Nuclear Waste Storage

Nuclear power stations make electricity. Like most methods to produce electricity, nuclear power stations create waste. Some of this waste is radioactive and can be dangerous to humans, animals and the environment if it isn't looked after properly.

Photos by **Recognize Productions** from **Pexels**

Radioactive waste may include:
- Old used fuel
- Bits of metal and plastic
- Sludge and water
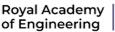- Clothing and equipment

Different Types of Waste are stored in different ways

- **LLW (Low Level Waste)** has low levels of radioactivity. It can include old protective clothing, paper, rubble, and tools. LLW can be sent to Cumbria in the North of England for safe storage
- **ILW (Intermediate Level Waste)** has intermediate levels of radioactivity and can include old components of nuclear reactors
- **HLW (High Level Waste)** is highly radioactive and can stay hot for a long time. It's often produced as a by-product of reprocessing used nuclear fuel

ILW and HLW need to be stored in other ways. One of these ways is to **put the waste in drums** and keep them in facilities **deep underground** to stop the radiation from reaching people.

Minecraft challenge

Create an underground radioactive waste storage area with Minecraft:

1. Make an **area/room deep underground** that can be reached by a **tunnel** (you will need torches for lights!)
2. Make the room using **stone or metal** (like bedrock or iron as these materials **block radioactivity better**)
3. Add a **cart and rail** to move waste from the entrance into the storage room
4. And a **fence** around the entrance with **signs** to stop people and animals entering a dangerous area when they shouldn't be there
5. Add a **crane** in the storage room to move waste from the carts

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Extension challenges

Make the rail and cart **automated** using redstone tracks - **automation removes human error** so less dangerous mistakes will be made when moving radioactive waste

Have a **viewing room** surrounded by **thick glass** for people to see the waste – people shouldn't get too close to the waste though

Include lots of **gates** - to limit the number of people in the storage area and keep them safe

Put the waste **under water** – water can help protect people from the radioactivity as it absorbs some of it