Peaceful use of Nuclear Technologies/Nuclear Applications

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RADIOACTIVE WASTE:
MEETING THE CHALLENGE
Science and Technology for
Safe and Sustainable Solutions
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Scopes:

- Introduction
- Benefit and risk
- Energy
- Industry
- Medicine hospital
- Research & Development
- Mutation Breeding
- RWM
- Conclusion

Introduction

- Since ionizing radiation was discovered by Wilhelm Rontgen in 1895, nuclear technology has been widely used, especially in power generation, industry and medicine
- What makes nuclear useful? :
  - nuclear fission produces energy
  - nuclear radiation can interact with the atoms of a material
  - nuclear radiation can penetrate materials

Benefit and Risk

- Today most people are aware of the important contribution nuclear energy makes in cleanly providing a significant proportion of the world's electricity.
- Radioisotopes and radiation have many applications in agriculture, medicine, industry and research. They greatly improve the day to day quality of our lives.
- Accident of nuclear powers (Chernobyl, Fukushima etc)
- Increase of Radioactive waste generation
- The international community has well developed technologies to develop safe and secure solution to overcome risk.

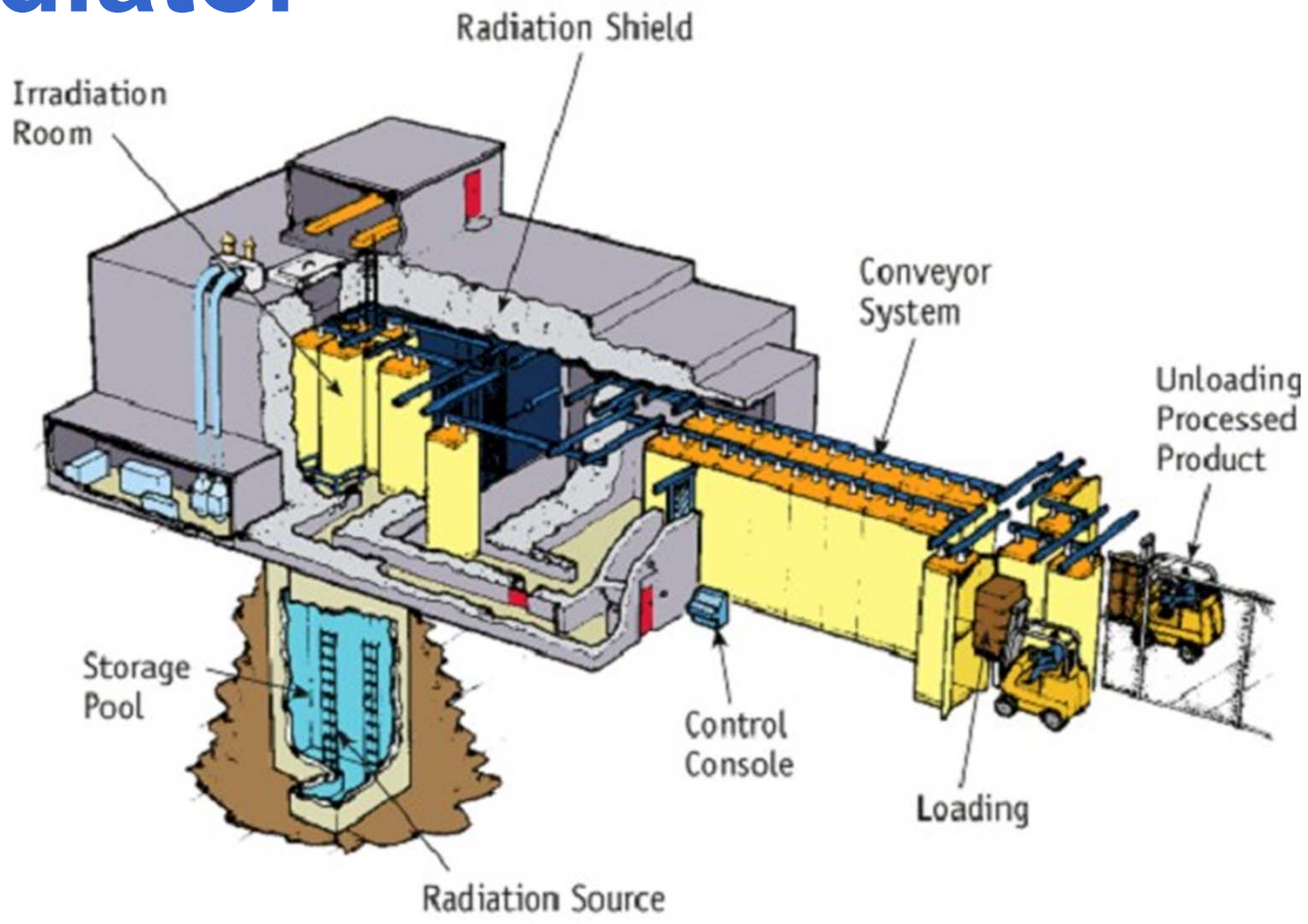
Energy

- 437 NPPs in operation
- 70 under construction
- 374.504 MWe Total Net Installed Capacity
- Over 12 percent of the world's electricity production

Industry

- Irradiator
- Gauging Devices
- Radiography
- Portal Monitor
- Well Logging
- Tracer

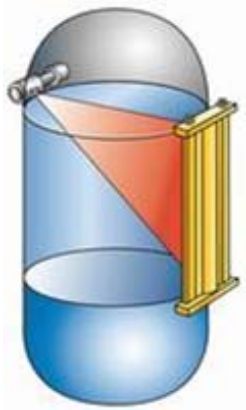
Irradiator



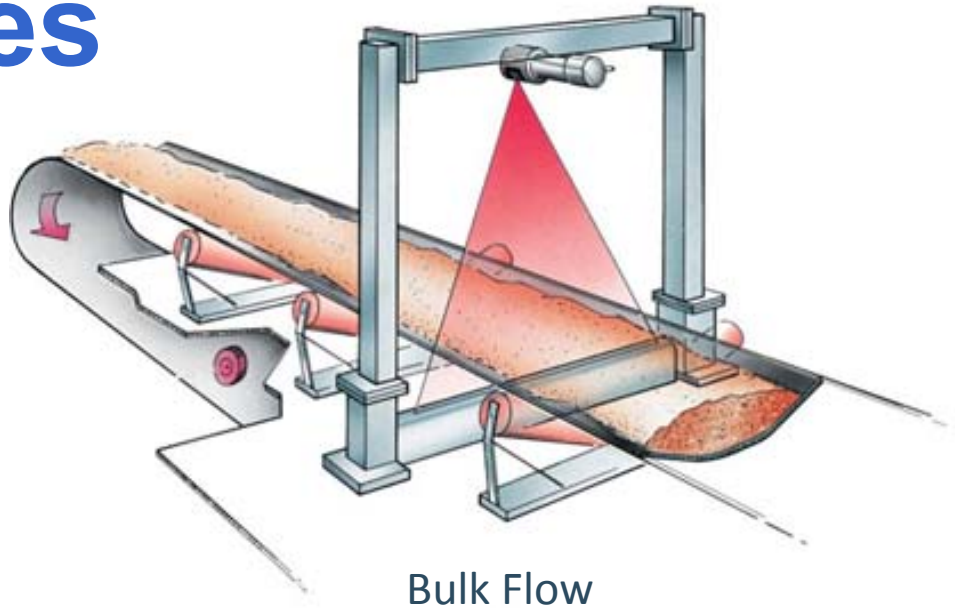
For food preservation, sterilization, polymerization

Gauging Devices

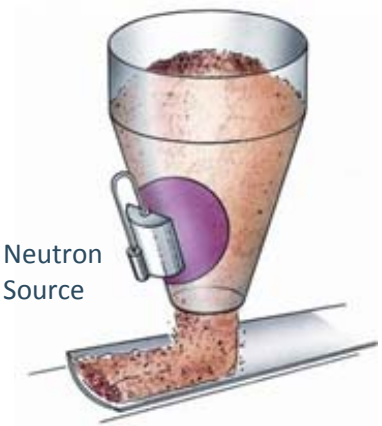
Level Switch



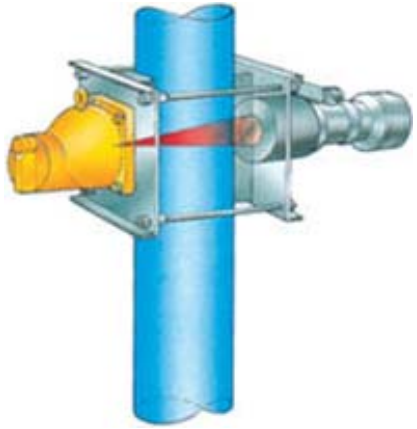
Continuous Level



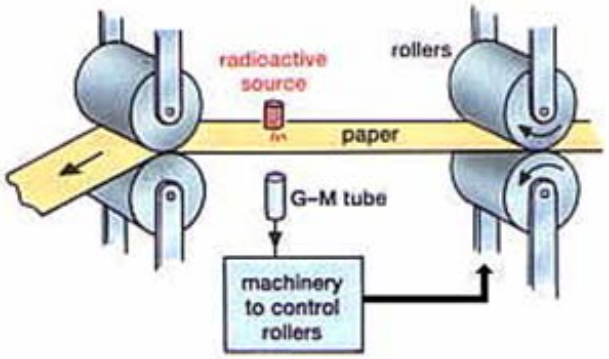
Bulk Flow



Moisture

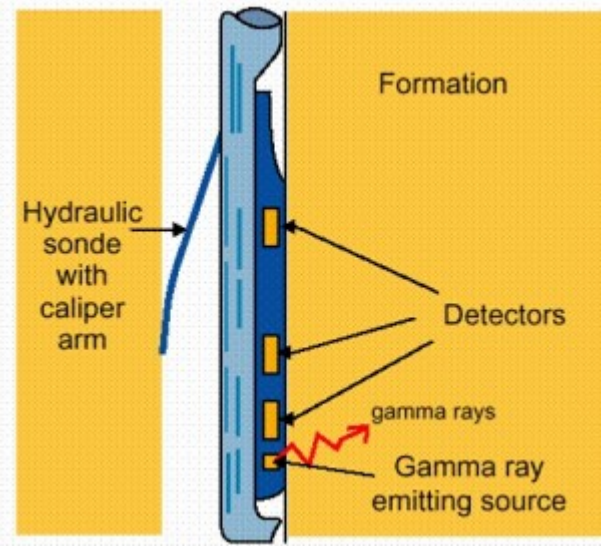


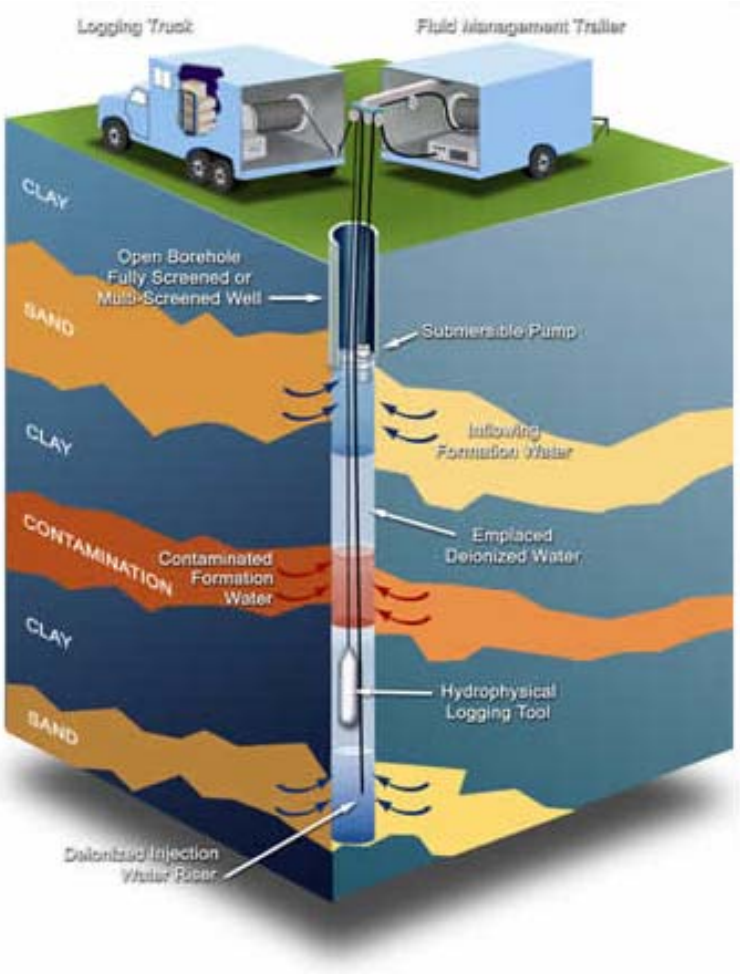
Density

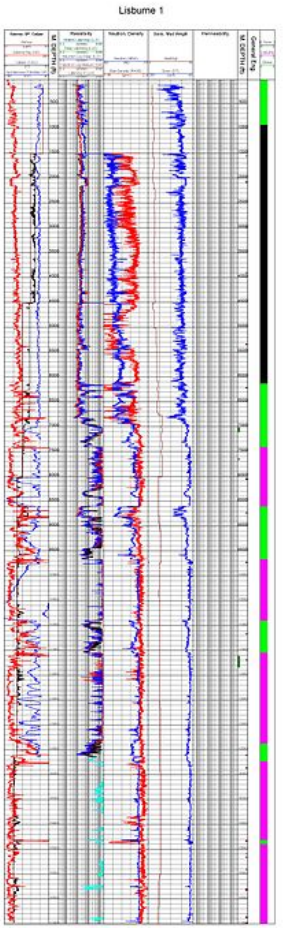


Thickness

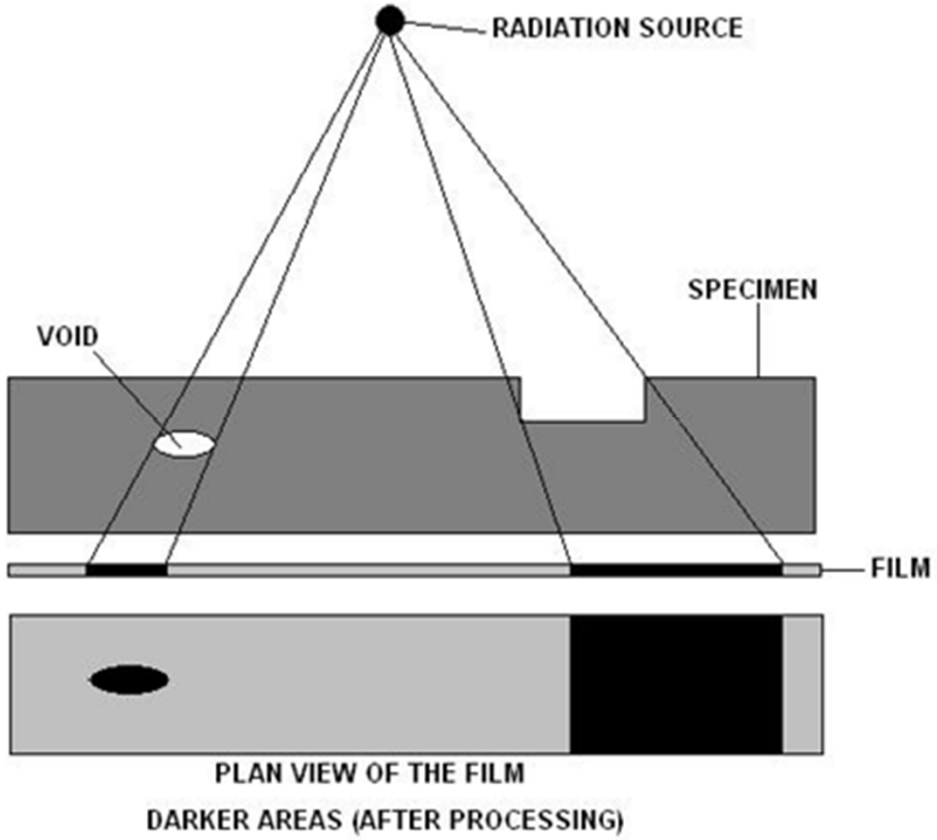
Well Logging







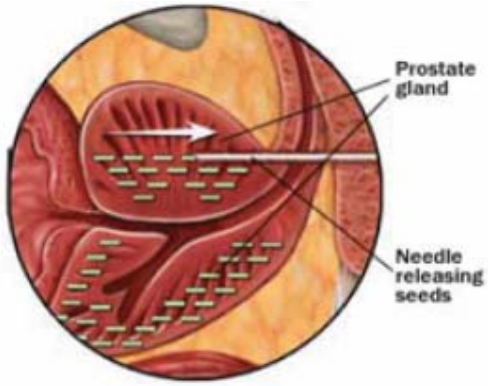
Radiography



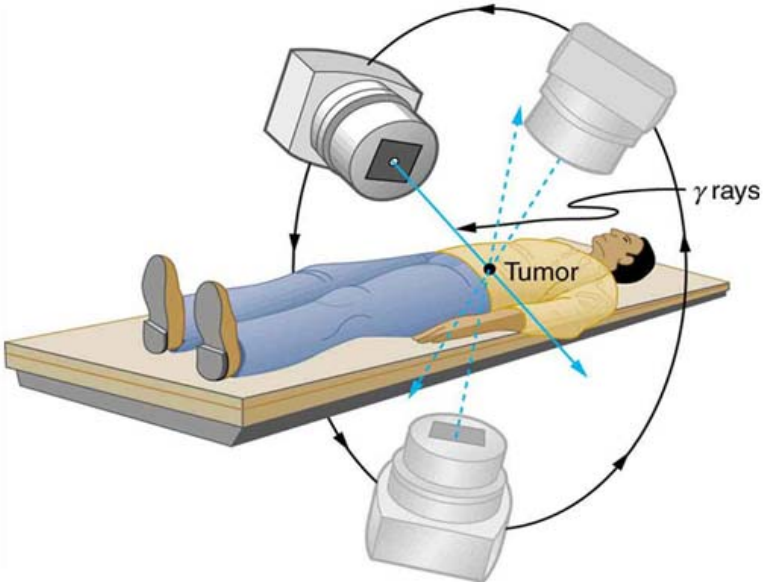
For Non Destructive Test

Medicine

- Diagnostic Radiology
- Radiotherapy
- Nuclear Medicine, etc.



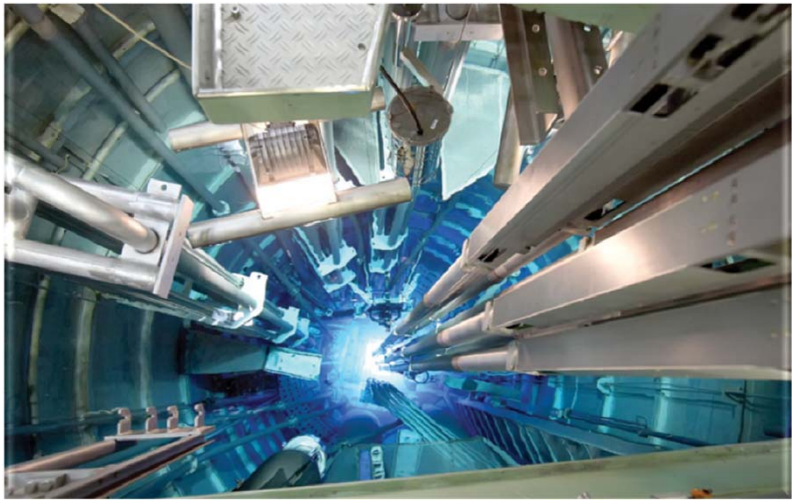
Brachytherapy (seed implant)

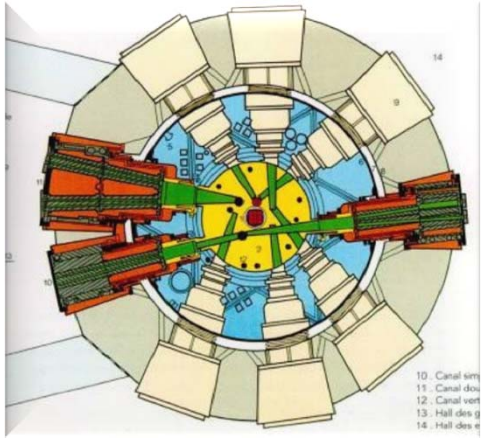


Teletherapy

Research & Development

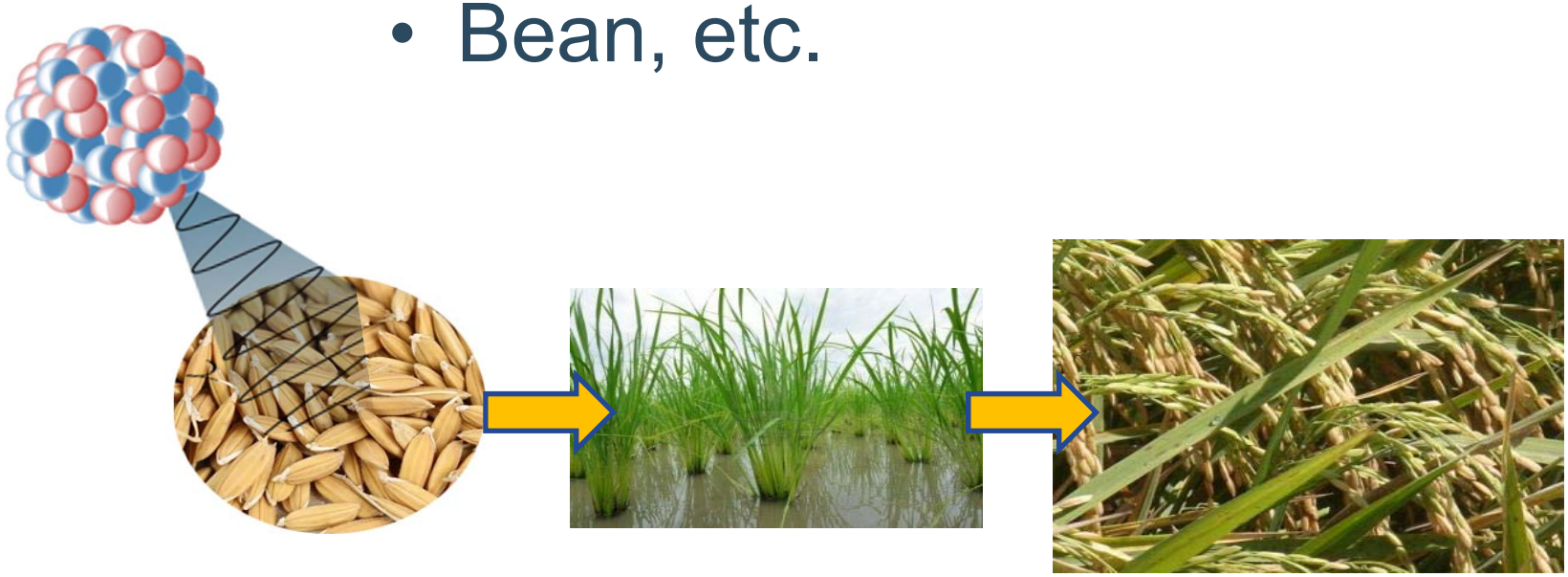
- Research reactor
- Neutron Activation Analysis (NAA)
- New material technology





Mutation Breeding in Crop Improvement

- Rice
- Shorgum
- Bean, etc.



Radioactive Waste Management

- The use of nuclear technologies/nuclear applications generate radioactive waste
- The waste is required to be managed to ensure the protection of human health and the environment now and in the future, and without imposing undue burdens on future generations

Conclusion

- Nuclear is useful for human welfare and its use will increase with the development of science
- Use of nuclear technologies generate radioactive waste that shall be managed well, so it does not burden future generations


Thank you for your attention