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## Ionizing Radiation Fact Sheet

### Facts About Ionizing Radiation

- It cannot be discerned by human senses.
- Radiation and radioactive materials are natural phenomena present in soil, water, food, plants and animals.
- Radiation can be useful. X-rays for broken bones or nuclear medicine scans of heart.
- Radiation can be harmful. The probability of a harmful consequence (cancer) is related directly to how much and where radiation interacts with the body.
- For this reason annual LIMITS are placed on the amount of radiation dose for radiation workers.

### Where Does Radiation Come From?

- Outer space
- Building materials
- Soil
- Water
- Food
- Human Body

### Radiation Protection Principles

- Time
  - o The less time spent in a radiation area, the lower the total dose due to radiation
  - o You personally control the amount of time spent in a radiation field
- Distance
  - o Double the distance from a radiation source to reduce the exposure rate by one quarter
  - o Most of the radiation used in the laboratories causes little exposure 3 feet from the bench
- Shielding
  - o Shielding is not practical if it increases the time to perform an experiment
  - o Some materials can cause an increase in radiation exposure

### Contamination

- Radioactive contamination on the skin can be washed off like normal dirt
  - o Check the area with a survey meter after washing
- Prevention of internal contamination is the primary concern
  - o No eating, drinking, using cosmetics (Chapstick<sup>®</sup>, skin creams) in the laboratory