

Radiopharmaceutical

Definition

Those Compounds or Substances that emits / release radiation and are used for therapeutic or diagnostic purpose are called Radiopharmaceuticals .



Handling and storage of Radiopharmaceuticals

- When Radiopharmaceuticals are not in use , must be kept in sealed container .
- The radioactive materials must not contaminate the working area .

- Unnecessary movement of persons and radioactive materials must be avoided .
- all the radiation workers must wear suitable protective clothing and surgical gloves and should have radiation monitoring device .
- to carry liquid Radiopharmaceuticals , the trays should be used with absorbent tissue paper for absorbing any accidental spillage .
- Smoking , eating , drinking and like that activities are strictly prohibited in the area of radioactive work .

Storage

- ❖ Radiopharmaceuticals must be stored in well closed , air tight containers .
- ❖ The containers should be dark
- ❖ they should be stored in a sealed place .
- ❖ They should be stored for short time of periods .
- ❖ Staffs should not expose themselves to Radiopharmaceuticals .

Dispensing of Radiopharmaceuticals

- Dispensing of Radiopharmaceuticals should be safe, simple, and reliable.
- Radiopharmaceuticals should not be dispensed to patients, but dispensed to healthcare providers and from there administered to patients.
- The recommended dose should be determined by the pharmacist on the basis of patients history, age, weight etc.
- These drugs should be dispensed only on the valid prescription.
- necessary records should be maintained.

Disposal Of Radiopharmaceuticals

- Radiopharmaceuticals are not disposed just like other drugs,
- Low level radioactive wastes are disposed into land at 10 meter depth.
- High level radioactive wastes are stored for about 50 years before disposal. and they are disposed into at depth of 500 to 1000 meter



Steps before disposal

- They are put in yellow color plastic in a separate place ,
- solid should be free from liquids and liquids from solids .
- Radio Active symbol should be labeled on the bags .
- attach a dangerous tag .
- seal the bag when it is full
- sealed it in a clear plastic bag
- moved it waste storage area

Types of Disposal

1) Incineration 2) In water 3) Burial 4) Deep Burial 5) recycle and reuse

Radiopharmaceuticals-

- ▶ Radiopharmaceuticals are agents used to diagnose certain medical problems or treat certain diseases.
- ▶ They may be given to the patient by mouth, by injection, or placed into the body parts.

Radiopharmaceuticals for diagnosis-

- ▶ Red blood cell diseases—Sodium Chromate Cr 51
- ▶ Salivary gland diseases—Sodium Pertechnetate Tc 99m
- ▶ Thyroid diseases; thyroid cancer- Sodium Iodide I 131
- ▶ Brain diseases and tumors—Fludeoxyglucose F 18

Radiopharmaceuticals for treatment of disease-

- ▶ Treatment of bone pain- strontium- 89.
- ▶ Treatment of thyroid cancer- iodine-131.
- ▶ Treatment of rheumatoid arthritis- erbium-169 & yttrium-90.

Storage of radiopharmaceuticals-

- ▶ Radiopharmaceuticals should be kept in well- closed containers and stored in an area assigned for the purpose.
- ▶ Radiopharmaceuticals should be securely store in locked store room (shielded with lead)
- ▶ The store /room should be constructed in such a way that it minimize the risk from fire or flooding.
- ▶ Lyophilized radiopharmaceutical kits should be stored in refrigerator.

Dispensing of radiopharmaceuticals-

- When dispensing a dose, traceability of the dose should be ensured.
- Radiopharmaceuticals should not be dispensed to the patient but dispensed to the healthcare provider and from their administered to the patient.
- A record of the dispensing of a unit dose such as date and time of dispensing, radioactivity of unit dose, syringe identification code, name and designation of staff, and to whom the dose was delivered should be recorded.
- The identity of the dose must be checked against the dispensing document supplied by the radiopharmacy laboratory or manufacturer.

Disposal of radiopharmaceuticals-

The management of radioactive waste involves two stages:

1. Collection

2. Disposal

1. Collection -

- The radioactive waste should be identified and segregated within the area of work. Foot operated waste collection bins with disposable polythene lining should be used for collecting solid radioactive waste and polythene carboys for liquid waste.
- When two different isotopes of different half-lives like Tc-99m and I-131 are used, separate waste collection bags and bins should be used for each. Each bag or bin must bear a label with name of the isotope, level of activity and date of monitoring.

