

Atom Physics

Instadose Badge Quarterly Report

What your reading means

Atom Physics provides you with your deep, shallow, and lens doses. These are recorded and calculated from your Instadose badge readings this quarter. The Colorado Department of Public Health and Environment (CDPHE) regulations 6 CCR 1007-1 Part 4 (4.6) sets separate annual limits for the shallow, deep and lens doses. This document provides further explanation of the radiation exposure readings.

The reason behind these different categories of dose reporting is that radiation dose is not uniformly distributed throughout the body, nor does it affect different body parts in the same way. X-ray dose is higher in the skin and surface of the body and decreases deeper into the body. The lens of the eye is known to be particularly sensitive to radiation; cataracts have been known to form at lower doses than other known radiation-caused problems in the body.

With that said, the x-ray dose received by workers in most medical facilities is extremely low. Do not be surprised if the badge readings are consistently at 0 or in the single digits. That means the radiation protection program and shielding in the walls are working well for you. For more information about dosage regulations and typical amounts of radiation, see the next page.

Atom Physics is very proactive about contacting anyone with a radiation dose reading that we think is abnormal or unusually large-- and in most cases that high reading is due to the dosimeter being accidentally left in the x-ray room!

Please contact us at info@atomphysics.com or 303-748-5499 with any questions or concerns. We also offer dose counseling for workers who become pregnant.

Typical occupational exposure for radiation workers

Average background radiation is about 1 mrem/day or 30 mrem/month. Most people who work with x-rays receive an extra amount of dose at their job that is so small that it does not even equal the amount of background radiation. In order to get an idea of how your dose reading compares to others, we have listed below what we consider typical amounts that a radiation worker might receive:

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| Doctor/chiropractor office (operator is always behind shielded wall during exposure) | < 2 mrem/month |
| Dental office | < 20 mrem/month |
| Industrial x-ray operator (varies widely depending on how x-rays are used) | < 20 mrem/month |
| Veterinary office (operator often has to hold animals) | < 50 mrem/month |
| Atom Physics will contact you to investigate any readings of more than 50 mrem/month. | |
| Annual limit for occupational exposure | 5,000 mrem/year (approx. 417 mrem/month) |

The 5,000 mrem annual limit for occupational exposure is extremely conservative. For context, research shows that cataract formation begins at about 15,000 mrem of dosage to the lens of the eye and the level of radiation proven to increase the risk of cancer is about 50,000 mrem.