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of food irradiation.

The proposed federal bill further contains statutory provisions concerning proper labeling of irradiated food. This may be quite propitious. The current FDA regulations for food labeling do not apply to food products with an irradiated ingredient. For instance, irradiated tomatoes in tomato soup or irradiated peaches in a can of fruit cocktail would not have to be labeled as such. Moreover, the FDA regulation that irradiated foods must be labeled with a written warning and a logo is due to expire in April 1988; after that time, irradiated food will no longer require a written warning.

Active input from the scientific community may help structure proposed legislation in a way that is palatable to the public health.

Leo Uzych
Wallingford, Pa.

Sheltered from the storm?

In reading "In Search of Electrical Surges" (SN: 12/12/87, p.378), I was especially surprised by the lack of knowledge about the subject and by the lack of development of devices to help us protect our sophisticated electronic instruments of the Computer Age.

In 1982 I bought a telephone answering machine, a very fancy one, rated highly by CONSUMER REPORTS. Within months it blew out because lightning caused a power surge. I had it repaired, and I was sold a surge protector. When the next electrical storm came, the machine blew again. It was either that time or the next time around (after another repair) that I unplugged the machine from the AC power and heard it crackling, being damaged once again.

Incidentally, unlike computers or shavers, the answering machine is supposed to stay on when one is away, and one can't often rush home, if it might rain. I had to suffer with the machine totally disconnected when the weather forecast said there might be electrical storms that day.

Eventually, I realized that the damage was coming via the telephone line. No one had any surge protector for this purpose. No one could tell me the proper voltage or amperage the lines use.

Finally, my car mechanic suggested I install a simple fuse, as is found in car radios. I installed one for the red wire and one for the green. One of the people at the store where I had bought the machine guessed that a ¼-amp fast-acting fuse would be a safe bet. He was right. At a cost of about 23¢ each I was able to save my equipment from then on. Every time an electrical storm came around, the filament inside the cylindrical fuse would be pulverized, but my equipment would be safe, even if rendered inoperable for that day.

My main reason for writing this letter is to point out that your article did not mention fuses as a stopgap (literally) measure until someone perfects the surge protectors.

Henry J. Stark
Montgomery, N.Y.

It would seem from "In Search of Electrical Surges" that transient protection is primarily "witchcraft" and that scientists and engineers know very little about it. Nothing could be further from the truth! It is, in fact, a topic for which government standards exist along with well-known circuit design and grounding, bonding and shielding guidelines. In addition, the electrical surges caused by the electromagnetic pulse (EMP) from a nuclear burst are far more serious than those addressed in the article, and EMP effects have been studied by experimental and theoretical means since the 1950s. As a result, protection techniques against EMP have been developed and refined over the years, and these are certainly applicable to the problem at hand.

Since it appears that theoretical and experimental techniques and design guidelines do, in fact, exist, then what *is* the problem? The primary problem is a lack of technology transfer. The sophisticated techniques that have been developed over the years for use on government systems have not been transferred to the commercial sector in a timely fashion.

A second problem is that design engineers often fail to realize that this is a statistical problem and not a deterministic one. When theoretical models or guidelines fail to predict exact values that are observed, the theory and guidelines are often discarded as being worthless in favor of an empirical approach often bordering on "witchcraft." The answer, therefore, lies in technology transfer and continuing education.

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Correction: In "The curious power of large numbers" (SN: 1/30/88, p.70), the fourth of the smallest integers that fit Euler's conjecture for fourth powers should be 422,481 instead of 422,560.