



Sandy Ridge - Low Level Radioactive Waste

Almost everything in nature has some small amount of natural radioactivity. If approved, the proposed Sandy Ridge Facility would accept a form of waste called NORM up to Low Level Waste (LLW) activity content. NORM means **Naturally Occurring Radioactive Material** which contains radionuclides sourced from the natural environment.

NORM can be found in:

- Mined materials (e.g. sands, clays, ores)
- Commodities (e.g. fertiliser, building materials)
- Products and by-products (e.g. ceramics, glazes)
- Residues (e.g. fly ash, mineral processing slags)
- Commercial items (e.g. electronic components)



NORM in titanium found in sand used for alloys

- NORM can be found in contaminated equipment



NORM in a filter



NORM scale in a pipe

If approved, the proposed Sandy Ridge Facility would also accept a form of waste called **Low Level Radioactive Waste (LLW)**. Australia also produces LLW on a daily basis. Examples of LLW include:

- X-rays, medical isotopes and imaging
- Smoke detectors and fire alarms



- Sealed industrial sources
- Density gauges, moisture gauges
- Tools from the paper, resources sector



Sealed gauges to measure moisture (left picture) and paper thickness (right picture)

Tellus will **not be accepting** Intermediate Level (ILW) and High Level waste (HLW) radioactive waste such as reprocessed spent nuclear fuel and components with high levels of radioactivity.



Tellus will **also not accept** nuclear waste as defined in the WA Government’s Nuclear Waste Storage & Transportation (Prohibition) Act 1999. The simplest definition of nuclear waste is material that is or contains a radioactive substance from power generation & defence use.

Containers for LLW

LLR resulting from science, medicine and industry sometimes requires containment and isolation before transport. An example of a shielded special container is illustrated below.



Volume of LLW at Sandy Ridge

For planning purposes Tellus is assuming a potential volume of less than 1%.

Radiation dosage

Typical radiation doses to the public from natural background radiation, medical sources, regulatory limit for doses of radiation to the public additional to natural background sources and the exposure to workers at Tellus’ proposed Sandy Ridge Facility are illustrated below. *Source: www.nuclear.sa.gov.au*

Transport of LLW

Australia’s radioactive material is transported under national and international standards developed by experts and the International Atomic Energy Agency (IAEA). The Australian Radiation Protection and Nuclear Safety Agency (ARPANSA) has adopted the IAEA’s standards. Refer to Tellus’ Transport Fact Sheet for more detail.

On site disposal – multi-barrier safety case

LLR like sealed gauges are placed in engineered barriers, for example a small drum and cemented, then placed in a larger drum and cemented and then placed into a cement shaft and normally cemented and capped. The thick shaft walls act as another shielding barrier. The thick shaft then sits in a massive, 70 million year old, dry, thick, flat clay bed that forms a passively safe natural barrier.

