

Removal and handling of expired drugs-

- ▶ First of all check and collect the expired drugs from the drug store.
- ▶ The expired medicines are separated category wise or based on dosage forms.
- ▶ Based on dosage forms they may be classified into three basic categories: Solids, semi solids , powders, liquids and aerosols.
- ▶ Stick a Label "Expired drugs not for sale".
- ▶ Dangerous drugs should be handled very carefully.
- ▶ Expired drugs must be disposed off safely, without harming people and the environment.
- ▶ Expired drugs should not be discarded in the sink or into general waste bins.

Methods of disposal of expired drugs- Drug disposal means discarding of drugs.

1. Returning to the manufacturer.
2. Landfill method
3. Waste immobilisation (encapsulation)
4. Waste immobilisation (inertisation)
5. Sewer method
6. Burning in open containers
7. Incineration
8. Chemical decomposition

1. Returning to the manufacturer-

- ▶ In this method the expired drugs are return to the manufacturer because the manufacturer have good disposal method.

2. Landfill method-

- ▶ This is the oldest and most practiced method for solid waste disposal.
- ▶ Care should be taken to prevent contamination of ground water.



3. Waste immobilization (encapsulation):

Filled the expired drugs in the plastic or steel drum (75% of drum capacity).



Filled the drum with a mixture of lime, cement and water (15:15:5)



The sealed drums placed inside the land.



Covered with municipal solid waste.

4. Waste immobilization (inertisation):

Expired or unused drugs are removed from the package (e.g. Removing pills from blister)



Crush the products in powder form.



Made a paste with a mixture of water, cement and lime.



Dump it inside the land.



Cover with municipal waste.

5. Sewer method-

➤ Some liquid medicines like syrups, intravenous fluids can be flushed into sewer after dilution.

➤ Small quantities of liquid medicines including antiseptics can be disposed off if they are well diluted before flushing.

6. Burning in open containers-

➤ Small quantities of waste medicines can be disposed by this method.

7. Incineration-

- ▶ Medium and high temperature incineration devices require a capital investment, operation and maintenance budget.
- ▶ Medium temperature incinerators operate at a medium temperature combustible process (800-1000°C)
- ▶ High temperature incineration works at a temperature above 1000°C. Incineration of expired medicines is recommended only when absolutely necessary.

8. Chemical decomposition-

- ▶ As the method is tedious and time consuming, it is useful only for small quantities of medicines when appropriate incineration method is not available

Disposal of narcotics drugs-

- ▶ Narcotics are drugs such as opium or heroin which make you sleepy and stop you feeling pain.
- ▶ The production and distribution of controlled substances must be licensed and supervised, and Governments must provide estimates and statistical returns to INCB (International Narcotics Control Board) on the forms supplied for that purpose, on the quantities of drugs required, manufactured and utilized and the quantities seized by police and customs officers.
- ▶ Disposal of narcotic drug must be done under the supervision of pharmacist or the police depending on the national guideline.

▶ Method of disposal-

1. Return to manufacturer
2. Waste immobilisation (encapsulation)
3. Waste immobilisation (inertisation)
4. Incineration

Disposal of cytotoxic drugs-

- ▶ The drugs which are harmful to cells, known as cytotoxic drugs.
- ▶ Cytotoxic drugs are used to destroy cancer cells.
- ▶ Cytotoxic drugs should be isolated from other drugs and kept separately in clearly marked container with rigid wall.

Method for disposal- Disposal of cytotoxic drugs must be handled with care.

1. Return to manufacturer.
2. Waste encapsulation.
3. Incineration (high temperature).