ATOMIC ENERGY (SAFE DISPOSAL OF RADIOACTIVE WASTES) RULES, 1987.

(February 3, 1987)

G.S.R. 125. — In exercise of the powers conferred by sub-section (1) read with clause (i) of sub-section (2) of Section 30 and clause (b) of sub-section (1) of Section 17 of the Atomic Energy Act, 1962 (33 of 1962) and all other powers enabling it in this behalf, the Central Government hereby makes the following rules, namely —

1. Short title, extent and commencement —

(1) These rules may be called the Atomic Energy (Safe Disposal of Radioactive Wastes) Rules, 1987.

2. Definitions — In these rules, unless the context otherwise requires :-

(i) "accident condition" means a substantial deviation from normal operating conditions which could lead to release of unacceptable quantities of radioactive materials if the relevant engineered safety features did not function as per design intent;

(ii) "Act" means the Atomic Energy Act, 1962 (33 of 1962);

(iii) "adequate protection" means protection against radiation so provided that the prescribed operational limits are not exceeded;

(iv) "applicant" means a person or an organisation that applies, in Form A , for granting of authorisation to perform specified activities connected with disposal of radioactive wastes; (v) "authorisation" means permission for disposal of radioactive wastes, granted by the competent authority in Form B;

(vi) "authorised person" means a person authorised by the competent authority to disposal of radioactive waste in accordance with the provisions of these rules;

(vii) "competent authority" means any officer or authority appointed by the Central Government by notification under these rules;

(viii) "Conditioning" means those operations, chemical or physical, that transform the radioactive waste into a form suitable for transport, storage or final disposal and may include converting the waste to another form, enclosing the waste in containers and providing additional packaging;

(ix) "Contamination" means the presence of radioactive substance in a material or place that may be specified as excessive by the competent authority by notification for the purposes of these rules;

(x) "disposal" means release of any material to the environment in a manner leading to loss of control over the future disposition of the radionuclides contained therein and includes emplacement of waste materials in a repository;

(xi) "disposal limits" means the limits for disposal of radioactive waste, prescribed from time to time by the competent authority under these rules;

(xii) "effluent" means gaseous, particulate or liquid emission which is discharged from the installation into its environment;

(xiii) "environment" means the surroundings of an installation that will influence the life, survival and development of human beings and any organisms relevant to man;

(xiv) "employer" means a person who employs workers or who is self-employed as a worker in an installation;

(xv) "Form" means form attached to these rules;

(xvi) "installation" or "institution" means any location wherein the processes incidental to the waste generation, conditioning, storage and disposal are carried out;

(xvii) "institutional control" means controls or actions to preclude unauthorised human contact with radioactive waste and includes controlled access to the installation and to the restricted area around it, periodic inspection and surveillance of the said installation and its restricted area, controlled productive use of the said restricted area and restrictions in the form of titles and deeds for land use;

(xviii) "operational limits" means operational limits prescribed from time to time under the Radiation Protection Rules, 1971;

(xix) "packaging" means any container prepared for containing the conditioned waste for handling, transportation, storage or disposal and may be permanent part of the waste package or it may be a reusable cask or overpack;

(xx) "person" includes,

(i) any individual, corporation, association of persons whether incorporated or not, partnership, estate, trust, private or public institution, group, government agency, or any state or any political sub-division thereof or any political entity within state, any foreign government or nation or any political sub-division of any such government or nation or other entity; and

(ii) any legal successor, representative or agent of each of the foregoing;

(xxi) "Radiological Safety Officer" means any person who is so designated by the employer and who, in the opinion of the competent authority, is qualified to discharge the duties and functions outlined in rule 13 of these rules;

(xxii) "radioactive waste" means any waste material containing radionuclides in quantities or concentrations as prescribed by the competent authority by notification in the official gazette;

(xxiii) "repository" means an underground geological formation with or without enginenered barriers or an overground vault in which waste may be emplaced for disposal;

(xxiv) "restricted area" means any area access to which is controlled by the employer and approved as such by the competent authority for purposes of protection of individuals from exposure to radiation and radioactive contamination;

(xxv) "scheduled" means schedule attached to these rules;

(xxvi) "storage" as distinct from disposal, means containment of the radioactive wastes under controlled conditions and under radiation surveillance in accordance with the provisions of the Radiation Protection Rules, 1971;

(xxvii) "Surveillance" includes all planned activities performed, —

(i) to ensure that conditions at an installation remain within prescribed limits;

(ii) to ensure that the operational limits prescribed under the Radiation Protection Rules, 1971, are not exceeded; and

(iii) to detect in a timely manner any unsafe condition and the degradation of structure, system and components which could at a later time result in an unsafe condition in the installation or in its environment;

(xxviii) "waste form" means the physical land chemical form of the waste, without its packaging;

(xxix) "waste package" means waste form duly contained in its packaging for handling, transportation, storage or disposal;

(xxx) words and expressions used in these rules and not defined but defined in the Act, shall have the meanings respectively assigned to them in the Act.

3. Restrictions on the disposal of radioactive waste — No person shall dispose of radioactive waste —

(a) unless he has obtained an authorisation from the competent authority under these rules;

(b) in any manner other than in accordance with the terms and conditions specified in the authorisation issued under these rules;

(c) in any location different from those specified in the authorisation;

(d) in quantities exceeding those specified in the authorisation.

4. Application for authorisation — Each application for authorisation to dispose of or transfer radioactive waste shall be made (save as provided in rule 15) in Form I and shall include — (i) brief description of —

(a) the process, materials and equipment generating radioactive wastes in the installation;

(b) the equipment and systems provided in the waste generating installation to monitor and control the radioactive wastes and to reduce environmental releases;

(c) the environment around the

(d) the processes and equipment in the installation for conditioning, treatment and disposal of radioactive waste and the staff employed for the purpose;

(e) safety devices incorporated in the waste disposal installation to contain the radioactive effluents and control their release to unrestricted areas during normal operations, including anticipated operational occurrences and to keep these releases as low as reasonably achievable (ALARA);

(f) an estimate of the amounts of annual releases, discharges and leakages from radioactive waste repositories during normal condition and an analysis of their anticipated environmental impact;

(g) an analysis of the potential accidents which may occur in the installation and design features and monitoring equipment incorporated in the waste disposal installation to control the release of radioactivity in the event of such accidents;

(h) procedures to be followed for safe collection of radioactive wastes arising from such accidents and

(i) design features of surveillance equipment incorporated or otherwise provided in and around the waste disposal installation to monitor the normal releases of activity and those released in the event of an accident;

(ii) estimates of the quantities of each of the principal radionuclides expected to be released in the environment annually (in solid, liquid and gaseous form) during normal operations;

(iii) any other information, which the competent authority may deem necessary to evaluate the safety status of waste disposal operations.

Form II where it is satisfied that the applicant has complied with the requirements of rule 4.

6. Duties of the authorised person — Every authorised person shall ensure that —

(i) disposal of radioactive wastes is done in accordance with the provisions of these rules, and in accordance with the terms and conditions laid down in the authorisation;

(ii) records of waste disposal are maintained in Form III for the periods stipulated by the competent authority;

(iii) all the requirements of the Radiation Protection Rules, 1971 are complied with;

(iv) any operation likely to result in a more hazardous accident than that envisaged in the safety analysis given by the applicant under rule 4(i)(g) are not carried out in the installation;

(v) personnel monitoring and environmental surveillance is carried out on a continued basis to evaluate the risks and to monitor the environmental impact of the waste disposal operations;

(vi) unless stipulated otherwise in the authorisation, quarterly reports are submitted to the competent authority in

Form IV;

(vii) reports received on any hazardous situation, as provided under clause (g) of rule 13, are forthwith transmitted to the competent authority;

(viii) that the Radiological Safety Officer discharges his duties under rule 13 of these rules;

(ix) after the waste disposal installation is closed, institutional control is maintained for such time as stipulated by the competent authority in each specific case under rule 11.

7.Maintenance of Records of Waste Disposal — Every authorised person shall maintain records of disposal or radioactive waste giving the following particulars —

(a) the description, quantity, physical state, chemical characteristics and the date of disposal of each consignment of radioactive waste;

(b) mode of disposal, concentration of radioactive material in the waste disposed of and site of disposal;

(c) names of the workers and the Radiological Safety Officer associated with the disposal of the radioactive waste;

(d) data on periodic radiation surveillance in and around the site of the disposal of radioactive waste, as specified in the authorisation;

(e) any other information which the competent authority deems necessary.

8. Installation for Disposal of Radioactive Waste to be considered as Radiation Installation— Any installation for disposal of radioactive waste shall be considered a radiation installation as defined under the Radiation Protection Rules, 1971.

9. Prevention of Entry into Restricted Areas — The authorised person shall make adequate arrangements to prevent entry of unauthorised members of the public in the restricted areas and shall further ensure that only the essential staff remains in the said areas to perform necessary operations.

10. Power to inspect installations — Any person duly authorised by the competent authority under section 17 of the Act, for purposes of inspection and enforcement of these rules may at any time —

(a) inspect any installation where disposal of radioactive waste is carried out;

(b) inspect any equipment (permanently installed or mobile) therein;

(c) make such tests and or measurements as may be necessary for purposes of evaluating radiation hazards;

(d) order disposal of such radioactive wastes as he deems necessary in the interest of radiation protection;

(e) do all such things (including examination of relevant records) as he may consider necessary for purposes of determining the adequacy or otherwise of the methods employed and devices used therein for controlling and monitoring environmental release of radioactive materials.

11. Closure and Institutional Control — Decommissioning or closure of a radioactive waste disposal installation and institutional control shall be undertaken by the authorised person after obtaining permission from the competent authority and in accordance with the procedure as prescribed by the competent authority in each case.

12. Radiological Safety Officer — The authorised person shall designate, with the approval of the competent authority; either himself or a person under his employ as Radiological Safety Officer. The Radiological Safety Officer shall possess the following minimum educational qualifications, training and experience —

(i) A graduate in science with mathematics and physics as the subjects;

(ii) Training in radiological safety at the Bhabha Atomic Research Centre or at any other organisation recognised as equivalent by the competent authority; and

(iii) One year experience of discharging relevant duties under a qualified Radiological Safety Officer.

13. Duties and Functions of the Radiological Safety Officer — The duties and functions of the Radiological Safety Officer in the radiation installation shall be as follows :

(a) to advise the employer regarding the safe handling and disposal of radioactive wastes and on the steps necessary to ensure that the operational limits are not exceeded;

(b) to instruct the radiation workers engaged in waste disposal on the hazards of radiation and on suitable safety measures and work practices aimed at minimising exposures to radiation and contamination, and to ensure that adequate radiation surveillance is provided for all radiation workers and the environment;

(c) to carry out such tests on conditioned radioactive wastes, as specified by the competent authority;

(d) to ensure that all buildings, laboratories and plants wherein radioactive wastes will be or are likely to be handled/produced, conditioned or stored or discharged from, are designed to provide adequate safety for safe handling and disposal of radioactive waste;

(e) to assess the radiation protection instruments required for an installation and to keep such instruments in use under proper calibration;

(f) to help investigate and initiate prompt and suitable remedial measures in respect of any situation that could lead to radiation hazards;

(g) to ensure that reports on all hazardous situations (including situations of the type referred to in rule 14 or as laid down by the competent authority regarding operational limits) along with details of any immediate remedial measures that may have been initiated are made available immediately to his employer and a copy thereof to the competent authority;

(h) to ensure that the provisions of the Radiation Protection Rules, 1971 are followed properly.

14. Accidental release of radioactive waste — In the event of accidental release of any radioactive material resulting in personnel, surface or environmental contamination, the Radiological Safety Officer shall —

(a) take steps to arrange for the immediate decontamination of the affected personnel and areas and other remedial measures as required;

(b) inform immediately the employer and the competent authority; details of the incident, remedial measures initiated and programme for disposal of contaminated material, if any.

15. Special provisions for installations such as Hospitals and Tracer Research Laboratories —

(1) Persons using small amounts of radioisotopes of very short effective half life (such as in medical practice and tracer applications) may submit their application in Form V for authorisation to dispose of radioactive waste.

(2) Without prejudice to the generality of these rules, a person thus authorised may dispose of wastes containing short lived radioisotopes, contaminated materials and contaminated effluents, in accordance with the procedures and conditions laid down in the schedule.

16. Prior approval of modifications — Any modification to any installation for the disposal of radioactive waste or any change in the working conditions therein, shall be done only with the approval of the competent authority.

17. Power to suspend or cancel an authorisation — The competent authority may cancel an authorisation issued under these rules or suspend it for such period as it thinks fit, if in its opinion, the authorised person has failed to comply with any of the conditions of the authorisation or with any provisions of the Act or these Rules after giving the authorised person an opportunity to show cause and after recording reasons therefor.

18. Power of the competent authority in the case of cancellation of authorisation — Upon suspension or cancellation of the authorisation and during the pendency of an appeal the competent authority may give directions to the persons whose authorisation has been suspended or cancelled for the safe storage of the radioactive wastes, and such person shall comply with such directions.

19. Authorisation for Existing Installations — Every person presently engaged in disposing of radioactive wastes shall, obtain an authorisation under these rules from the competent authority within six months from the date of coming into force of these rules.

Form IV, the authorised person shall submit such periodical reports to the competent authority, as stipulated in the authorisation for ensuring safe disposal of radioactive waste.

21. Appeal —

(1) An appeal shall lie, against any order of suspension or cancellation or refusal of an authorisation by the competent authority, to the Central Government.

2) Every appeal shall be in writing and shall be accompanied by a copy of the order appealed against and shall be presented within thirty days of the order passed.

FORM I

(See rule 4)

Government of India

Atomic Energy Regulatory Board

Application for Authorisation to Dispose of Radioactive Waste

(This form is meant to assess the suitability of the institution for carrying out waste disposal operations).

1. Name & address of the applicant :
2. (i) Name of the employer: :
   (ii) Name of the Head of the installation :
3. Department in which the radioactive :
   waste will be disposed of :
4. Name and designation of the Head of the Dept. :
5. Name of the individual who is entrusted :
   with day to day administration of
   radiation protection in the department
   (Radiological Safety Officers)
6. Are the persons doing radiation work
   members of the personnel monitoring
   service ? If so,please give details
7. Give details of the experience, if any, of the staff
   members in handling radioactive waste in
   Appendix I.

8. Give details or particulars of radioactive wastes for:
which the application is made in Appendix II.

* Complete address of the installation with Telephone No. (during and outside office hours) and telex number, if any, may please be provided in the space provided below :

9. (a) Please attach to this application the following drawings:-
   (i)A SITE PLAN of the installation (1:500 scale or as appropriate) of the installation indicating the locations of buildings, producing the radioactive waste and the buildings for its conditioning, packaging and ultimate disposal. Please indicate the points of discharge of radioactive effluents into the environment. Also indicate the nature of occupancies and land utilisation in the neighbourhood of the above buildings and water resources of the above land and their utilisation.

   (ii) ARCHITECTURAL BLUEPRINTS (1:50 scale or as appropriate) with dimensions of each of the buildings housing the waste producing, conditioning and disposal equipment and systems. Please indicate in the blue prints the nature of work carried out

   in each room. Further, please mark clearly the locations of the radioactive waste generating conditioning and packaging equipment and storage facility, work benches, sinks, fumehoods, decontamination equipment, monitoriny and surveillance equipment and specify the nature of occupied or other areas around the rooms or in the rooms in question as applicable.

   (iii) A drawing showing CONSTRUCTIONAL DETAILS of radioactive waste storage facilities available (e.g. lead container, concrete closest or vaults etc.)

   (b) Please provide details of any special ventilation facilities incorporated (such as fume-hood, stacks, exhausts, general air inlet and exhaust facilities for the rooms etc.)

   (c) Please indicate where —

   (a) the floor areas of the rooms are covered with special material such as linoleum ?

(b) the workbenches are covered with stainless steel or polythene sheet ?

(c) the walls are coated with stripable paint or conporous washable paint ?

(d) Please state whether —

(i)the installations in the plans are to be built;

(ii)existing rooms are to be modified as per the plans;

(iii) rooms already built and fitted up as per plan.

10. List of equipment available with the department (alongwith their specifications) where the radioactive waste will be handled. Please give details including the numbers of equipment available with you under each category (attach additional sheets if necessary).

(A) Equipment for collection of radioactive wastes (unconditioned);

(B) System for transporting unconditioned waste within the installation;

(C) Equipment for conditioning radioactive waste;

(D) Equipment for transportation of conditioned waste packages;

(E) Equipment for package handling and shipment at repository sites;

(F) Equipment for monitoring and surveillance;

(G) Details of safety devices incorporating in the systems to contain the radioactive effluents and control their releases (Please give their design features, technical specifications and analysis of their behaviour under off normal conditions).

11. Please give a brief description of the proposed procedures for : (a) Shut down and stabilisation of waste disposal site after intended period of operation.

(b) Observation and maintenance of stabilised disposal site for institu- tional control.

(c) Provision of funds and financial assets for the above shut down and institutional control for 100 years.

12. Please give details of anticipated accidents and procedures to be followed for their management (attach emergency preparedness plan, if available).

13. Any other relevant information the applicant wishes to furnish in support of his case.

14. I hereby certify that —

(a) all the statements made above are correct to the best of my knowledge and belief. (b) the radioactive waste will not be disposed off except as specified under paragraph 8 of this form.

(c) radioactive waste will not be moved from the authorised place without prior approval of the competent authority.

(d) radioactive waste packages will be transported outside the restricted area in duly shielded containers and after obtaining the necessary safe transport certificate from the competent authority.

(e) full facilities will be accorded by us to any authorised representative of the competent authority to inspect the department in which the radioactive waste will be handled.

(f) radiation monitoring and environmental surveillance shall be provided in the installation and in the restricted areas to ensure adequate protection.

(g) the radioactive waste will not be sold, rented or transferred to any other Institution, without prior approval of the competent authority.

(h)all recommendations that may be made from time to time by the competent authority in respect of radiation safety measures will be duly implemented.

Date : _____ Place: _____

Signature and Seal of the
Head of the Installation(s)

SCHEDULES

Appendix I (

Appendix II (

Form I)

Name of the person	Academic qualification and designation	When and where the radioactive wastes were handled	Type of experience or training
1	2	3	4

Form I)

Name and address of the Department or Laboratory in which the waste originate	Brief description of the process giving rise to the radioactive wastes	Brief description of physical state & chemical charac-teristics of radioactive waste and name of radionuclides contained in it	Volume of the unconditioned waste and its weight (give separately for liquids, solids etc.)	Description of the conditioning method and details of packaging employed for transporation of the waste	Total Activity of each of the principal radio-nuclides present in the waste package	Weight and of the condi waste packa total numbe packages (o type)
1	2	3	4	5	6	7

Mode of trans-port of the waste package to the ultimate disposal site	Method of ultimate disposal of the waste	Name and address of the institution undertaking the ultimate waste disposal	Maximum waste quantity that will be disposed off annually (give separately for each type)	Address & location of the waste repository or burial site	Name and address of the person with whom the ownership title of the land of of waste repo-sitory or burial rests	Remark (if any)
8	9	10	11	12	13	14

FORM II

(See rule 5)

Government of India

Atomic Energy Regulatory Board

Authorisation for Disposal or Transfer of Radioactive Waste :

Pursuant to the Atomic Energy Act of 1962 and the enabling rules made thereunder and specially the "Atomic Energy (Safe Disposal of Radioactive Wastes) Rules, 1987" and in reliance on the statements and representations made by the applicant in his application dated _____, an authorisation is hereby issued authorising the applicant to dispose of Radioactive Waste listed below and in conformity with the technical specifications given in the attachment to his authorisation and subject to the terms and conditions specified on the back-side of this authorisation :

Authorisation No. Reference No.
Date of Issuance/Date of Expiry

1.	Name of the authorised person	:
2.	Address of the authorised person	:
3.	Location/address of the authorised waste disposal installation(s)	:
4.	Authorised mode(s) of disposal (air/sewage/burial/transfer)	:
5.	Specifications of the radio-chemical(s) authorised for disposal (viz. Name of radionuclide, physical form, chemical composition)	:
6.	Maximum quantities authorised for disposal (per day/week/month/year)	:
7.	Reference No., date, number of page etc. of the attachment giving technical specifications governing this authorisation.	:

Signature and seal of the
Competent Authority

TERMS AND CONDITIONS OF AUTHORISATION

1. The person authorised shall abide by all the provisions concerning disposal of radioactive waste and radiation protection laid down in —

(i) the Atomic Energy Act, 1962 (33 of 1962);

(ii) the Radiation Protection Rules, 1971; and

(iii) the Atomic Energy (Safe Disposal of Radioactive Wastes) Rules, 1987.

2. The person authorised shall dispose off radioactive waste strictly in accordance with the technical specifications (Ref. No. _____dated _____) which are attached herewith.

3. The person authorised shall not rent, lend, sell, transfer or otherwise transport the radioactive waste without obtaining prior permission of the competent authority.

4. Any unauthorised change in personnel, equipment, working conditions, from that given in his application by the person authorised shall constitute a breach of this authorisation.

5. It is the duty of the authorised person to take prior permission of the competent authority for shut down of the waste disposal installation and to provide institutional controls as stipulated by the competent authority in the aforesaid permission.

[see rule 6 (ii)]

1. Name and address of the Institution:

2. Date of

issuance of authori-: sation and its reference No.

3. Description of unconditioned radioactive waste :

Principal Radio-nuclides present and their quantity (Bq)	Physical form with description	Chemical form	Total volume

4. Description of conditioned radioactive waste :

Method of condi-tioning of radio-active waste	Address of agency which conditioned the waste	Radiation level (dose rate) if any on the surface of the conditioned waste package (unshielded)	Weight & volume of package of each type

5. Details of transportation of radioactive waste :

Name and address of the consignee of the package	Mode of packing of the waste for trans-portation	Radiation level (dose rate) if any, on the surface of transport package (shielded)	Mode of tran-sportation to site of disposal	Date of transportation

6. Details of disposal of radioactive waste :

Date of disposal	Concentration of radioactive material in the final waste form	Site of disposal (identify the location on the relevant layout drawing	Method of disposal	Persons involved in disposal

7. Data on periodic radiation surveillance:

Date of measure-ment	Maximum radiation levels at sites of waste handling				Maximum contamination levels in waste handling areas (accessible points)				Maximu concentr of activi the influ from the installati going to
	Stora ge area	Dispo-sal area	Monitor-ing area (health physics and change rooms etc.	Any other (speci fy)	Storage area	Disp osal area	Monitorin g area (health physics and change rooms etc.)	Any other (specify)	Sewa ge

8. Data on environmental surveillance:

Date of measurement	Analysis of ground water			Analysis of soil samples			Analysis sampling
	location of sampling	depth of sampling	activity content (per ml)	location of sampling	depth of samplin g	activity content (per gm)	location of sampling

Form IV

[see rule 6(vi)]

Format for Record of Disposal of Radioactive Waste

(To be submitted to the competent

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details of waste disposal operations:

Sr. No.	Date of issuance of authorisation for the disposal of radioactive waste and its reference	Description of Radioactive Waste				Mode of conditioning and packaging	Radiation dose per hour if any, on the surface	Mode of transportation to the site of disposal	Site of disposal (attach a sketch showing the location(s) of disposal)	Brief description of the mode of disposal	Date of diposal	Name and design tion of radiati worke involv in was dispos
		Physical form	Chemical form and contents	Principal radio nuclides present	Total volume of the radio-active waste disposed with No. of			unshield packages	shield packages			

3. Details of environmental surveillance :

Date of measure-emnt	Analysis of ground water samples			Analysis of soil samples			Analy
	Location of sampling	Depth of sampling	Activity content	Location of sampling (per ml)	Depth of sampling	Activity content	Location of sampl (per gm)

Name and signature of the
Head of the Installation

Name and signature of the Supervisor
incharge/Head of the disposal operations

[see rule 15(1)]

Government of India

Atomic Energy Regul

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Application for Authorisation for disposal of Radioactive Waste by small installations

1. Name & Address of the Applicant :

2. Name of the Head of the installaltion :

3. Department in which the radiation sources will be disposed of :

4. Name and designation of the Head of the Department :

5. Name of the individual who is entrusted with day to day adminis-tration of radiation protection in the department (Radiological :

* Complete address of the installation with Telephone No. (during and outside office hours) and telex number, if any, may please be provided in the space provided below :

6. Are the persons doing radiation work members of the Personnel Monitoring Service ? If so, please give details :

7. Give details of the experience, if :
8. any, of the staff members in
9. handling radioactive waste (in Appendix I).

Give details of particulars of radioactive wastes for which the application is made (in Appendix II) :

If unsealed radioactive waste is to be disposed of please enclose, :

(i) A SITE PLAN of the installation (1:500 scale) making the location of waste disposal installations, th the neighbouring land utilisation and water resources with the utilisations.

(ii) An ARCHITECTURAL BLUEPRINT (1:50 scale) with dimensions of the building housing the Please indicate in the blue print the nature of disposal work carried out in each location. Further, radioactive waste storage facility, work benches, sinks, fumehoods, decontamination equipment and effluents into the environment.

(iii) Details of radioactive waste burial/incineration facilities if available.

(iv) Details of any special ventilation facilities incorporated (such as fume hood exhausts, general air in etc.)

(v) Details of drainage system till it joins the sewerage soak-pit.

(vi) Please state whether —

(a) (i) the installations shown in the plan are to be built.

(ii)existing installations are to be modified as per plan.

(iii) Waste disposa fitted up as per plan

(c) Are the work benches covered with stainless steel or polythene sheet ?

(d) Are the walls coated with shippable paint or non-porous washable paint ?

10. Proposed procedure for final disposal of radioactive wastes (solid, liquid and gases).

11. List of equipments available with the department (along with their specifica

Please give details of equipment available with you under each category.

A. Radioactive waste handling equipment.

B. Radioactive waste storage facilities (e.g. waste bins, carbouys etc.)

tions) where the radioactive waste will be handled.

C. Radiation Protection Devices (e.g. lead bricks, remove handling tools, etc.)

D.Radioisotope Laboratory Accessories (e.g. stainless steel trays/sinks, fume hoods, glove boxes, etc.) E. Radiation Detection/Measurement Equipment (e.g. area survey meters, contamination monitors, counters

12. Any additional relevant information :

13. I hereby certify that :

(a) all the statements made above are correct to the best of my knowledgeand belief.

(b) the radioactive waste will not be disposed of except as specified under paragraphs 8 and 10 of this form.

(c) radioactive waste will not be moved from the authorised place without prior approval of the competent authority.

(d) decayed, scaled sources will be returned to the supplier only in duly shielded containers as per the advice of the competent authority and after obtaining the necessary safe transport certificate.

(e) full facilities will be accorded by us to any authorised representative of the competent authority to inspect the department in which the radioactive waste will be handled.

(f) personnel monitoring badges will be worn by all persons engaged in radiation work, as required by the competent authority.

(g) the radioactive waste will not be sold, rented or transferred to any other institutions, without prior approval of the competent authority. (h) all recommendations that may be made from time to time by the competent authority will be duly implemented.

Place _____

Date _____

Signature and seal of the
Head of the installation.

SCHEDULE

[see rule 15(2)]

Conditions and procedures for disposal of Radioactive Waste by Institutions handling small quantities of Radioisotopes.

Institutions such as hospitals and tracer research laboratories, handling small quantities of radioisotopes of short effective half life may, after obtaining the authorisation, under rule 3, undertake disposal of radioactive waste, in accordance with the following procedures :-

1. Disposal of Radioactive Waste by release into Sanitary Sewerage system - An authorised person may discharge radioactive waste into a Sanitary sewerage system, provided :-

(a) the waste is readily soluble or dispersible in water;

(b) the maximum quantity of radioactive material released in the sanitary sewerage system is less than the quantity prescribed in Table I of this Schedule and is not in excess of the quantity which, if diluted by the average daily quantity of sewerage released into the sewerage system by the authorised institution, will result in an average monthly concentration equal to the limits:-

(i) as specified in Table 1, or

(ii) as specified by the competent authority, on a case by case basis for radionuclides, not listed in Table 1,

(c) the gross quantity of radioactive material released into the sewerage system by the institution does not exceed 37 GBq per year;

(d) when more than one radionuclide is present in the liquid waste, the sum of the ratios of the individual quantities of each of the radioisotopes present and their respective maximum quantities allowed as per Table 1, does not exceed unity;

(e) periodic maintenance and monitoring of the path-ways of the liquid effluents, till the effluents reach the sewerage system, is done by the Radiological Safety Officer, to ensure that the appropriate disposal limits and operational limits are not exceeded in and outside the drainage system;

(f) a log book is maintained in Form III recording the identity and quantity of each radioisotope disposed, its time of disposal, the name of the person who has supervised the waste disposal and the data on radiation surveillance.

2.Disposal of Solid Radioactive Waste — An authorised person may dispose of solid radioactive waste by burial into pits prepared in an exclusive burial ground, provided : (a) the burial ground is located in an isolated site owned by the said person;

(b) the site is duly fenced off to prevent unauthorised entry;

(c) the site is duly approved by the competent authority for burial of radioactive waste, the approval being governed by factors such as the nature of environment including topographical and geological characteristics of the burial site, usage of ground and surface waters in the general area around the site, with a view to minimise the assessed anticipated risk of accidental dispersal of the waste to potentially affected locations or back to the environment;

(d) the total activity in the wastes buried in any one pit of the burial ground does not exceed —

(i) the limits specified in Table 2 of this schedule; or

(ii) the limit specified by the competent authority on a case by case basis; for radionuclides not listed in Table 2 of this Schedule;

(e) when more than one radionuclides is present in the solid waste, the sum of the ratios of the individual quantities of each of the radioisotopes present and their respective maximum quantities allowed as per Table 2, does not exceed unity;

(f) the depth of the burial pit is so chosen that the wastes have a top layer of compact earth of minimum 120 cm thickness when the pit head is closed;

(g) successive burial pits are separated by a distance of at least 180 cm;

(h) not more than 12 burials are made in any one year;

(i) a closed pit is not opened for reuse till 10 half lives, of the longest lived radioisotope buried in that pit, have elapsed;

(j) the burial area is treated as restricted area and subjected to periodic environmental surveillance by the Radiological Safety Officer to ensure that the appropriate disposal limits and operational limits are not exceeded;

(k) the material excavated from a closed pit is released for normal disposal, under the supervision of the Radiological Safety Officer before reusing the pit as laid down in (i);

(l) periodic monitoring of the burial ground and its environment is done by the Radiological Safety Officer to ensure that the operational limits on radioactive contamination are not exceeded;

(m) a log book is maintained in Form III recording identity and quantity of each radioisotope buried, description of waste, time of burial, name of the person who has supervised the burial operations and the data on radiation surveillance.

3.Incineration of Radioactive Waste — An authorised person may undertake incineration of radioactive wastes, including incineration of radioactive animal card cases, provided the competent authority is duly satisfied that —

(a) the design of the incinerator is suitable for the intended operations and provides for retention of solid and liquid combustion/scrubbing by products and for controlled discharge of liquid and gaseous effluents;

(b) the incineration operations will not result in air borne radioactive contamination in excess of the operational limits prescribed under Radiation Protection Rules, 1971, for unrestricted areas;

(c) the solid and liquid radioactive wastes arising from incineration operations will be duly collected and disposed off in accordance with these rules;

(d) adequate environmental surveillance, including air monitoring where necessary, will be provided to ensure that the operational limits are not exceeded;

(e) the incineration operations are undertaken under direct supervision of the radiological safety officer;

(f) up-to-date records are maintained, in Form III annexed to these rules, of the incineration operations indicating the names of radionuclides and their amounts finally disposed in gaseous, liquid and solid form, the details of such disposals, names of the persons involved in these operations and the date of radiation surveillance.

4.Records, etc. — Quarterly records, in respect of the disposal operations, shall be submitted to the competent authority in

Form IV.

5. Other conditions — The authorised person shall abide by —

(i) such orders as may be issued by notifications, by the competent authority modifying the concentrations prescribed in Table 1 or the quantities prescribed in Table 1 & 2.

(ii) any other safety measures stipulated by the competent authority in accordance with these rules.

TABLE 1

Disposal limits for sanitary sewerage systems

Radionuclide	Maximum limit on total discharge per day (MBq)	Average monthly concentration of radioactivity in the discharge (MBqM^{-3})
H_3	92.5	3700
C_{14}	18.5	740
Na_{24}	3.7	222
P_{32}	3.7	18.5
S_{35}	18.5	74
Cl_{36}	0.37	74
Ca_{45}	3.7	10.1
Co_{60}	0.37	37.0
Sr_{89}	0.37	11.1
$Sr_{90}+Y_{90}$	0.037	0.148
$Zr_{95}+Nb_{96}$	3.7	74
$Mo_{99}+Tc_{99m}$	3.7	185
$Ru_{106}+Rh_{106}$	0.37	14.8
Sb_{124}	0.37	25.9
I_{125}	3.7	22.2
I_{131}	3.7	22.2
$Cs_{137}+Ba_{137m}$	0.37	14.8
$Ba_{140}+La_{140}$	0.37	29.6
$Ce_{144}+Pr_{144}$	0.37	11.1
Tm_{170}	3.7	37.0
Ir_{192}	3.7	37.0
Po_{210}	0.037	0.74

TABLE 2 Disposal limits for Ground Burial

Radionuclide	Maximum activity in a pit (MBq)
H_3	9250
C_{14}	1850
Na_{24}	370
P_{32}	370
S_{35}	1850
Cl_{36}	37
Ca_{45}	370
Co_{60}	37
Kr_{85}	3700
Fe_{59}	370
Sr_{89}	37
$Sr_{90}+Y_{90}$	3.7
$Zr_{94}+Nb_{95}$	370
Mo_{99}	370
$Ru_{106}+Rh_{106}$	37
Sb_{134}	37
I_{125}	37
I_{131}	37
Xe_{131}	37
$Cs_{137}+Ba_{137m}$	37
$Ba_{140}+La_{140}$	37
$Ce_{144}+Pr_{144}$	37
Tm_{170}	37