Commentary Article
Volume 6:6, 2021

Advances in Recycling & Waste Management

ISSN: 2684-4567 Open Access

Nuclear Waste Recycling

Dario Furnari*

Department of Health Sciences, University of Exeter, UK

Commentary

Nuclear fuels used in the Nuclear reactors generate nuclear waste in the end process. Anyways, nuclear waste is recyclable. The recycled nuclear waste decays within a few hundred years, than the standard nuclear waste which takes a million years and is also harmful. Uranium or thorium is the most used nuclear fuels.

There are several Nuclear Waste Recycling management strategies in practice, such as reuse in reactors to generate more low-carbon electricity or direct disposal driven by the country's political and economic strategies.

There are three types of nuclear waste, classified according to their radioactivity

Low: Accounts for 90% with 1% radioactivity and contains lightly contaminated items

Intermediate: Accounts for 7% with 4% of radioactivity and contains used filters, components within the reactor and effluents.

High-level: Accounts for 3% with waste from the nuclear reactions but contains 95% of the total radioactivity.

The nuclear waste, before being recycled or disposed of, is stored in either wet or dry storage facilities. The nuclear waste is both hot and radioactive and requires storage in water to allow the fuel to cool. After a period of initial cooling the fuel can be kept in wet storage, or transferred into a dry facility. Keeping the used fuel in temporary storage to allow both the heat and radioactivity to diminish makes the recycling and disposal easier.

The main rationale for reprocessing old fuel over the last 50 years has been to recover unused plutonium, as well as less immediately valuable unused uranium, in the used fuel elements, and so acquire 25%-30% more energy from the original uranium in the process. This helps to ensure the country's energy security.

A secondary reason is to cut the amount of material that must be disposed of as high-level waste in half.The amount of radioactivity in reprocessing waste is substantially lower, and it decays much faster after around 100 years than it does in burned fuel.

Another significant difference concerns waste. In the last decade, there has been a growing interest in recovering all long-lived actinides* combined (i.e. with plutonium) in order to recycle them in fast reactors as short-lived fission products. Two factors motivate this policy: decreasing long-term radioactivity in high-level wastes and reducing the risk of plutonium being diverted from its intended use.

Uranium (U-238) being the vast majority (94%) of the nuclear waste (97%) is used as a fuel in some reactors. Other than this, recycling is mostly focused on extracting plutonium and uranium which can be mixed with fresh uranium for making new fuel rods.

The by-products (4%) are mainly the fission products are immobilised by mixing them with glass. This process is known as vitrification.

In direct disposal, the nuclear waste, which includes used nuclear fuel and fission products, without recycling is disposed of in an underground repository. The nuclear waste is kept in canisters and placed in tunnels and subsequently sealed with rocks and clay.

How to cite this article: Dario Furnari.Nuclear Waste Recycling. Adv Recycling Waste Manag(2021)

***Corresponding Author:** Dario Furnari, Department of Health Sciences, University of Exeter, UK, Email: dariofurnari@hotmail.it*

Received date: 08 June, 2021; **Accepted date:** 22 June, 2021**; Published date:** 29 June, 2021