Contamination versus Irradiation

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CONTAMINATION

Contamination is the process by which radioactive material is deposited any place where it is not desired, particularly where its presence may be harmful. The harm may be in invalidating an experiment or a procedure, or in actually being a source of danger to personnel.

Contamination could be thought of as a cup of coffee that has spilled. If the coffee cup is securely covered with a lid you can take it in the car or take it on a walk without any fear it might spill. If the coffee cup is not securely covered with a lid, some of the coffee could spill on your clothes while driving your car. That is contamination, material deposited in a place where it was not desired. Someone else could also spill some coffee on a table and you could put your papers in the coffee. That is the process of spreading the unwanted coffee contamination from one location to another.

Facilities using radioactive materials regularly monitor for contamination. Workers can safely work with radiation and are trained in special handling techniques so as not to create or spread contamination.

IRRADIATION

When an unstable atom decays it emits energy in the form of radiation. This radiation has the ability to deposit energy in the material that is in the pathway of the radiation. This process of being in the pathway of traveling radiation is called exposure. When the traveling radiation is ionizing radiation, like alpha, beta, gamma and x-rays, this process is called irradiation. Once the person or object is removed from the pathway of the

radiation, or is outside of the range of the radiation, they are no longer being irra diated. An application of irradiation most people experience is medical or dental x -rays. **When someone or something is irradiated it does not become "radioactive."** To be radioactive the person, or object, must be able to emit radiation. Since the person, or object, did not come in actual physical contact with the radioactive material and was only in the pathway of the emitted radiation, the person or object could not be contaminated with radioactive material. Thus, the person or object does not have radioactive material on them and is not able to emit radiation.

Irradiation could be thought of as the aroma from a cup of coffee as you pass by. When you are near the coffee you can smell a strong aroma. As you walk further away from the coffee, the smell becomes fainter and fainter. Since you did not come in physical contact with the coffee there is no way the coffee could be on you or your clothes. By only passing the coffee and smelling the coffee the coffee did not contaminate you.

Source

Office of Radiation Protection, Washington State Department of Health

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