

# Novel Study on Nuclear Waste and Its Management: An Engineering Challenge

**Pravat K. Swain**<sup>a,b\*</sup>

<sup>a</sup>Department of Chemistry, Satyasai Engineering College, Balasore-756002, India

<sup>b</sup>Department of Chemistry, Indira Gandhi Institute of Technology, Sarang-759146, India

\*E-mail: pravatvision2020@gmail.com

**Keywords:** nuclear waste, environment, spent nuclear fuel, valuable product, new technology

Radioactive wastes have been accumulating in many countries at ever increasing rates since 1940s. Despite the hazards and risks posed by such materials, no facility yet exists anywhere in the world for the disposal of spent nuclear fuel and other high-level wastes. The world focussing on low carbon sources with increasing demand for energy. It is clear that nuclear power must play a significant role for the foreseeable future, especially as the environmental concerns threaten the sustainability of economies and the scarcity of cheap fossil fuels. However, it is inconceivable that this could happen without a solution to the problem and dispose of spent nuclear fuel and other HLW. Hence the acceptable radioactive waste disposal remains a pressing and critical issue for mankind. The disposal of nuclear waste was considered over long years ago, but it was rejected in favour of mined and engineered repositories largely because at the time, the technology for drilling large enough diameter holes to depths of a few kilometres did not exist. Due to research and development programmes spread across many countries and costing billions of dollars, mined repositories are still not without their problems and an operating facility is decades away. The present study reveals those sources of nuclear waste and its characterisation. Conversion of nuclear waste to valuable product by using new technology. Hence, it is very useful for tomorrow and it has uses in near future for benefit of society

