

Dental X-rays Low on Totem Pole of Radiation Worries

By Dr. Eric Gustavsen, Published in the Walla Walla Union Bulletin 7/29/11

Want to know how to make your dentist nervous? Tell him/her you refuse to have dental x-rays. Some people are understandably concerned about radiation and limiting their exposure from unnecessary sources, but have you ever wondered how much radiation you are actually exposed to from dental x-rays compared to other sources? A few individuals are concerned about dental x-rays with the belief that they aren't safe and they aren't really necessary. So why does your dentist recommend x-rays?

Dental x-rays are necessary for the following reasons:

- They help the dentist detect decay in between the teeth that they wouldn't be able to visually until the decay was already invading the nerve.
- They help the dentist assess the stability of the bone that supports the teeth. Where there is lost bone there is always disease.
- They help the dentist see problems in the bone such as infections or growths that could cause serious, even life threatening problems, if undetected.
- They are used to determine if all a child's permanent teeth are forming properly.
- They help the dentist see if old fillings are starting to break down under the gum line and make sure the seal is intact on crowns.

Dentists usually take "bitewing" x-rays to check for cavities in between the teeth once per year. If a person isn't prone to decay the dentist will use his/her judgment and may wait every 18 months. If someone has small areas of decay starting in between the teeth the dentist/hygienist will provide instruction on how to halt the decay and may check that specific area in 6 months with a single x-ray. In those more prone to decay such as kids, infrequent brushers, those with simple carbohydrate filled diets, and people with medication caused dry mouth, decay can progress a long way in 6 months. Your dentist also knows decay is always deeper than it appears on the x-ray.

For those without dental benefits cost can be a concern. Taking x-rays, however, actually saves individuals money in the long run as it discovers problems while they are small and much less expensive to fix. Many times during the course of a work week, your dentist finds decayed teeth that she/he wouldn't have guessed had problems without taking necessary x-rays. This usually saves an individual from needing much more expensive treatment such as root canals, or crowns to repair very large decayed areas.

Some patients say "I know need them, but are they safe?" We get radiation from many background sources in the course of a day; the cosmic rays from the sun, flying in commercial airliners, our home cities elevation and surrounding mineral composition, radon from basements, and even sandstone rocks and granite counter tops.

The following table gives you an idea of the relative exposure from different sources of radiation, including some essential for medical reasons, and other incidental environmental sources.

Recommended limit for radiation workers per year (EPA)	5,000
CT scan: abdomen & pelvis	1500
Full-body CT scan	1000
Airline crew flying New York to Tokyo polar route, annual exposure	900
Natural/background radiation annually, depending on city elevation/location	250 to 350
CT scan: head	200
Spine x-ray	150
Mammogram breast x-ray	40
Chest x-ray	10
Airline flight across the USA (1 millirem per hour of flight)	4 to 5
Watching TV, annual exposure	1
Dental x-ray: panograph (Full face x-ray taken every 5 years)	1
Dental x-ray: bite wing (4-7 films annually with non digital technology)	.5
Living within 50 miles of a coal fired power plant (annual exposure, EPA est.)	.03
Living within 50 miles of a nuclear power plant (annual exposure, EPA est.)	.009

*All units are in millirems and represent average values.

As you can see the amount of radiation from a yearly dental x-ray exam is very small compared to other possible sources of radiation. To further reduce radiation exposure in the dental office your dentist limits the # of x-rays to the fewest necessary to adequately make sure no abnormalities are overlooked. X-ray units are fitted with devices that focus the beam only on the spot where the small film is located eliminating splatter. X-ray units must be licensed by the state of Washington and are tested periodically to insure they are working properly and all shields and filters are intact. A lead x-ray blanket with a thyroid collar is used to add an extra layer of protection. X-rays are avoided, if at all possible, on pregnant women. To further reduce radiation exposure many offices are also switching to digital x-ray sensors that require around 40 to 50% less exposure to provide the information the dentist needs.

So why would refusing to have x-rays make your dentist nervous? Because we know some kind of cosmic Murphy's Law is at play where the most likely candidate for a deep cavity is the person who refuses x-rays. Every dentist has a mental list of patients that have refused x-rays and ended up needing to have a tooth extracted because of undetected decay. They may have saved a few bucks but ended up losing a tooth. Asking your dentist to do a thorough exam without x-rays is like asking your mechanic to tell you what's wrong with your car engine without letting him open up the hood. It can't really be done without superpowers...like x-ray vision.