



**D.S.P.M.U**

# **RADIOACTIVE POLLUTION**

**Submitted To:– VIKRANT SIR**

**Submitted By: – RAHUL**



# CONTENT

- **What is Radioactive Pollution?**
- **Types**
- **Sources**
- **Effects**
- **Prevention**
- **Conclusion**
- **Reference**



# WHAT IS RADIOACTIVE POLLUTION?

- **Addition of radiation to environment by using radioactive elements .**
- **Radioactive pollution, like any other kind of pollution, is the release of something Unwanted into the environment and, in this case, the unwanted thing is radioactive material.**



- **Radioactive contamination , also called radiological contamination , is the deposition of, or presence of radioactive substances on surfaces or within solids, liquids or Gases (includingThe human body), where their presence is unintended or undesirable .**
- **Such contamination presents a hazard because of the radioactive decay of the contaminants, which emit Harmful ionising Radiation such as alpha or beta particles, gamma rays or neutrons . The degree of hazard is Determined by the concentration of the contaminants, the energy ofThe radiation being emitted, the type of radiation, And the proximity of the contamination to organs of the body . It is important to be clear that the contamination gives rise to the Radiation hazard, and the terms "radiation" and "contamination" are not interchangeable .**
- **Contamination may affect a person, a place, an animal, or an object such as clothing**



# TYPES OF RADIATIONS

- **Non-ionizing radiations**
- **Ionizing radiations**
- **Non-ionizing radiations: Electromagnetic waves of a longer wavelength which are near ultraviolet rays to radio waves are known as non-ionizing radiations. These radiations have enough amount of energy to excite molecules and atoms of the medium via which they travel. They make atoms to vibrate faster and but does not have enough amount of energy to ionize them.**



- **Ionizing radiations:** These radiations are electromagnetic radiations that have high energy like gamma rays, x-rays, and short wavelength ultraviolet radiations. These rays of energy like alpha, beta, and gamma are generated in radioactive decay have the ability to ionize molecules and atoms via which they travel. They also have ability to change molecules and atoms into charged ions. Radioactive decay is a process from which alpha, beta, and gamma radiations are generated.



# SOURCES OF RADIOACTIVE POLLUTION

**Natural sources of radiation: Natural sources of radiation are mentioned below:**

- In natural sources of radioactive pollution, atomic radioactive minerals are one among them.**
- Cosmic rays possess high energy ionizing electromagnetic radiation.**
- Another source of radioactive radiation is naturally occurring radioisotopes. Radioisotopes are found in soil in small quantity.**
- Radioactive elements like radium, thorium, uranium, isotopes of potassium and carbon occur in lithosphere**



**Anthropogenic sources of radiation: Human activities mentioned below include in sources of radioactive pollution:**

- Nuclear tests**
- Nuclear reactors**
- Diagnostic medical applications**
- Nuclear Wastes**
- Nuclear explosions**
- Nuclear metal processing**





# EFFECTS OF RADIOACTIVE POLLUTION

## On Human Beings

- **The impact of radioactive pollution on human beings can vary from mild to fatal; the magnitude of the adverse effects largely depends on the level and duration of exposure to radioactivity. Low levels of localized exposure may only have a superficial effect and cause mild skin irritation.**
- **Long-term exposure or exposure to high amounts of radiation can have far more serious health effects. Radioactive rays can cause irreparable damage to DNA molecules and can lead to a life-threatening condition.**



**The rapidly growing/dividing cells, like those of the skin, bone marrow, are more sensitive towards radioactive emissions.**

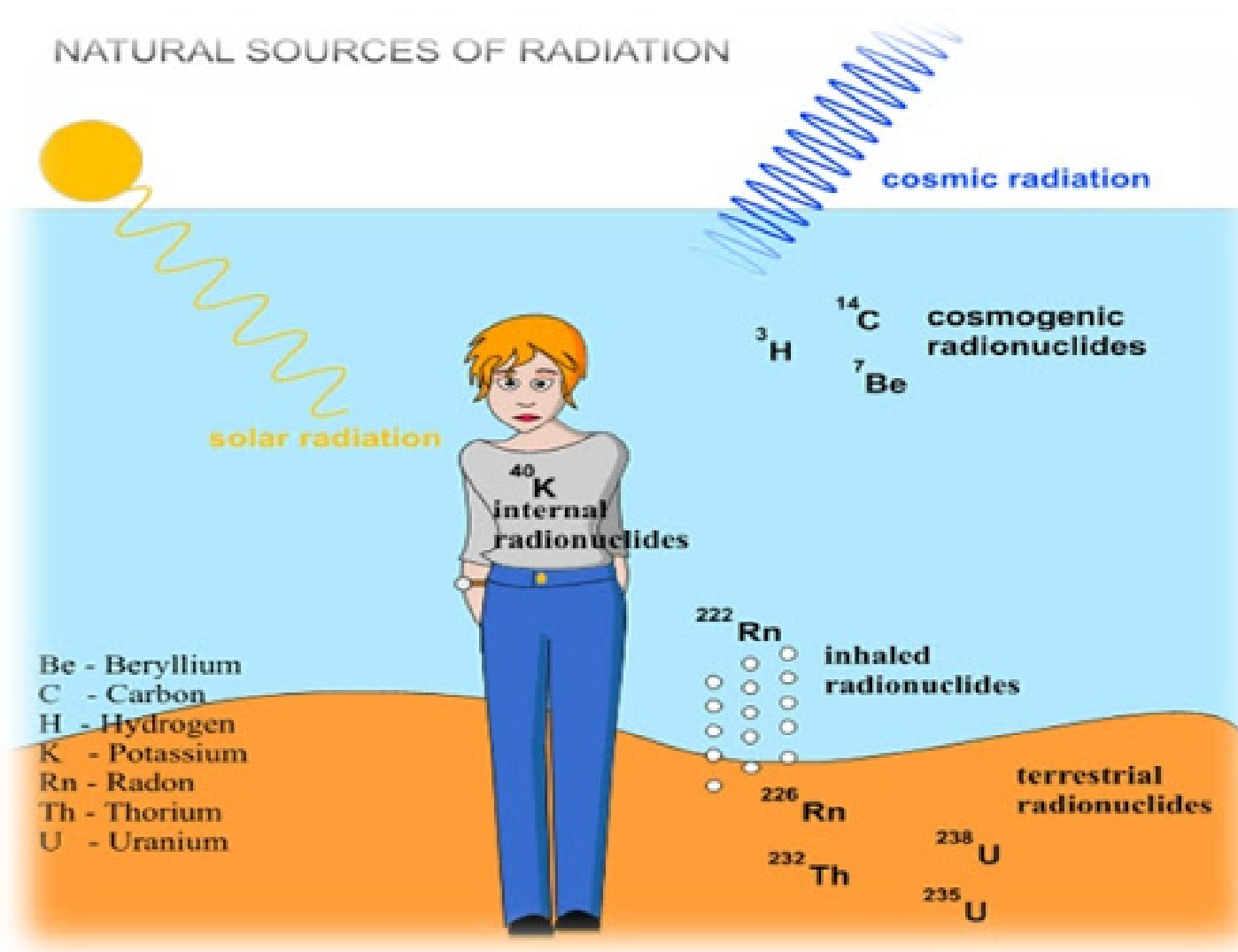
**On the other hand, cells that do not undergo rapid cell division, such as bone cells and nervous cells, aren't damaged so easily.**

**Skin cancer, lung cancer and thyroid cancer are some of the common types of cancers caused by radiation effect.**



# Effect of Radiation

- Effect on Human body



# PREVENTION

- Nuclear devices should be exploded under ground.
- Contaminants may be employed to decrease the radioactive emissions.
- Production of radio isotopes should be minimised.
- Extreme care should be exercised in the disposal of industrial wastes contained with radionuclide's.
- Use of high chimney and ventilations at the working place where radioactive contamination is high.



- In nuclear reactors, closed cycle coolant system with gaseous coolants of very high purity may be used to prevent extraneous activation products.
- Fission reactions should be minimised.
- In nuclear mines, wet drilling may be employed along with underground drainage.
- Nuclear medicines and radiation therapy should be applied when absolutely necessary and earth minimum doses.



# Conclusion

- Overall, nuclear energy has several ghastly risks for us and the next generations, and we are living with them and are responsible for them. None of the nuclear plants, wastes, or weapons will disappear in this world because they overwhelmingly need a long time to be safely disposed of, even if we can dispose of them, they are still around us, we just cannot see it.
- So, what we can do is to dwindle the usage of nuclear power for the future. The third nuclear plants (Chernobyl, Three Mile Island, Fukushima) disaster should be a turning point for us. It is not too late for us to change our goal, although we have a responsibility for nuclear power because we are using it. I really hope that the future without nuclear power will come.

