

Quote from the Opinions Page in the January 8th 2004 edition of the Modesto Bee, in an article titled "Let's face it - man will never go to Mars", on the perils of interplanetary travel

"If the average person on Earth absorbs about 350 millirems of radiation every year, an astronaut traveling to Mars would absorb about 130,000 millirems of a particularly virulent form of radiation that would probably destroy every cell in his body."

Assume that the trip to Mars takes a total of two years, six months each way, plus a year on the surface of Mars.

Questions

1. How long would it take a person on the Earth to receive the same total dose of radiation as the astronauts?
2. Bearing in mind your answer to the previous question, do you think this falls under the category 'Acute Radiation' or 'Chronic Radiation'? Why?
3. Assuming that it can be classified as chronic radiation would it kill 100% of the people? Can you estimate what fraction of the crew members it would kill?
4. Assuming that it can be classified as acute radiation would it kill 100% of the people? Can you estimate what fraction of the crew members it would kill?
5. What is "virulent" about radiation? (Added: Most people gave a meaning of virulent to mean harmful or poisonous, which are really 'soft' definitions. Virulent doesn't really equate to either. For example, I could hit you over the head with a 2x4, which would certainly be harmful but there's nothing virulent about it. So, look up a precise definition of the word. Ask yourself what is the stem of virulent. Then try answering this question again.)
6. What do you think about the claim that the absorbed radiation would "probably destroy every cell in his body"? (Hint: think about your answers to questions 3 and 4).