

# Relative radiation dose with dental x-rays

# Relative dose from radiation

## Background radiation from natural sources

- average person dose 3000  $\mu\text{Sv}$  per year (8  $\mu\text{Sv}$  /day)
  - Cosmic radiation
  - Sources in the soil.
  - Radon gas in homes = 2/3's about 2000  $\mu\text{Sv}$  per year.
  
- High altitude = 1000  $\mu\text{Sv}$  > sea level / yr
  - Flight = about 8 $\mu\text{Sv}$  per 90 min flight.
  - Banana= 10 $\mu\text{Sv}$  radiated for transport



# Radition with various exams

Examination	Effective Radiation Dose ( $\mu\text{Sv}$ )	Equivalent Natural Background Radiation for:
Panoramic	3-11	Half to One day
Cephalogram	5-7	Half to One day
Occlusal Film	5	Half day
Bitewing	1-4	Half day
Full mouth series	30-170 Modern Avg = 60	4-21 days 8 days

## Medical Examinations

Chest X-ray	100	10-12 days
Mamography	700	88 days
Medical CT	8000	1000 days

# Approximate dental exposures in $\mu\text{Sv}$

- **Intra oral** full mouth series ( fmx)
  - 1970's "d- -film FMX " = 380
  - Modern digital FMX = 60
- **Digital** panoramic average = 15- 20
- **CBCT cone beam** 5-140 msv
  - hi res "dental panoramic " volume = 85
  - hi res full volume head to neck = 140
  - Med res single arch implant screening = 30
  - Small field endodontic tomo ( 2 teeth) = 5