (f) polycyclic aromatic hydrocarbon concentration (PAH);
- (g) static acute fish toxicity test;
- (h) acute oral rate toxicity test;
- (i) polychlorinated Dibenzo p-dioxins and dibenzofurans concentrations;
- (j) polychlorinated Biphenyls (PCB's).

## **14. Methods and tests to determine representative samples**



- (1) The method used for obtaining representative samples of a waste shall vary with the type and form of the waste.
- (2) The Agency shall consider such representative samples using any of the sampling methods.
- (3) If the waste samples have properties similar to the characteristics mentioned in regulation 13 of these Regulations and the materials indicated therein can cause any of the reactions indicated in regulation 13 of these Regulations then the waste shall be considered as a dangerous waste as described in paragraph (2) of this regulation.
- (4) The following methods shall be used by the Agency to determine representative samples as waste, that is-
  - (a) crushed or powdered material-ASTM standard method (D346-75);
  - (b) extremely viscous liquid-ASTM standard method (D 140-70);
  - (c) flash-like material-ASTM standard method (D22234- 7 6);
  - (d) solid-like material-ASTM standard method (D 1452-65);
  - (e) solid or rock-like materials-ASTM standard method (D420-69);
  - (f) containerised liquid waste (COLIW ASA) described in "Test Methods for the evaluation of solid waste, Physical/Chemical Methods" SW-846 USEPA (1985);
  - (g) liquid waste in pits, ponds, lagoons and similar reservoirs-"Pond sampler" described in "Test methods for the evaluation of solid waste, Physical/Chemical Methods" SW-846, USEP A (1985).

#### **15. Ignitability test**

- (1) A solid waste is ignitable if its representative sample has any of the following properties, that is-
  - (a) it is liquid, other than an aqueous solution containing less than 24 per cent alcohol by volume and has a flash point of less than 60°C as defined by Pensky-Mertens Close cup Tester using the test method specified in ASTM standard D-93- 79 or D 93-80, or a seta flash closed cup tester using method specified in ASTM Standard D-3278;
  - (b) it is not a liquid and is capable, under standard temperature and pressure, of causing fire through friction, absorption of moisture or spontaneous chemical changes and, when ignited, s so vigorously and persistently that it creates a hazard;
  - (c) it is an ignitable compressed gas;
  - (d) it is an oxidiser.
- (2) An ignitable solid waste not designated as dangerous waste under any of the Agency's Dangerous Waste Lists or the Agency's Dangerous Waste Criteria shall be assigned the dangerous waste number FD-001.

#### **16. Corrosive testing**

(1) A solid waste is corrosive if its representative sample has any or more of the following properties, that is-

- (a) it is aqueous and has a (pH) less than or equal to 2 or greater than or equal to 12.5 as determined by a (pH) meter using method 5.2 in Test Method for the evaluation of solid waste, (Physical/Chemical methods);
- (b) it is a liquid and corrodes steel (SAE 1020) at a rate greater than 6.35mm per year at a test temperature of 55°C as determined by standard Test Method 01-69 as standardised in "Test Methods for the evaluation of solid waste, (Physical/Chemical methods)";
- (c) it is a solid or semi-solid, and when mixed with an equal weight of water results in a solution, the liquid portion of which has the property specified in such paragraph (a) of this regulation.

(2) A corrosive solid waste not designated as a dangerous waste under any of the Agency Exclusive List of Dangerous Substances listed in Schedule 12 to these Regulations or has any of the characteristics of Dangerous Waste Criteria listed in regulation 13 of these Regulations shall be designated DW and shall be assigned the dangerous waste number FD-002.

#### **17. Reactivity test**

(1) A solid waste exhibits the characteristic of reactivity if a representative sample of the waste has any of the following properties, that is-

- (a) it is normally unstable and readily undergoes violent changes, without detonating;
- (b) it reacts violently with water;
- (c) it forms potentially explosive mixtures with water;
- (d) when mixed with water, it generates toxic gases, vapours or fumes in a quantity sufficient to pose danger to human or animal health or the environment;
- (e) it is a cyanide or sulfide bearing waste which when exposed to (pH) conditions between 2 and 12.5 can generate toxic gases, vapours or fumes in a quantity sufficient to present a danger to human or animal health or the environment.

#### **18. Solid waste exhibiting characteristic of toxicity**

Where a solid waste exhibiting the characteristic of EP toxicity is not designated a dangerous waste under any of the Agency's Dangerous Waste List or Dangerous Criteria, it shall be assigned to the Agency's dangerous waste number specified in Schedule 9 to these Regulations which corresponds to the toxic constituent causing it to be dangerous.

#### **19. Generic dangerous waste numbers**

A waste which exhibits any of the dangerous waste characteristics lists in Schedule 8 to these Regulations shall be assigned the dangerous waste number corresponding to the characteristic exhibited by the waste as shown in Schedule 9 to these Regulations.

## *Spills and discharges into the environment*

### **20. Notification of discharge of waste**

(1) Any person who intentionally or accidentally spills or discharges or causes to be spilled or discharged any quantity of dangerous waste or hazardous substance, detrimental to public health or the environment shall, (within 24 hours of the commencement of the spillage), notify the nearest "FEPA" Office or State environmental protection body and local government council of the area of the spillage.

(2) The Agency, or any person or authority authorised in that behalf shall do any or all of the following, that is-

- (a) instruct the person responsible for the spillage or discharge to clean up all released dangerous harmful wastes or hazardous substances within the time or days as may be specified;
- (b) designate and treat, store or dispose of all solids, water or other materials contaminated by the spillage or discharge in accordance with specific directives given in that behalf by the Agency or any person or authority authorised in that behalf to issue the directive;
- (c) restore the area affected by the spillage or discharge and replenish resources in a manner acceptable to the Agency or any other person or authority authorised in that behalf by the Agency;
- (d) where immediate removal or temporary storage of spilled or discharged dangerous wastes or hazardous substances is necessary to protect human health or the environment, the Agency may direct that it be removed by competent transporters.

### **21. Waste quantity**

(1) When measuring the weight of a dangerous waste, the Agency or any person or authority authorised by it in that behalf shall consider only the weight of the residues and shall disregard the weight of the containers and innerliners thereof.

(2) A container or inner liner shall be considered to be "empty"-

- (a) when all wastes in it have been taken out using practises commonly employed to remove materials from that type of container or inner liner whichever quantity is least, until less than 2 cm of waste remains at the bottom of the container or innerliner-
  - (i) innerliner, the volume of waste remaining in the container or innerliner is equal to one per cent or less of the container's total capacity; or
  - (ii) if the containers total capacity is greater than 416 litres the volume of waste remaining in the container or innerliner is no more than 0.3 per cent of the container's total capacity;
- (b) when a container which holds compressed gas is empty, then the pressure inside the container equals or nearly equals atmospheric pressure.

### **22. Containers damaged by liquids**

(1) Containers that may be damaged by liquids (e.g. cardboard, fibre containers without innerliners) may be vacuum-cleaned.

(2) Strike the open end of the container up, thrice on the ground, using a hammer or hand to remove base particles and vacuum-clean again.

(3) The equipment used for such vacuum-cleaning shall be decontaminated in the manner approved by the Agency or person or authority authorised by it in that behalf before such containers are destroyed or disposed of.

### **23. Over-packed containers**

Small containers of dangerous waste may be placed in over-packed drums (or labpacks) provided the following conditions are met, that is-

- (a) hazardous waste shall be packaged in non-leaking inside containers designed and constructed of a material that does not react dangerously when decomposed or ignited by the dangerous waste and to minimise voids, inside containers shall be full, tightly and securely sealed and shall contain very little air inside them;
- (b) the inside containers shall be over-packed in an open head metal shipping container at no more than 614 litres capacity and surrounded by a sufficient quantity of absorbent material to completely absorb all the liquid contents of the inside packing;
- (c) the absorbent material referred to in paragraph (b) of this regulation shall not be capable of reacting dangerously when being decomposed or ignited by the contents in the containers.

### **24. Manifest system**

There shall be a manifest system which shall include the following requirements-

- (a) Packaging-the generator of the waste shall package all dangerous waste for transportation in accordance with the directives of the Agency or its authorised officers;
- (b) Labelling-the generator of the waste shall label each package in the manner prescribed by the Agency;
- (c) Marking-the generator of the waste shall mark each package of dangerous waste with the following or equivalent words and information, very well displayed, that is-

HAZARDOUS WASTE

Federal and State laws prohibit improper disposal, if found, contact the nearest FEPA Zonal Office, Police or Public Health Authority.

*Generator's name and address*

.....  
.....  
.....  
Manifest document number  
.....

(d) the generator of the waste shall provide bold warning signs to the transporter( s) as may be prescribed by Agency.

**25. Duties of owners and operators receiving dangerous waste**

(1) Owners and operators who received dangerous waste accompanied by manifest from off-site sources shall-

- (a) sign and date each copy of the manifest to certify that the dangerous waste covered by the manifest was received;
- (b) note any significant discrepancies in the manifest;
- (c) immediately, deliver at least one copy of the signed manifest to the transporter;
- (d) within thirty days after the delivery, send a copy of the manifest to the generator of the waste;
- (e) retain at the place of delivery a copy of each manifest for at least three years from the date of delivery.

(2) If an owner or operator of a facility receives dangerous waste whose manifest or shipping paper contains discrepancies from a transporter, it shall notify the generator as well as Agency or its designated officer within 21 days from the receipt of the dangerous waste.

**26. Discrepancies manifest**

(1) Discrepancies in manifest shall be regarded as significant differences between the quantity or type of dangerous waste designated on the manifest or shipping paper and that actually received if-

- (a) significant discrepancies in quantity and variations are greater than ten per cent in weight for bulk quantities (e.g. any tanker, trucks, rail-road tank cars, etc.) or any variations in numerical figures for non-bulk quantities (i.e. any missing container or package);
- (b) significant discrepancies in type are obvious physical or chemical differences which can be discovered by inspection or waste analysis (e.g. waste solvent substituted for waste acid);
- (c) there appears in the manifest obvious omission of FEPA or State identification numbers, generator certification or signature from the manifest.

(2) Upon discovering a significant discrepancy, the owner or operator of a facility to which a dangerous waste has been delivered shall attempt to reconcile the discrepancies with the waste generator or transporter.

(3) Where the owner or operator fails to resolve the discrepancies with the generator or transporter within fifteen days after receiving the waste, the owner or operator shall immediately notify the Agency by sending a copy of the manifest or shipping paper at issue, describing the discrepancies and attempts made to reconcile it.

## **27. Non-acceptance of dangerous waste shipments**

(1) Dangerous waste shipments shall be rejected on the following grounds if-

- (a) any or all of the facility to which the waste was delivered could not properly manage the type of dangerous waste which was in the shipment;
- (b) there is a significant discrepancy between the shipment and the waste listed on the manifest or shipping papers; or
- (c) the shipment arrived in a condition which the owner or operator of the facility believes would present an unreasonable hazard to facility operations or facility personnel handling the dangerous waste.

(2) If the owner or operator is unable to handle the waste he may send the shipment on to the alternate facility designated on the manifest or shipping paper or contact the generator of the waste who will identify another facility capable of handling the waste and provide for its delivery to that other facility.

(3) If however, the containers are in such a condition as to present a hazard to public health or the environment in the process of further transportation a contingency plan shall be put in operation.

## **28. Preparedness and prevention**

Facilities for the reception, treatment or disposal of dangerous wastes shall be designed, constructed, maintained and operated in such manner-

- (a) to prevent, or to minimise the possibility of fire, explosion, sudden or non-sudden release of dangerous waste or its constituents;
- (b) to prevent its exposure to air, soil, or ground water which could threaten public health or the environment.

29. Except if it can be demonstrated to FEPA that none of the hazards posed by waste handled at the facility would necessitate their usage, all facilities, waste reception, treatment or disposal shall be equipped with the following, that is-

- (a) an internal communication or alarm system capable of providing immediate emergency instructions to personnel employed or engaged within the premises, building or precinct of the facility;
- (b) a device, such as a telephone or hand-held two-way radio capable of summoning emergency assistance from the police and service departments or State or local government on-the-scene co-ordinator (OSC);
- (c) portable fire extinguishers, fire equipment, spill control equipment and decontamination equipment; and

- (d) water at adequate volume and pressure to supply water, hose streams, foam-producing equipment, automatic sprinklers or water-spray systems.

30. All communications or alarm systems, fire-protection equipment, spill-control equipment and decontamination equipment, installed with waste-reception facility shall be tested and maintained as and when necessary to assure their proper operation and functioning in times of emergency.

### **31. Access to communications or alarms**

Whenever dangerous waste is being poured, mixed, spread or otherwise being handled, facility personnel shall have immediate access to signalling devices such as-

- (a) internal or emergency communication device;
- (b) telephone or hand-held, two way radio (capable of summoning external emergency assistance) .

### **32. Aisle space**

The owner or operator shall maintain aisle space to allow the unobstructed movement of personnel, fire protection equipment, spill-control equipment and decontamination equipment to any area of the facility operation at all times and particularly in an emergency.

### **33. Arrangement with local organisations and Agencies**

(1) The owner or operator of waste generating facility shall notify the Agency that he has made the following arrangement-

- (a) familiarise the police, fire services department or any emergency response team and other such members of the local response team with the layout of the facility, the properties of dangerous waste or hazardous substances handled at said facility and places where facility personnel would normally be working, entrances to and roads inside the facility and possible evacuation routes;
- (b) familiarise local hospitals with the properties of dangerous waste or hazardous substances handled at the facility and the type of injuries or illness which could result from fires, explosions or emissions at the facility;
- (c) where more than one party might respond to an emergency, reach agreement with the others to provide support to the primary emergency authority;
- (d) notify the designated "OSC" in the event of any emergency, who will then co-ordinate response activities by the local response teams.

(2) The owner or operator of a waste facility shall notify the Agency of all the arrangements and agreements entered into with the person or authorities mentioned in sub-paragraphs (a) to (d) of paragraph (1) of this regulation unless the hazards posed by the waste or substance handled at the facility, would not require those arrangements.

(3) Where the waste or substance handled at the facility would not required the arrangements under paragraph (2) of this regulation, prior opportunity to assess the facility to confirm this shall be given to the Agency or its authorised officer to exempt the facility from the arrangement.

(4) The Agency shall regularly be permitted to continuously determine that the situation in the facility remains constant.

### **34. Failure to enter into arrangements**

Where the Agency State or local government decline to enter into arrangement under regulation 33 of these Regulations, are the owner or operator shall enter the refusal in the operating record and the onus of proof of that refusal shall rest with the owner or operator.

## **PART 4**

### *Contingency plan and emergency procedure*

### **35. Contingency plan**

(1) An owner or operator of a facility shall develop a contingency plan to lessen the potential impact on public health and the environment in the event of an emergency, including a fire, sudden or non-sudden release of dangerous waste or its constituents or hazardous substances to air, soil, surface water or ground water.

(2) Each owner or operator shall have an on-site and off-site contingency plan at his facility for use in the emergencies mentioned in paragraph (1) of this regulation which threaten public health and the environment.

(3) The on-site plan shall conform to the provisions of regulation 28 of these Regulations relating to preparedness and prevention while the off-site contingency plan shall be drawn up to integrate the right of the community within the areas known to the potential dangers in the activities being carried on the facility.

(4) The community within the area where a facility is located shall be aware of the potential dangers of sudden or non-sudden discharges and all activities to mitigate any emergencies arising from the facility.

### **36. Contents of contingency plans, etc.**

(1) The contingency plan shall contain the following that is-

(a) a description of the actions to be taken by facility personnel to comply with provisions of these Regulation;

(b) a description of the actions to be taken when a dangerous waste shipment, which is damaged or presents a hazard to public health and the environment and unacceptable to the owner, arrives at the facility, but cannot be immediately transported or disposed of without causing danger to human health and the environment or the effect of which may result in the emission, of fire or explosion.

(2) In the event of any of the contemplated under subparagraph (1) of this regulation, report of the findings of the owner or operator of the facility shall be submitted to the Agency.

(3) The emergency co-ordinator's report shall include-



- (a) the name and telephone number of the reporter;
- (b) the name and address of facility;
- (c) the time and type of incident (e.g. emission, fire);
- (d) the name and quantity of material(s) involved to the extent known;
- (e) the extent of injuries, if any; and
- (f) the possible hazards to human health or the environment outside the facility.

(4) The emergency co-ordinator for a facility shall-

- (a) take all reasonable measures to ensure that fires, explosions, and emissions do not occur;
- (b) whenever any of these occurs, the co-ordinator shall take steps to contain the spread of any fire, explosion or emission to other dangerous waste;
- (c) stop processes and operation at the facility;
- (d) collect and contain released waste or hazardous substances; and
- (e) remove or isolate all containers within the facility.

(5) If the facility stops operations to fire, explosions or emission, the emergency co-ordinator shall monitor leaks, pressure build up, gas generation or ruptures in valves, pipes or other equipment in the facility.

(6) Immediately after an emergency, the emergency co-ordinator shall provide for treating, storing or disposal of recovered waste, contaminated soil, surface water or any other material that results from a release, fire or explosion at the facility.

(7) The emergency co-ordinator shall ensure that, in the affected area(s) of the facility-

- (a) no waste that may be incompatible with the released material is treated, stored, or disposed of until clean-up procedures are completed; and
- (b) all emergency equipment listed in the contingency plan are cleaned and made fit for their intended re-use before operations are resumed.

### **37. Contents of the contingency plans**

(1) The contingency plan shall contain the following particulars that is-

- (a) a description of the arrangements agreed to by local police and fire service departments, hospital, contractors, zonal or State response teams to co-ordinate emergency services;
- (b) a current list of names, addresses and phone numbers (office and residence) of all persons qualified to act as the emergency co-ordinator in accordance with the provisions of the Agency's directives;
- (c) an up-to-date list of all emergency and response equipment required at the facility such as-

- (i) fire extinguishing system;
- (ii) spill control equipment;
- (iii) communication equipment;
- (d) an evacuation plan for facility personnel where necessary describing the signal(s) to be used to begin evacuation, evacuation routes and alternate evacuation routes.

(2) In addition, the plan shall include the location, physical description of each item on the list and a brief outline of its capabilities; and

(3) A copy of the contingency plan and all revisions to the plan shall be-

- (a) maintained at the facility; and
- (b) submitted to the designated OSC and all members of the State or local response team.

(4) The owner or operator shall review and immediately amend the contingency plan, if necessary, whenever-

- (a) applicable regulations or the facility permit are revised;
- (b) the plan fails in an emergency;
- (c) the facility changes (in its design, construction, operation, maintenance or other circumstances) in a way that materially increases the potential for fires, explosions, or release of dangerous waste constituents or hazardous substances, or in a way that changes the response necessary in an emergency;
- (d) the list of emergency co-ordinator changes; or
- (e) the list of emergency equipment changes.

(5) At all times, there shall be at least one employee either on the facility premises or on call with the responsibility for co-ordinating all emergency response measures.

(6) This emergency co-ordinator shall be thoroughly familiar with all aspects of the facility's contingency plan required by the Agency, all operations and activities at the facility, the location and properties of all waste and hazardous substances handled, the location of all records within the facility layout and all other aspects of the facility's plan required by the Agency for contingency control.

(7) In addition, the emergency co-ordinator shall have the authority of the owner or operator of the facility to commit the resources needed to carry out the contingency plan.

(8) The emergency co-ordinator for a facility shall take all reasonable measures to ensure that fires, explosions, and releases do not occur or spread to other dangerous waste by stopping processes and operations, collecting and containing released waste or hazardous substances and removing or isolating containers.

(9) If the facility stops operations in response to fire, explosion or release the emergency co-ordinator shall monitor for leaks, pressure build up, gas generation or ruptures in valves, pipes or other equipment.

(10) Immediately after an emergency, the emergency co-ordinator shall provide for treating, storing, or disposing of recovered waste, contaminated soil or surface water or any other material that results from a release, fire or explosion at the facility.

(11) The emergency co-ordinator shall ensure that, in the affected area of the facility, no waste that may be incompatible with the released material is treated, stored or disposed of until clean-up procedures are completed and all emergency equipment listed in the contingency plan are cleaned and made fit for their intended re-use before operations are resumed.

(12) The owner or operator shall notify the Agency or any appropriate local government that the facility is in compliance with regulation 37 (10) of these Regulations before operations are resumed in the affected area of the facility.

### **38. Emergency proceedings**

(1) In the case of an imminent or actual emergency, the emergency co-ordinator shall promptly notify all the personnel within the factory premises and mobilise all the necessary equipment to deal with the emergency situation.

(2) He shall also inform the Agency, if the release or outcome of the emergency would endanger human health or the environment outside the factory or facility.

(3) The report of the emergency co-ordinator shall contain the following particulars, that is-(i) the name and telephone number of the reporter;

- (ii) the name and address of the facility;
- (iii) the time and type of incident (e.g. release, fire);
- (iv) the name and quantity of material(s) involved to the extent known;
- (v) the extent of injuries, if any; and
- (vi) the possible hazards to human health or the environment outside the facility.

(4) The owner or operator shall enter in the operating record the time, date and details of any incident that requires implementing the emergency procedures within fifteen days after the incident.

(5) The owner or operator shall submit a written report on the incident to the Agency offices of the incident.

(6) The report shall include-

- (a) the name, address and telephone number of the owner or the operator;
- (b) the name, address and telephone number of the facility;
- (c) the date, time and type of incident (e.g. fire, explosion);
- (d) the name and quantity of materials involved;

- (e) the extent of injuries, if any;
- (f) an assessment of actual or potential hazards to human health or the environment, where this is applicable;
- (g) estimated quantity and disposition of recovered materials that resulted from the incident;
- (h) the cause of the incident; and
- (i) the description of corrective action taken to prevent reoccurrence of the incident.

## PART 5

### *Record keeping in the facility*

#### **39. Operating record**

(1) A factory or industry or facility in which wastes are stored, operated, recycled or purified shall keep an up-to-date written record at the premises of the factory, industry or facility.

(2) The following particulars shall be kept by the owner or operator, that is-

- (a) a description of the quantity of each hazardous waste received and managed on-site and the method and date of its treatment, or storage or disposal at the industry;
- (b) a map or diagram of each cell or disposal area, showing the location of each hazardous waste within the industry. Every hazardous consignment shall be accompanied by a manifest;
- (c) cross-reference to specific manifest document numbers;
- (d) records and results of waste analysis;
- (e) summary reports and details of all incidents that require implementing the contingency plan;
- (f) results of general inspections carried out by the Agency or on behalf of the Agency;
- (g) analytical data of dangerous waste.

#### **40. Instructions on record keeping**

(1) In accordance with instructions by the Agency, the information in section 39 of these regulations shall be kept in the operating record in the following manner, that is-

- (a) every hazardous consignment received shall be accompanied by a manifest;
- (b) information required by these Regulations shall be kept for three years and shall not be destroyed without the written approval from the Agency;
- (c) each hazardous waste received or managed shall be described by its common name and by its hazardous waste number.

(2) Where a hazardous waste contains more than one hazardous waste number, the waste description shall include all applicable hazardous waste numbers. If the hazardous waste number is not listed then the waste description shall include the process which generated the waste.

(3) The description required in paragraph (2) of this regulation shall include the waste's physical form (whether liquid, solid, sludge, or gas).

(4) The weight or volume and density of the hazardous waste shall be recorded, using one of the units of measure specified in Schedule 10 to these Regulations.

#### **41. Power of the Agency to require for information about waste disposal, etc.**

(1) The Agency shall have power to call for relevant information pertaining to records and plans about waste disposal by any industry at any given time.

(2) While any enforcement action is pending the Agency shall have power to hold on to any record and no limitation of time shall apply in respect thereof.

(3) All records of waste disposal shall be submitted to the nearest Agency's office, including all particulars of the site of the disposal and the area of land covered by the disposal.

### PART 6

#### *Ground water protection*

#### **42. Applicability of the Agency's regulations**

(1) All regulations made by the Agency for the control and protection of ground waste shall apply to industries and factories that treat, store or dispose of the dangerous waste in surface impoundments, waste piles, land treatment units or land fills.

(2) The regulations shall also apply where waste migrate beyond the industry's waste management area unless the industry or factory can prove to the satisfaction of the Agency that such waste originated from another source.

(3) Factories or industries shall not be subject to any regulation to control or protect ground water if-

- (a) the factory or industry designs and operates a surface impoundment as a landfill;
- (b) the Agency finds that the treatment zone of a land treatment unit does not contain levels of dangerous constituents that are above background levels of these constituents by an amount that is statistically significant.

(4) An exemption under this regulation may only relieve an owner or operator of responsibility to meet the requirements of this or any regulation during the closure care period, or the Agency finds that there is no potential for migration of liquid from a regulated unit to the uppermost aquifer during the active life of the regulated unit (including the closure period) and the post-closure care period:

Provided that this demonstration shall be certified by a qualified geologist or geo-technical engineer.

(5) Any regulation made to control or protect underground water shall apply during-

- (a) the active life of the regulated unit (including the closure period);
- (b) the post-closure period if the factory or industry is conducting a detection monitoring programme and during the compliance period;
- (c) conducting a compliance monitoring programme; or
- (d) a corrective action programme.

(6) If, however, all the waste, waste residues, contaminated containment system components and contaminated subsoils are removed or decontaminated at closure, the regulation controlling or protecting underground water shall not apply.

#### *Required programme*

#### **43. Monitoring and response programme**

Factories and industries subject to these Regulations shall conduct monitoring and response programmes as specified hereunder.

#### **44. Ground water protection standard**

(1) The factory or industry shall comply with conditions specified in the permit given by the Agency that dangerous constituents entering the ground water from the regulated unit, do not exceed the concentration limits in the uppermost aquifer underlying the waste management area during the compliance period.

(2) Where it is not practicable for the Agency to establish a standard at the time a permit is issued or when an already established permit is not protective enough, the Agency shall establish a ground water protection standard when dangerous constituents have entered the ground water from a regulated unit.

#### **45. Dangerous constituents**

(1) The Agency shall specify in the facility permit the dangerous constituents to which the ground water protection standard of regulation 4 of these Regulations shall apply.

(2) For the purpose of this regulation, dangerous constituents shall be-

- (a) constituents identified in F AC000-000-9905 contained in Schedule 14 to these Regulations;
- (b) constituents which have caused a waste to be regulated under these Regulations however detected.

(3) The Agency may also specify in the permit indicator parameters as identified in the detection monitoring programme that provide a reliable indication of the presence of dangerous constituents in the ground water.

(4) The Agency shall not treat as dangerous a constituent which is not capable of posing a substantial and potential hazard to human health or the environment.

(5) In deciding to apply paragraph (4) of this regulation, the Agency shall consider whether or not the waste constitutes a hazard to-

- (a) human health;
- (b) the environment;
- (c) ground water quality.

#### **46. Concentration limits**

(1) The Agency shall specify in the facility permit that concentration limits-

- (a) shall not exceed the background level of that constituent in the ground water;
- (b) for any of the constituents listed in Schedule 11 to these Regulations shall not exceed the background level of the constituent;
- (c) shall not exceed an alternative limit established by the Agency.

(2) The Agency may establish an alternative concentration limit for a dangerous constituent and in doing so may consider the same factors listed in paragraph (1) of this regulation.

#### **47. Point of compliance**

(1) The Agency shall specify in the facility permit the point of compliance at which the ground water protection standard of these Regulations shall apply and at which monitoring shall be conducted.

(2) The point of compliance is a vertical surface located at the hydraulically down gradient limit of the waste management area that extends down into the uppermost aquifer underlying the regulated units.

(3) Alternatively, the point of compliance may be any closer point identified by the Agency at the time the permit is issued, considering the following, that is-

- (a) risks of the facility;
- (b) the wastes and constituents managed there;
- (c) the potential for waste constituents to have already migrated past the alternate compliance point; and
- (d) the potential threats to ground and surface water.

(4) The waste management area is the limit projected in the horizontal plane of the area in which waste may be placed during the active life of a regulated unit.

(5) The waste management area shall include horizontal space taken up by any liner, dike or other barrier designed to contain waste in a regulated unit.

#### **48. Compliance period**

(1) The facility permit granted by the Agency shall also state compliance period that is the number of years of the active life of the waste management area.

(2) The compliance period begins when the factory or industry initiates a compliance monitoring programme thus satisfying the requirements of the Agency.

(3) If the factory or industry is engaged in a corrective action programme at the end of the compliance period, the period shall be extended until the factory or regulated industry can demonstrate that the ground water protection standard of these Regulations has not been exceeded for a period of three consecutive years.

#### **49. General ground water monitoring requirements**

(1) The ground water monitoring system shall consist of a sufficient number of wells, installed at appropriate locations and depth to yield ground water samples from the uppermost aquifer that is-

(a) represents the quality of background water that had not been affected by leakage from a regulated unit; and

(b) represents the quality of ground water passing the point of compliance.

(2) Industries with more than one regulated unit need not have separate ground water monitoring systems for each unit provided that the system used for sampling the ground water in the upper-water aquifer shall detect and measure dangerous constituents entering the ground water in the uppermost from the regulated units.

(3) All monitoring wells shall be cased in a manner allowing collection of representative ground water samples and maintaining the integrity of the monitoring well bore-hole.

(4) Wells shall be constructed in such a manner as to prevent contamination of the samples, then sampled strata and the layers between aquifers and water-bearing strata.

#### **50. Detection monitoring programme**

(1) Any factory or industry required to establish a detection monitoring programme shall monitor the ground water for indicator parameters (e.g. pH, specific conductance, total organic carbon (TOC), total organic halogen (TOH), or heavy metals), waste constituents, or reaction products that provide a reliable indication of the presence of dangerous constituents in ground water.

(2) The Agency shall specify the parameters or constituents to be monitored in the permit issued to the facility.

#### **51. Compliance monitoring programme**

(1) An industry or factory required to establish a compliance monitoring programme shall-

(a) monitor the ground water to determine whether regulated units are in compliance with the ground water protection standard under regulation 44 of these Regulations;

(b) install a ground water monitoring system at the compliance point as specified by the Agency;

(c) determine the concentration of dangerous constituents and parameters in ground water at each monitoring well at the compliance point at least quarterly during the compliance period:



Provided that the owner or operator shall express the concentration at each monitoring well in a form necessary for the determination of statistically significant increases;

- (d) determine the rate and direction of ground water flow in the uppermost aquifer at least annually;
- (e) analyse samples from all monitoring wells at the compliance point for constituents identified in FAC000-000-9905 contained in Schedule 14 to these Regulations and any other dangerous constituents not listed but which are specified in the permit issued to the facility at least annually to determine whether additional dangerous constituents are present in the uppermost aquifer if those constituents are young:

Provided that all the findings shall be reported to the Agency within seven days after completion of the analysis;

- (f) use procedures and methods for sampling and analysis that meet the requirements of the Agency;
- (g) determine whether there is an increase in the concentration limits for any dangerous constituents specified in the permit;
- (h) notify the Agency in writing within seven days that the ground water protection standard is being exceeded at any monitoring well at the point of compliance;
- (i) submit to the Agency an application for a permit modification to establish a corrective action programme within 90 days (or for regulated units managing EHW, within 60 days) if an engineering feasibility study has been previously submitted to the Agency;
- (j) demonstrate that a source, other than a regulated unit, caused the increase or that the increase resulted from error in sampling, analysis or evaluation, such demonstration being without prejudice to an application for permit modification;
- (k) submit an application for a permit modification on determining that the compliance monitoring programme no longer satisfies the requirements of this regulation;
- (l) assure the Agency that monitoring and corrective action measures necessary to achieve compliance with the ground water protection standard under regulation 44 of these Regulations are taken during the term of the permit.

## **52. Corrective action programme**

The owner or operator shall take corrective action to ensure that regulated units are in compliance with the ground water protection standard under regulation 44 of these Regulations and this shall be specified in the permit issued by the Agency to the facility.

## PART 7

### *Surface impoundments*

## **53. Surface impoundments to conform to standard**

(1) Owners or operators of surface impoundments shall ensure that a surface impoundment conforms with standards and regulations which shall be prescribed by the Agency, from time to time.

(2) A surface impoundment shall have a liner of such quality and strength as would prevent an escape of waste into the adjacent sub-surface soil or ground water at any time during the active life of the impoundment.

(3) The intending owner of a surface impoundment shall apply to the Agency for necessary guidance.

#### **54. Design operating requirement**

(1) During the active life of a surface impoundment, the liner shall be-

(a) designed, constructed and installed with materials to prevent any flow of wastes in and out of the impoundment during the active life of the facility;

(b) constructed with materials which can withstand physical contact with waste to which they are exposed, climatic conditions, the stress of installation and the stress of daily operation;

(c) placed upon a base capable of providing support to the liner and resistance to pressure above and below the liner;

(d) installed to cover all surrounding areas likely to be in contact with the waste or leachate; and

(e) for EHW management, the factory or industry shall submit an engineering report with its permit application affecting the basis for selecting the liners.

(2) The report shall be certified by a licensed professional engineer approved by the Agency.

(3) The factory or industry which own a new surface impoundment in which liquid EHW is managed shall-

(a) install a double-lined system which incorporates the specifications of regulation 55 of these Regulations;

(b) comply with the ground water monitoring requirements.

(5) A surface impoundment shall-

(a) be constructed and operated to prevent overflowing and take into account the effect of wind and wave action, rainfall run-on malfunctions of level controllers, alarms and other equipment and human error;

(b) be designed so that any flow of waste into the impoundment can be immediately shut off in the event of overtopping or liner failure;

(c) have at all times, functional dikes, where earthen, the dikes shall have a protective cover to preserve their structural integrity.

(6) The Agency shall specify in the permit to be obtained by the industry, designs and operating practices that are necessary in the construction of surface impoundments and dikes.

#### **55. Double-lined surface impoundment**

(1) Except as provided in regulation 54 of these Regulations, a factory or industry which owns a double-lined surface impoundment shall not be subject to the provisions of the said regulations if the following conditions are met, that is-

- (a) the impoundment (including its underlying liners) shall be located entirely above the seasonal high-water table;
- (b) the impoundment shall be underlaid by two liners which are designed and constructed in a manner that prevents the migration of liquid into or out of the space between the liners:

Provided that both liners shall meet all the specifications of sub-paragraphs (a) and (b) of paragraph (1) of this regulation;

- (c) a leak detection system shall be constructed and operated between the liners to detect any migration of liquids into the space between the liners; and
- (d) a leachate detection, collection and removal system be constructed and operated to remove accumulated liquid from the system as quickly as possible to avoid unnecessary building of hydrostatic pressure in the system.

(2) If liquid leaks into the leak detection system, the factory or industry shall-

- (a) notify the Agency of the leak in writing within seven days after detecting the leak; and
  - (b) within a period of time specified in the permit, remove accumulated liquid, repair or replace the liner which is leaking and obtain a certification from a qualified engineer that the leak has been stopped;
- or
- (c) begin to comply with any detection monitoring programmes specified in the permit.

(3) The Agency shall specify in the permit all design and operating practices that are necessary to ensure that the requirements of this regulations are satisfied.

#### **56. Monitoring and inspection during construction and installation**

(1) During construction and installation of liners and cover systems, that is-

- (a) membranes;
- (b) sheets; or
- (c) coatings,

shall be inspected for uniformity, and imperfections, holes, cracks, thin spots, or foreign materials.

(2) During maintenance-

- (a) synthetic lines and covers shall be inspected to ensure tight seams and joints for the absence of tears, punctures or blisters;

(b) soil-based and admixed liners and covers shall be inspected for imperfections including lenses, cracks, channels, root holes or other structural non-uniformities that may cause an increase in the permeability of the liner or cover.

### **57. Inspection of surface impoundment**

(1) While a surface impoundment is in operation, it shall be inspected weekly and after storms to detect evidence of any of the following-

- (a) deterioration, malfunctions, or improper operation of overtopping control system;
- (b) sudden drops in the level of the impoundment's contents;
- (c) the presence of liquids in leak detection system, where installed to comply with regulation 55 (1) (c) of these Regulations;
- (d) severe erosion or other signs of deterioration in the dikes or other containment devices.

(2) Where an impoundment has not been in use for at least six months and a permit has not been issued, a certification by a qualified engineer proving the structural integrity of the impoundment dike, shall be provided by the factory or industry.

(3) The certification shall establish, in particular, that the dike-

- (a) shall withstand the stress of the pressure exerted by the types and amounts of waste to be placed in the impoundment; and
- (b) shall not fall due to scouring or piping, and remain without dependence of any liner system included in the surface impoundment construction.

### **58. Emergency repairs and contingency plans**

(1) A surface impoundment shall be removed from service in accordance with regulation 59 of these Regulations if-

- (a) unexpected changes of liquid levels occur;
- (b) the dike leaks.

(2) When a surface impoundment is to be removed from service as required by regulation 59 of these Regulations, the owner or operator shall-

- (a) immediately shut off the flow or stop the addition of waste into the impoundment;
- (b) immediately contain any surface leakage which has occurred or is occurring;
- (c) immediately stop the leak;
- (d) take any other necessary steps to stop or prevent catastrophic failure;

- (e) empty the impoundment, if a leak cannot be stopped by any other means; and
- (f) notify the Agency of the problem in writing within seven days after detecting the problems.

(3) As part of the contingency plan in regulation 35 (1) of these Regulations and in this regulation,

a factory or industry shall specify a procedure for complying with the requirements of this regulation and a containment system evaluation and repair plan describing-

- (a) the testing and monitoring techniques;
- (b) the procedures to be followed to evaluate the integrity of the containment system, in the event of a failure;
- (c) a description of a schedule of actions to be taken in the event of possible failure;
- (d) repair techniques, available materials to be used in the event of leakage due to containment system failure or deterioration.

#### **59. Closure and post-closure care**

(1) At closure, the factory or industry shall-

- (a) remove and decontaminate all waste and its residues, system components including liners, subsoils and structures and equipment which have all been contaminated with dangerous waste and leachate, and manage them as dangerous waste; or
- (b) eliminate free liquids by removing wastes and waste residues;
- (c) stabilise the remaining waste to a bearing capacity sufficient to support a final cover; and
- (d) cover the surface impoundment with final cover designed and constructed to provide long-term minimisation of the flow of liquids through the closed impoundment;
- (e) promote drainage and minimise erosion or abrasion of the final cover and accommodate settling and subsidence so that the cover's integrity is maintained.

(2) If some waste residues or contaminated materials are left in place at final closure (except that no EHW may be left in place) all factory and industries shall comply with all post-closure requirements.

(3) The owner or operator may-

- (a) maintain the integrity and effectiveness of the final cover, including making repairs to the cap as necessary to correct the effects of setting, subsidence, erosion or other events;
- (b) maintain and monitor the leak detection system in accordance with regulation 58 of these Regulations where such a system is present between double liner systems;
- (c) maintain and monitor the ground water system;
- (d) prevent run-off from arising or otherwise damaging the final cover.

(4) If a factory or industry plans to close a surface, impoundment in accordance with regulation 59 of these Regulations and the impoundment does not comply with the liner requirements of regulation 54 of these Regulations and is not exempted from those requirements in regulation 55 of these Regulation then-

(a) the closure plan shall include both a plan for complying with regulation 59 of these Regulations and a contingent plan for complying with regulation 59 (2) in case not all contaminated subsoil can be practically removed at closure; and

(b) the owner or operator shall prepare a contingent post-closure plan for complying with regulation 59 (2) of these Regulations in case not all contaminated subsoils can be practicably removed at the closure.

(5) During the post-closure care period, if liquids leak into a leak detection system installed under regulation 55 (1) (c), the owner or operator shall notify the Agency of the leak in writing within seven days after detecting the leak.

(6) The Agency shall then modify the permit to require compliance with applicable requirements or if so requested by the owner or operator, removal of all materials in accordance with regulation 59 of these Regulations.

#### **60. Special requirement for ignitable or reactive waste**

Ignitable or reactive waste shall not be placed in a surface impoundment, unless the waste is treated or mixed before or immediately after placement in the impoundment so that the resulting waste, mixture or dissolution of material is no longer ignitable.

#### **61. Special requirements for dangerous wastes**

Incompatible wastes and materials shall not be placed in the same surface impoundments.

#### **62. Special wastes not to be placed in a surface impoundment**

(1) The wastes with code numbers FEF020, FEF021, FEF023, FEF026 or FEF027 shall not be placed in a surface impoundment unless the factory or industry operates the surface impoundment in accordance with the management plan for these wastes as approved by the Agency.

(2) The factors to be considered are-

(a) the volume, physical and chemical characteristics of the wastes, including their potential to migrate through soil, their volatility or escape into the atmosphere;

(b) the attenuative properties of underlying and surrounding soils or other materials;

(c) the mobilising properties of other materials so disposed with these wastes; and

(d) the effectiveness of additional treatment, design or monitoring techniques.

## *Land treatment*

### **63. Land treatment programme**

(1) Factories and industries that treat or dispose of dangerous waste in land treatment units shall establish a land treatment programme designed to ensure that dangerous constituents placed in or on the treatment zone are degraded, transformed or immobilised within the treatment zone specified by the Agency when issuing the permit.

(2) The Agency shall specify in the permit the dangerous constituents that shall be degraded, transformed or immobilised as specified.

(3) These dangerous constituents are those identified in FAC-0000-9905 and any other constituent which, although not listed, is considered dangerous by the Agency.

### **64. Treatment of dangerous waste in the treatment zone**

(1) Prior to the application of the waste to be treated in the treatment zone, the factory or industry shall demonstrate using field tests, laboratory analysis, available data or, in the case of existing units, operating data, to show that dangerous constituents in the waste can be completely treated in the treatment zone.

(2) For the treatment of waste within the treatment zone a land treatment demonstration permit is required.

### **65. Design, construction, etc., of factory or industry to minimise dangerous constituent**

The factory or industry shall design, construct, operate and maintain-

- (a) the unit in accordance with all design and operating conditions that were used in the treatment demonstration under regulation 64 of these Regulations;
- (b) minimise the sum of dangerous constituents during the active life of the land treatment unit;
- (c) a run-on control system capable of preventing flow unto the treatment zone during discharge from at least a twenty- five years storm;
- (d) a run-off management system to collect and control at least the water volume resulting from a twenty-five years storm;
- (e) a run-off management system to collect at least the water volume resulting from a twenty-five year storm.

### **66. Field test and laboratory analysis**

(1) Any field test or laboratory analysis conducted in order to make the demonstration under regulation 65 of these Regulations shall-

- (a) accurately simulate the characteristics and operating conditions for the proposed land treatment unit including-

- (i) the characteristics of the waste and of the dangerous constituent present;
  - (ii) the topography of the surrounding area;
  - (iii) the characteristics and depth of soil in the treatment zone; and (v) the operating practices to be used at the unit;
- (b) be conducted in a manner that protects human health and the environment.

#### **67. Design and operating requirement**

(1) The Agency shall specify in the permit issued for the facility how the factory or industry shall design, construct, operate and maintain the land treatment unit in compliance with these Regulations.

(2) Collection and holding facilities (e.g. tanks or basins) associated with run-on and run-off control system after storm shall be emptied or otherwise managed expeditiously in accordance with the provisions of these Regulations.

(3) If the treatment zone contains particulate matter which may be subject to wind dispersal, the owner or operator shall control the wind dispersal.

(4) The owner or operator shall inspect the unit weekly and after storms to detect evidence of-

- (a) deterioration, malfunctions, or improper operation of run-on and run-off control system; and
- (b) improper functioning of wind dispersal control measures.

#### **68. Food chain crops**

(1) The Agency may allow the growth of food chain crops in, or on the treatment zone only if the factory or industry satisfied the conditions of these Regulations.

(2) The Agency may specify in the permit issued for the facility the specific food chain crops which may be grown on the treatment zone.

(3) The factory or industry shall demonstrate that there is no substantial risk to human health caused by the growth of such crops in or on the treatment zone by demonstrating prior to the planting of such crops, that dangerous constituents other than cadmium-

- (a) shall not be transferred to the plant by intake or direct contact and shall not otherwise be ingested by food chain animals grazing within the treatment zone; or
- (b) shall not occur in greater concentrations on crops grown on the treatment zone than when the same crops are grown on untreated soils under similar conditions and in the same region.

#### **69. Demonstration by the use offield and test greenhouse studies**

(1) In making such a demonstration, the factory or industry may use field tests, greenhouse studies, available data and in the case of existing units, operating data, and shall-



- (a) base the demonstration on conditions similar to those present in the treatment zone, including soil characteristics (for example pH, cation-exchange capacity) specific wastes, application rates or methods, and crops to be grown; and
- (b) describe the procedures used in conducting such tests, including the sample selection criteria, sample size, analytical methods, and statistical procedures.

(2) If the owner or operator intends to conduct field tests or greenhouse studies in order to make the demonstration, he shall obtain a permit from the Agency for conducting such activities.

#### **70. Unsaturated zone monitoring**

(1) Subject to this regulation, an industry or factory shall establish an unsaturated zone monitoring programme to monitor the soil and soil-pore liquid to determine whether dangerous constituents migrate out of the treatment zone.

(2) The Agency shall specify the dangerous constituents as specified in regulation 63 (2) of these Regulations to be monitored in the facility permit.

(3) The Agency may require monitoring for principal dangerous constituents (PDCS) in lieu of those constituent specified under regulation 63 (2) of these Regulations.

(4) An unsaturated zone monitoring system mentioned in paragraph (1) of this regulation which includes soil monitoring, soil cores and soil-pore liquid monitoring using devices such as lysimeters and shall consist of a sufficient number of sampling points at appropriate locations and depths yield samples that represent the quality of background soil-pore, liquid quality and the chemical make-up of the soil that has not been affected by leakage from and below the treatment zone.

(5) The factory or industry shall establish a background value for each dangerous constituent to be monitored.

(6) The Agency shall specify the frequency and timing of soil and soil-pore liquid monitoring in the permit issued to the facility after considering the frequency, timing and rate of waste application, and the soil permeability.

(7) The owner or operator shall use consistent sampling and analysis procedures that are designed to ensure sampling results that provide a reliable indication of soil-pore, liquid quality and the chemical make-up of the soil below the treatment zone.

(8) In addition to regulation 70 (2) of these Regulations, the factory or industry shall implement procedures and techniques for-

- (a) sample collection;
- (b) sample preservation and shipment;
- (c) analytical procedures; and
- (d) control of custody and distribution of sample.

(9) The factory or industry shall conduct soil monitoring from time to time to determine whether there is a statistically significant change over background values for any dangerous constituents to be monitored under regulation 70 (2) of these Regulations.

(10) If the owner or operator determines, pursuant to regulation 70 (6) of these Regulations, that there is a statistically significant increase of dangerous constituents below the treatment zone, he shall-

- (a) notify the Agency of this finding in writing within seven days and the notification shall indicate what constituents have shown statistically significant increases;
- (b) within 45 days, submit to the Agency an application for a permit modification to amend the operating practices at the facility in order to maximise the success of degradation, transformation, or immobilisation processes in the treatment zone;
- (c) continue to monitor in accordance with the unsaturated zone monitoring programme established under this regulation;
- (d) demonstrate that a source other than regulated units caused the increase or that the increase resulted from an error in sampling, analysis, or evaluation.

(11) In addition to making a demonstration under this regulation, a factory or industry shall within 45 days submit concurrently a permit modification application, unless such demonstration successfully shows the increase resulted from an error in sampling, analysis, evaluation or from a source other than regulated units.

### **71. Record keeping**

The owner or operator shall include dangerous waste application dates and rates in the operating record.

### **72. Closure and post-closure**

(1) During the closure period, the owner or operator shall-

- (a) continue all operations (including pH control) necessary to maximise degradation, transformation or immobilisation of dangerous constituents within the treatment zone as required under regulations 63, 64, 65 of these Regulations, except to the extent that such measures are inconsistent with these Regulations;
- (b) continue unsaturated zone monitoring except that in soil-pore liquid, monitoring may be terminated ninety days after the last application of waste to zone; and
- (c) establish a vegetative cover on the portion of the facility being closed at such time that the cover will not substantially impede degradation, transformation or immobilisation of dangerous constituents in the treatment zone and the vegetative cover shall be capable of maintaining growth without extensive maintenance.

(2) When closure is completed, the owner or operator shall submit to the Agency a certification by an independent qualified soil scientist or a licensed professional engineer, that the facility has been closed in accordance with the specifications in the approved closure plan.

### **73. Special requirement for ignitable or reactive waste**

The owner or operator of a facility, factory, or industry shall not apply ignitable or reactive waste to the treatment zone unless the waste is immediately incorporated into the soil so that the resulting material is no longer ignitable or reactive waste.

#### **74. Special requirement for incompatible waste**

The owner or operator of a facility, factory or industry shall not place incompatible wastes or incompatible materials, in the same treatment zone, unless-

- (a) the waste is immediately incorporated into the soil so that the resulting waste, mixture or dissolution of material no longer meets the definition of ignitable and reactive wastes;
- (b) the waste is managed in such a way that it is protected from any material or conditions which may cause it to ignite or react.

#### **75. Special requirement for extremely hazardous waste**

(1) Under no circumstances will extremely Hazardous Waste (EHW) be allowed to remain in closed land treatment unit after concluding the postclosure care period unless-

- (a) the Agency extends the postclosure care period; or
- (b) the Agency requires that all EHW be disposed off-site or that it be treated in around or safe environment manner.

(2) In deciding whether to extends postclosure care which required disposal or treatment of extremely hazardous waste the Agency may take into account the likelihood that the waste will or will not continue to degrade the land treatment zone to the extend that it is still regarded as of extremely hazardous waste (EHW).

(3) For the purposes of this regulations, EHW shall be considered to remain in a land treatment zone if representative samples of the treatment zone are designated as EHW by procedures for representative sampling and testing specified in the permit.

#### **76. Special requirements for dangerous wastes**

(1) Dangerous wastes with Code Nos. FEF020, FEF021, FEF022, FEF023, FEF026 or FEF027 contained in Schedule 12 and these mentioned in Schedule 13 of these Regulations shall not be placed in a land treatment zone unless the owner or operator operates the treatment zone in accordance with a management plan.

(2) The factor to be considered are as specified in section 62 of these Regulations.

### **PART 9**

#### *Waste Piles*

#### **77. Applicability**

(1) The provisions of this Part shall apply in this section to owners and operator of facilities that store or treat dangerous waste piles but not to factories or industries that are located near or very close to the facilities

containing the waste piles provided that such waste piles are subject to the provisions of Part VII of these Regulations.

(2) Any factory or industry whose waste pile is inside or under a structure that provides protection from precipitation so that neither run-off nor leachate is generated, is not subject to the provisions of section 62 of these Regulations provided that-

- (a) liquid or materials containing free liquids are not placed in the pile;
- (b) the pile is protected from surface water run-on by the structure or in some other manner;
- (c) the pile is designed and operated to control dispersal of the waste by wind, by means other than wetting; and
- (d) the pile shall not generate leachate through decomposition or any other reactions.

(3) All EHW and respiratory carcinogens stored in waste piles shall be protected from dispersal by precipitation or wind (covered, stored inside a building, etc.).

#### **78. Design and operating requirements**

(1) A waste pile shall have-

- (a) a liner that is designed, constructed, installed and maintained to prevent any migration of wastes out of the pile into the adjacent subsurface soil or ground water or surface water at any time during the active life (including the closure period) of the waste pile;
- (b) the liner may be constructed of materials that may allow waste to migrate into the liner itself (but not into the adjacent subsurface soil or ground water or surface water) during the active life of the facility:

Provided the liner shall be as specified in regulation 54 of these Regulations;

- (c) the leachate collection and removal system which conform with the Agency's specifications in regulation 55 (d) to collect and remove leachate from the pile.

(2) For extremely hazardous waste management, the owner or operator of the factory or industry shall submit an engineering report certified by a licensed professional engineer with his permit application stating the basis for the liner required in regulation 62.

(3) If the Agency finds, based on a demonstration by the factory or industry, that, alternate design and operating practices, together with location characteristics, shall prevent the migration of any dangerous constituents into the ground water or surface water at any future time the factory or industry may be exempted from the requirements of regulation 66 of these Regulations.

(4) The owner or operator shall design, construct, operate and maintain a run-on control system and a run-off management system to conform with regulation 65 (iii) and (iv) of these Regulations.

#### **79. Double-lined piles**

(1) The factory or industry of a double-lined waste pile is not subject to the provisions of this Part if the conditions specified in regulation 55 (a) (i) for impoundment are satisfied.

(2) If liquid seeps into the leak detection system the owner or operator shall comply with the provisions of regulation 58 of these Regulations.

(3) The Agency shall specify in the permit all design and operating practices that are necessary to ensure that the provisions of this Part are complied with.

### **80. Inspection of lines**

(1) The owner or operator of a pile shall be subject to the following guidelines-

- (a) the pile (including its underlying liner) shall be located entirely above the seasonal high-water table;
- (b) the pile shall be underlain by a base that meets all the specification of regulation 55 (1) (a) of these Regulations;
- (c) the wastes in the pile shall be removed periodically and the liner shall be inspected for deterioration, cracks or other conditions that may result in leaks;
- (d) the frequency of inspection plans shall be based on the potential for the liner (base) to crack or otherwise deteriorate under the conditions of operation;
- (e) the liner shall be of sufficient strength and thickness to prevent failure due to puncture, cracking, tearing, or other physical deterioration from equipment used to place waste in the pile or to clean and expose the liner surface for inspection.

(2) If deterioration, cracking or other condition is identified that is causing or could cause a leak, the owner or operator of the factory shall-

- (a) notify the Agency in writing within seven days after detecting the condition; and
- (b) repair or replace the liner (base) and obtain a certification from a qualified engineer that the liner (base) has been repaired and leakage shall not occur; or
- (c) comply with a detection monitoring programme as defined in the permit.

### **81. Monitoring and inspection**

During construction or installation, liners and cover systems shall be inspected for uniformity, damage and imperfections as specified in regulation 56 (a) (b) of these Regulations for surface impoundments.

### **82. Containment system and repairs contingency plans**

- (1) Whenever there is any indication of a possible failure of the containment system, such as-
- (a) liquid detected in the leachate detection system;
  - (b) evidence of leakage or the potential for leakage in the base;

- (c) erosion of the base; or
- (d) apparent or potential deterioration of the liner(s) based on observation or samples of the liner materials,

then that system shall be inspected in accordance with the provisions of the containment system evaluation and repair plan required by regulation 58 of these Regulation.

(2) Whenever there is a positive indication of a failure of the containment system, the waste pile shall be removed from service.

(3) Such failure as maintained in subparagraph (1) of this regulation may include detection in the leachate detection system or breach such as hole, tear, crack, or separation in the base.

(4) If the waste pile is to be removed from service as required by the factory or industry, the owner or operator of the factory shall immediately-

- (a) stop adding waste to the pile;
- (b) contain any leakage which has occurred or is occurring;
- (c) cause the leakage to be stopped; and
- (d) remove the waste from the leak if it cannot be stopped by any other means.

(5) As part of the contingency plan the owner or operator shall specify-

- (a) a procedure for complying with the provisions of regulation 58 of these Regulations; and
- (b) a containment system evaluation and repair plan describing-
  - (i) testing and monitoring techniques;
  - (ii) procedures to be followed to evaluate the integrity of the containment system in the event of a possible failure;
  - (iii) a schedule of actions to be taken in the event of a possible failure; and
  - (iv) a description of the repair techniques and materials (and their availability) to be used in the event of leakage due to containment system failure or deterioration which does require the waste pile to be removed from service;
- (c) for extremely hazardous waste piles, the factory or industry shall submit with his permit application a statement signed by a licensed professional engineer stating the basis on which the evaluation and repair plan was established.

(5) No waste pile that has been removed from service pursuant to regulation 58 of these Regulations may be restored to service unless the containment system has been-

- (a) repaired;

(b) certified by a qualified engineer as meeting the design specification approved in the permit.

(6) A waste pile which has been removed from service pursuant to regulation 58 of these Regulations and cannot be repaired, shall be closed in accordance with regulation 59 of these Regulations.

### **83. Special requirements for incompatible waste**

(1) Piles of incompatible wastes shall not be served by the same system and shall be separated or protected by means of a dike, bam, well or other device.

(2) Dangerous wastes shall not be piled on the same base where incompatible wastes or materials were previously piled, unless the base has been decontaminated sufficiently.

### **84. Closure and post-closure care**

At closure, the factory or industry shall comply with the requirement specified in regulation 72 of these Regulations.

### **85. Special requirements for dangerous wastes**

(1) Dangerous waste with code No.'s FEF020, FEF021, FEF022, FEF023, FEF026 and FEF027 shall not be placed in waste piles that are not enclosed as defined in regulation 76 of these Regulations unless the factory or industry operates the waste pile in accordance with a management plan approved by the Agency in accordance with the provisions of regulation 65 of these Regulations.

(2) The factories to be considered are specified in regulation 62 of these Regulations.

## **PART 10**

### *Landfills*

### **86. Applicability of the provisions of Chapter**

The provisions in this Chapter shall apply to owners and operators of facilities that dispose of dangerous waste in landfills.

### **87. Design and operating requirements**

(1) A landfill shall have the requirements specified in regulations 54 of these Regulations.

(2) The design, construction, maintenance and operation of a leachate collection and removal system shall conform to specifications in regulations 54 and 55 (1) (c) of these Regulations.

(2) Any owner or operator of a landfill covered by sub-paragraph (1) of this regulation shall be exempted from the provisions of regulation 55 (1) (a)-(d) of these Regulations.

(3) The owner or operator of landfill covered by sub-paragraph (1) of this regulation shall design, construct, operate, and maintain a run-out control system of the landfill during peak discharge from at least a twenty years storm, and a run-off.

### **89. Double-lined landfills**

The factory or industry of a double-lined landfill is not subject to the provisions of this Chapter if the provisions of regulation 59 of these Regulations have been complied with.

#### **90. Monitoring and inspection**

During construction or installation, liners and cover systems shall be inspected for uniformity, damage and imperfections as specified in regulation 56 of these Regulations.

#### **91. Surveying and record-keeping**

The factory or industry of a landfill shall maintain the items in the operating record, that is-

- (a) on a map, the exact location and dimensions, including depth of each cell with respect to permanently surveyed benchmarks; and
- (b) the contents of each cell and the approximate location of each dangerous waste type within each cell.

#### **92. Closure and post-closure care**

(1) At final closure of the landfill or upon closure of any cell, the factory or industry shall-

- (a) comply with the specifications contained in regulation 59 of these Regulations covering surface impoundments;
- (b) provide long-term minimisation of migration of liquids, through the closed landfill;
- (c) function with minimum maintenance;
- (d) promote drainage and minimise exertion or abrasion of the cover;
- (e) accommodate setting and subsidence so that the cover's integrity is maintained; and
- (f) have a permeability less than or equal to that of any bottom liner system or natural subsoils present.

(2) After final closure, the owner or operator shall comply with all post-closure provisions in regulations 59 of these Regulations.

(3) In addition, the owner or operator shall continue to-

- (a) operate the leach collection and removal system until leachate is no longer detected;
- (b) protect and maintain surveyed benchmarks used in accordance with the provisions of section 55 (2) of these Regulations.

(4) During the post -closure care period, if liquid leaks into a leak detection system, the owner or operator shall notify the Agency.

#### **93. Special requirements for incompatible waste**



Incompatible wastes, or incomparable wastes and materials shall be treated in accordance with regulations 74 and 83 of these Regulations.

## PART 11

### *Incinerators*

**94.** (1) The provisions of this Part shall apply to factories and industries that incinerate solid and dangerous waste in boilers or industrial furnaces in order to destroy them-

(a) after an examination of the waste analysis included with Part B of the factory or industries permit application.

(2) The agency may exempt the facility from the provisions of this Part, if the waste is to be burned in an incinerator of a factory or industry, Part B of the application for a permit has been examined by the Agency and the waste has been carefully analysed as not detrimental to human health and the environment after burning.

(3) Throughout normal operation the operator shall conduct sufficient waste analysis to verify that waste feed to the incinerator is within the physical and chemical composition limits specified in his permit.

### **96. Designation of principal organic dangerous constituents and dangerous combustion by products**

(1) Organic constituents or by-products which present the greatest degree of difficulty of incineration shall be designated principal organic dangerous constituents (PODC's) and dangerous combustion by-products (DCBP's) and shall be treated to the required standards specified in regulation 64 of these Regulations.

(2) The Agency shall consider constituents as dangerous if they are present in large quantities or concentrations.

(3) For each waste feed to be burned, one or more PODC's and dangerous combustion by-products shall be specified in the facility's permit from among those constituents listed in FAC 000-000-9905 and where possible to the practicable, from among those constituents which contribute to the toxicity, persistence or carcinogenicity of wastes designated under regulations 11, 12, and 13 of these Regulations.

(4) This specification shall be based on the degree of difficulty of incineration of the organic constituents of waste feed and its combustion by-products and their concentration or mass, considering the results of waste analysis and trials.

### **97. Performance standards**

(1) An incinerator burning dangerous waste, shall be designed, constructed and maintained so that when operated in accordance with operating requirements specified under regulation 99 of these Regulations, it shall meet certain performance standards specified by the Agency.

(2) Except as provided in paragraph (3) of this regulation an incinerator burning dangerous waste shall achieve destruction and removal efficiency (DRE) of 99.99 per cent for each PODC designated in its permit for each waste feed. DRE is determined for each PODC from the following equation, that is-

$$(a) \quad DRE = \frac{W_{in} - W_{out}}{W_{in}} * 100\%$$

where  $W_{in}$  - Mass feed rate of one PODC in the waste stream feeding the incinerator, and  $W_{out}$  - Mass emission rate to the same PODC present in exhaust emission prior to release to the atmosphere.

(b) An incinerator burning dangerous waste FEF020, FEF021, FEF022, FEF026 or FEF027 contained in Schedule 13 of these Regulations shall achieve DRE 99.999 per cent for each PODC's designated in its permit. This performance must be demonstrated on PODC's that are more difficult to incinerate than tetrapentadioxins and hexachlorodibenz- P-dioxin and dibenzofurans.

(c) DRE is determined for each PODC's from the equation in subsection (a) above. In addition, the owner or operator of the incinerator shall notify, the Agency of his intent to incinerate dangerous wastes FEF020, FEF022, FEF023, FEF026 or FEF027.

(d) Incinerators burning dangerous waste shall destroy dangerous combustion by products designated under section 96 that the total mass emission rate of these by-products emitted from the stack, is no more than 10 per cent of the total mass feed rate of PODG's fed into the incinerator.

(e) (i) An incinerator burning dangerous waste and producing stack emissions of more than 1.8 kilograms per hour of hydrogen chloride (HCL) emissions such that the rate of emission is no greater than the larger of either 1.8 kilograms per hour or one percent of the HCL in stack gas prior to entering any pollution control equipment.

(ii) An incinerator burning dangerous waste shall not emit particulate matter in excess of 180 milligrams per dry standard cubic meter when corrected for the amount of oxygen in the stock gas according to the formula-

$$P_c = \frac{P_m \times 14}{21 - Y}$$

Where  $P_c$  is the corrected concentration of particulate matter,  $P_m$  is the measured concentration of particulate matter and  $Y$  is the measured concentration of oxygen in the stack gas, using the Orsat method for oxygen analysis of dry flue gas. This correction procedure is to be used by all dangerous waste incinerators except those operating under conditions of oxygen environment. For these facilities the Agency will select an appropriate correction procedure to be specified in the facility permit.

(f) The emission standards specified in sub-paragraph (e) above shall be met when no other more stringent standards exist. Where a state or local air pollution control authority has jurisdiction and has more stringent emission standards, an incinerator burning dangerous wastes shall comply with the applicable air pollution control authority's emission standards (including limits based on best available control technology).

(g) For the purpose of permit enforcement, compliance with the operating requirements specified in the permit under regulation 99 of these Regulations shall be regarded as compliance with regulation 97 of these Regulations, however evidence that compliance with those permit conditions is insufficient to ensure compliance with the performance requirements of regulation 99 of these Regulations, it may be evidence justifying modification, revocation, or re-issuance of a permit.

#### **98. Trial burns and permit modifications**

(1) The owner or operator of a dangerous waste incinerator shall only wastes specified in his permit and only under operating conditions specified for those wastes under regulation 99 of these Regulations except-

- (a) in approved trial s; or
- (b) under exemptions created under regulation 97 (b) of these Regulations.

(2) New dangerous wastes may be burned only after operating conditions have been specified in a trial burn permit or a permit modification has been issued as applicable. Operating requirements for new wastes shall be based on trial burn results or included with a permit application.

(3) The permit for a new dangerous waste incinerator shall establish appropriate conditions for each of the applicable requirements of this paragraph, including but not limited to allowable feeds and operating conditions necessary to meet the requirements of section 99 but sufficient to comply with the following standards-

- (a) the period beginning with initial introduction of dangerous waste to the incinerator and ending with initiation of the trial burn, shall exceed 1020 hours operating time for treatment of dangerous waste;
- (b) during the trial , the operating requirements shall be sufficient to demonstrate compliance with the performance standards of section 99 and shall be in accordance with the approved trial burn plan;
- (c) immediately after following completion of the trial , and for the minimum period sufficient to allow sample analysis, data computation, and submission of the trial results by the applicant, and review of the trial results and modification of the facility permit.

#### **99. Operating requirements**

(1) An incinerator shall be operated in accordance with operating requirements specified in the permit. These will be specified on a case-by-case basis as those demonstrated in a trial burn.

(2) Each set of operating requirements shall specify the composition of waste feed, and acceptable operating limits including the following conditions-

- (a) carbon monoxide (CO) level in the stack exhaust gas;
- (b) waste feed rate;
- (c) combustion temperature;
- (d) an appropriate indicator of combustion gas velocity;

- (e) allowance variations in incinerator system designed or operating procedures; and
- (f) such other operating requirements as are necessary to ensure that the performance standards of regulation 97 of these Regulations are met.

(3) During start-up and shut-down of an incinerator, dangerous waste (except waste exempted in accordance with subsection 97 (b)) shall not be fed into the incinerator and shall not operate within the conditions of operation (temperature, air feed rate, etc.) specified in the permit.

(4) Fugitive emissions from the combustion zone shall be controlled by-

- (a) keeping the combustion zone totally sealed;
- (b) maintaining a combustion zone pressure lower than atmospheric pressure; or
- (c) providing an alternate means for fugitive emissions control, equivalent to maintenance of combustion zone pressure lower than atmospheric pressure.

(5) An incinerator shall be operated with a functioning system to automatically cut off waste feed to the incinerator when operating conditions deviate from limits established under this section.

(6) An incinerator shall cease operation if waste feed, incinerator design, or operating conditions exceed limits designated in its permit.

#### **100. Monitoring and inspection**

(1) The factory or industry shall conduct, and closely monitor the following while incinerating dangerous waste-

- (a) combustion temperature, waste feed rate, and the indicator of combustion gas velocity specified in the facility permit on a continuous basis;
- (b) carbon monoxide (CO) on a continuous basis at a point in the incinerator down-stream of the combustion zone and prior to release to the atmosphere; and
- (c) as required by the Agency, sampling and analysis of the waste and exhaust emissions to verify that the operating requirements established in the permit achieve the performance standard of section 97.

(2) The incinerator and associated equipment (pumps, valves, conveyors, pipes, etc.) shall be completely inspected at least daily for leaks, spills, fugitive emissions and signs of tampering.

(3) All emergency waste feed cut-off controls and system alarms must be tested at least weekly to verify proper operation, unless the owner or operator demonstrates to the Agency that weekly inspections will unduly restrict or upset operations and that less frequent inspections will be adequate.

(4) Emergency cut-off and alarm systems shall be tested at least monthly.

(5) Monitoring and inspection data shall be recorded and the records shall be placed in the operating log.

#### **101. Closure**

(1) At closure the factory or industry operator shall remove all dangerous waste and dangerous waste residues (including but not limited to ash scrubber liquids, and from scrubber site).

(2) The remaining equipment, basis, liners, soil and debris containing, or contaminated with dangerous waste or waste residues shall be decontaminated or removed, and disposed in an environmentally safe manner.

## PART 12

### *Harmful/dangerous/hazardous/toxic wastes*

#### *Tracking programme*

#### **102. The tracking programme**

(1) The tracking programme shall-

- (a) provide for tracking of the collection, transportation and treatment of the wastes from its generation to the disposal;
- (b) include a system for providing the generator of the waste with assurance that the waste is received by the disposal facility;
- (c) use a uniform format for tracking;
- (d) include the following requirements-
  - (i) segregation and/or recovery of the waste at the point of generation, where practicable;
  - (ii) placement of the waste in containers that will protect waste handlers and the public from exposures;
  - (iii) appropriate labelling of containers of the wastes.

(2) The waste that is incinerated need not be tracked after incineration except for the disposal of the ash.

#### **103. Medical waste and laboratory waste tracking programme**

The following types of harmful/dangerous/hazardous/medical wastes to be tracked include, but are not limited to the following types of solid waste-

- (a) cultures and stock of infectious agents and associated biological materials, including cultures from medical and pathological laboratories, cultures; and
- (b) stock of infectious agents, from research and industrial laboratories, wastes from the production of biological, discarded live and attenuated vaccines, and culture dishes and devices used to transfer, inoculate and mix cultures;
- (c) pathological wastes; including tissues, organs and body parts that are removed during surgery and autopsy;

- (d) wastes of afterbirth (placenta), human blood and products of blood including serum, plasma and other blood components;
- (e) sharp instruments that have been used in patient care or in medical research or industries, including hypodermic needles, syringes, pasteur pipettes, broken glass, and scalpel blades;
- (f) contaminated animal carcasses, body parts, and cages used for animals that were exposed to infectious agents during research, production of biological or testing of pharmaceutical;
- (g) wastes from surgery or autopsy that were in contact with infectious agents, including soiled dressings, sponges, drapes, lavage-tubes, drainage sets, under-pads, and surgical gloves;
- (h) laboratory wastes from medical, pathological, or industrial laboratories that were in contact with infectious agents, including slides and cover slips, disposable gloves, laboratory coats and aprons;
- (i) dialysis wastes that were in contact with the blood of patients undergoing haemodialysis, including contaminated disposable equipment and supplies such as tubing, filters, disposable sheets, towels, gloves, aprons and laboratory coats;
- (j) discarded medical equipment and parts that were in contact with infectious agents;
- (k) biological wastes and discarded materials contaminated with blood, faecal matter, exudate or secretion from human beings or animals who are isolated to protect others from communicable diseases;
- (l) such other waste materials that result from the administration of medical care to a patient by a health care provider and is found by the Agency to pose a threat to human health or the environment; and
- (m) radioactive medical wastes.

#### **104. Inspection**

Any person who generates, stores, treats, transports, disposes of, or otherwise handles or has handled medical, hazardous, toxic or harmful wastes shall upon request of any officer, employee or representative duly designated by the Agency furnish information relating to such wastes, including any tracking forms required to be maintained according to the provision of these guidelines, conduct monitoring or testing, and permit such persons at all reasonable times to have access to, and copy all records relating to waste. For such purpose, such persons are authorised to-

- (a) enter at reasonable times, any establishment, or other place, where medical or harmful/dangerous hazardous wastes have been generated, stored, treated or transported from;
- (b) conduct monitoring or testing; and
- (c) inspect and obtain samples from any bonafide staff or representative of the establishment of any such wastes and samples of any container or labelling for such wastes.

### **105. Procedure**

(1) Each inspection under this section shall be commenced and completed within a reasonable period as determined by the Agency.

### **106. Inspection**

(1) If the official from the Agency obtains any sample prior to leaving the premises, he shall give to the owner, operator, or agent in charge a receipt describing the sample obtained and if requested, a portion of each sample in volume or weight to the portion retained, (if giving such an equal portion is feasible).

(2) If analysis is made of such samples, a copy of the result of such analysis shall be furnished promptly to the owner of the factory or industry in charge of the premises concerned.

(3) The mechanism for implementation and enforcement shall be co-ordinated by the Agency in collaboration with relevant federal and state ministries and parastatals.

### **107. Enforcement**

The procedure for compliance with this order and violations shall be as contained in the provisions of Decree 42 of 1988 and Decree 58 of 1988 in addition to any other laws for the time being in force including appropriate penalties.

### **108. Penalty**

A person who contravenes a provision of these Regulations is guilty of an offence and liable on conviction to the penalty specified in section 35 or 36 of the Federal Environmental Protection Agency Act.

### **109. Interpretation**

In these Regulations, unless the context otherwise requires-

"**Agency**" means the Federal Environmental Protection Agency established by the Federal Environmental Protection Agency Act;

"**person**" includes a corporate and incorporate body, industry, enterprises operator, owner of a facility in which waste or hazardous substances, are handled;

"**waste or hazardous waste**" has the meaning assigned thereto by the Federal Environmental Protection Agency Act.

### **200. Citation**

These Regulations may be cited as the National Environmental Protection (Management of Solid and Hazardous Wastes) Regulations.

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SCHEDULE 1

[Regulation.]

TABE 1.1

Toxicity Category Table

Category	TLM 96 (Fish) (Fish) or LC 50 mg/-	Oral (Rat) LD 50 (mg/kg)	Inhalation (Rat) LC 50 LC50 (mg/kg)	Dermal (Rabbit) LD50 (mg/kg)
X .....	<0.01	<0.5	<0.02	<2
A.....	0.1-1	0.5-5	0.02-0.2	2-20
B.....	1-10	5-5	0.2-2	20-200
C.....	10-100	50-500	2-20	200-2000
D.....	100-1000	500-5000	20-200	2,000-20,000

(a) In this table the degree of toxicity decreases from X to D with X being the most acutely toxic category.

(b) Any person or factory generating waste containing one or more toxic categories shall determine the equivalent concentration for the waste on the basis of the following formular that is-

Equivalent concentration (%)

$$= X\% + \frac{A\%}{10} + \frac{B\%}{100} + \frac{C\%}{1,000} + \frac{D\%}{10,000}$$

Where (X, A, B, C, or D)% is the sum of all the concentration percentage of a particular toxic category.

TABLE 1.2

Toxic Hazardous/Dangerous Waste Designation Table

<i>If your waste's toxic range falls in the wastes, designation is-</i>	<i>And your monthly or batch waste quantity is-</i>	<i>Then your</i>
D Category .....	Greater than 100kg .....	DW
X, A, B, or C .....	182 –100kg .....	DW
Category .....	Greater than 100kg .....	EHW

TABLE 1.3

Persistent Hazardous/Dangerous Waste Table



*Dangerous Waste Number*

*Dangerous Waste Criteria and Designation*

*Toxic Dangerous Wastes*

FWT01	EHW
FWT02	DW
FWPO1	EHW
FWP02	DW

*Polycyclic Aromatic Hydrocarbons*

FWP03	EHW
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*Carcinogenic Dangerous Wastes*

FWCO1	EHW
FWCO2	DW

SCHEDULE 4

- (a) discarded chemical products;
- (b) dangerous waste products;
- (c) infectious dangerous wastes;
- (d) dangerous waste mixture;
- (e) toxic dangerous waste;
- (f) persistent dangerous waste; and
- (g) carcinogenic dangerous waste.

(a) discard or intended to be discarded or described as abandoned i.e. disposal of or burned or incinerated, accumulated, stored or treated (but not recycled) before or in lieu of being abandoned by being disposed through burning or incineration;

(b) burned for purposes of energy in lieu of their original intended uses;

- (c) used to produce fuel in lieu of their original intended uses;
- (d) applied to the land in lieu of their original intended use; or
- (e) contained in products that are applied to land in lieu of their intended use.

Schedule 5

[Regulation 5.]

*Discharged chemical products*

- (a) a commercial chemical product or manufacturing intermediate which has the generic name listed in the discarded chemical product list F AC 000-000-9903;
- (b) an off-specification commercial chemical product or manufacturing chemical intermediate which if it had met specification should have the generic name listed in the discarded chemical product list FAC 000-000-9903;
- (c) any container or inner liner that have been used to hold any commercial chemical product or manufacturing chemical intermediate that has, or any off-specification commercial chemical product or manufacturing chemical intermediate which if it had met specification would have the generic name listed on the acutely dangerous chemical product list of F AC 000-000-9903 unless the container or inner liner is empty and has been triple-rinsed;
- (d) any residue or contaminated soil, water, or other debris resulting from the clean up of a spill of a commercial chemical product or manufacturing chemical intermediate which if it had met specification would have the generic name listed in the discarded chemical product list FAC 000-000-9903.

(2) The materials or items described in (a), (b), (c) and (d) of this sub-paragraph shall be designated as dangerous waste when they are.

SCHEDULE 6

[Regulation 7.]

*List of infectious wastes*

- (a) culture and stock of infectious agents;
- (b) pathological wastes;
- (c) human blood waste and products of blood;
- (d) sharp instruments that have been used in patient care or in medical, research, or industrial laboratories;
- (e) contaminated animal carcasses, body parts, etc.;

- V) wastes from surgery or autopsy that were in contact with infectious agents, etc.;
- (g) laboratory wastes from medical, pathological, pharmaceutical or other research, commercial or industrial laboratories.
- (b) a person whose waste mixture contains one or more toxic constituents shall determine the equivalent concentration for his waste from the following formula-

$$= x\% \quad A\% \quad B\% \quad C\% \quad D\%$$

$$+ \quad \frac{\quad}{10} \quad + \quad \frac{\quad}{100} \quad + \quad \frac{\quad}{1,000} \quad + \quad \frac{\quad}{10,000}$$

SCHEDULE 7

[Regulation 10 (2).]

*Toxic Hazardous/Dangerous Waste Designation Table*

*If your waste's toxic range falls in the- And your monthly or batch waste quantity is- Then your wastes, designation is-*

D Category .....	Greater than 100kg .....	DW
X, A, B, or C .....	182 –100kg .....	DW
Category .....	Greater than 100kg .....	EHW

Schedule 8

Extraction Procedure (EP) Toxicity List

<i>Dangerous waste number</i>	<i>Contaminant</i>	<i>EHW maximum concentration in extract (mg/l)</i>	<i>D W maximum concentration in extract (mg/l)</i>
FD 004	Arsenic	500	5 - 500
FD 005	Barium	10,000	100 - 10,000

FD 006	Cadmium	100	1 - 100
FD 007	Chromium	500	5 - 500
FD 008	Lead	500	5 - 500
FD 009	Mercury	20	02 - 20
FD 010	Se1enuim	100	1 - 100
FD 011	Silver	500	5 - 500
FD 012	Endrin	2	0.02 - 20
FD 013	Lindane	40	0.4 - 40
FD 014	Methoxychlor	1,000	10 - 1,000
FD 015	Toxaphene	50	0.5 - 50
FD 016	2,4 - D	1,000	10 - 1,000
FD017	2,4,5,-T	100	1-100

(3) Two levels of concentration are established for the contaminants listed (Schedule 9) Any waste containing one or more contaminants with concentrations in EHW (extremely hazardous waste) ranges shall cause that waste to be designated EHW. Any waste containing contaminants which occur at concentrations in the dangerous waste (DW) range only (i.e. no EHW contaminants) shall be designated DW.

SCHEDULE 9

*Generic Hazardous/Dangerous Waste Numbers Table*

<i>Dangerous waste criteria</i>	<i>Dangerous waste number</i>	<i>Dangerous waste criteria and designation toxic dangerous waste</i>
Toxic dangerous waste .....	FWTC 1	EHW
	FMT 02	DW
Persistent dangerous.....	FWPC 1	EHW
Halogenated hydrocarbons.....	FWP 02	DW
Polycyclic aromatic hydrocarbons.....	FWP03	EHW
Carcinogenic dangerous wastes.....	FWC 01	EHW

*Schedule 10*

*Maximum concentration of constituents for ground water protection*

Constituents	Maximum concentration (mg 1-1)
Arsenic .....	.05
Barium .....	1.0
Cadmium.....	0.01
Chromium .....	0.05
Lead .....	0.05
Mercury .....	0.002
Selenium .....	0.01
Silver .....	0.05
Endrin .....	0.0002 Waste analysis
Lindane.....	0.004
Methoxychlor.....	0.1
Toxaphene .....	0.005
2, 4,-D.....	0.1
2,4, 5-TP Silver (Tree Killer).....	0.01

*Handling codes for Hazardous/Dangerous Waste Management*

- 1. Storage-
  - FS01 Container (barrel, drum, etc.)
  - FS02 Tank
  - FS03 Waste pile
  - FS04 Surface impoundment

FS05            Other (specify)

2.    Treatment-

(a)    Thermal Treatment

- FT06            Liquid injection incinerator
- FT07            Rotary kiln incinerator
- FT08            Fluidised bed incinerator
- FT09            Multiple hearth incinerator
- FT10            Infrared furnace incinerator
- FT11            Molten salt destructor
- FT12            Pyrolysis
- FT13            Wet air oxidation
- FT14            Calcinator
- FT15            Microwave discharge
- FT16            Cement kiln
- FT17            Lime kiln
- FT18            Other (specify)

(b)    Chemical Treatment

- FT19            Absorption mound
- FT20            Absorption field
- FT21            Chemical fixation
- FT22            Chemical oxidation
- FT23            Chemical precipitation
- FT24            Chemical reduction
- FT25            Chlorination
- FT26            Chlorinolysis
- FT27            Cyanide destruction
- FT28            Degradation

FT29	Detoxification
FT30	Ion exchange
FT31	Neutralisation
FT32	Ozonation
FT33	Photolysis
FT34	Other (specify)

(c) Chemical Treatment

(i) Separation of Components

FT35	Centrifugation
FT36	Clarification
FT37	Coagulation
FT38	Decanting
FT39	Encapsulation
FT40	Filtration
FT 41	Flocculation
FT42	Flotation
FT43	Foaming
FT44	Sedimentation
FT45	Thickening
FT46	Ultra-filtration
FT47	Other (specify)

(ii) Removal of specific components

FT48	Absorption-molecular sieve
FT49	Activated carbon
FT50	Blending
FT51	Catalysis
FT52	Crystallisation

FT53	Dialysis
FT54	Distillation
FT55	Electrodialysis
FT56	Electrolysis
FT57	Evaporation
FT58	High gradient magnetic separation
FT59	Leaching
FT60	Liquid ion exchange
FT61	Liquid-liquid extraction
FT62	Reverse osmosis
FT63	Solvent recovery
FT64	Stripping
FT65	Sand filter
FT66	Other (specify)

(d) Biological Treatment

FT67	Activated sludge
FT68	Aerobic lagoon
FT69	Aerobic tank
FT70	Anaerobic lagoon or tank
FT71	Composting
FT72	Septic tank
FT73	Spray irrigation
FT74	Thickening filter
FT75	Trickling filter
FT76	Waste stabilisation pond
FT77	Other (specify)
FT78 - 79	(Reserved)



- (e) Disposal
- FD80 Underground injection
  - FD81 Landfill
  - FD82 Land treatment
  - FD83 Ocean disposal
  - FD84 Surface impoundment (to be closed as a landfill)
  - FD85 Other (Specify)

SCHEDULE 11

1.0 Hazardous (Dangerous) Chemical Products (FAC 000-000-9903)

1.1 Acutely Hazardous (Dangerous) Chemical Products List

<i>Hazardous Dangerous Waste No.</i>	<i>Substance</i>	<i>FEPA* hazardous designation</i>	<i>Reason for designation</i>
FA023	Acetaldehyde, chloro- .....	EHW	BH
FBO01	Acetaldehyde .....	EHW	C
FB034	Acetaldehyde, trichloro .....	EHW	H
FAOO2	Acetamide, N- (aminothioxomethyl) .....	.EHW	B
FA057	Acetamide, 2-fluoro .....	EHW	BH
FA058	Acetic acid, fluoro-sodium salt .....	EHW	AH
FB144	Acetic acid, lead salt .....	EHW	DEP
FA066	Acetimidic acid, N-[methylcarbamoyl) oxy] thio-methyl ester .....	EHW	B
FB003	Acetonitrile .....	EHW	CI
FAOO1	3-(alpha-Acetyl-benzyl)-4-hydroxycoumarin and salts .....	EHW	A
FAOO2	l-Acetyl-2-thiourea .....	EHW	B
FBO06	Acetyl chloride .....	EHW	CHaR

FA003	Aero lein .....	EHW	X
FBO07	Acrylamide .....	EHW	C
FBO08	Acrylic acid .....	EHW	COL
FBO09	Acrylonitrile .....	EHW	C+I
FA070	Aldicarb .....	EHE	B
FA004	Aldrin .....	EHW	XH
FA005	Allyl alcohol .....	EHW	B
FA006	Aluminium phosphide .....	EHW	BR
FA007	5 (Aminomethyl)-3 isoxazolo .....	EHW	B
FA008	4-Aminopyridine .....	EHW	B
FA009	Ammonium picrate .....	EHW	B
FA119	Ammonium vanadate .....	EHW	B
FB012	Aniline .....	EHW	CI
FBO10	Arsenic acid .....	EHW	B
FA012	Arsenic (III) oxide .....	EHW	B+
FA011	Arsenic (V) oxide .....	EHW	B
FA011	Arsenic pentoxide .....	EHW	B
FA012	Arsenic trioxide .....	EHW	B+
FA038	Arsine, diethyl- .....	EHW	B
FB015	Azaserine .....	EHW	C+
FA054	Aziridine .....	EHW	B+
FBO10	Azirino (2, 3 : 3,4) pyrrolo (1, 2a) indole 4, 7-dione, 6-amino- [8 (amino carbonyl) oxy methyl]-1, 1a, 2, 8a, 8b-hexahydro-8a-methoxy-5-methyl- .....	EHW	B+
FA013	Barium cyanide .....	EHW	A
FB157	Benz [j] acenathrylene, 1,2,	EHW	HP
FB017	Benzyl chloride .....	EHW	DH

FB018	Benz [a] anthracene .....	EHW	p*
FB018	1, 2-Benzanthracene .....	EHW	p*
FB094	1, 2-Benzanthracene, 7, 12-dimethyl- .....	EHW	CP
FB012	Benzenamine .....	EHW	C
FA024	Benzenamine, 4-chloro- .....	EHW	CH
FB049	Benzenamine, 4-chloro-2-methyl- .....	EHW	H
FB093	Benzenamine, N, N-dimethyl-4 (phenylazo)- .....	EHW	C+
FB158	Benzenamine, 4, 4-methylenebis (2-chloro)- ....	EHW	H+
FAOn	Benzenamine, 4-nitro- .....	EHW	D
FA028	Benzene, (chloromethyl)- .....	EHW	BH+
FB019	Benzene .....	EHW	C+I
FB038	Benzeneacetic acid, 4-chloro-alpha-( 4-chloro-phel ethyl .....	EHW	H
FB030	Benzene, l-bromo-4-phenoxy- .....	EHW	H
FB037	Benzene, chloro- .....	EHW	BH1
FB190	1, 2-Benzenedicarboxylic acid anthydride .....	EHW	C
FB070	Benzene, 1, 2-dichloro- .....	EHW	BH
FB071	Benzene, 1, 3-dichloro- .....	EHW	BH
FBOOn	Benzene, 1, 4-dichloro- .....	EHW	BH
FB017	Benzene, 1,3 (dichloromethyl)- .....	EHW	DH
FB223	Benzene, 1, 3-disocyanatomethyl- .....	EHW	BR
FB239	Benzene, dimethyl- .....	EHW	C1
FB201	1, 3-Benzenediol .....	EHW	C
FB127	Benzene, hexachloro- .....	EHW	H
FB056	Benzene, hexahydro- .....	EHW	C
FB188	Benzene, hydroxy .....	EHW	C
FB220	Benzene, methyl .....	EHW	C

FB105	Benzene, l-methyl- 1,2,4 dinitro .....	EHW	C
FB106	Benzene, l-methyl-2, 6-dinitro- .....	EHW	C1
FB055	Benzene, (l-methylethyl)- .....	EHW	C
FB169	Benzene, nitro .....	EHW	H
FB183	Benzene, pentachloro .....	EHW	DH+
FB185	Benzene, pentachloronitro .....	EHW	DHOP
FB020	Benzenesulphonic acid chloride .....	EHW	DHOP
FB020	Benzenesulphonyl chloride .....	EHW	DH
FB207	Benzene, 1,2,4,5 tetrachloro- .....	EHW	HOR
FB023	Benzene, (trichloromethyl)- .....		
FA042	1, 2- Benzenediol, 4-( l-hydroxy- 2-( methylamino) ethyl)- .....	EHW	B
FA014	Benzenethiol .....	EHW	A
FB021	Benzidine .....	EHW	B+
FB022	Benzo (a) pyrene .....	EHW	P+
FB022	3, 4-Benzopyrene .....	EHW	P+
FB197	p-Benzo uinone .....	EHW	C
FB023	Benzotrichloride .....	EHW	HOR
FB050	1, 2-Benzphenanthrene .....	EHW	P+
FA028	Benzyl chloride .....	EHW	PH+
FA015	Beryllium dust.....	EHW	C+
FB085	2, 2-Bioxirane.....	EHW	B1
FB021	(1,1 '-Biphenyl)-4, 4'-diamine.....	EHW	B+
FB073	(1, 1'-Biphenyl)-4, 4'-diamine, 3, 3-dichloro-.....	EHW	H+
FB095	(1, 1'-Biphenyl)-4, 4'-diamine, 3, 3-dimethyl-.....	EHW	C+
FB024	Bis (2-chloroethoxy) methane .....	EHW	CH
FB027	Bis (2-chloroisopropyl) ether .....	EHW	CHG

FA016	Bis (chloromethyl) ether .....	EHW	CH+
FB246	Bromine cyanide.....	EHW	CH
FA017	Bromoacetone.....	EHW	CH
FB225	Bromoform .....	EHW	H
FB030	4-Bromophenyl phenyl ether .....	EHW	H
FA018	Brucine.....	EHW	A
FB128	1, 3-Butadiene, 1, 1,2,3,4, 4-hexachloro- .....	EHW	CH
FB035	Butanoic acid 4-[bis (2-chloroethyl) amino] benzene- .....	EHW	H
FB160	2-Butanone peroxide .....	EHW	BR
FB074	2-Butene, 1, 4-dichloro- .....	EHW	B1
FB053	2-Butenal.....	EHW	B1
FB074	2-Butene, 1, 4-dichloro- .....	EHW	CH1
FB032	Calcium chromate.....	EHW	C+EP
FA021	Calcium cyanide.....	EHW	B
FA123	Camphene, octachloro- .....	EHW	XH
FA097	Camphor .....	EHW	A
FA178	Carbamic acid, methylnitroso-ethyl ester .....	EHW	C+
FB176	Carbamide, N-ethyl-nitroso.....	EHW	C+
FB177	Carbamide, N-methyl-N-nitros .....	EHW	C+
FB219	Carbamide, thio-.....	EHW	C+
FA103	Carbamimidoseleonic acid.....	EHW	B
FB097	Carbamoyl chloride, dimethyl.....	EHW	DH+
FA022	Carbon bisulphide .....	EHW	D1?
FA022	Carbon disulphide.....	EHW	D1?
FB156	Carbonochloridic acid, methyl ester.....	EHW	BH1
FB033	Carbon oxyfluoride .....	EHW	BHR

FB211	Carbon tetrachloride.....	EHW	CH+
FA095	Carbonyl chloride .....	EHW	BH
FB033	Carbonyl fluoride .....	EHW	BHR
FB035	Chlorambucil.....	EHW	H+
FB036	Chlodane, trechnical .....	EHW	XH
FA033	Chlorine cyanide.....	EHW	AH
FB026	Chlnaphazine.....	EHW	H+
FA023	Chloroacetaldehyde .....	EHW	BH
FA024	p-Chloroanilin .....	EHW	CH
FB037	Chlorobenzene .....	EHW	BH1
FB039	4-Chloro-m-Cresol .....	.EHW	H
FB041	1-Chloro-2, 3-epoxypropane .....	EHW	CH+1
FB042	2-Chloroethyl vinyl ether .....	EHW	CH
FB044	Chloroform .....	EHW	CH+
FB046	Chloromethyl methyl ether .....	EHW	DH+1
FB047	beta-Chloronaphtalene .....	EHW	DH
FB048	O-Chlorophenol .....	EHW	DH
FA026	1-(o-Chlorophenyl) thiourea .....	EHW	AH
FA027	3-Chloropropionitrile .....	EHW	BH
FB049	4-Chloro-o-tuluidine, hydrochloride .....	EHW	H
FB032	Chromic acid, calcium salt .....	EHW	C+EP
FB050	Chrysene .....	EHW	P+
FA029	Copper cyanides .....	EHW	B
FB052	Cresols .....	EHW	B
FB052	Cresylic acid .....	EHW	B
FB053	Crotonaldehyde .....	EHW	B
FB055	Cummene .....	EHW	Cl

FA030	Cyanides (soluble cyanide salts), not elsewhere specified .....	EHW	A
FA031	Cyanogen .....	EHW	B1
FB246	Cyanogen bromide .....	EHW	CH
FA033	Cyanogen chloride .....	EHW	AH
FB197	1, 4-Cyclohexadienedione .....	EHW	C
FB056	Cyclohexane .....	EHW	C1
FB057	Cyclohexanone .....	EHW	C1
FB130	1,3-Cyclopentadiene, 1,2,3,4,5, 5,-hexachloro .....	EHW	XH
FB058	Cyclophosphamide .....	EHW	CH+1
FB240	2, 4-D, salts and esters .....	EHW	BH
FB060	DDD .....	EHW	CH+
FB061	DDT .....	EHW	XH+
FB142	Decachlorooctahydro- 1,3,4, -metheno-2H cyclobuta [c, d,]- pentalen-2-one .....	EHW	XH
FB062	Diallate .....	EHW	CH+
FA133	Diamine .....	EHW	B+R
FB063	Dibenz [a, h] anthracene .....	EHW	AP+
FB063	1,2 : 5, 6-Dibenzanthracene .....	EHW	P+A
FB064	1,2 : 7, 8-Dibenzopyrene .....	EHW	P+
FB064	Dibenz [a, i] pyrene .....	EHW	P+
FB066	1, 2-Dibromo-3- Chloropropane .....	EHW	CH+
FB062	S- (2, 3-Dichloroally) dicopropylthio carbamate .....	EHW	CH+
FB070	o-Dichlorobenzene .....	EHW	BH

FB071	m-Dichlorobenzene .....	EHW	BH
FBO n	p-Dichlorobenzene .....	EHW	BH
FB073	3, 3-Dichlorobenzidine .....	EHW	B+
FB074	1, 4-Dichloro-2-butene .....	EHW	CHI
FB075	Dichlorodifluor-omethane .....	EHW	H
FB060	Dichloro diphenyl dichloroethane .....	EHW	CH+
FB061	Dichloro diphenyl trichloroethane .....	EHW	XH+
FB078	1, 1-Dichloroethylene .....	EHW	CH+
FB079	1, 2-Dichloroethylene .....	EHW	DH
FB025	Dichloroethyl .....	EHW	CH
FB081	2, 4-Dichlorophenol .....	EHW	DH
FB082	2, 6-Dichlorophenol .....	EHW	DH
FB240	2, 4-Dichlorophenoxyacetic acid, salt and esters .....	EHW	BH
FA036	Dichlorophenylarsine .....	EHW	BH
FB083	1, 2-Dichloropropane .....	EHW	CHI
FA037	Dieldrine .....	EHW	XH+
FB085	1,2,3, 4-Diepoxybutane .....	EHW	BI
FA038	Diethylarsine .....	EHW	B
FA039	0, O-Diethyl S-[2-( ethylthio) ethyl] phosphorodithioate .....	EHW	A
FB087	0, O-Diethyl-S-methyl-dithiophosphate .....	EHW	B
FA041	Diethyl-p-nitrophenylphosphate .....	EHW	A
FA040	0, O-Diethyl-pyrazenyl phosphorothioate .....	EHW	A
FA043	Disopropyl fluorophosphate .....	EHW	BH



FA044	Dimethoate .....	EHW	A
FB092	Dimethylamine .....	EHW	Cl
FB093	Dimethylaminoazobenze .....	EHW	C+
FB094	7, 12-Dimethylbenz[a]-anthracene .....	EHW	CP
FB095	3, 3-Dimethylbenzidine .....	EHW	C+
FB096	alpha, alpha-Dimethylbenzylhydroperer Oxide ..	EHW	CR
FB097	Dimethylcarbamoylchloride .....	EHW	DH+
FB099	1, 2-Dimethylhydrazine .....	EHW	C+I
FA045	3, 3-Dimethyl-l-(methylthio-butanone, O-[(methyl carbonyl] oxime .....	EHW	B
FA071	O, O-Dimethyl O-p-nitrophenyl phosphorothioate .....	EHW	A
FA082	Dimethylnitrosamine .....	EHW	B+
FA046	Alpha, alpha-Dimethylphenethylamine .....	EHW	C
FB103	Dimethyl sulphate .....	EHW	CO+
FA047	4, 6-Dinitro-o-cresol and salts .....	EHW	B
FA034	4, 6-Dinitro-o-cydohexylphenol .....	EHW	C
FA048	2, 4-Dinitrophenol .....	EHW	B
FB105	2, 4-Dinitrotoluene .....	EHW	C
FB106	2, 6-Dinitrotoluene .....	EHW	C
FA020	Dinoseb .....	EHW	B
FB109	1, 2-Diphenylhydrazine .....	EHW	C
FB035	Diphosphoramide, octamethyl .....	EHW	?
FBII0	Dipropylamine .....	EHW	C??

FBI 11	Di-n-propylnitrosamine .....	EHW	C+
FA039	Disulphoton .....	EHW	A
FA049	2, 4-Dithiobiuret .....	EHW	A
FA109	Dithiopyrophosphoric acid, tetraethyl ester .....	EHW	A
FA050	Endosulphan .....	EHW	XH
FA088	Endothiol .....	EHW	B
FA051	Endrin .....	EHW	XH
FA042	Epinephrine .....	EHW	B
FBOOI	Ethanal .....	EHW	C
FBI74	Ethanamine, N-ethyl-N-nitroso .....	EHW	C+
FA046	Ethanamine, 1, 1-dimethyl-W-phenyl- .....	EHW	C
FB067	Ethane, 1, 2-dibromo- .....	EHW	CH+
FB076	Ethane, 1, 1-dichloro- .....	EHW	DH
FBO n	Ethane, 1, 2-dichloro- .....	EHW	DH
FBI I4	1, 2-Ethanedrylibiscarba-modithioc acid .....	EHW	B
FBI31	Ethane, 1, 1, 1, 2, 2, 2-hexachloro- .....	EHW	H
FB024	Ethane, 1, 1-[methylenebis (oxy) bis [2-chloro- .....	EHW	CH
FB247	Ethane, 1, 1, 1-trichloro-2-2-bis (p-metoxypheny) .....	EHW	DH
FB003	Ethanenitrile .....	EHW	C
FB025	Ethane, 1, 1, oxybis 2-chloro .....	EHW	CH
FBI84	Ethane, pentachloro- .....	EHW	AH
FB208	Ethane, 1, 1, 1, 2-tetrachloro- .....	EHW	H
FB209	Ethane, 1, 1, 2-tetrachloro- .....	EHW	H
FB227	Ethane, 1, 1, 2-irichloro- .....	EHW	CH
FB084	Ethenamine, N-methy l-N-nitroso .....	EHW	B+

FB043	Ethene, chloro- .....	EHW	DH+
FB042	Ethane, 2-chloroethoxy- .....	EHW	CH
FB078	Ethene, 1, 1-dichloro- .....	EHW	CH+
FB079	Ethene, trans-1, 2-dichloro- .....	EHW	DH
FB210	Ethene, 1, 1,2,2-tetrachloro- .....	EHW	CH
FBO06	Ethanoyl chloride .....	EHW	CH
FBIOi	Ethyl cyanide .....	EHW	B
FB038	Ethyl 4, 4-dichlorobenzilate .....	EHW	DH
FBII4	Ethylenebis (dithiocarbamic acid), salts and esters .....	EHW	B
FB067	Ethylene dibromide .....	EHW	CH
FBon	Ethylene dichloride .....	EHW	DH
FB115	Ethylene oxide .....	EHW	CI
FA054	Ethylenimine .....	EHW	B+
FB076	Ethylidene dichloride .....	EHW	DH
FA056	Fluorine .....	EHW	B
FA057	Fluoroacetamide .....	EHW	BH
FA058	Fluoroacetic acid, sodium salt .....	EHW	AH
FB122	Formaldehyde .....	EHW	C
FA065	Fulminic acid, mercury (II) salt .....	EHW	R?
FB125	2-Furancarboxaldehyde .....	EHW	C?
FB147	2, 5-Furandione .....	EHW	C
FB125	Furfural .....	EHW	C?
FB126	Glycidylaldehyde .....	EHW	C+

FB163	Guanidine N-nitroso-N-methyl-N'nitro- .....	EHW	C+
FA059	Heptachlor .....	EHW	XH+
FB127	Hexachlorobenzene .....	EHW	H
FB128	Hexachlorobutadiene .....	EHW	CH
FB130	Hexachlorocyclopentadiene (gamma isomer) ....	EHW	XH
FA05I	1,2,3,4, 10, IO-Hexachloro-6, 7-epoxy-l, 4, 4a, 5, 6, 7, 8a-octahydro-endo, end-l, 4, 5, 8-dimetha-nophalene .....	EHW	XH
FA037	1,2,3,4, 10, IO-Hexachloro-6, 7-epoxy-l, 4, 4a, 5, 6, 7, 8, 8a-octahydro-endo-, exo-l, 4, 5, 8, -dimethanonaphalene .....	EHW	XH+
FB13I	Hexachloroethane .....	EHW	H
FA060	1,2,3,4, 10, IO-Hexachloro-l, 4, 4a, 5, 8, 8a-hexahydro- 1,4,5, 8 -endo endo-dimethanonapha-leine .....	EHW	BH
FA004	1,2,3,4, 10, IO-Hexachloro-l, 4, 4a, 5, 8, 8a-hexahydro-l, 4, 5, 8-endo, exodimethanonaphthalene .....	EHW	BH
FA060	Hexachlorohexahydro-endo endodimethanonaphtl .....	EHW	BH
HB132	Hexachlorophene .....	EHW	CH
FB243	Hexachloropropane .....	EHW	H
FA062	Hexaethyltetraphosphate .....	EHW	B
FB133	Hydrazine .....	EHW	B+R
FBI16	Hydrazinecarbothioamide .....	EHW	B
FB099	Hydraxine, 1, 2-dimethyl- .....	EHW	C+
FB109	Hydrazine, 1, 2-diphenyl- .....	EHW	C

FA068	Hydrazine, methyl- .....	EHW	A
FA063	Hydrocyanic acid .....	EHW	A
FA063	Hydrogen cyanide .....	EHW	A
FA096	Hydrogen phosphide .....	EHW	B
FB135	Hydrogen sulphide .....	EHW	BI
FB096	Hydroperoxide-methyl-l-phenyletyl- .....	EHW	CR
FB245	Indomethacin .....	EHW	BH
FA064	Isocyanic acid, methyl ester .....	EHW	17
FA007	3 (2H)-Isozalone, 5-(animomethyl) .....	EHW	B
FB142	Kepone .....	EHW	XH
FB143	Lasiocarpine .....	EHW	C+
FB144	Lead acetate .....	EHW	DEP
FB129	Lindane .....	EHW	H+
FB147	Maleic anhydride .....	EHW	C
FB149	Malononitrile .....	EHW	C
FB151	Mercury .....	EHW	EP
FA092	Mercury (acetato-O), phenyl- .....	EHW	B
FA065	Mercury fulminate .....	EHW	R7
FB152	Methacrylotrinile .....	EHW	B
FB092	Methanemine, N-methyl .....	EHW	C
FA016	Methane, oxybis (chloro)- .....	EHW	BH+
FA112	Methane, tetranitro- .....	EHW	AR
FB029	Methane, bromo .....	EHW	H
FB045	Methane, chloro- .....	EHW	H

FB046	Methane chloromethoxy- .....	EHW	DH+
FB068	Methane, dibromo- .....	EHW	CH+
FB080	Methane, dichloro- .....	EHW	CH
FB075	Methane, dichlorodiphloro- .....	EHW	H
FB138	Methane, iodo- .....	EHW	H+
FB211	Methane, tetrachloro- .....	EHW	CH+
FA118	Methanethiol, trichloro- .....	EHW	H
FB153	Methanethiol .....	EHW	B
FB225	Methane, tribromo .....	EHW	H
FB121	Methane, trichlorofluoro- .....	EHW	H
FB044	Methane, trichloro- .....	EHW	CHI
FA059	4,7-Methano-H-indeno, 1,4,5,6, 7, 8, 8-heptachloro-3a, 4, 7, 7a-tetrahydro-		
FA036	4,7-Methanoindan, 1,2,4,5,6, 7, 8, 8-octachloro-3a, 4, 7, 7a-tetrahydro- .....	EHW	XH
FA066	Methomyl .....	EHW	B
FA067	2-Methylaziridine .....	EHW	B+
FA068	Methyl hydrazine .....	EHW	AI
FA064	Methyl isocyanate .....	EHW	1
FA069	2-Methylactonitrite .....	EHW	A
FA071	Methyl parathion .....	EHW	A
FB029	Methyl bromide .....	EHW	H
FB045	Methyl chloride .....	EHW	HI
FB156	Methyl chlorocarbonate .....	EHW	GHI

FB226	Methyl chloroform .....	EHW	CH
FB157	3-methylchloranthrene .....	EHW	HP
FB158	4, 4-methylenebis (2-chloroniline) .....	EHW	H+
FB132	2, 2-methylenebis (3, 4, 6-trichlorophenol) .....	EHW	CH
FB068	Methylene bromide .....	EHW	CH+
FB080	Methylene chloride .....	EHW	CH
FB112	Methylene oxide .....	EHW	C
FB160	Methyl ethyl ketone peroxide .....	EHW	BR
FB138	Methyl iodide .....	EHW	H+
FB163	N-Methyl-N-nitro-N-nitrosoguanidine .....	EHW	C+R
FBOIO	Mitomycin C .....	EHW	B+
FB165	Naphthalene .....	EHW	B
FB047	Naphthalene, 2-chloro- .....	EHW	DH
FB166	1, 4-Naphthalenedione .....	EHW	C
FB236	2, 7-Naphthalenedisulphonic acid, 3, 3- [(3, 3 dimethyl- (1, 1-biphenyl)- 4, 4 diyl)] -bis (azo) bis (5-amino-4-hydroxy, tetrasodium salt .....	EHW	H+
FB116	1,4, naphthaquinone .....	EHW	C
FB167	1-naphthylamine .....	EHW	B+
FB168	2-naphthylamine .....	EHW	B+
FB167	alpha-naphthylamine .....	EHW	B+
FB168	beta-naphthylamine .....	EHW	B+
FB026	2-Naphthylamine, N, N-bis (2-chloromethyl)- ..	EHW	H+
FAOn	alpha-Naphthylthiourea .....	EHW	B
FA073	Nickel carbonyl .....	EHW	B
FA074	Nickel cyanide .....	EHW	DR
FA074	Nickel (II) cyanide .....	EHW	DR

FA073	Nickel tetracarbonyl .....	EHW	B
FA075	Nicotine and salts .....	EHW	B
FA076	Nitric oxide .....	EHW	B
FA077	p-Nitroaniline .....	EHW	D
FB169	Nitrobenzene .....	EHW	C
FA078	Nitrogen dioxide .....	EHW	A
FA076	Nitrogen (II) oxide .....	EHW	B
FA078	Nitrogen (IV) oxide .....	EHW	A
FA081	Nitroglycerine .....	EHW	R
FB170	p-Nitrophenol .....	EHW	C
FB171	2-Nitropropane .....	EHW	C
FB174	N-Nitrosodiethylamine .....	EHW	C+
FA082	N-Nitrosodiethylamine .....	EHW	B+
FB176	N-Nitroso-N-ethylurea .....	EHW	C+
FB177	N-Nitroso-N-methylurea .....	EHW	C+
FB178	N-Nitroso-N-methylurethane .....	EHW	C+
FA084	N-Nitrosomethylvinyl-amine.....	EHW	B+
FB179	N-Nitrosopiperidine .....	EHW	C+
FBI 11	N-Nitroso-N-propylamine.....	EHW	C+
FA050	5-Norbornene-2, 3,-dimethanol, 1,4,5,6,7, 7-hexachloro, cyclic sulphite.....	EHW	XH
FA085	Octamethylpyrophosphoramidate .....	EHW	A
FA087	Osmium oxide .....	EHW	B
FA087	Osmium tetroxide .....	EHW	B
FA088	7-Oxabicyclo (2, 2, 1) heptane-2, 3-dicarboxylic acid .....	EHW	B
FB058	2 H1, 3, 2-Oxazaphosphorine, 2-[bis		



	(2-chloroethyl amino) tetrahydro-, oxide 2- .....	EHW	CH+
FB115	Oxirane.....	EHW	X
FB041	Oxirane, 2-(chloromethyl)- .....	EHW	CH+
FAO 9	Parathion .....	EHW	X
FB1 3	Pentachlorobenzene .....	EHW	H
FB18	Pentachloroethane .....	EHW	AH
FB185	Pentachloronitrobenzene .....	EHW	DH
See FE207	Pentachlorophenol.....	EHW	AH
FB188	Phenol.....	EHW	C
FA034	Phenol, 2-Cyclohexyl-4, 6 dinitro- .....	EHW	C
FA048	Phenol, 2, 4-dinitro- .....	EHW	C
FA047	Phenol, 2, 4,-dinitro-6-methyl, and salts .....	EHW	B
FA020	Phenol, 2, 4-dinitro-6-(1-methylpropyl)- .....	EHW	B
FA009	Phenol, 2, 4, 6-trinitro-ammonium salt .....	EHW	R
FB048	Phenol, 2-chloro- .....	EHW	DH
FB039	Phenol, 4-chloro-3-methyl- .....	EHW	H
FB081	Phenol, 2, 4,-dichloro- .....	EHW	DH
FB082	Phenol, 2, 6-dichloro- .....	EHW	DH
FB170	Phenol, 4-nitro- .....	EHW	C
See	Phenol, pentachloro .....	EHW	AH
See	FEF027 Phenol, 2, 3,4, 6-tetrachloro- .....	EHW	CH
See	FEF027 Phenol, 2, 4, 5-trichloro.....	EHW	AH
See	FEF027 Phenol, 2, 4, 6-trichloro .....	EHW	AH
FA036	Phenol dichloroarsine .....	EHW	BH
FA092	Phenylmercuricacetate .....	EHW	B
FA093	N-Phenylthiourea .....	EHW	A
FA094	Phorate.....	EHW	X

FA095	Phosgene .....	EHW	BH
FA096	Phosphine .....	EHW	B
FA041	Phosphoric acid, diethyl p-nitophenyl ester .....	EHW	A
F A044	Phosphorodithioic acid O, O-dimeth 12-[2-(methylamino)- 2-oxoethyl] ester .....	EHW	X
F A043	Phosphofluoride acid, bis(1-methylpethyl)-ester .....	EHW	BH
F A094	Phosphorothioic acid, O, -diethyl S (ethylthio) methyl ester .....	EHW	X
F A097	Phosphorothioic acid, O, O-dimeth 1 -[p-di: ethylamino) -sulphonyl (phenyl ester) .....	EHW	A
F A089	Phosphorothioic acid, O, O-diethyl O-(p-nitro-phenyl) ester.....	EHW	X
F A040	Phosphorothioic acid, O, O-diethyl O-pyrazinyl ester.....	EHW	A
FB189	Phosphorus sulphide.....	EHW	BIR
FB190	Phthalic anhydride .....	EHW	C
FB191	2-Picoline .....	EHW	C
FAIIO	Plumbane, tetraethyl- .....	EHW	A
FA098	Potassium cyanide .....	EHW	A
FA009	Potassium silver cyanide .....	EHW	A
FA070	Prop anal, 2-methyl-2 (methylthio) O-methylamino car-bonyl] oxime .....	EHW	B
FB194	I-Propanamine .....	EHW	C
FBIIO	I-Propanamine, N-propyl- .....	EHW	C
FB066	Propana, 1, 2-dibromo-3-chloro .....	EHW	CH+
FB149	Propanedinitrile .....	EHW	C
FB101	Propanenitrile .....	EHW	B
FB027	Propanenitrile, 3-chloro .....	EHW	BH

	FA079	Propanenitrile, 2-hydroxy-2 methyl- .....	EHW	A
	FB171	Propane, 2-nitro- .....	EHW	C
	FB027	Propane, 2, 2, oxybis [2-choloro- .....	EHW	CHO
	FA081	1,2, 3-Propanetriol, trinitrate- .....	EHW	R?
	FB235	I-Propanol, 2, 3-dibromo-, phosphate (3 : 1) .....	EHW	DH
	FB126	I-Propanol, 2, 3-epoxy- .....	EHW	C*
	FA017	2-Propanone, -bromo- .....	EHW	CH
	FA102	Prop argyl alcohol.....	EHW	X
	FA003	2-Propenal.....	EHW	X
	FB007	2-Propenamide .....	EHW	C
	FB084	Propene, 1, 3-dichloro- .....	EHW	CH
	FB243	I-Propene, 1, 1,2,3, 3-hexachloro- .....	EHW	H
	FB009	2-Propenenitrile .....	EHW	C*
	FB152	2-Propenenitrile, 2-methyl-.....	EHW	B
	FB008	2-Propenoic acid .....	EHW	COI
	FA005	2-Propen-I-ol .....	EHW	B
See	FEF207	Propionic acid, 2-(2, 4, 5,-trichlorophenoxy- .....	EHW	B
	FB194	n-Propylamine .....	EHW	BH
	FB083	Propylene dichloride .....	EHW	CH1
	FA067	1, 2-Propylenimine .....	EHW	B+1
	FA102	2-Propyn-I-ol .....	EHW	X
	FA008	4-Pyridinamine .....	EHW	B
	FA075	Pyridine, (S)-3-(1-methyl-2- pyrrolidinyl)-, and salt .....	EHW	B
	FB196	Pyridine .....	EHW	C1
	FB179	Pyridine, hexahydro-N-nitroso- .....	EHW	C+
	FB191	Pyridine, 2-methyl- .....	EHW	C
	FA11 1	Pyrophosphoric acid, terraethyl ester .....	EHW	A

FB201	Resorcinol.....	EHW	C
F103	Selenourea .....	EHW	B
FB015	L-Serine, diazoacetate (ester) .....	EHW	C+
FA104	Silver cyanide .....	EHW	C
See	FEF027 Silvex .....	EHW	BH
	FA105 Sodium azide.....	EHW	A
	FA106 Sodium cyanide .....	EHW	A
	FA107 Strontium sulphide .....	EHW	R
	FA108 Strychnidin 10-one, and salts .....	EHW	B
	FA018 Strychnidin-10, 2, 3-dimethoxy-.....	EHW	A
	FA108 Strychnine and salts .....	EHW	B
	FB135 Sulphide hydride.....	EHW	B
	FB103 Sulphuric acid, dimethyl ester.....	EHW	CO+
	FB115 Sulphuric acid thallium (1) salt .....	EHW	B
	B189 Sulphur phosphide .....	EHW	BIR
See	FEF027 2,4, 5-T .....	EHW	BH*
See	FEF027 1,2,4, 5-Tetrachlorobenzene .....	EHW	DH
	FB208 1,1,1, 2-Tetrachloroethane.....	EHW	H
	FB209 1, 1,2, 2-Tetrachloroethane .....	EHW	H
	FB210 Tetrachloroethylene .....	EHW	CH+
	FB212 2,3,4, 6,-Tetrachloro phenol.....	EHW	CH
	FB109 Tetraethyldithiopy rophosphate .....	EHW	A
	FA110 Tetraethyllead .....	EHW	A
	FA111 Tetraethylhyrophosphate.....	EHW	A
	FA112 Tetranitromethane .....	EHW	AR
	FA062 Tetraphosphoric acid, hexaethyl ester .....	EHW	B
	FA113 Thallic oxide .....	EHW	B

	FA113	Thallium (III) oxide .....	EHW	B
	FA114	Thallium (I) selenide.....	EHW	C
	FA115	Thallium (I) sulphate.....	EHW	B
	FA045	Thiofanox .....	EHW	B
	FA049	Thioimidodicarbonic diamide .....	EHW	A
	FB153	Thiometainol.....	EHW	B1
	FA014	Thiophenol.....	EHW	A
	FA116	Thiosemicarbazide .....	EHW	BH+
	FB219	Thiourea .....	EHW	C+
	FA026	Thiourea, 2-(chlorophenyl)- .....	EHW	AH
	FAOn	Thiourea, 1-naphtalenyl- .....	EHW	B
	FA093	Thiourea, Phenyl- .....	EHW	A
	FB220	Toluene .....	EHW	CI
	FB223	Toluene diisocyanate .....	EHW	BR
	FA123	Toxaphene .....	EHW	XH
	FB226	1,1, 1-trichloroethane.....	EHW	CH
	FB227	1, 1, 2-trichloroethane.....	EHW	CH
	FB228	Trichloroethene.....	EHW	CH
	FB228	Trichloroethylene .....	EHW	CH+
	FA11 8	Trichloromethanethiol.....	EHW	H
	FB121	Trichloromonoffuoromethane .....	EHW	H
See	FEF 207	2,4, 5-Trichlorophenol.....	EHW	AH
See	FEP207	2,4, 6-Trichlorophenol.....	EHW	AH
See	FE 207	2,4, 5-Trichlorophenoxyacetic acid.....	EHW	BH+
	FB235	Tris (2, 3, -dibromopropyl) phosphate .....	EHW	DH
	FB236	Trypan blue .....	EHW	H+
	FB237	Uracil, 5-[bis (2-chloromethyl) amino]- .....	EHW	BH+

FB237	Uracil mustard.....	EHW	BH+
FA119	Vanadic acid, ammonium salt .....	EHW	B
FA120	Vanadium pentoxide .....	EHW	B
FA120	Vanadium (V) oxide .....	EHW	B
FB043	Vinyl chloride .....	EHW	DH+
FA001	Warfarin .....	EHW	A
FB239	Xylene .....	EHW	C
FA121	Zinc cyanide.....	EHW	C
FA122	Zinc phosphide.....	EHW	BR

#### 1.2 Moderately Hazardous/Dangerous Chemical Products

FB187	Acetamide, N-ethoxyphenyl)- .....	DW	D+
FB005	Acetamide, N-9H fluoren-2-yl- .....	DW	
FB112	Acetic acid, ethyl ester.....	DW	D1
FB214	Acetic acid, thallium (I) salt.....	DW	
FB002	Acetone .....	DW	D1
FB004	Acetophenone .....	DE	D
FB005	2-Acetylaminofluorene .....	DW	
FB150	Alanine, 3-[p-bis (2-chloroethyl) amino] phenyl	DW	+
FB328	2-Amino-l-methyl benzene .....	DW	D+
FB353	4-Amino-l-methyl benzene .....	DW	D
FB011	Amitrole .....	DW	D+
FB014	Auramine .....	DW	+
FB016	Benz [c] acridine .....	DW	+
FB016	3, 4-Benzacridine .....	DW	+
FB014	Benzenamine, 4, 4-carbonimidoyl bis (N, N-dimethyl- .....	DW	+
FB222	Benzenamine, 2-methyl-, hydrochloride .....	DW	D+

FB181	Benzenamine, 2-methyl-5-nitro .....	DW	D
FB028	1, 2-Benzenedicarboxylic acid, dibutyl ester .....	DW	
FB069	1, 2-Benzenedicarboxylic acid, dibutyl ester .....	DW	D
FB088	1, 2-Benzenedicarboxylic acid, diethyl ester .....	DW	
FB102	1, 2-Benzenedicarboxylic acid, dimethyl ester.....	DW	
FB107	1, 2-Benzenedicarboxylic acid, di-n-octyl ester.....	DW	
FB203	Benzene 1, 2-methyl enedioxy-4-allyl- .....	DW	D
FB141	Benzene, 1, 2-methyl endioxy -4-propenyl- .....	DW	D+
FB090	Benzene, 1, 2-methyl- enedioxy-4-propyl.....	DW	D+
FB234	Benzene, 1,3, 5-trinitro- .....	DW	D
FB202	1, 2-Benzisothiazolin-3-one, 1, l-dioxide, and salts.....	DW	+
FB120	Benzo [j, k] floureno .....	DW	D
FB091	(1, l-Biphenyl)-4-'diamine, 3, 3-dimeth-oxy-.....	DW	D+
FB244	Bis (dimethylthio carbomoyl) disulfide .....	DW	D
FB028	Bis (2-ethythoxyl) phthalate .....	DW	
FB172	1-Butanamine, N-butyl-N-nitroso- .....	DW	D+
FB031	1-Butanol.....	DW	D1
FB159	2-Butanone .....	DW	D1
FB031	n-Butyl alcohol.....	DW	D1
FB136	Cacodylic acid .....	DW	D
FB215	Carbonic acid, dithallium (l) salt .....	DW	
FB051	Creocote .....	DW	D
FB059	Daunomycin .....	DW	+
FB221	Diminotoluene .....	DW	
FB069	Dibutyl phthalate.....	DW	D
FB192	3, 5-Dichloro-N-(1, 1-dimethyl-2-propynyl) Benzamide.....	DW	

FB108	1, 4-Diethylene dioxide.....	DW	D+
FB086	N, N-Diethylhdrazine.....	DW	*
FB088	Diethyl phthalate .....	DW	
FB089	Diethylstilbestrol.....	DW	+
FB148	1, 2-Dihydro-3-6-pyridizincdione .....	DW	D
FB090	Dihydrosafrole .....	DW	D
FB091	3,3 Dimethoxybensidine .....	DW	D+
FB098	1, l-Dimethylhydrazine .....	DW	+ 1
FB101	2, 4-Dimethylphenol .....	DW	D+
FB102	Dimethyl phthalate .....	DW	?
FB107	Di-n-octyl phthalate.....	DW	?
FB108	1, 4-Dioxane.....	DW	D+
FB117	Ethane, 1, l-oxybis .....	DW	D+
FB218	Ethanethioamide .....	DW	+
FB173	Ethanol, 2, 2-(nitrosoimino) bis .....	DW	+
FB004	Ethanone, l-phenyl- .....	DW	D
FB112	Ethyl acetate .....	DW	D
FB113	Ethyl acrylate .....	DW	DI
FB238	Ethyl carbamate (urethane) .....	DW	+
FB116	Ethylene thiourea .....	DW	D+
FB117	Ethyl ether .....	DW	DI
FB118	Ethyl methacrylate.....	DW	D
FB119	Ethyl metha nesulphonate.....	DW	+
FB139	Ferric dextran .....	DW	+
FB120	Fluoranthene .....	DW	D
FB123	Formic acid .....	DW	DO
FB124	Furan.....	DW	



FB213	Furan, tetra hydro- .....	DW	
FB124	Furfuran .....	DW	
FB213	Furan, tetra hydro- .....	DW	
FB059	5, 12- Naphthacenedione, (8S-cis) -8-acety-10-[(3-amino-2, 3, 6-trideoxy-alpha-l-ly; oxyl]-7, 8, 9, 10- tetrahydro-6, 8,11 - trihydroxy-l-metoxo- .....	DW	+
FB172	N-Nitrosodi-n-butylamine.....	DW	D+
FB173	N-Nitrosodiethanolamine .....	DW	+
FB180	N-Nitrosopyrrolidine .....	DW	D+
FB181	5-Nitro-o-toluidine .....	DW	D
FB193	1,2, -Oxathiolane, 2, 2-dioxide.....	DW	+
FB182	Paraldehyde .....	DW	DI
FB186	1, 3-Pentadiene.....	DW	DI
FB187	Phenacetin .....	DW	D*
FB101	Phenol, 2, 4-dimethyl- .....	DW	D
FB137	1, 10-(1, 2-Phenylene) pyrene .....	DW	*
FB145	phosphoric acid, lead salt .....	DW	*
FB087	phosphorodithioc acid, O.O-diethyl-S-methylester .....	DW	?
FB192	Pronamide .....	DW	?
FB193	1, 3-Propane sultone .....	DW	*
FB140	1-Propanol, 2-methyl- .....	DW	DI
FB002	2-Propanone .....	DW	DI
FB113	2-Propenoic acid, ethyl ester.....	DW	DI
FB118	2-Propenoic acid, 2-methyl-, ethyl ester .....	DW	I
FB162	2-Propenoic acid, 2-methyl-methyl ester .....	DW	DI
FB234	Syn-Trinitrobenzene .....	DW	DR
FB182	1,3, 5-Trioxane, 2, 4, 5-trimethyl- .....	DW	DI

FB200 Y ohimban-16-carboxylic acid, 11, 17-di-methoxy-18-(3, 4, 5,-trimethoxy-benzoy oxy)-methyl ester .....

KEY

- \*EHW..... Extremely Hazardous Waste
- DW..... Dangerous Waste
- X..... Toxic, Category X
- A ..... Toxic, Category A
- B ..... Toxic, Category B
- C ..... Toxic, Category C
- D ..... Toxic, Category D
- H ..... Persistent Halogenated Hydrocarbon
- O..... Corrosive
- P ..... Persistent, Polycyclic Hydrocarbon
- \* ..... IARC Animal or Human, Positive or suspected Carcinogen
- I..... Ignitable
- R ..... Reactive
- EP..... Extraction Procedure Toxicity

Inconclusive

SCHEDULE 12

[Regulation 76 (1).]

2.0 Hazardous/Dangerous Waste Sources List (FAC 000-000-9904)

2.1 Non-Specific Sources

Dangerous Sources  
waste No.

2.1.1 Generic

- FEF001           The following spent halogenated solvents used in degreasing: Tetrachloroethylene trichloroethylene chloride, 1, 1, 1-trichloroethane, carbon tetrachloride, and chlorinated fluorocarbons; and sludges from the recovery of these solvents in degreasing operations (See footnote 1, below).
- FEF002           The following halogenated solvents: tetrachloroethylene, methylene chloride, trichloroethane, chlorobenzene, 1, 1, 1-trichloro-2, 2, 2-trifluoroethane, ortho-dichlorobenzene and trichlorofluoromethane; and the still bottoms from the recovery of these solvents (See footnote 1, below).
- FEF003           The following spent non-halogenated solvents: xylene, acetone, ethyl acetate ethyl benzene, ethyl ether, methyl isobutyl ketone, n-butyl alcohol, cyclohexane and methanol; and the still bottoms from the recovery of these solvents.
- FEF004           The following spent non-halogenated solvents: cresols and acrylic acid.
- FEF005           The following spent non-halogenated solvents: Toluene, methyl ethyl ketone, carbon disulphide, isobutanol, pyridine, and the still bottoms from the recovery of these solvents.
- FEF006           Waste water treatment sludges from electro-plating operations, except from the following processes: (1) sulphuric acid anodising of aluminium; (2) tin plating on carbon steel; (3) zinc plating (segregated basis) on carbon steel; (4) aluminium or zinc-aluminium plating on carbon steel; (5) cleaning, stripping associated with tin, zinc and aluminium plating on carbon steel; and (6) chemical etching and milling of aluminium.
- FEF007           Spent cyanide plating bath solutions from electroplating operations.
- FEF008           Plating bath residues from the bottom of plating baths from electroplating operation where cyanides are in the process.
- FEF009           Spent stripping and cleaning bath solutions from electroplating operations where cyanides are used in the process.
- FEF010           Quenching bath residues from oil baths from metal heat treating operations where cyanides are used in the process.
- FEF011           Spent cyanide solutions from salt bath pot cleaning from metal heat treating operations.
- FEF012           Quenching waste water treatment sludges from metal heat-treating operations where cyanides are used in the process.
- FEF020           Wastes (except waste water and spent carbon from hydrogen chloride purification), from the production or manufacturing (used as a reactant chemical intermediate or component in a formulating process) of tri- or tetrachlorophenol, or of intermediates used to produce their pesticides derivatives. (This listing does not include wastes from the production of hexachlorophene from highly purified 2, 4, 5-trichlorophenol). (See footnote 2, below).
- FEF021           Wastes (except waste water and spent carbon from hydrogen chloride purification) from the production or manufacturing use (as a reactant chemical intermediate or component in a

formulating process) of pentachlorophenol, or of intermediates used to produce its derivatives (See footnote 2, below).

FEF022 Wastes (except waste water and spent carbon from hydrogen chloride purification) from the manufacturing use (as a reactant, chemical intermediate, or component in a formulating process) of tetra-penta-, or hexachlorobenzenes under alkaline conditions (See footnote 2, below).

FEF023 Wastes (except waste water and spent carbon from hydrogen chloride purification, from the production of materials on equipment previously used for the production or manufacturing use (as a reactant, chemical intermediate, or component in a formulating process) of tri- and tetrachlorophenols (See footnote 2, below). This listing does not include wastes from equipment used only for the production or use of hexachlorophene from highly purified 2,4,5 trichlorophenol).

FEF024 Wastes, including but not limited to, distillation residues, heavy ends, tars, and reactor cleanout wastes from the production of chlorinated aliphatic hydrocarbons having carbon content from one to five, utilising free radical catalysed processes (See footnote 1, below). (This listing does not include light ends spent filters and filter aids, spent desiccants, waste water, waste water treatment sludges, spent catalysts, and waste listed under specific sources, below).

FEF026 Wastes (except waste water and spent carbon from hydrogen chloride purification from the production of materials on equipment previously used for the manufacturing use (as a reactant, chemical intermediate, or component in a formulating process) of tetra-penta or hexachlorobenzene under alkaline conditions (See footnote c, below).

FEF027 Discarded unused formulations containing tri-tetra- or pentachlorophenol or discharged formulations containing compounds derived from these chlorophenols (See footnote 2, below). (This listing does not include formulations containing hexachlorophene synthesised from prepurified 2, 4, 5-trichloro-pheno as the sole component).

FEF028 Residues resulting from the incineration or thermal treatment of soil contaminated with non-specific sources wastes FEF027.

## 2.2 Specific Sources

### 2.2.1 Wood Preservation

FEK001 Bottom sediment sludge from the treatment of waste waters from wood preserving processes that use creosote and/or pentachlorophenol (See footnote 1, below).

### 2.2.2 Inorganic pigments

FEK002 Waste water treatment sludge from the production of chrome yellow and orange pigments.

FEK003 Waste water treatment sludge from the production of molybdate orange pigments.

FEK004 Waste water treatment sludge from the production of zinc yellow pigments.

FEK005 Waste water treatment sludge from the production of chrome green pigments.

FEK006 Waste water treatment sludge from the production of oxide green pigments (anhydrous and hydrated).

FEK007 Waste water treatment sludge from the production of iron blue pigments.

FEK008 Oven residue from the production of chrome oxide green pigments.

### 2.2.3 Organic Chemicals

FEK009 Distillation bottoms from the production of acetaldehyde from ethylene.

FEK010 Distillation side cuts from the production of acetaldehyde from ethylene.

FEK011 Bottom stream from the waste water stripper in the production of acrylonitrile.

FEK013 Bottom stream from the acetonitrile column in the production of acrylonitrile.

FEK014 Bottoms from the acetonitrile purification column in the production of acrylonitrile.

FEK015 Still bottoms from the distillation of benzyl chloride (See footnote 1, below).

FEK016 Heavy ends or distillation residues from the production of carbon tetrachloride (See footnote 1, below).

FEK017 Heavy ends (still bottoms) from the purification column in the production of epichlorohydrin (See footnote 1, below).

FEK018 Heavy ends from the fractionation column in ethylchloride production (See footnote 1, below).

FEK019 Heavy ends from the distillation of ethylene dichloride in ethylene dichloride production (See footnote 1, below).

FEK020 Heavy ends from the distillation of vinyl chloride in vinyl chloride monomer production (See footnote 1, below).

FEK021 Aqueous spent antimony catalyst waste from fluoromethanes production (See footnote 1, below).

FEK022 Distillation bottom tars from the production of phenolacetone from cumene.

FEK023 Distillation light ends from the production of phthalic anhydride from naphthalene.

FEK024 Distillation bottoms from the production of phthalic anhydride from naphthalene.

FEK025 Distillation bottoms from the production of nitrobenzene by the nitration of benzene.

FEK026 Stripping still tails from the production of methyl ethyl pyridines.

- FEK027 Centrifuge and distillation residues from toluene diisocyanate production.
- FEK028 Spent catalyst from the hydro chlorinator reactor in the production of 1, 1, 1-trichloroethane (See footnote, below).
- FEK029 Waste from the product stream stripper in the production of 1, 1, 1-trichloroethane (See footnote 1, below).
- FEK030 Column bottoms or heavy ends from the combined production of trichloroethylene and perchloroethylene (See footnote 1, below).
- FEK083 Distillation bottoms from aniline production.
- FEK093 Distillation light ends from the production of phthalic anhydride from orthoxylene.
- FEK094 Distillation bottoms from the production of phthalic anhydride from orthoxylene.
- FEK095 Distillation bottoms from the production of 1, 1, 1 trichloroethane (See footnote 1 below).
- FEK096 Heavy ends from the heavy ends column from the production of 1, 1, 1 trichloroethane (See footnote 1, below).
- FEK 1 03 Process residues from aniline extration from the production of aniline.
- FEK104 Combined waste water streams generated from nitobenzene/aniline production.
- FEK085 Distillation column bottoms from the production of chlorobenzenes (See footnote 1, below).
- FEK105 Separated aqueous stream from the reactor product washing step in the production of chlorobenzenes (See footnote 1, below).
- FEK111 Product wash waters from the production of dinitrosotoluene via nitration of toluene.
- FEK112 Reaction bye-product water from the drying column in the production of toluenediamine via hydrogenation of dinitrosotoluene.
- FEK113 Condensed liquid light from the purification oftoluenediamine in the production oftoluenediamine via hydrogenation of dinitrotoluene.
- FEK114 Vicinals from the purification of toluenediamine in the production of toluenedianmine via hydrogenation of dinitrotoluene.
- FEK115 Heat ends from the purification oftoluenediamine in the production of toluenediamine via hydrogenation of dinitrotoluene.
- FEK116 Organic condensate from the solvent recovery column in the production of toluene diisocyanate via phosgenation oftoluenediamine (See footnote 1, below)

### 2.2.3 Explosive

- FEK04 Waste water treatment sludges from the manufacturing and processing of explosives.

FEK045 Spent carbon from the treatment of waste water containing explosive.

FEK046 Waste water treatment sludges from the manufacturing formulation and loading of lead based initiating compounds.

FEK047 Pink/red water from TNT operations.

#### 2.2.4 Inorganic Chemicals

FEK071 Brine purification muds from the mercury cell process in chlorine production, where separately prepurified brine is not used.

FEK073 Chlorinated hydrocarbon waste from the purification step of the diaphragm cell process using graphite anodes in chlorine production (See footnote 1, below).

FEK106 Waste water treatment sludge from the mercury cell process in chlorine production.

#### 2.2.5 Petroleum Refining

FEK048 Dissolved Air Flotation (DAF) float from the petroleum refining industry.

FEK049 Slop oil emulsion from the petroleum refining industry.

FEK050 Heat exchanger bundle cleaning sludge from the petroleum refining industry.

FEK051 API separator sludge from the petroleum refining industry.

FEK052 Tank bottoms (leaded) from the petroleum refining industry.

#### 2.2.6 Iron and Steel

FEK061 Emission control dust/sludge from the primary production of steel in electric furnace.

FEK062 Spent pickle liquor generated by steel finishing operations of facilities within the iron and steel industry (SIC Codes 331 and 332).

#### 2.2.7 Pesticides

FEK031 By-product salts generated in the production of MSMA and cacodylic acid.

FEK032 Waste water and scrub water from the chlorination of cyclopentadiene in the production of chlordane (See footnote 3, below).

FEK033 Waste water and scrub water from the chlorination of cyclopentadiene in the production of chlordane (See footnote 3, below).

FEK034 Filter solids from the filtration of hexachlorocyclopentadiene in the production of chlordane (See footnote 3, below).

- FEK097 Vacuum stripper discharge from the chlordane (See footnote 3, below).
- FEK035 Waste water treatment sludges generated in the production of creosote.
- FEK036 Still bottoms from toluene reclamation distillation in the production of disulphoton.
- FEK037 Waste water treatment sludges from the production disulphoton.
- FEK038 Waste water from the washing and stripping of phorate production (See footnote 3, below).
- FEK039 Filter cake from the filtration of diethyphosphorodithioic acid in the production of phorate (See footnote 3, below).
- EK040 Waste water treatment sludge from the production of phorate production (See footnote 3, below).
- FEK041 Waste water sludge from the production of toxaphene (See footnote 3, below).
- FEK098 Untreated process waste water from the production to toxaphene (See footnote 3, below).
- FEK042 Heavy ends or distillation residues from the distillation oftetrachlorobenzene in the production of 2, 4, 5- T (See footnote 1, below).
- FEK043 2, 6-Dichlorophenol waste from the production of 2, 4-D (See footnote 1, below).
- FEK099 Untreated waste water from the production of 2, 4-D (See footnote 1, below).
- FEK123 Process waste water (including superuates, filterates, and waste waters) from the production of ethylenebisdithiocarbamic acid and its salts.
- FEK124 Reactor vent scrubber from the production of ethylenebisdithiocarbamic and its salts.
- FEK125 Filtration, evaporation and centrifugation solids from the production of ethylenebisdithiocarbamic acid and its salts.
- FEK126 Baghouse dust and floor sweepings in milling and packaging operations from the production or formulation of ethylenebisdithiocarbamic acid and its salt.

#### 2.2.8 Secondary Lead

- FEK069 Emission control dust/sludge from the secondary lead smelting.
- FEK100 Waste leaching solution from acid leaching of emission control dust/sludge from secondary lead smelting.

#### 2.2.9 Veterinary Pharmaceuticals

- FEK084 Waste water treatment sludges during the production of veterinary pharmaceuticals from arsenic or organo-arsenic compounds.
- FEK101 Distillation tar residues from the distillation of aniline-based compounds in the production of veterinary pharmaceuticals from arsenic or organoarsenic compounds.



FEK102 Residue from the use of activated carbon for decolourisation in the production of veterinary pharmaceuticals from arsenic or organo-arsenic compounds.

#### 2.2.10 Ink Formulation

FEK086 Solvent washes and sludges, caustic washes and sludges, or water washes and sludges from cleaning, tubs and equipment used in the formulation of ink from pigments, driers, soaps, and stabilisers containing chromium and lead.

#### 2.2.11 Coking

FEK060 Ammonia still-lime sludge from coking operations.

FEK087 Decanter tank tar sludge from coking operations.

#### NOTES-

1. These wastes contain or may contain halogenated hydrocarbons. Although 1.2 states that these wastes are DW, generators who know that their waste contains greater than one per cent of these listed halogenated hydrocarbons should designate their waste as EHW.
2. For wastes listed with the dangerous waste numbers EF020, FEF021, FE022, FEF023, FEF026 or FE027 the quantity exclusions limit is 1 kg per month or per batch.
3. These wastes contain or may contain X Category toxic constituents. Although section 1.2 states that these wastes are DW generators who know that their waste contains greater than 0.1 per cent of these listed toxic constituents should designate their waste EHW.

#### SCHEDULE 13

[Regulation 76 (1).]

4. Hazardous/Dangerous Waste Constituents List (FAC 000-000-9905).

Acetonitrile (Ethanenitrile)

Acetophznone (Ethanone l-phenyl) -alpha (Acetonylbenzyl)-4 hydroxycoumarin and salt (Warfarin).

2-Acetylaminofluorene (Acetamide, N-9H-fluoren-2-yl-) Acetyl chloride (Ethanoyl Chloride)

1-Acetyl-2-thiourea (Acetamide, N-(aminothioxomethyl-Acrolein (2-propenal) Aery lonitrile (2 Propenenitrile)

Aflatoxins

Aldrin (1, 2, 3, 4, 10, 10-Hexachloro-l, 4, 4a, 5, 8, 8a, 8b- hexahydro-endo, exo-l, 4, 5,

8- Dia-methanonaphthalene)

Allyl alcohol (2-Propen -1-01) Aluminum phosphide

4-Aminobiphenyl ([1,1',-Biphenyl]-4 amine)

6-Amino-1, 2,8, 8a, 8b-hexahydro-8- (hydroxymethyl)-8a-methoxy-5-methyl-Carbamate azirino [2, 3': 3,4] pyrrolo [1, 2,-ajindole-4, 7-dione, (ester) Mitomycin C) (Azirino [2, 3' : 3, 4] pyrrolo (1, 2-a) indole-4, 7 -dione, 6-amino-8)

Barium and Compounds, N.O.S.\*

Barium Cyanide

Benz [c] acridine (3, 4-Benzacridine)

Benz [a] anthracene (1 2-Benzanthracene) Benzene (Cyclohexatriene)

Benzenearsonic acid (Arsonic acid, phenyl-) Benzene, 2-amino-1-methyl (o- Toluidine) Benzene, 4-amino-1-methyl (p-Toluidine) Benzene, dichloromethyl- (Benzal Chloride) Benzenethiol (Thiopheno)

Beneidine ([1, 1' Biphenyl] -4, 4' diamine) Benzol [b] fluoranthene (2, 3- Benzofluoranthene) Benzo [j] fluoranthene (7, 8-Benzofluoranthene) Benzo [a] pyrene (3, 4- Benzopyrene)

p- Benzoquinone (1, 4-Cyclohexadienedione) Benzotrichloride (Benzene, trichloromethyl-) Benzyl chloride (Benzene, chloromethyl)-Beryllium and compounds, N.O.S.\*

Bis (2-Chloroethoxy) Methane (Ethane, 1, 1,2-dimethylenebis (oxy) [bis [2chloro-D Bis (2-Chloroethyl ether (Ethane, 1, 1,2-dimethylenebis [2-chloro-D

N, N - Bis (2-chloroethyl) -2 naphthylamine (Chlomaphazine)

Bis (2 Chloroisopropyl) ether (propane, 2, 2,2-dimethyloxybis [2-chloro- D Bis (chloromethyl) ether (Methane, oxybis [chloro-]

Bis 2-ethylhexyl) phthalate (1, 2-Benzenedicarboxylic acid bis (2-ethylhexyl) ester) Bromoacetone (2-Propanone, 1-bromo-)

Bromomethane (Methyl bromide)

4-Bromophenyl phenyl ether (Benzene, 1-bromo-4-phenoxy-) Brucine (Strychnidin 10 one, 2, 3,-dimethoxy-)

2-Butanone peroxide (Methyl ethyl ketone, pro xi de

Butyl benzyl phthala (1 2-Benzenedicarboxylic acid, butyl phenylmethyl ester) 2-sec-Butyl-4, 6-dinitrophenol (DNBP) (Phenol, 2, 4-dinitro-6-(1-methylpropyl-) Cadmium and compounds, N.O.S. \*

Calcium chromate (Chromic acid, calcium salt) Calcium cyanide

Carbon disulphide (Carbon bisulphide) Carbon oxyfluoride (carbonyl fluoride) Chloral (Acetaldehyde, trichloro-) Chloramucil (Butanic acid 4 [bis (2 Chloroethyl) amino] benzene-)

Chlordane (alpha and gamma isomers) 4, 7,- Methanoindan, 1, 2, 4, 5, 6, 8, 8-octachloro-3, 4, 7, 7a-tetrahydro-) (alpha and gamma isomers)  
Chlorinated benzenes, N.O.S. \* Chlorinated ethane, N.O.S. \*

Chlorinated fluorocarbons, N.O.S. \* Chlorinated naphthalene, N.O.S. \* Chlorinated phenol, N.O.S. \*  
Chloroacetaldehyde (Acetaldehyde, chloro Chloroalkyl ether, N.O.S. \*

Chloroaniline (Benzenamine, 4-chlor-)

Chlorobenzene (Benzene, Chloro-)

Chlorobenilate (Benzeneacetic acid, 4-chloro-alpha- (4 chlorophenyl) alpha hydroxy, ethylester)

2-Chloro-1, 3-butadiene

p-Chloro-m-cresol (Phenol, 4-Chloro-3-methyl)

1-Chloro 2 3-epoxypropane (Oxirane, 2-(chloromethyl-)

2-Chloroethyl vinyl ether (Ethene, (2 chloro-ethoxy)-) Chloroform (Methane, trichloro-)

Chloromathane (Methyl, chloride)

Chloromethyl methyl ether (methane, chloromethoxy-)

2-Chloronaphthalene (Naphthalene, betachoro-) 2-Chlorophenol (Phenol, o-chloro-)

1-( o-Chlorophenyl) thiourea (Thiourea, (2-chlorophenyl)-)

3-Chloropropene

3-Chloropropionitrile (Propanenitrile, 3-chloro-) Chromium and compounds, N.O.S. \*

Chrysene (1, 2-Benzphenanthrene)

Citrus red No.2 (2-Naphthol, 1-[(2, 5-dimethoxyphenyl) azol]-] Coaltars

Copper cyanide

Creosote (Creosote, wood)

Cresols (Cresylic acid) Phenol, methyl-) Crotonaldehyde (2-Butenal)

Cyanides (soluble salts and complexes), N.O.S. \*

Cyanogen (Ethanedinitrile)

Cyanogen bromide (Bromine cyanide)

Cyanogen chloride (Chlorine cyanide)

Cyasin (beta-D-Glucopyranoside, (methyl-ONN-azoxy) methyl-)

2-Cyclohexyl-4,6-dinitrophenol (Phenol, 2-cyclohexyl-4, 6-dinitro-) Cyclophosphamide (2H -1, 3, 2-)

Oxazaphosphorine, [bis (2-chloroethyl) amino-] tetrahydro, 2-oxide)

Daunomycin (5, 12- Naphthacenedione, (8S-cis )-8-acetyl-10-[(3-amino-2, 3,

6- trideoxy )-alpha- L-xylo- hexopyranosyl oxy]- 7, 8, 9, 10- tetrahydro-6, 8, 11- trihydroxy-1- methoxy - )

DDD (Dichlorodiphenyldichloroethane) (Ethane, 1, 1-dichloro-2, 2-bis (p-chloro-phenyl)-)

DDE (Ethylene, 1, 1-dichloro-2, 2-bis (4-chlorophenyl)-)

DDT (Dichlorodiphenyltrichloroethane) (Ethane 1, 1, 1-trichloro-2,2- bis (p-chloro

-phenyl)-) Diallylate (S-(2, 3-dichloroallyl) diisopropylthiocarbamate)

Dibenz [a, h] acridine (1, 2, 5, 6-Dibenzacridine)

Dibenz [a, j] acridine (1, 2, 7, 8- Dibenzacridine)

Dibenz [a, h] anthracene (1, 2, 5, 6-Dibenzanthracene)

7H-Dibenzyl [c, g] carbazole (3, 4, 5, 6 -Dibenzcarbazole)

Dibenzo [a, e] pyrene (1, 2, 4, 5-Dibenzpyrene)

Dibenzo [a, h] pyrene (1, 2, 5, 6-Dibenzpyrene)

Dibenzo [a, i] pyrene (1, 2, 7, 8-Dibenzpyrene)

1, 2- Dibromo- 3 -chloropropane (Propane, 2-dibromo- 3 -chloro- )

Dibenzo [a, i] pyrene (1, 2, 7, 8-Dibenzpyrene)

1, 2-Dibromoethane (Ethylene dibromide)

Dibromomethane (Methylene bromide)

Di-n-butyl phthalate (1,2-Benzenedicarboxylic acid, dibutyl ester)

o- Dichlorobenzene (Benzene, 1, 2-dichloro-)

m-Dichlorobenzene (Benzene, 1, 3-dichloro-)

p- Dichlorobenzene (Benzene, 1, 4-dichloro-)

Dichlorobenzene, N.O.S. \* (Benzene, dichloro-, N.O.S. \*

3, 3-Dichlorobenzidine ([1, 1-Biphenyl]-4, 4'-diamine, 3, 3-dichloro-) 1, 4-Dichloro-2-butene (2-Butene, 1, 4-Butene, 1, 4-dichloro-) Dichlorodifluoromethane (Methane, dichlorodifluoro-)

1, 1-Dichloroethane (Ethylidene dichloride) trans-1, 2-Dichloroethene (1, 2-Dichloroethene) Dichlo

roethylene, N.O.S. \* (Ethene, dichloro-, N.O.S.)

1, 1-Dichloroethylene (Ethene, 1, 1-dichloro-)

Dichloromethane (Methylene chloride)

2, 4-Dichlorophenol (Phenol, 2, 4-dichloro-) 2, 6-Dichlorophenol (Phenol, 2, 6-dichloro)

2, 4-Dichlorophenoxyacetic acid (2, 4-D), salts and esters (Acetic acid, 2, 4-dichloro-

phenoxy-, salts and esters)

Dichlorophenylarsine (Phenyl dichloroarsine)

Dichloropropane, N.O.S. \* (Propane, dichloro-, N.O.S. \*) 1, 2-

Dichloropropene (Propylene dichloride) Dichloropropanol, N.O.S. \* (Propanol, dichloro-, N.O.S. \*)

Dichloropropene, N.O.S. \* (Propane, dichloro, N.O.S. \*)

1, 3-Dichloropropene, (1-Propene, 1, 3-dichloro-)

Dieldrin (1, 2,3,4,10, 10-hexachloro-6, 7-epoxy- 1,4, 4a, 5, 6, 7, 8, 8a-octa hydro-endo, exo- 1,

4: 5, 8-Dimethanonaphthalene)

1,2: 3, 4-Diepoxybutane (2, 211z-Bioxirane)

Diethylarsine (Arsine, diethyl-)

N, N-Diethylhydrazine (Hydrazine, 1, 2-diethyl)

O, O-Diethyl S-methyl ester of phosphorodithioic acid (Phosphorodithioic acid, O, O

-diethyl S-methyl ester O, O-Diethylphosphoric acid, O-p-nitrophenyl ester (Phosphoric acid, diethyl p-nitrophenyl ester)

Diethyl phthalate (1, 2-Benzenedicarboxylic acid, diethyl ester)

O, O-Diethyl O-2-pyrazinyl phosphorothioate (Phosphorothioic acid, O, O-diethyl O pyrazinyl ester)

Diethylstilbesterol (4,4' -Stilbenediol, alpha, alpha-diethyl bis (dihydrogen phosphate, (E)-) Dihydrostilbesterol (Benzene, 1, 2-methylenedioxy-4-propyl-)

3-4-Dihydroxy-alpha-(methylamino) methyl benzyl alcohol (1-2-benzendiol, 4-[1-hydroxy-2-(methylamino) ethyl-)

Diisopropylfluorophosphate (DFP) (Phosphorofluoride acid, bis (1-methylethyl) ester)

Dimethoate (Phosphorodithioic acid, O, O-dimethyl S-[-methylamino]-2-oxoethyl) ester

3, 3<sup>1</sup>/<sub>2</sub>-Dimethoxybenzidine/ 1, 11z-Biphenyl-4, 41z dimethine, 3-3 dimethoxy-  
p-Dimethylaminoazobenzene (Benzenamine, N, N-dimethyl-4-(phenylazo)-)

7, 12-Dimethylbenz [a] anthracene (1, 2- Benzanthracene, 7, 12-dimethyl-)

3, 3<sup>1/2</sup> Dimethylbenzidine ([1, 1 liz-Biphenyl] -4, 4<sup>1z</sup> diamine, 3, 3<sup>1z</sup>-dimethyl-)

Dimethylcarbamoyl chloride (Carbamoyl chloride, dimethyl-)

1, 1-Dimethylhydrazine (Hydrazine, 1, 1-dimethyl-)

1, 2-Dimethylhydrazine (Hydrazine, 1, 2-dimethyl-)

3, 3-Dimethyl-(methylthio)-2-butanone, O-[(methylamino) carbonyl]oxine (Thiofanox) alpha,  
alpha- Dimethylphenethylamine

(Ethanamine, 1, 1-dimethyl-2-phenyl)

2, 4-Dimethylphenol (Phenol, 2, 4-dimethyl-)

Dimethyl phthalate (1, 2-Benzenedicarboxylic, acid, dimethyl ester)

Dimethyl sulfate (Sulphuric acid, dimethyl ester)

Dinitrobenzene, N.O.S. \* (Benzene, dinitro-, N.O.S. \*

4, 6-Dinitro-o-cresol and salts (Phenol, 2, 4-dinitro-6-methyl-, and salts)

2, 4 Dinitro-o-cresol and salts (Phenol, 2, 4-dinitro-)

2, 4- Dinitrotoluene (Benzen, 1-methyl-2-4-dinitro-)

2, 6-Dinitrotoluene (Benzene, 1-methyl-2, 6-dintro-)

Di-n-octyl phthalate (1, 2-Benzenedicarboxylic acid, Dioctyl ester)

1, 4-Dioxane (1, 4-Diethylene oxide)

Diphenylamine (Benzenamine, N-Phenyl-)

1, 2-Diphenylhydrazine, Hydaazine 1,2- diphendyl-)

Di-n-propylnitrosamine (N - Nitroso-di-n-propylamine)

Disulphoton (0, O-diethyl S-[2-(ethylthio) ethyl] phosphorodithioate)

2, 4- Dithiobiuret (Thioimidodicarbonic diamide)

Endosulphan (5-Nobomene, 2, 3-dimethanol,

1,4,5,6, 7, 7-hexachloro-, cyclic sulphite)

Edrin and metabolites (1, 2, 3, 4, 10, 10-hexachloro-6, 7-epoxy-, 4 4a, 5, 6, 7, 8, 8a-

octahydro-endo, endo-, 4 : 5, 8- dimethanonaphthalene, and metabolites)

Ethyl carbamate (Urethan) (Carbamic acid, ethyl ester)

Ethyl cyanide (propanenitrile)

Ethylenebisdithiocarbamic acid, salts and esters (1, 2-Ethanediylobiscarbamodithioic acid,

salts and esters

Ethyleneimine(Aziridine)

Ethylene oxide (Oxirane) Ethylenethiourea (2- Imidazo-idinithione)

Ethylmethacrylate (2-Propenoic acid, 2-methyl-, ethyl ester)

Ethylmethanesulphonate

(Methanesulphonic acid, ethyl ester)

Fluorine

Fluoranthene (Benzo [j, k] fluorene)

2- Fluoroacetamide (Acetamide, 2- fluoro-)

Fluoroacetic acid, sodium salt (Acetic acid, fluorine, sodium salt)

Formaldehyde (Methylene oxide)

Formic acid (Methanoic acid)

Glycidylaldehyde (1-Propanol-2-3-epoxy)

Halomethane, N.O.S. \*

Heptachlor (4, 7- Methano- 1H-indeno, 1,2,5,6, 7, 8, 8-heptachloro-3a, 4, 7, 7a-

tetrahydro-)

Heptachlor epoxide (alpha, beta, and gamma isomers) (4, 7-Methano-1 H-indeni 1, 4, 5, 6, 7, 8, 8-heptachloro-2, 3-epoxy-3a, 4, 7, 7- tetrahydro-, alpha beta, and gamma isomers

Hexachlorobenzene (Benzene, hexachloro-)

Hexachlorobutadiene (1, 3-Butadiene, 1, 1,2,3,4, 4-hexachloro-)

Hexachlorocyclohexane (all isomers) (Lindane and isomers)

Hexachlorocyclopentadiene (1,3- Cyclopentadiene, 1,2,3,4,5, 5-hexachloro-)

Hexachlorodibenzo- p-dioxins

Hexachloroethane (Ethane, 1, 1, 1, 2, 2, 2, - hexachloro- )

1,2,3,4, 10, 10-Hexachloro-1, 4, 4a, 5, 8, 8a-dimethanonaphthalene

Hexachlorohexahydro-endo, endo- dimethanonaphthalene)

Hexachlorophene (2, 2' -Methylenebis (3, 4, 6-trichlorophenol)

Hexachloropropene (1- Propene, 1, 1, 2, 3, 3, 3,- hexachloro- )

Hexaethyl tetraphosphate (Tetraphosphoric acid, hexaethyl ester)

Hydrazine (Diamine)

Hydrocyanic acid (Hydrogen cyanide)

Hydrofluoric acid (Hydrogen fluoride) Hydrogen sulphide (Sulphur hydride)

Hydroxydimethylarsine oxide (Cacodylic acid)

Indeno (1, 2, 3-cd) pyrene (1, 10-(1,2- phenylene) pyrene)

Iodomethane (methyl iodide)

Iron Dextran (Ferric dextran)

Isocyanic acid, methyl ester (Methylisocyanate)

Isobutyl alcohol (1-Propanol, 2-methyl-)

Isosafrole (Benzene, 1, 2-methylenedioxy-4-allyl-)

Kepon (Decachlorooctahydro-1, 3, 4,-Methano-2H-Cyclobuta (cd) pentalen-2-one)

Lasiocarpine (2-Butenoic acid, 2-methyl-, 7- [(2, 3-dihydroxyethyl)-3methyl-oxobutoxy) methyl]-2, 3, 5, 7a-tetrahydro-1H-pyrrolizin-yl ester)

Lead and compounds, N.O.S. \*

Lead acetate (Acetic acid, lead salt)

Lead phosphate (Phosphoric acid, lead salt)

Lead sub acetate (Lead, bis (acetato-O) tetrahydroxytri-)

Maleic anhydride (2, 5-Furandione)

Maleic hydrazide (1, 2-Dihydro-3, 6- pyridazinedione)

Malononitrile (Propanedinitrile)

Melphalan (Alanine, 3-[p-bis (2-chloroethyl) amino] phenyl- L-)

Mercury Fulminate (Fulminic acid, mercury salt)

Mercury and compounds, N.O.S. \*

Methacrylonitrile (2-Propenenitrile, 2-methyl-)

Methanethiol (Thiomethanol)

Methapyrilene (Pyridine, 2-[2-dimethylamino) ethyl]-2-ethenylmino-)

Metholonyl (Acetimidic acid, N [(methylcarbamoyl) oxy] thio-, methyl ester)



Methoxychlor (Ethane, 1, 1, 1-trichloro-2, 2- bis (p-methoxyphenyl)-)

2-Methylaziridine (1, 2-Propylenimine)

3- Methylchloranthrene (Benz)(J) aceanthrylene, 1, 2-dihydro-3-methyl-)

Methyl chlorocarbonate (Carbanocloridic acid, methyl ester)

4, 4' - Methylenebis (2-chloroaniline)

(Benzenamine, 4, 4' -methylenebis-(2-chloro-)

Methyl ethyl ketone (MEK) 2-Butanone)

Methyl hydrazine (Hydrazine, methyl-)

2-Methylactonitrile (Propanenitrile, 2-hydroxy-2-methyl-)

Methyl methacrylate (2-Propenoic acid, 2- methyl-, methyl ester)

Methyl methanesulphonate (Methanesulphonic acid, methyl ester)

2-Methyl-2-(methylthio) propionaldehyde-o-(methycarbonyl) oxime (Prop anal, 2-methyl-2(methylthio)-0- (Methylamino) carbonyl) oxime)

N-methyl-N' -nitro- N-nitrosoguanidine

(Guanidine N-nitros-N-methyl-N-iz nitro-)

Methyl parathion (O, O-dimethylO-( 4 nitrophenyl) phosphorothioate

Methylthiouracil (4-1 1 1-Pyrimidinone, 2, 3- dihydro-6-methyl-2-thioxo-)

Mustard gas (Sulphide, bis (2-chloroethyl-)

Naphthalene

1, 4-Naphthoquinone (1, 4-Naphthanedione)

1- Naphthylamine (alpha- Naphthylamine)

2- Naphthylamine (beta- Naphthylamine)

Nickel and compounds, N.O.S. \*

Nickel carbonyl (Nickel tetracarbonyl)

Nickel cyanide (nickel (II) cyanide)

Nicotine and salts, Pyridine, (S)-3-(1-methyl- 2-pyrrolidinyl-, and salts)

Nitric oxide (Nitrogen (II) oxide)

p-Nitroaniline Benzenamine, 4-nitro-) Nitrobenzine (Benzene, nitro-)

Nitrogen dioxide (Nitrogen (IV) oxide)

Nitrogen mustard and hydrochloride salt (Ethanamine, 2-chloro- N-(2-chloroethyl)

-N-methyl- and hydrochloride salt)

Nitrogen mustard N-oxide and hydrochloride salt (Ethanamine, 2-chloro-, N-(2-chloroethyl)-N-methyl-, and hydrochloride salt)

Nitroglycerine (1, 2, 3,-Propanetriol, trinitrate)

4- Nitrophenol Phenol, 4-dinitro-) 4-Nitroquinoline-I-oxide (Quinoline,

4-nitro-I-oxide-) Nitrosamine, N.O.S. \*

N-Nitrosodi-n-butylamine (1-Butanamine, N-bntyl-N-nitroso-)

N - Nitrosodiethanolamine (Ethanol, 2, 2- (nitrosoimino) bis-)

N-Nitrosodiethylamine (Ethanamine N-Ethyl- N-nitroso-)

N - Nitrosodimethylamine

(Dimethylnitrosamine)

N-Nitroso-N-ethylurea (Carbamide, N-ethyl- N-nitroso-)

N-Nitrosomethylethylamine (Ethanamine, N-methyl-N-nitroso-)

N-Nitroso-N-methylurca (Carbamide,) N-methyl-N-nitroso-)

N-Nitroso-N-methylthane (Carbamic acid, methylnitroso-, ethyl ester)

N-Nitrosomethyl-virylamine (Ethenamine, N-methyl-N-nitroso)

N-Nitrosomorpholine (Morpho line, N-nitroso-)

N-Nitrosonomicotine (Nomicotine, N-nitroso-)

N - Nitrosopiperidine (Pyridine, hexahydro-, N -nitroso- )

Nitrosopyrrolidine (Pyrrole, tetrahydro-,

N-nitroso-) Nitrosopyrrolidine (pyrrole, tetrahydro, N-nitroso-

N - Nitrososacrosine (Sarcosine, N -nitroso-)

5-Nitro-o-toludine (Benzenamine, 2-methyl-5- nitro-)

Isobutyl alcohol (1-Propanol, 2-methyl-)

Isosafrole (Benzene, 1, 2-methylenedioxy-4-allyl-)

Kepone (Decachlorooctahydro-1, 3, 4,-Methano-2H-Cyclobuta [cd] pentalen-2-one)

Lasiocarpine (2-Butenoic acid, 2-methyl-,7- [2, 3-dihydroxyethyl]-3 methyl-l- oxobutoxy) methyl]-2, 3, 5, 7 atetrahydro-1H-pyrrolizin-yl ester)

Lead and compounds, N.O.S.

Lead acetate (Acetic acid, lead salt)

Lead phosphate (Phosphoric acid, lead salt)

Lead sub acetate (Lead, bis (acetato-O) tetrahydroxytri-)

Maleic anhydride (2, 5- Furandione)

Maleic hydrazide (1, 2- Dihydro-3, 6-pyridazinedione)

Malonoitrile (Propanedinitrile)

Melphalan (Alanine, 3-[p-bis (2-chlorosthyl) amino] phenyl-L-)

Mercury Fulminate (Fulminic acid, mercury salt)

Mercury and compounds N.O.S.

Methacrylonitrile (2-Propenenitrile, 2-methyl-)

Methanethiol (Thiomethanol)

Methapyrilene (Pyridine, 2-[2- dimethylamino) ethyl]-2-thenylamino-)

Metholonyl (Acetimidic acid, N- [(methylcarbamoyl) oxy] thio-, methyl ester Methoxychlor (Ethane, 1, 1, 1-trichloro-2, 2-bis (p-methoxyphenyl)-)

2-Methylaziridine (1, 2-Propylenimine)

3-Methylcholanthrene (Benz [j] aceanthrylene, 1, 2-dihydro-3-methyl-)

Methyl chlorocarbonate (Carbanochloridic acid, methyl ester)

4, 4,-Methylenebis (2-chloroaniline) (Benzenamine, 4, 4-methylenebis-(2-chloro-)

Methyl ethyl ketone (MEK) (2-Butanone)

Methyl hydrazine (Hydraxine, methyl-)

2-Methylactonitrile (Propanenitrile, 2-hydroxy-2-methyl-)

Methyl methacrylate (2-Propenoic acid, 2-methyl-methyl ester)

Methyl methanesulphonate (Methanesulphonic acid, methyl ester)

2-Methyl-2-(methylthio) propionaldehyde-o- (methycarbonyl) oxime (Prop anal, 2 methyl-2(methylthio)-O- [(methylamino) carbonyl] oxime)

N - Methy 1- N -nitro- N -nitro s oguanidine (Guanidine, N -nitros- N -methyl- Nianitro-

Methyl parathion (0, O-dimethyl 0-(4 nitrophenyl phosphorothioate

Methylthiouracil (4-1H-Pyrimidinone, 2, 3- dihydro-6-methyl-2-thioxo-

Mustard gas (Sulphide, bis (2-chloroethyl)-

Naphthalene

1, 4- Naphthoquinone (1,4- N aphtanclenedione)

1-Naphthylamine (alpha-Naphthylamine)

2- N aphty lamine (beta- N aphty lamine)

1-Naphthy12-thiourea (Thiourea, l-naphthalenyl-)

Nickel and compounds, N.O.S. \*

Nickel carbonyl (Nickel tetracarbonyl)

Nickel cyanide (nickel (II) cyanide)

Nicotine and salts, Pyridine, (S)-3-(1-methyl-2-pyrrolidinyl)-, and salts)

Nitric oxide (Nitrogen (II) oxide

P-Nitroaniline Benzenamine, 4-nitro-)

Nitrobenzene (Benzene, nitro-)

Nitrogen dioxide (Nitrogen (Nitrogen (IV) oxide)

Nitrogen mustard and hydrochloride salt (Ethanamine, 2-chloro-, N-(2-cloroethyl)-

N-methyl-, and hydrochloride salt

Nitrogen mustard N-Oxide and hydrochloride salt (Ethaanamine, 2-chloro-, N-(2-chloroethyl) N-methyl-, and hydrochloride salt)

Nitroglycerine (1, 2, 3-Propanetriol, trinitrate)

4- Nitrohenl (Phenol, 4-dinitro-)

4- Nitroquinoline- I -oxide (Quinoline, 4-nitro-I-oxide-)

Nitrosamine, N.O.S.

N-Nitrosodi-n-butylamine (1-Butanamine, N-butyl-N-nitroso-)

N-Nitrosodiethanolamine (Ethanamine, N- thyl-N-nitroso-)

N - Nitrosodimethylamine (Dimethylnitrosamine)

N-Nitroso-N-ethylurea (Carbamide, N-ethyl- N-nitroso-)

N-Nitrosodiethanolamine (Ethanol, 2, 2- ((nitrosoimino) bis-)

N - Nitrosodimethylamine (Dimethylnitrosamine)

N-Nitrosomethylethylaminethylethylamine (Ethanamine, N-methyl-N-nitroso-)

N-Nitroso-N-methylurea (Carbamide, N-methyl-N-nitroso-)

N-Nitroso-N-methylurethane (Carbamic acid, methylnitroso-, ethyl ester)

N-Nitrosomethyl-vinylamine (thenemine, N-methyl-N-nitroso)

N - Nitrosomorpholine (orphonline, N -nitroso-)

N-Nitrosomonicotine (Nomicotine, N-nitroso-)

N - Nitrosopiperidine (Pyridine, hexahydro-, N -nitroso- )

Nitrosophrolidine (Pyrrole, tetrahydro-, N-nitroso-)

Nitrosopyrrolidine (Pyrrole, tetrahydro-, N-nitroso-

N- Nitrososacrosine (arcosine, N-nitroso-) 5- Nitro-o-tol dine (Benzenamine, 2- 2-methyl-  
5- nitro-)

Octamethylpyrophosphoramidate (Disphosphoramidate, octamethyl-)

Osmium tetroxide (Osmium (VII) oxide)

7-Ocabicyclo [2,2, 1] heptane-2, 3-dicarboxylic acid (Enodothal)

Paraldehyde (1, 3, 5- Trioxane, 2, 4, 6-triethyl)-

Parathion (Phosphorothioc acid, O O-diethyl O-(P-nitrophenyl ester

Pentachlorobenzene (Benzene, pentachloro-)

P enthachlorodibenzo- p-dioxins

Pentachlorodibenzofurans

Pentachloroethane (Ethane, pentachloro-)

Pentachloronitrobenzene (PCNB) (Benzene, pentachloronitro-)

Pentachlorophenol (Phenol, pentachloro-)

Phenacetin (Acetamide, N-(4-ethoxyphenyl)-)

Phenol (Benzene, hydroxy-)

Phenylenediamine (Benzenediamine)

Phenylmercury acetate (mercury, acetatophenyl-)

N-Phenylthiourea (Thiourea, phenyl-) Phosgene (Carbonyl chloride)

Phosphine (Hydrogen phosphide)

Phosphrodichioic acid, O, O-diethyl S-[(ethylthio) methyl] ester (Phorate)

Phosphorothioic acid, O, O-dimethyl O-[p-(dimethylamino) sulphonyl] phenyl] ester (camphur)

Phthalic acid esters, N.O.S\* (Benzene, 1, 2-dicarboxylic acid, esters, N.O.S.\*

Phthalic anhydride (1, 2- Benzenedicarboxylic acid anhydride)

2-Picoline (Pyridine, 2-methyl-)

Polychlorinated biphenyl, N.O.S. \*

Potassium cyanide

Potassium silver cyanide (Argentate (1-), dicyano, potassium)

Pronamide (3, 5-Dichoro-N-(1, l-dimethyl-2-propynl benzamide)

1, 3- Propaneuslphone (1, 2-Oxathiolane 2, 2-dioxide) n-Propylamine (1-Propane)

Propy lthiouracil (Undecamethy lenediamine,

N, N<sup>1</sup>/<sub>2</sub>-bis (2-chlorobenzyl)-, dihydrochloride

) 2-Propyn-1-ol (Progargyl alcohol)

Pyridine

Reserpine (Yohimban-16-carboxylic acid, 11, l7-dimethoxy-18-[(3, 4, 5-trimethoxy-benzoyl) oxyl-, methyl ester)

Resorcinol (1, 3-benzenedio)

Saccharin and salts (1, 2-Benzoisothiazolin-3-one 1, l-dioxide and salts)

Safrol (Benzene, 1, 2-methylenedioxy-4-allyl-)

Selenious acid (Selenium dioxide)

Selenium and compounds N.O.S. \*

Selenium sulphide (Sulphur selenide)

Selenourea (Carbamimidoseleonic acid)

Silver and compounds N.O.S. \*

Silver cyanide

Sodium cyanide

Streptozotcin (D-G lucopyranose, 2-deoxy- 2-(3 - methy 1- 3 - nitrosoureido )- )

Strontium sulphide

Strychnine and salts (Strychnidin-I O-one, and salts)

1,2,4,5- Tetrachlorobenzene (Benzene, 1,2,4, 5-tetrachloro-)

T etrachlorodibenzo- p-dioxins

Tetrachlorodibenzofurans

2, 3, 7, 8- Tetrachlorodibenzo-p-dioxin (TCDD) Dibenzo-p-dioxin, 2, 3, 7, 8-tetrachloro-

Tetrachloroethane, N.O.S. \* (Ethane, tetrachloro-, N.O.S. \*

1,1,1, 2-Tetrachlorethane (Ethane 1, 1,2, 2-tetrachloro-)

Tetrachlorethylene (Ethane 1, 1, 2, 2,-tetrachloro-)

Tetrachloromethane (Carbon tetrachloride)

2, 3, 4, 6- Tetrachlorophenol (Phenol, 2, 3, 4, 6-tetrachloro-)

Tetraethyldithiopyrophosphate (Dithiopyrophosphoric acid, tetraethyl-ester)

Tetraethyllead (Plumbane, tetraethyl-)

Tetraethylpyrophosphate (Pyrophosphoric acid, tetraethyl-ester)

Tetranitromethane (Methane, tetranitro-)

Thallium and compounds, N.O.S.\*

Thallic oxide (Thallium (III) oxide)

Thallium (1) acetate (Acetic acid, thallium (1) salt)

Thallium (1) carbonate (Carbonate (Carbonic acid, dithallium (1) salt)

Thallium (1) chloride

Thallium (1) nitrate (Nitric acid, thallium (1) salt) Thallium selenite

Thallium (1) sulphate (Sulphuric acid, thallium (1 ) salt)

Thioacetamide (Ethanethioamide)

Thiosemicarbazide (Hydrazinecarbothioamide )

Thiourea (Carbamide thio-)

Thiuram (Bis (dimethylthioucarbomyl) disulphide)

Toluene (Benzene, methyl-)

Toluenediamine, N.O.S. (Diaminotoluene)

2, 2- Toluenediamine

2, 6- Toluenediamine

3, 4- Toluenediamine

o-Toluidine hydrochloride (Benzanamine, 2-methyl-, hydrochloride)

Tolylene (disocyanate (Benzene, 1, 3-diisocyanatometyl-)

Toxaphene (Camphene, octachloro-)

Tribromomethane (Bromoform)

1, 2, 4- Trichlorobenzene (Benzene 1, 2, 4-trichloro-)

1, 1, 1- Trichloroethane (Methyl chloroform)

1, 1, 2- Trichloroethane (Ethane, 1, 1, 2-trichloro-)

Trichloroethane (Trichloroethylene)

Trichloromethanethiol (Methanethiol, trichloro-)

Trichloromonofluoromethane (Methane, trichlorofluoro-)

2, 4, 5- Trichlorophenol (Phenol, 2, 4, 5-trichloro-)

2, 4, 6- Trichlorophenol (Phenol, 2, 4, 6-trichloro-)

2, 4, 5- Trichlorophenoxyacetic acid (2, 4, 5- T) Acetic acid, 2, 4, 5-trichlorophenoxy-)

2, 4, 5- Trichlorophenoxyacetic acid (2, 4, 5- TP) (Silver) Propionic acid, 2-(2, 4, 5-trichlorophenoxy)- )

Trichloropropane, N.O.S. \* (Propane trichloro-, N.O.S. \*

1,2, 3-Trichloropropane (Propane, 1,2, 3-trichloro-)



O,O,O,- Triethyl phosphorothioate (Phosphorothioic acid, 0, 0, O-triethyl ester)

Syo- Trinitrobenzene (Benzene, 1, 3, 5-trinitro-)

Tris (1-aziridinyl) phosphine sulphide (Phosphine sulphide, tris (Lariridinyl-)

Tris (2, 3-dibromopropyl) phosphate (1-Propanol, 2, 3-dibromo-, phosphate)

Trypan blue (2, 7-Napathalenededisulphonic acid, 3, 3'-[(3, 3'-dimethyl (1, 1, biphenyl)-4, 4'-duyl) bis (azol) [bis (5-amino-4-hydroxy-, tetrasodium salt)

Uracil mustard (Uracil 5-[bis (2-chloroethyl) amino]-)

Vanadic acid, ammonium salt (ammonium vanadate)

Vanadium pentoxide (Vanadium (V) oxide)

Vinyl chloride (Ethane, chloro-)

Zinc cyanide

Zinc phosphide

\*The abbreviation N.O.S. signifies those members of general class "not otherwise specified" by name in listing.