International Journal of Engineering, Science and Mathematics
Vol. 11 Issue 03, March 2022,
ISSN: 2320-0294 Impact Factor: 6.765
Journal Homepage: http://www.ijesm.co.in,
Double-Blind Peer Reviewed Refereed Open Access International Journal - Included in the International Serial Directories Indexed & Listed at: Ulrich's Periodicals Directory ©, U.S.A., Open J-Gage as well as in Cabell's Directories of Publishing Opportunities, U.S.A

NUCLEAR HAZARDS: A THREAT FOR HUMANITY

AKSHIT JOON,
ASSISTANT PROFFESSOR IN DEPARTMENT OF PHYSICS. D.A.V. P.G. COLLEGE, KARNAL.

ABSTRACT

Nuclear power plants create **plenty** of hazardous waste within the sort of radioactive wastes like uranium tailings, spent reactor fuel and other such radioactive materials, these wastes can remain radioactive for thousands of years and pose dangers to human health. There are always concerns related to transportation, storage and disposal of nuclear wastes and even nuclear fuels nuclear disasters are capable of manufacturing large damages to human health and also the environment. The radiation release related to nuclear disaster causes significant acute and chronic problems within the immediate environment also as over a large geographical area over longer periods of your time.

KEYWORDS : Environment, Hazards, Nuclear, Power plant, Radioactive.

1. INTRODUCTION

Nuclear hazards and incidents generally ask incidents involving
(1) the release of significant levels of radioactive materials or
(2) exposure of workers or the final public to radiation.

The primary concerns following a nuclear incident or accident is that the public health impact from direct exposure to a radioactive plume, inhalation of radioactive materials, ingestion of contaminated food, water and milk, and future exposure to deposited radioactive materials within the environment that will result in either acute (radiation sickness or death) or chronic (cancer) health effects.Due to radioactivity, even a little amount of radiation exposure can have serious biological consequences because of nuclear hazards The radioactive elements emit high energy

particles that cause damage to environmental resources. Radiations emitted because of hazards in nuclear facilities concludes in mutations in DNA, burns and radiation sickness, weakness, nausea, hair loss etc. Contamination of natural resources further aggravates the potential of nuclear hazards nuclear hazards can be created by man through the mining of radioactive materials, careless handling and processing of nuclear fuels, storage of radioactive wastes, carelessness in safety protocols while operating reactors, as well as improper use of devices that are used to give radiation therapies in hospitals, clinics etc.

2. CAUSES OF NUCLEAR HAZARDS

- **Nuclear Accidents** Nuclear energy has been regarded as a viable energy source that is safe for the environment. Nuclear mishaps could happen if strong safety regulations are not applied to nuclear energy production facilities. A significant amount of radioactive material is used in nuclear power reactors to produce nuclear energy. The immediate land, air, and water resources as well as human health are adversely affected by radioactive elements if they are allowed to escape into the environment. Nuclear power plant accidents also happen when poorly designed nuclear power plants are operated. Take the 1986 Chernobyl nuclear accident as an example.

- **Nuclear Waste Handling** Nuclear dangers may arise as a result of leakage of this radioactive material if the management and disposal of radioactive nuclear wastes are not carried out in accordance with the standards established for handling wastes. It is impossible to biologically or chemically decompose or remediate radioactive waste. The waste can only be contained by being kept in sealed containers, protected from radiation, or disposed of in remote areas.

- **Mining of Nuclear Fuels** If safety procedures are not implemented, mining and harvesting radioactive elements from the Earth's surface, such as uranium and thorium, can become a nuclear hazard. Typically, safety gear and protective equipment are used when mining these chemicals. Mining also increases the potential of hazards by exposing the surrounding ecosystem, including trees, plants, water, and animals, to radioactive elements.

- **Spilling of Radioactive Elements** Spills result from maritime mishaps, which are caused by mishaps on ships carrying nuclear and radioactive cargo. Water body spills have a negative impact on marine life, contaminate water supplies, and lead to the extinction of many marine plant and animal species. Household water supplies that are contaminated can significantly harm people's health.

- **Radiation Based Tests** Several medical treatments, including chemotherapy for cancer, employ radiation. Medical radiotherapy exposure causes fatalities and other problems. Nuclear dangers from radioactive materials seeping from medical facilities can be devastating.

3. HUMAN AND ECOLOGICAL EFFECTS OF NUCLEARHAZARDS

Environment as a result of nuclear dangers, contaminating the air, water, and land resources. Nuclear material and structures housing nuclear material must be safely contained. The negative consequences of nuclear risks include:

- Nuclear dangers that emit radioactive materials alter DNA, which has an impact on genes and chromosomes. These mutations have an impact on the genetic makeup of future generations. It causes a number of permanent birth abnormalities.

- Essential species of flora and fauna, significant environmental species, and other species such as plants and land can all be negatively impacted by radiation. The biodiversity suffers severe damage as a result.

- Direct bodily harms like burns, miscarriages, cancer, bone deformities, eye problems, etc. are also included in the list of damages brought on by different types of radiation. Radiation exposure can have negative effects even at low doses. Generations of damage are spread out across extended periods of time.

- Nuclear waste and nuclear elements can have an impact on natural resources like land, soil, forests, and water bodies like rivers, ponds, and oceans. Many individuals in rural and urban regions are impacted by the contamination of natural resources.

- If nuclear accident sites are not adequately handled and managed, contaminated water and soil in a region may cause human infectious diseases.

- Nuclear radiation poses a special risk to children. Early in a child's life, high radiation doses raise their risk of developing cancer. Radiation exposure in children considerably raises their lifetime cancer risk.

- Because contaminated soil and water supplies put more strain on the environment, there is less land available for agriculture as a result of nuclear dangers. Due to limited oxygen, the soil's microorganisms also perish, decreasing soil fertility.

4. CONCLUSION

- Nuclear threats can be extremely dangerous for the environment, people, and animal and plant life. The following steps can be taken to reduce nuclear risks:

- Nuclear reactors must have a sturdy design and structure in order to prevent any faults from occurring when the reactor is operating.

- To avoid any unwelcome exposure to radioactive material, medical devices involving nuclear fuel must be utilised carefully.

- Leakage of nuclear materials, radioactive elements, careless handling of radioactive elements must be fully ensured before carrying out any operations in nuclear facilities.

- There should be regular monitoring of areas that are prone to nuclear hazards.

- Nuclear wastes should be disposed properly as to prevent any long-term presence of radioactive material. Long term presence of radioactivity results in hidden and unwanted effects on human lives for longer periods of time.

5. REFERENCES

1. Illinois Department of Nuclear Safety. "Evaluating and Treating Patients Accidentally Exposed to Radiation or Contaminated with Radioactive Materials." Illinois Dept. of Nuclear Safety, Illinois, October, 1995.

2. International Atomic Energy Agency. "Generic Assessment Procedures for Determining Protective Actions During a Reactor Accident." IAEA-TECDOC-955. IAEA, Vienna, August1997.

3. International Atomic Energy Agency. "Method for the Development of Emergency Response Preparedness for Nuclear or Radiological Accidents." IAEA-TECOC-953. IAEA, Vienna, July 1997.

4. International Atomic Energy Agency. "Health Effects and Medical Surveillance." Practical Radiation Technical Manual, PRTM-3. IAEA, Vienna, 1998.

5. International Atomic Energy Agency. "Assessment and Treatment of External and Internal Radionuclide Contamination." IAEA-TECDOC – 869. IAEA, Vienna, 1996.