



Health action in crises

FAQs: Japan nuclear concerns

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Human exposure to ionizing radiation

Are people normally exposed to ionizing radiation?

- Human beings are exposed to natural radiation (also known as background radiation) on a daily basis. Natural radiation comes from space (i.e. cosmic rays) as well as from naturally-occurring radioactive materials found in the soil, water and air. Radon gas is a naturally-occurring gas that is the main source of natural radiation.
- People can also be exposed to radiation from man-made sources. Today, the most common man-made sources of ionizing radiation are X-ray machines and other medical devices.
- Radiation doses can be expressed in Sievert (Sv) units. On average, a person is exposed to approximately 3.0 milli Sieverts (mSv)/year, of which 80% (2.4 mSv) is due to naturally-occurring sources (i.e., background radiation), 19.6 % (almost 0.6 mSv) is due to the medical use of radiation and the remaining 0.4% (around 0.01 mSv) is due to other sources of human-made radiation.
- In some parts of the world, levels of exposure to natural radiation differ due to local geology. People in some areas can be exposed to more than 200 times the global average.

How are people exposed to ionizing radiation?

- Ionizing radiation may result from sources outside or inside of the body (i.e. external irradiation or internal contamination).
- External irradiation is produced when a person is exposed to external sources (i.e. X-rays) or when radioactive material (i.e. dust, liquid, or aerosols) becomes attached to skin or clothes.
- Internal contamination may result from breathing in or swallowing radioactive material or through contamination of wounds.

What type of radiation exposure could occur in a nuclear power plant accident?

- In the event a nuclear power plant does not function properly, individuals, land, and structures in the vicinity of the plant could be exposed to a mixture of radioactive products generated inside the reactor, also known as "nuclear fission products". The main radionuclides representing health risk are radioactive caesium and radioactive iodine.
- Members of the public may be exposed directly to radionuclides, either in the air or if food and water become contaminated by these materials.

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