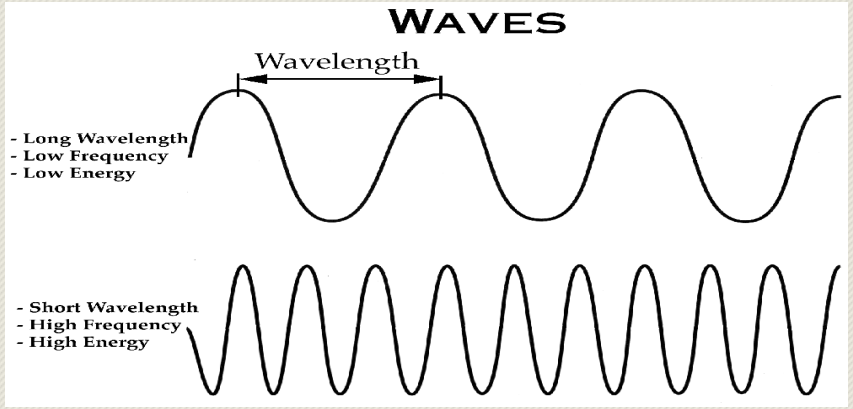
Radiation Safety

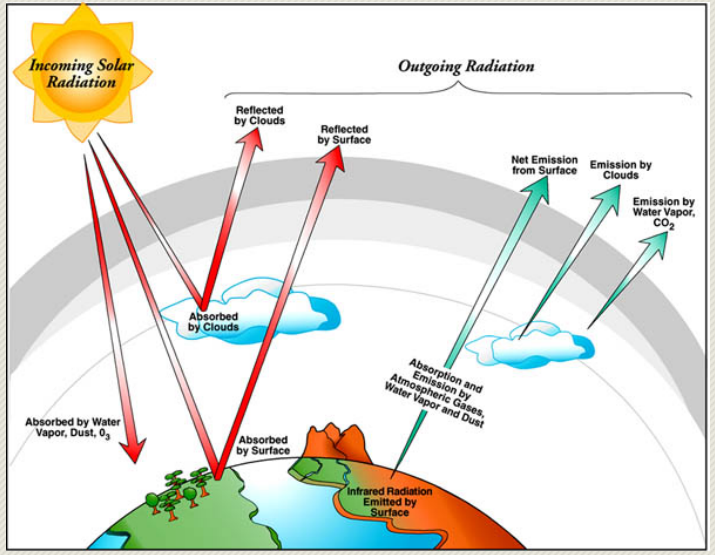
2019

Southeast HEALTH

What is Radiation?

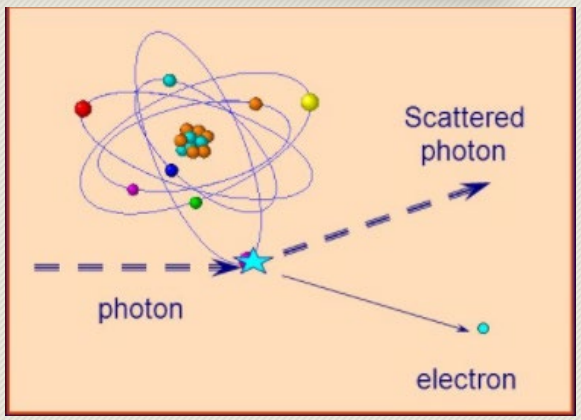
- Radiation is energy that travels in the form of waves or high-speed particles. It occurs naturally in sunlight. Man-made radiation is used in X-rays, nuclear weapons, nuclear power plants and cancer treatment.
- Your body is correcting for these exposures daily.

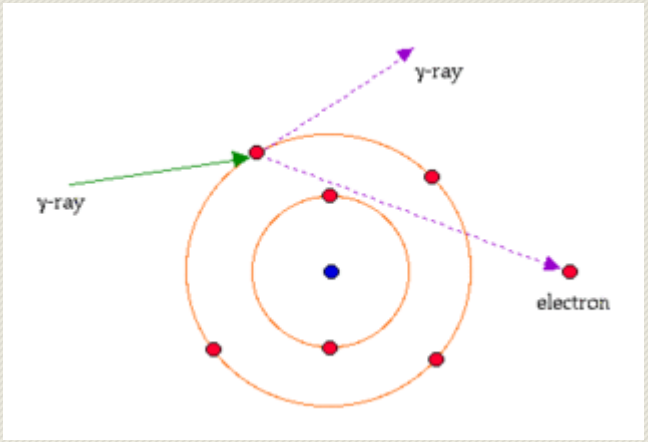




Radiation Interaction With Cells

1. Pass through cell – no damage
2. Cell damaged/mutated
3. Cell death

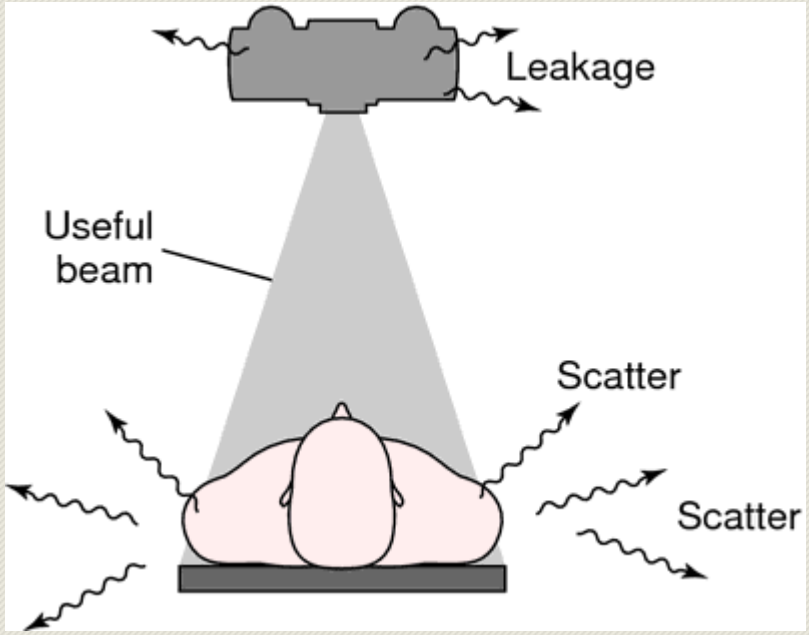




Exposed Area

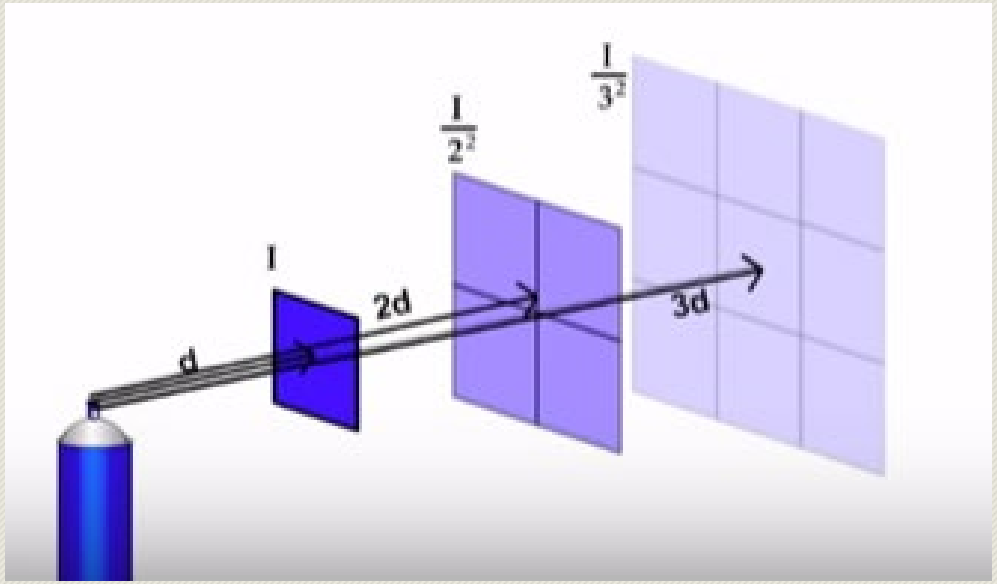
- Extremity 50 kVp at 1.5 mas
- Lumbar Spine Lateral 80 kVp at 32 mas
- Knowing the size of the anatomy being imaged determines the dose produced

Scatter Radiation



Basic Radiation Protection

- To minimize exposure we follow ALARA guidelines. ALARA stands for As Low As Reasonably Achievable.
- ALARA has practices to reduce radiation exposure which include time, distance, and shielding.
  - Time – halving exposure time halves exposure
  - Distance – Use inverse square law to calculate
  - Shielding – reduces exposure exponentially



Occupational Dose Limits

- Annual Radiation Exposure Limits (mrem)
- Whole Body 5,000
- Lens of the Eye 15,000
- Extremities 50,000
- Fetal 500

- Employees have the right to know their occupational exposure.

- Monthly badge reports are posted within each department and can also be obtained from your manager or the Radiation Safety Officer.

Radiation and Pregnancy

- Because the human embryo or fetus is protected in the uterus, a radiation dose to a fetus tends to be lower than the dose to its mother for most radiation exposure events.
- Radiation exposure from most diagnostic medical exams as well as from occupational radiation exposures that fall within regulatory limits.

Conclusion

- Wear your monitor badges
- Wear protective equipment – glasses, aprons, thyroid shield
- Reduce time in cases – rotate staff
- Distance – move 6 feet from source