

## FACTSHEET:

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### Wastes from medical activities

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#### Overview

Radioactive materials are used for a wide range of purposes in the medical industry. In particular, radioactive materials are used for the sterilisation of equipment, and to help diagnose and treat medical illnesses.

The amount of radioactive waste produced by the medical industry is small. This waste is generated primarily from the manufacture, use and disposal of radioactive sources and radiopharmaceuticals.

#### Use of radioactive materials

Radioactive materials are used for a wide range of purposes in the medical industry. In particular, radioactive materials are used for the sterilisation of equipment, and to help diagnose and treat medical illnesses.

Some medical diagnosis and treatment processes involve the use of radioactive sources, which are sealed within metal containers. The source then releases a controlled amount of radiation through a small window in the container. This beam of radiation can then be directed at a specified area for diagnosis or treatment purposes.

The extent to which the radiation penetrates the body varies and is affected by the radiation type, the energy of the radiation and the density of the material the radiation is travelling through.

Rapidly dividing cells are particularly sensitive to damage by radiation. For this reason, some cancerous growths can be controlled or eliminated by irradiating the area, either through external radiotherapy (directing a beam of radiation at the affected area) or through the use of radiopharmaceuticals. Radiopharmaceuticals are drugs that contain radioactive materials.

Radiopharmaceuticals are chemicals that contain radioactive isotopes. They can be injected into the body, inhaled or ingested for both diagnosis and treatment purposes. These substances can be easily detected and tracked until they disappear leaving no trace.

Different chemicals can be absorbed preferentially by different organs in the body. Taking advantage of this, radiopharmaceuticals can be used to assess the condition of particular organs. In diagnostics, the amount of radioisotope added to the body is very small, just enough to obtain the required information before the isotope decays.

Radioactive sources and radiopharmaceuticals are manufactured by commercial companies at specialist facilities in the UK and overseas. Many thousands of radioactive sources are in use in UK hospitals.



Image: Manufacturing radiopharmaceuticals. Source: [www.comecer.com](http://www.comecer.com)

## Radioactive wastes produced by medical activities

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Many different radioactive wastes are produced by medical activities, although usually in relatively small volumes. These include:

- used sealed sources from hospitals
- contaminated laboratory equipment and materials
- other solid wastes such as swabs, vials, syringes, gloves and dressings
- liquid wastes, such as mildly active washings from laundry treatment of protective clothing
- waste radiopharmaceuticals - radiopharmaceuticals often have short half lives and so need to be replaced at regular intervals

Radioactive waste from medical applications is typically categorised as LLW, and is often suitable for disposal through incineration at appropriately licensed facilities. Higher activity sealed sources are often returned to the manufacturer for recycling or disposal.