THE DANGER OF RADIOACTIVE WASTE TECHNIQUES OF DISPOSAL

Покотис І.
Науковий керівник – ст. викладач Фесенко А.М.
Харківськийнаціональнийтехнічнийуніверситетсільськогогосподарства
імені Петра Василенка
(61023, Харків, вул. Мироносицька, 92, секція агрономії, тел. (057)700-39-11)
E-mail: agroecology265@gmail.com

Harmfulradioactivewasteemits radiation and adversely affects the persons. They destroy all living organisms and act as a catalyst to premature mutations.

Radioactive waste is:

in gaseous form, such as ventilating emissions facilities where radioactive materials are handled;

in liquid form, ranging from scintillation counters solutions from research facilities to high level liquid waste generated during reprocessing of spent fuel;

in solid form (contaminated supplies, glassware from hospitals, medical research facilities and radiopharmaceutical laboratories, vitrified waste from reprocessing and spent fuel from nuclear power plants, when it is considered waste).

The main stages of radioactive waste management are:

Preliminary processing - collection, management and decontamination of chemical composition, intermediate storage;

Processing - operation, the aim of which is to improve safety and efficiency by changing the characteristics of the radioactive waste.

Conditioning - it consists of the operations in which the radioactive waste is shaped acceptable to the handling, transportation, storage and disposal;

Burial.

Handling the intermediate level radioactive waste. Radioactive waste can be subjected to ion exchange or other methods whose purpose is the concentration of radioactivity in a small volume, and after complete deactivation.

Treatment of high-level radioactive waste. First the waste is briefly stored in special barrels. Afterthatvitrificationiscarryout. It a complex process, after which the radioactive waste is transformed into a kind of glassy mass. Later, the substance is poured into stainless steel cylinders and sent to underground storage.

A more sophisticated method of neutralization is the use of high-level radioactive materials such SINROK (synthetic rock). The main components of this substance are special elements such as $BaAl_2Ti_6O_{16}$ $CaZrTi_2O_7$ $CaTiO_3$. It neutralizes strontium and barium, cesium.

Transmutation. It is creation a reactor that can work on radioactive waste and turn them into less dangerous substances.

Reusing waste. Already, cesium- 137, strontium - 90, technetium - 99 and some other isotopes is used for food irradiation and provide job radioisotope thermoelectric generators.

Removal of waste into space. These projects have significant drawbacks.