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Letters

Radiation's deadly dose

"New estimates of radiation lethality..." (SN: 10/12/85, p. 232) uses the "old" unit of absorbed dose, the rad. The SI unit, the gray (Gy), should be used starting this year.

The article states that the lethal human radiation dose (LD-50) was previously believed to be 6 Gy (600 rads) to bone marrow. Other sources available to me indicate the value is about 4 Gy (400 rads). This would make a proposed reduction to 1.54 Gy (154 rads) about a factor of 2.5 rather than a factor of 4.

The LD-50 value is for radiation by itself, such as that due to distant fallout from nuclear weapons, with no subsequent medical care. One of the effects of large radiation doses is to reduce the blood's ability to clot and to fight infections. Thus a large radiation dose in conjunction with lacerations is far more serious than either the radiation dose or the laceration by itself.

Most of the victims of the 1945 bombings of

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332 Sick Chips

Cover: Two metal leads emanate from the active portion of a failed MOS FET, or metal-oxide semiconductor field-effect transistor. This MOS FET, shown magnified 540 times, was to have been used in the Infrared Astronomy Satellite. In laboratory tests, however, these chips kept failing — short circuiting — from defects caused by electrostatic discharge. The chip shown has four such defects. The most serious, and the one that caused the chip to fail, is the circular hole in the band of metal circuitry about an inch to the right of the upper lead connection. Today's state-of-the-art chips are especially vulnerable to electrical damage that can inflict symptomless yet severely life-shortening damage. (Photo: JPL/Caltech)



Departments

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Japan within "892 meters" of ground zero, with radiation doses of 1 to 4 Gy (100 to 400 rads), would have suffered lacerations and/or burns from the heat of the blast (larger doses would have been required to produce serious "radiation burns"). It would seem that the study may have counted deaths from the combined effects of radiation, lacerations and thermal burns, and attributed them to radiation alone.

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Regarding the LD-50 cited in the article, Joseph Rotblat notes in his paper: "This value has been deduced partly from animal data and partly from the few radiation accidents, many victims of which have been receiving extensive medical treatment. ... In the U.K. an LD-50 of [6 Gy] to bone marrow — deduced from these accidents — is being used in estimates of radiation casualties in a nuclear war." — J. Raloff

Hypothetical honor

I would like to call into question J.A. Miller's citation of Judah Folkman as the originator of the angiogenesis hypothesis ("Call of the tumor," SN: 10/5/85, p. 213). We believe this honor belongs to Stevan Durovic, M.D., who not only advanced this hypothesis from Argentina during the early 1940s but also supported it with such elegant research that he was sponsored to continue his work under A. C. Ivy, Distinguished Professor of Physiology at University of Illinois and Director of the American Cancer Society, during the next two decades.

Durovic and his colleagues have subsequently been quite successful in developing an organic antiangiogenic agent specific to many tumor cell types, and have demonstrated reversal of tumor growth due to angiocatabolism within 72 hours of its administration.

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