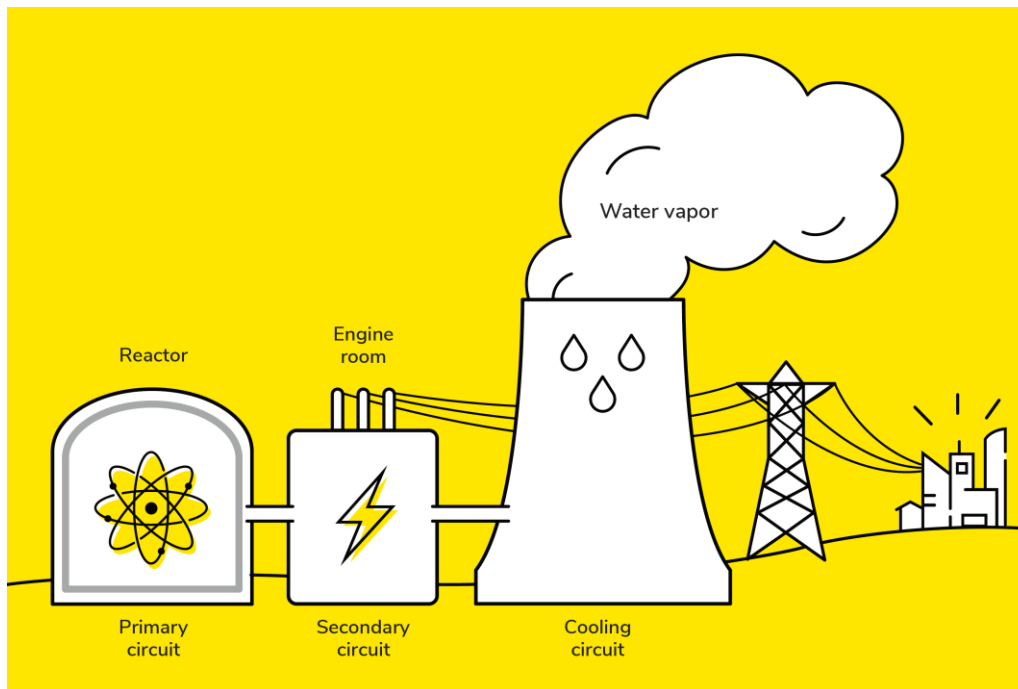


Peaceful Uses of Nuclear Energy

PROF. DR. SALIM ATTIA

Nuclear Energy Production

- ▶ Fission reactions generate heat
- ▶ Steam drives turbines → electricity
- ▶ Low CO₂ emissions compared to fossil fuels



Nuclear Medicine

- ▶ Radiotherapy destroys cancer cells
- ▶ PET scans detect metabolic activity
- ▶ Radioisotopes used in diagnosis



Sterilization

- ▶ Gamma radiation sterilizes equipment
- ▶ Used in hospitals and labs
- ▶ Prevents infection spread



Agricultural Applications

- ▶ Mutation breeding improves crops
- ▶ Sterile insect technique controls pests
- ▶ Increases food production



Industrial Applications

- ▶ Radiography inspects welds
- ▶ Thickness gauges in manufacturing
- ▶ Leak detection in pipelines

#DoYouKnow

The applications of Nuclear Energy are used in various fields like Generation of Electricity, Agriculture, Health and Medicine, Desalination of Water, Food Preservation Other Industrial Applications like Smoke Detectors, Baggage Scanning, Sterilization of Medical Equipments etc.

The infographic features a central atomic symbol with a red nucleus and blue electrons. Surrounding it are eight categories of nuclear energy applications, each with a representative image: Electricity (power lines), Food Preservation (canned goods), Industrial Applications like Smoke Detectors (smoke detector), Baggage Scanning (scanner), Sterilization of Medical Equipments (sterilization chamber), Desalination of Water (desalination plant), Health and Medicine (medical equipment), and Agriculture (plant growth).

Electricity

Food Preservation

Industrial Applications like Smoke Detectors

Baggage Scanning

Sterilization of Medical Equipments

Desalination of Water

Health and Medicine

Agriculture

Nuclear Energy: Friend Forever...

Nuclear Friends Foundation

Nuclear Friends

LET US SUPPORT

NUCLEAR POWER EVER CLEAN EVER GREEN EVER SAFE

#NuclearFacts

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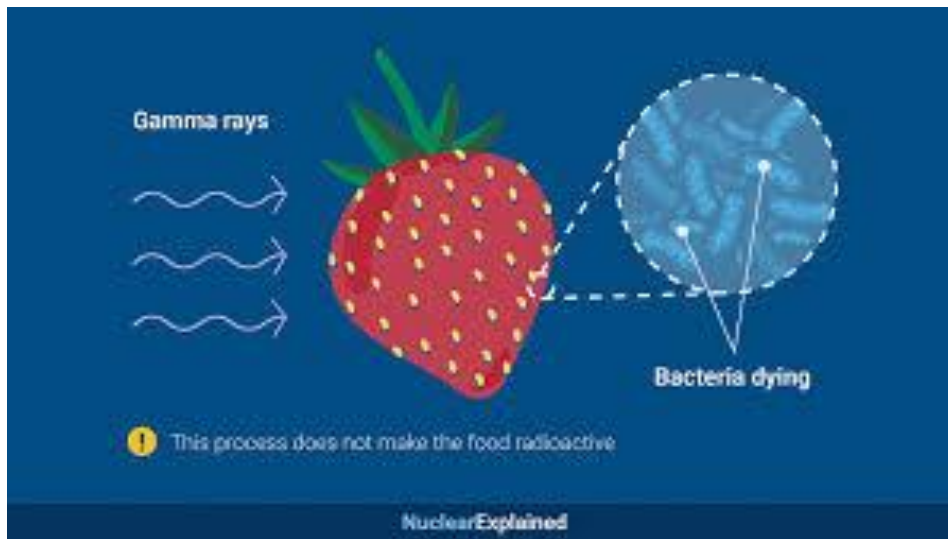
Environmental Protection

- ▶ Tracing pollutants using isotopes
- ▶ Studying groundwater movement
- ▶ Climate change research



Food Irradiation

- ▶ Kills bacteria like Salmonella
- ▶ Extends shelf life
- ▶ Maintains nutritional value



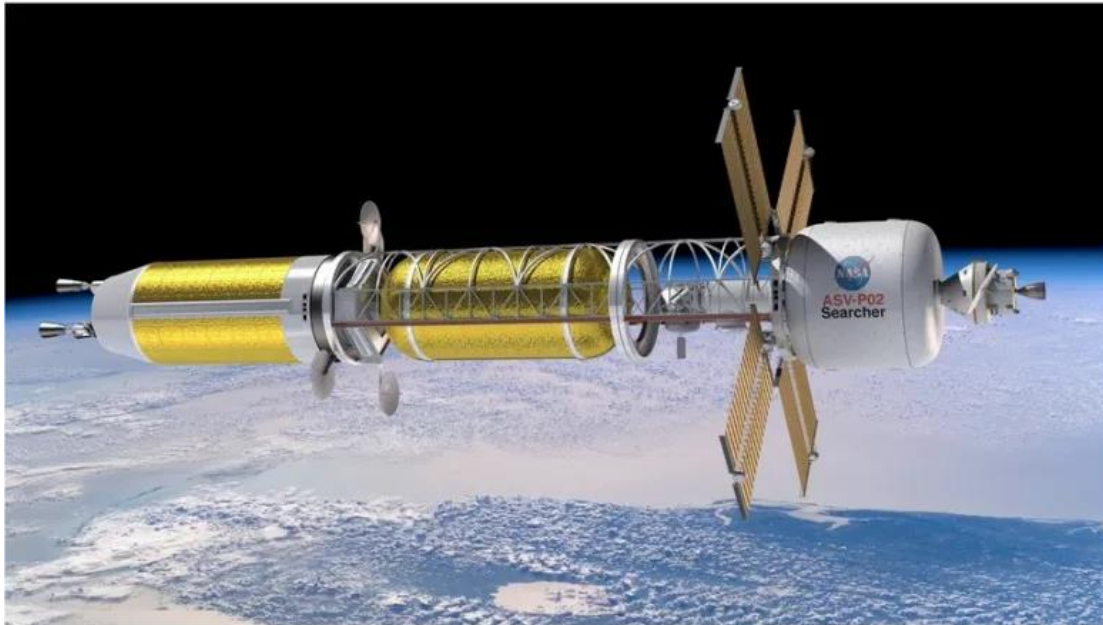
Space Applications

- ▶ RTGs power spacecraft

(RTG: Radioisotope Thermoelectric Generator (RTG) is a type of "nuclear battery" used to power spacecraft)

- ▶ Used in missions like Voyager

- ▶ Reliable for deep space



Advantages of nuclear energy

- ▶ Clean and efficient energy
- ▶ Medical breakthroughs
- ▶ Supports global food security
- ▶ Enhances industrial safety

ADVANTAGES OF NUCLEAR TECHNOLOGY

1 HIGH POWER OUTPUT

NUCLEAR POWER IS A CLEAN
ENERGY SOURCE

2

3 RELIABLE

ZERO CARBON EMISSIONS

4

5 LOW OPERATING COSTS



Risks & Safety of nuclear energy

- ▶ Radiation exposure risks
- ▶ Waste disposal challenges
- ▶ Strict safety protocols required



International Regulation of Nuclear Energy

- ▶ IAEA sets global standards
- ▶ (IAEA: International Atomic Energy Agency)
- ▶ Monitoring nuclear activities
- ▶ Promotes safe use



IAEA

THANKS FOR LISTENING

Conclusion

- ▶ Nuclear technology has vast peaceful benefits
- ▶ Essential in modern science and medicine
- ▶ Future depends on safe and responsible use