X-ray safely!

An annual presentation required by Washington State law
Maximum Safe Occupational Whole Body Radiation Exposure:

- 5,000 mrem = 5 rems
- Background radiation: 360 mrem/year
- Traditional dental film: 2 mrem/film
Other Clinical X-rays

- Chest 10 mrem
- Upper GI 117 mrem
- CAT scan 1,800 mrem
Radiation Exposure

- Acute effect
- Cancer risk
- Genetic risk
- Teratogenic risks
Acute Exposure

- 5,000 mrem: no effect
- 100,000 mrem: nausea
- 200,000 mrem: Bone marrow depression
- Fatality (50%) 500,000 mrem
Long Term Radiation Effects

- Cancer death risk of 5%: 100,000 mrem
- Genetic risk 1%: 100,000 mrem
Dental Films

- Digital is less than 2 mrem/film due to beam collimation, less scatter
- The dose is actually to the decedent
Beam off vs “dirty”

- Beam off, no exposure, no radiation on decedent (nuclear disaster-external exposure)
- Dirty bomb, particles on skin, still emit radiation (contamination)
Who needs personal dosimetry

- Employees who receive 10% of the annual limit of 5,000 rems (500/year)
- Minors, pregnant women
- Anyone who enters high radiation area (nuclear power plant)
Our Dental X-ray system

- Registered as an industrial X-ray unit
- Registered annually
- Inspected every 4-5 years
- HFH, subject to medical licensing
Dose reduction

- Time
- Distance (Dose decreases with the square of the distance)
- Shielding
ME X-ray Law

- Training required
- Don’t prop sensor with hands
- 5 feet away from beam source
- No pregnant women
- Equipment maintained
- Take as few films as possible