SAFE DISPOSAL OF NUCLEAR WASTES AND CONCEPT OF ECO LABELING

When the world entered the atomic age, the problem or the dangers of disposal of nuclear waste were not fully realized. It is now becoming increasingly clear that safe disposal of nuclear waste is not easy and simple.

Radioactive wastes are of two types (1) low level radioactive wastes (LL W) which include civilian applications of radionuclides in medicine, research and industry , materials from decommissioned reactors, protection clothing worn by persons working with radioactive materials or working in nuclear establishments.

(2) High level radioactive wastes (HL W) results from spent nuclear fuel rods and obsolete nuclear weapons. Some proposed methods of disposing nuclear waste are: • bury it deep underground in insulated containers. This is a strategy being pursued in United States.

• shoot it into the space or into the sun. The cost would be very high and a launch accident should be disastrous.

• bury it under the ice sheet of Antarctica or Greenland ice cap. The ice could be destabilized by heat from the waste. The method has been prohibited by international law .

• dump it into deep oceans by keeping the waste into glass and steel cases. But the containers might leak and contaminate the ocean. Both HL Wand LL Winto the Atlantic ocean. The method is prohibited by international law . Until 1983, European countries had been dumping before 1983 when dumping was stopped, by law 90,000 metric tons waste had been disposed in the ocean.

• change it into harmless or less harmful isotopes. Currently no method is known to do that and the method would be too costly .

• presently waste fuel rods are being stored in special storage ponds at reactor sites or sent to reprocessing plants. Even though reprocessing is more expensive but some countries use reprocessing as an alternative to waste storage.

Thus safe disposal of nuclear waste is a matter of debate. Potentially usable sites or locations where nuclear waste can be disposed off should have some characteristics like-• low precipitation;

• deep water table; • slow moving ground water; • absence or near absence, of exploitable resources in the area; • absence of surface waters; • low possibility of tectonic movement; • adequate buffer zone (in case the waste gets loose).

LIFE CYCLE ANAL YSIS OR LIFE CYCLE ASSESSMENT

Society has become concerned about issues of natural resources depletion and environment degradation. Many industries have started using “clean technology” processes to provide “greener” products. Thus environmental effects or impacts of products and processes have become a key issue, that is why some companies are trying to find out methods to minimize their efforts on the environment. Many industries are actually using pollution prevention methods to check and improve their environmental performance.

Life Cycle Assessment (LCA) is actually a concept which considers the entire life cycle of a product. In other words it is a “cradle to grave” approach for assessing industrial production systems. It actually involves all stages of life cycle of the product e.g. raw material extraction, material transportation manufacturing product use and disposal of out of service product etc. The term “life cycle” refers to the major activities in the course of products life span from acquiring the raw material to its manufacture, use, maintenance and final disposal. Life Cycle Assessment (LCA) is done in a systematic manner:

1. Aim or goal i.e. define or describe the product, process or activity. 2. Inventory analysis i.e. identify and quality ener gy , water , material used and environmental releases (e.g. air emissions, solid waste disposal and waste water discharge) 3. Impact assessment i.e. assess the human and ecological effects of energy , water and material usage and the environmental releases identified in the inventory analysis. 4. Interpretation i.e. evaluate the results inventory analysis and impact assessment to select the preferred product or service. Benefits of conducting LCA • It helps the decision makers to select the product or process that results in the least impact to the environment. • The LCA data identifies the

transfer of environmental impacts from one media to another e.g. eliminating air emissions by chemical washing of gaseous emissions and discarding the pollutants as liquid effluents. • Human and ecological effects of material consumption and environmental releases to air , water and land in relation to each state of the life stage can be assessed.

Recycle/W aste Management Use/Reuse/Maintenance Manufacturing Raw Materials Acquiation Inputs Raw matreials Energy Outputs Atmospheric Emission Coproducts Waterborne Wastes Solid W astes Other Releases

CONCEPT OF ECO LABELLING

Labeling of environmentally beneficial goods and resources extracted by more sustainable methods can help consumers decide which goods and services to buy product ecolabelling can encourage companies to develop green products and services and help consumers select more environmentally beneficial products and services. Eco-labels are also being used to certify that the fish bearing ecolabels were caught by using sustainable fishing methods and also for timber products to certify and trees were harvested in accordance with by sustainable forest management principles.

22.8.1 Objectives of ecolabelling The main objectives of ecolabelling are as follows-• Protecting the environment and to make consumers aware of environment issues. • Encouraging efficient management of renewable resources to ensure their availability to future generations. • Promoting efficient management of non-renewable resources, including fossil fuels. • Encouraging protection of ecosystems and species diversity . • Encouraging proper management of chemicals to prevent pollution .

22.8.2 Ecolabelling in India Ecolabelling scheme of Government of India supports cleaner (environmentally friendly) production practices. There is strong emphasis on cleaner manufacturing processes in the criteria used for the granting Eco-labels to products. Presently the scheme is limited to household and some consumer products to meet certain environment criteria alongwith quality requirements of Indian standards. The label is known as ‘Eco mark’. The products for which notifications have been issued for the criteria are: toilet soaps, detergents, paper, architectural points and laundry soaps.

Eco-label is issued by the Central Pollution Control Board (CPCB) is represented by a pitcher or an ‘earthen pot’indicating that the product is not harmful to the environment like as an earthen pot which is made of soil and after its use returned to it the soil. It is without causing any harmful effect on the environment.

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