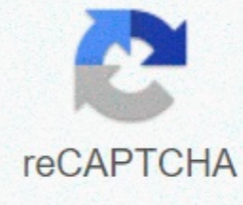




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Dens axis x ray

Wilhelm Roentgen stumbled upon the possibilities of X-rays while tinkering with catheter instruments in 1895. A German physicist placed various objects in front of him to measure his reactions in front of a photographic disc that can store images. Roentgen wanted to know what his wife's hand would look like when exposed to mysterious rays. The plate produced a picture of his bones and flesh, just like today in medical X-rays. The ability to create images in the human body was revolutionary, Nobel Prize-worthy work. Today, X-rays are used in several locations, from dental and doctor's offices to airport security checkpoints. While medical scans help doctors and patients around the world monitor injuries and conditions, they also have a downside: radiation. As we discuss, X-rays emit radiation that can be harmful to humans if the intensity is too high or exposure is too common. In this article, we explore the risks and benefits of using this tool to reveal valuable information about ourselves and the universe. But first we look at the dual personality of X-rays and why they can be both useful and harmful. Read more. Content It is best to think of X-rays, what they are: a kind of electromagnetic energy. These rays have short wavelength levels that allow them to carry a lot of energy. However, given what happens when they capture the human body, the term ionizing radiation enters the equation. Ionizing radiation can drop electrons that orbit the nuclei of atoms. When electrons are marginalized, they create charged molecules, or atoms called ion, that can break down and disrupt other atoms in our cells. Advertisement Cell damage caused by radiation can also alter our DNA, increasing the chances of cells mutating during replication or even changing to cancer over time. Therefore, doctors only use an effective dose of X-rays or the lowest amount to get the job done during medical imaging. In addition, radiation increases over time, so frequency also matters. However, X-rays are not all gloom and gloom. Fortunately, our cells heal after brief encounters. In medical contexts, X-rays provide a glimpse of bones, teeth and internal organs that do not appear from outside the body. They help assess fractures, fractures and abnormal growth in the bones and allow doctors to monitor the effectiveness of surgeries. Ultimately, the benefits of receiving appropriate medical treatment often outweigh the risks of radiation. It is also true that X-rays tell us about strange things that our children and pets accidentally swallow. The next step is to learn which group has the greatest vulnerability Short exposure to ionizing radiation is less worrying in adults, as mature cells can quickly (for the most part), but the bones and tissues of babies and children are at risk. Children's cells divide faster as they grow, creating more opportunities for mutations and DNA damage to replicate. Pregnant women should tell their doctors that they are pregnant before X-rays. And while most medical scans avoid exposing fetuses to radiation, it is important to talk about things with a doctor to be sure. In addition, because the effects of radiation on the body accumulate over time, doctors reserve the use of X-rays for young patients for a time when the immediate health problem outweighs the long-term risk - just as adults have been done [source: U.S. Food and Drug Administration]. This vulnerability gives children a higher risk of developing cancer and other health problems later in life. Ad Next time you're coming for medical tests, it might be a good idea to ask a few questions. Find out what it's appropriate to ask on the next page. X-rays have a dark side, but you can reduce your exposure. First of all, you should understand that scientists have created ways to minimize exposure to X-rays. This includes mostly offering recommendations, measuring inlet skin thids - the number of rays absorbed through the skin - from certain procedures, ensuring proper operation of devices, and providing the best training for people using machines. In general, the FDA regulates the production of X-ray equipment, while states pass laws to control the use of technology [source: U.S. Environmental Protection Agency]. Advertisement Make sure you are not exposed unnecessarily, check the level of instruction and certification of technicians and doctors performing medical X-rays. Since the training varies, you want to look for professionals with more training and experience. For example, you can search for clinics with government-certified radiologists for more serious scans. Do not be afraid to ask your doctor why an X-ray is or is not necessary. Can X-rays be exposed outside the doctor's office? Find out on the next page. We have learned that medical X-rays give doctors a unique glimpse into the flesh and bone under the skin, but how else to use them? In recent years, the U.S. Transportation Safety Board has used X-ray scanners to detect weapons and other potentially dangerous objects that cannot be picked up by metal detectors. This will certainly increase the safety of passengers before they take off, but it will also expose them to X-rays. The use of these backscatter scanners has caused controversy, but is still common at many US airports. In general, however, the amount of radiation is small compared to typical scans. In view of the perspective, the average amount of radiation exposure of

these scanners corresponds to the two minutes after being in the air on an aircraft at its normal altitude - a place where the atmosphere is not protected from incoming radiation [source: TSA]. Advertisement Still, both frequent pilots and aircraft staff should be more careful about using scanners too often. Did you know that X-rays aren't limited to our world? Keep reading to learn how to use it in science. The use of X-rays in astronomy gives us a lot of cool information about the universe. Many events in space, from black holes to comets and stars, give unique traces of radiation. Although we usually put all the X-rays together, those from space are a little different. They are created from the natural phenomena of the universe, which provide huge amounts of energy (and heat). Advertisement For measuring X-ray radiation, or energy from particles in space, scientists collect data from satellites outside the Earth's atmosphere. Such X-rays give us clues as to the origin of the universe and promote our perceptions of the Northern Lights, which routinely line the night sky. On Earth, scientists create X-rays with particle accelerators that move electrons close to the speed of light around the track until they emit radiation rays. This allows scientists to study the atomic structure of materials - both synthetic and environmentally friendly. You want more information about X-rays? See the following page for more interesting sources. HowStuffWorks looks at blood donation ins and outs. Centers for Disease Control and Prevention. Readiness and response: Radiant emergency situations - radiation measurement. May 10, 2006. (April 20, 2011) Clinic. Computer scan. January 12, 2010. (April 20, 2011) . Electromagnetic spectrum. March 27, 2007. (April 20, 2011) . The farthest X-ray beam found gives clues to the big bang. NASA News. November 25, 2007. (April 20, 2011) . Wilhelm Conrad Roentgen - Biography. (April 20, 2011) Society of North America. Radiation exposure for X-ray and CT examinations. November 15, 2010, at (April 20, 2011) Security Administration, U.S. Department of Homeland Security. FAQ: Advanced Imaging Technology. (April 20, 2011) University of Colorado. X-ray safety. Physics 2000. (April 20, 2011) . Radiation protection: health effects. March 24, 2011. (April 20th, April, Environmental Protection Agency. RadTown USA: Medical X-rays. July 19, 2010. (April 20, 2011) . Food and Drug Administration. Radiology and children. June 23, 2008. (April 29, 2011) . Food and Drug Administration. Reduction of radiation from medical X-rays. February 19, 2009. (29.4.2011) X-ray technicians, also known as radiology technicians or radiological technicians, prepare patients for X-rays and take and develop X-ray films. As an X-ray technician, you need physical endurance because you may need to translate or lift disabled patients, but you also spend long hours on your feet. Before becoming an X-ray technician, you can decide to specialise in a certain type of diagnostic imaging, such as: Advertisement The more procedures you have information, the better your employment opportunities will be [source: BLS]. Here's how to become an X-ray technician: Earn a two-year assistant degree in radiology technicians or complete a four-year bachelor's level program. A bachelor's programme is necessary if you want to move forward in the field and get an administrative or supervisory role. Health professionals who want to expand their medical knowledge or change career paths can simply complete a year's accelerated certification program. Get a certificate. Certification requirements vary from state to state. Some states require you to run an accredited program that allows you to earn an American Registration of Radiologic Technologists (AART) certificate. This can only be done after you have completed your degree or earned your certificate [Source:DegreeFinders]. You must attend continuing training every two years to keep your certificate. Once certified, you can start looking for a job. As an X-ray technician, you can work in a: HospitalPhysician's officeDental practiceDiagnostic laboratoryDiagnostic imaging center As the population ages, the job prospects of X-ray technicians are expected to grow faster than in the average field [source: BLS]. BLS].

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