



The Effects of Radiation on Life Forms





Part One: Exposure



- There are two ways to be exposed to harmful radiation.
- There is external exposure, where the source is still outside of the body, which is usually not very serious.
- Then, there is internal exposure, where radioactive particles become incorporated into the organism. This is far more dangerous than external exposure.



What is External Exposure?



- External exposure is an exposure to radiation in which radioactive particles come into contact with the life form in question **externally**.
- An external exposure never comes into contact with organs or inner tissue, and stays on the outside of the body, where it begins.





How do I Decontaminate from External Exposure?

- Decontamination of external exposures to radiation are usually very simple and easy, as long as the radiation that the organism was exposed to remains outside their body.
- In fact, to decontaminate a life form that was externally exposed to radiation, all you have to do is wash the spot of the exposure.





Types of External Exposure

- Touching a radioactive element, i.e. uranium, plutonium, etc.
- Coming into outside contact with cosmic rays of some type
- Having cancer radiation therapy





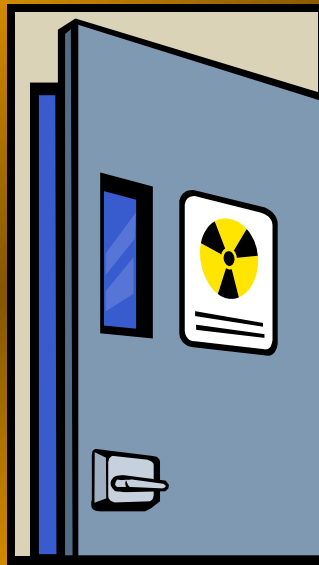
What is Internal Exposure?

- Internal exposure is when radioactive particles actually get inside of the organism.
- These particles can enter the body by being consumed, entering a wound, or other ways.



How do I Decontaminate from Internal Exposure?

- Decontamination from external exposure is highly difficult to perform, as the harmful radioactive particles are part of the organism.
- External exposure usually results in cancer or death.





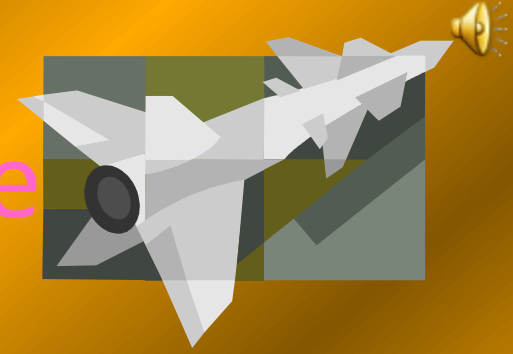
Types of Internal Exposure

- Consumption of K40 or any other soluble radioactive substance
- Radiotherapy for cancer with an open source

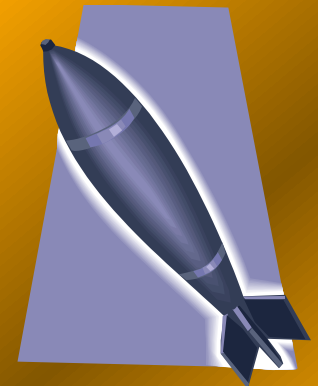




Atom Bomb Warfare



- People can be exposed to radiation in three different ways by atomic bombs. These account for the three different rays that enter their body. The question is: which rays are they?





Infrared Exposure

- Infrared accounts for burns in atomic bomb explosions.
- In this case, infrared is used as high-energy thermal radiation.



Beta Exposure

- Beta particles are low energy ionized nuclear fallout. These particles weakly penetrate and cause small burns.



Gamma Exposure

- Gamma is the strongest of the three exposure types, and exposure to large amounts of gamma rays often results in death.
- Gamma rays are strong and penetrating, usually resulting in wide spread irradiation and death.



The History of the Atom Bomb

- In 1939, Albert Einstein advised the president to try to refine Uranium 235 in order to create an atomic bomb.
- Billions of dollars were spent on what was called “the Manhattan Project” from 1939 to 1945. The atomic bomb was first tested on July 16, 1945, in New Mexico. A blind girl saw the flash from the bomb 120 miles away.



The History of Atom Bombs Continued

- On August 6, 1945, an atom bomb was dropped on Hiroshima, Japan.
- Three days later another one was dropped on Nagasaki. Japan surrendered shortly afterward.



The Aftermath

- Atomic warfare was outlawed shortly after the bombings, because this much death and destruction in one bomb would eventually bring a nuclear war big enough to wipe out the human race.

Amounts of Radiation

- Radiation is measured in REMs. The following slides will describe how harmful these amounts can be.



5-20 REMs



- No real danger, although slight possibility of cancer or mutation. Some say that radiation exposure of this amount may be actually beneficial.





20-50 REMs



- Some red blood cells are lost for a bit, but still not really any problems yet.





50-100 REMs

- Some radiation sickness, with headaches, but still not very severe.





100-200 REMs



- Nausea and vomiting, with a few symptoms of radiation poisoning. 10% chance of death after 30 days.





200-300 REMS



- Some radiation poisoning - after a month, approx. 35% of victims die. Also appearing are vomiting and loss of white blood cells as other symptoms.



300-400 REMs



- Dosage of this type results in severe radiation poisoning, including spontaneous bleeding in the mouth, kidneys, and under the skin. 50% chance of death.





400 REMs



- Dosage results in intense radiation poisoning, with 60% chance of death. Infections and bleeding usually are causes of death.



600 REMs



- Similar symptoms to 400 REMs, but more severe. 90% chance of death.





600-1000 REMs



- Heavy radiation poisoning, with over 98% chance of death. Survival depends on extensive care, and will not usually succeed. Recovery will take years, and will still not be complete.





This slide is dedicated to the ghosts for their cooperation.



1000+ REMs

- No chance of survival. 100% death rate.



THE END IS NEAR





And, here it is.

The end