

Spermicides and birth defects

An epidemiologic study showing an association between spermicide use and birth defects was flawed, claims one of its authors. A second author says it should never have been published. But in a battle being played out in the letters section of the Dec. 12 JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION, other authors of the initial report are standing by it.

In 1981, Hershel Jick of Boston University and others studied the incidence of birth defects for 790 Seattle women who had filled prescriptions for spermicides fewer than 600 days before miscarrying or delivering a baby. They compared this with the birth defect incidence of women who delivered or miscarried around that time who had not purchased spermicides. They found a 2.2 percent incidence of birth defects and a 3.5 percent miscarriage rate in the spermicide purchasers, compared with 1.0 percent and 2.0 percent in the control group (SN: 4/11/81, p. 229).

But subsequent studies and a Food and Drug Administration panel failed to confirm the relationship, and study coauthor Richard N. Watkins of Seattle's Group Health Cooperative of Puget Sound now says that the original conclusion "was based on an inaccurate presumption of exposure to spermicide near the time of conception."

Watkins reexamined the medical charts of the eight women in the spermicide-purchasing group who had had deformed children and found that four said their pregnancies were planned, suggesting they had stopped using spermicides before conceiving.

Another coauthor, Lewis B. Holmes of Massachusetts General Hospital in Boston, notes that no subsequent articles have shown "unequivocal evidence" of the association and that the type of careful reservations about the strength of the study included in the original publication tend to be ignored in courts of law. "In retrospect," he says, "I believe our article should never have been published."

But Jick and two coauthors stand by their work. "A number of authors have found associations between spermicide use and both chromosomal anomalies and limb anomalies very close to those reported by us," they write. While an association with limb-related birth defects "remains in substantial doubt," they say, the literature on chromosomal abnormalities "is more supportive . . . but it is far from definitive." They "still believe that [the] report did address plausible hypotheses, was valid in its conception and conduct, was circumspectly reported and is consonant with much material published both before and since."

Nasal sundae: Something to sneeze at

If you're allergic to chocolate, it may be important to keep your nose clean. A 23-year-old Minnesota woman with a chocolate allergy came into the emergency room at the St. Paul-Ramsey Medical Center recently, saying she had been sneezing every five to 10 seconds for two hours. Immediately before her bout of sneezing, it seems, an inebriated dinner companion had shoved some chocolate-topped ice cream into her nose. Though she had washed her nasal passages out, it hadn't helped.

Emergency room physician James T. Sturm, who says he's never heard of such a case before, administered cocaine to anesthetize the nasal passages and reduce the swelling. (Cocaine is a commonly used anesthetic in medicine.) The woman stopped sneezing within five minutes, he reports in the Dec. 4 NEW ENGLAND JOURNAL OF MEDICINE. His hypothesis: Something in the chocolate was absorbed by cells in the nasal passage, triggering an irritant reflex. The cocaine, he says, might have slowed the absorption of the irritant by constricting blood vessels.

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Stefi Weisburd reports from the American Geophysical Union/
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Radio waves signal earthquakes

From the bright flashes reported to appear in the sky during strong earthquakes to computer breakdowns during severe tremors, scientists have long suspected that seismic activity is associated with a variety of electrical effects. Recently researchers have been taking a careful look at this link, with an eye toward using it to predict earthquakes.

One such study is being conducted by Joseph Tate of Ambient Research in Sausalito, Calif., and William Daily at Lawrence Livermore National Laboratory in Livermore, Calif. With a system of radio wave monitors distributed along California's San Andreas fault, the researchers have recorded two kinds of changes in atmospheric radio waves prior to earthquakes that occurred between 1983 and 1986.

The most common change is a drop in the radio signals that normally pervade the air as a result of lightning and human sources such as car ignition systems and electric power grids. This reduction typically occurs one to six days before an earthquake and can last for many hours. For example, a magnitude 6.2 earthquake that shook Hollister, Calif., in April 1984 was preceded six days earlier by a 24-hour drop in radio signals being monitored 30 miles from the quake's epicenter. Tate and Daily have found that the larger the earthquake, the longer the time between the radio wave depression and the quake.

Laboratory studies have shown that the electrical conductivity of rocks increases as they are stressed. Based on this and their electrical modeling of the ground, Tate and Daily think the increased conductivity of stressed rocks near the fault causes more radio waves to be absorbed by the ground rather than their traveling through the air. They also plan to test a possible link between radio wave drops and the emission of radon gas, which itself is thought to be a quake precursor. The radon may ionize the air, making it temporarily more absorptive than the detector antenna.

The researchers have also found, in addition to these drops, another prequake phenomenon in which short pulses of *increased* radio wave activity are emitted. For example, five days before the magnitude 6.5 earthquake hit Palm Springs, Calif., in July 1986, a station 15 miles from the epicenter detected a rise in radio signals. This sort of emission is consistent with laboratory work showing that cracking rocks release electromagnetic signals.

Tate says that in their first attempts at predicting earthquakes in 1984 and 1985, they did not miss a single event, so he is optimistic about using this technique for short-term forecasting of San Andreas quakes. "In three to five years," he says, "we should be able to issue [earthquake] warnings."

Ionoquakes from groundshakes

Atmospheric phenomena might also be used to detect certain ongoing earthquakes. According to Robert L. Showen and his colleagues at SRI International in Menlo Park, Calif., earthquakes that shake the ground up and down, rather than causing it to slip and slide sideways, trigger atmospheric pressure waves. The disturbance produced by these waves in the ionosphere is known as an ionoquake.

Showen and others have detected a few ionoquakes following earthquakes while probing the ionosphere with radio waves. Showen now reports that his group detected an ionoquake generated on July 21, 1986, by a magnitude 6 earthquake that occurred in Bishop, Calif. The ionosphere soundings were taken about 124 miles away from the quake's epicenter and with a new configuration of their sounding instruments.

"Previous detections had been much farther away and with more subtle effects," he says. "This is another, strong indication that waves from a seismic event can in fact produce an effect in the ionosphere."

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