Medical X-Rays

From broken bones to life threatening illnesses, x-ray machines help diagnose and treat numerous medical conditions. In fact, seven out of ten people receive either a medical or dental x-ray every year. Literally thousands of x-ray machines are used daily in medicine and industry for examinations, inspections, and process controls. Because of their many uses, x-rays are the single largest source of man-made radiation exposure.

In a clinic setting you are most likely to encounter radiation from a diagnostic x-ray. X-rays pass more easily through the soft tissues of our bodies than through our bones and organs. After passing through our body, x-rays strike a special x-ray film, creating an image showing shadows where our bones, organs and other dense masses have absorbed x-rays.

Like microwaves, radio waves, and visible light, the x-rays produced by an x-ray machine are a form of electromagnetic radiation. Unlike microwaves, radio waves, and visible light, x-rays are ionizing radiation, which is capable of removing electrons from atoms and damaging living cells and the DNA of those cells. However, since x-ray machines only produce radiation during operation and the amount of radiation used is small, resulting medical problems are unlikely.

Who is protecting you

The States

State radiation programs, in cooperation with the Food and Drug Administration (FDA), regulate, register and inspect x-ray equipment used in medical, dental, and veterinary procedures.

U.S. Food and Drug Administration (FDA)

While the states regulate *use* of x-ray equipment, the FDA's Center for Devices and Radiological Health (CDRH) regulates the *manufacturing* of electronic radiation emitting products.

National Institute of Standards and Technology (NIST)

The mission of NIST is to develop and promote measurement, standards, and technology to enhance productivity, facilitate trade, and improve the quality of life. Although a non-regulatory federal agency, NIST makes x-ray machines safer for patients and workers by updating the technology and measurement standards upon which x-ray machines are based.

What you can do to protect yourself

Only trained and qualified persons should operate X-ray machines. You can best protect yourself by only having x-ray procedures performed at clinics and hospitals and by qualified personnel. You should follow any instructions given by your doctor, nurse, or the x-ray technician. To prevent any unnecessary exposures, a lead apron may be used to shield the parts of your body not being x-rayed.

Women who are pregnant should not have x-rays of their pelvic regions, lumbar spine, and abdomen, unless absolutely necessary; so tell your doctor if you are pregnant, might be pregnant or are nursing.

Finally, before having an x-ray, if you have any concerns or questions, don't hesitate to ask your doctor, or the x-ray technician.

Resources

You can explore this radiation source further through the resources at the following URL:
http://www.epa.gov/radtown/medical-xrays.htm#resources

We provide these resources on-line rather than here so we can keep the links up-to-date.