



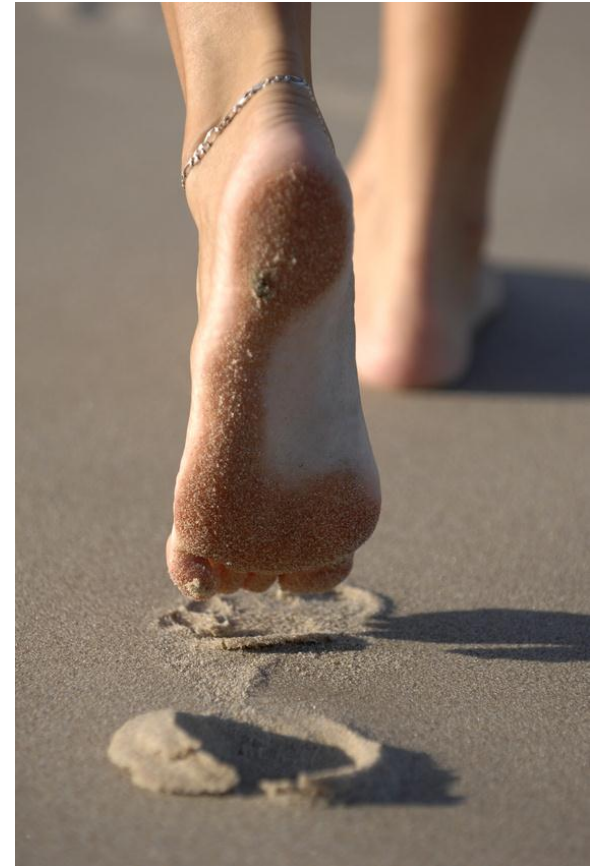
# X-ray safely!

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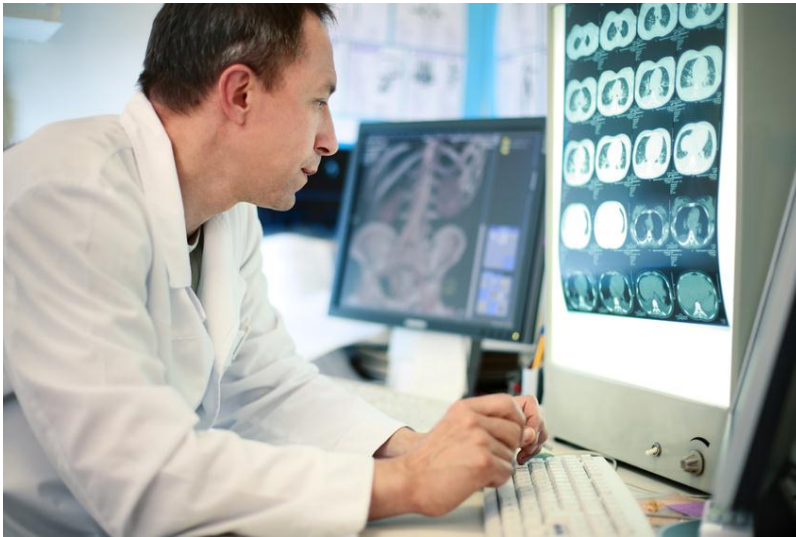
An annual presentation required  
by Washington State law

# 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



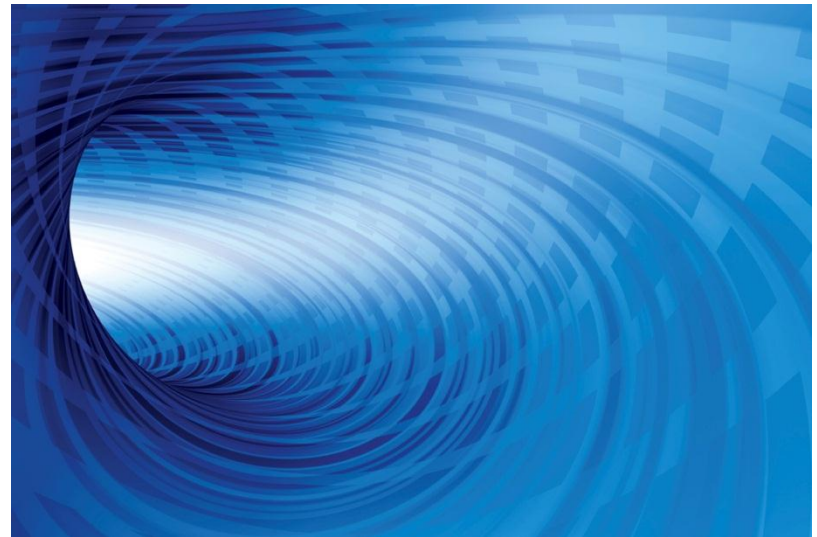
- Chest 10 mrem
- Upper GI 117 mrem
- CAT scan 1,800 mrem



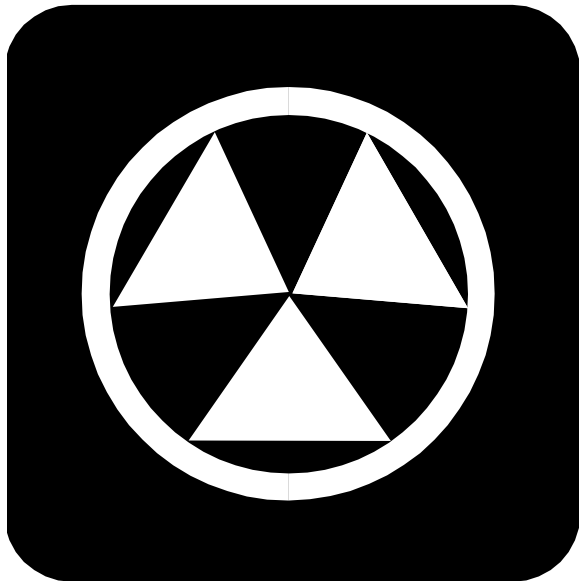
# Radiation Exposure

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



# Acute Exposure



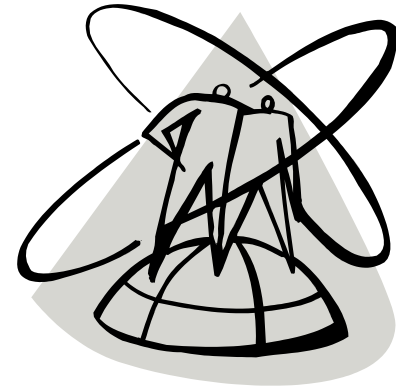
- 5,000 mrem: no effect
- 100,000 mrem: nausea
- 200,000 mrem: Bone marrow depression
- Fatality (50%)  
500,000 mrem



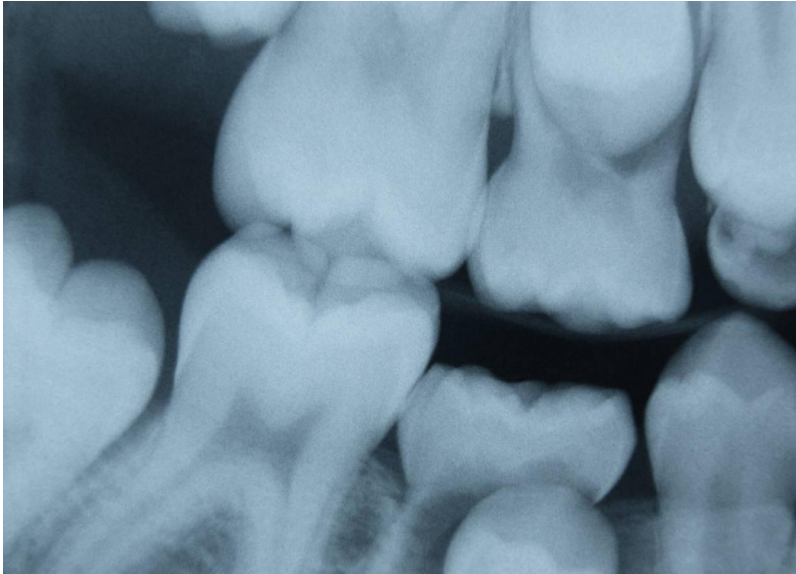
# Long Term Radiation Effects

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- 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)





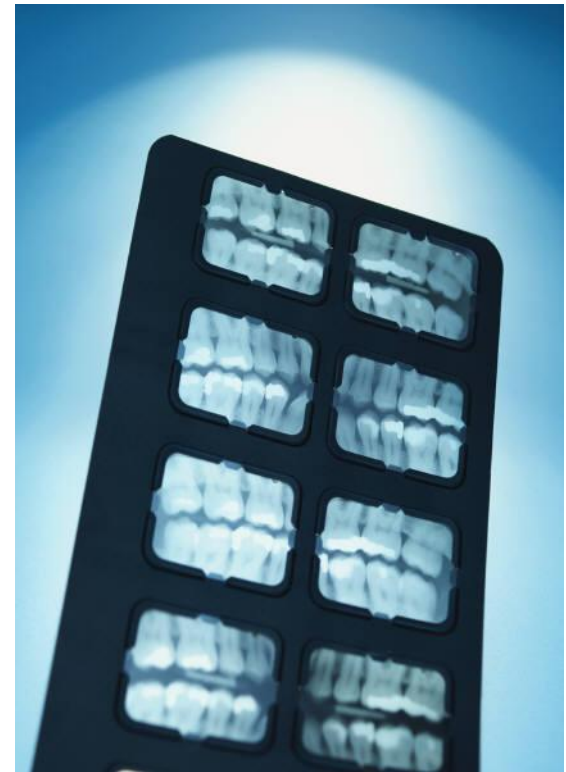
# Who needs personal dosimetry

- 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)



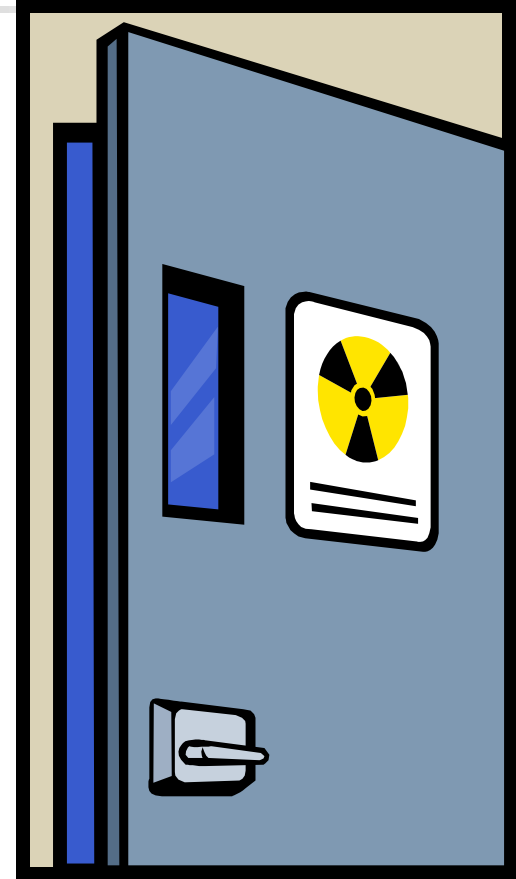
# Our Dental X-ray system

- 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