

BIOMEDICINE

Julie Ann Miller reports from Chicago at the Interscience Conference on Antimicrobial Agents and Chemotherapy

Food poisoning from the marijuana

An outbreak of severe food poisoning last January in various areas of the United States puzzled epidemiologists. The bacterium responsible, *Salmonella muenchen*, generally causes problems in the summertime. Because the outbreak occurred simultaneously in areas several hundred miles apart and continued for months, investigators from the Centers for Disease Control suspected a contaminated commercial product was involved. A survey of the victims failed to implicate any food, restaurant or social function. Because an unusually high proportion of the victims were in the 10 to 29 year age range, the investigators asked about illicit drug use. More than half the teenagers and young adults admitted smoking marijuana, and two-thirds of the younger children came from homes where marijuana was used. So the scientists obtained marijuana from the victims and found it heavily contaminated — more than a million *S. muenchen* per gram. Bacteria from marijuana in Ohio, Michigan, Georgia and Alabama, where the initial outbreak occurred, contained two plasmids, small rings of genetic material. These plasmids were also found in marijuana associated with *S. muenchen* in Arizona, California, Massachusetts and Wisconsin, but not in 46 strains not associated with marijuana and isolated in previous years. So marijuana indeed appeared responsible for last January's outbreak.

An important question, of course, is how the victims acquired the bacterium via the marijuana. Since feces are a common source of *Salmonella* infections, David Taylor of CDC believes that manure containing *S. muenchen* was added to the marijuana before it was shipped or distributed in order to increase its weight. The victims might then have handled the contaminated marijuana themselves, or they might have contracted *S. muenchen* from ashtrays used by other people who smoked the contaminated marijuana. In any event, "this is a fairly unique situation," Taylor concludes, that exemplifies *Salmonella*'s "remarkable ability to find and infect human hosts."

Chlamydia infection widespread

A surprisingly high incidence of *Chlamydia trachomatis* infection was reported both among women attending an inner city obstetrical clinic and among women at an eastern college. The sexually transmitted bacterium seldom causes problems in women, but can be responsible for nongonococcal urethritis in men and for eye infections and pneumonia in infants born to infected mothers. Although chlamydial infection has generally been associated with poor populations, William M. McCormack of the Massachusetts State Laboratory Institute and Stephen H. Zinner of Brown University find the infection "not uncommon" among healthy, sexually experienced, middle-class, female college students. The incidence, which was 5.2 percent among all 458 students, was higher in those with many sexual partners and in blacks and was lower in those who used a diaphragm or condoms for birth control.

Among economically disadvantaged pregnant women at the New Orleans Charity Hospital 22.7 percent of those studied were infected, David H. Martin of the U.S. Public Health Service Hospital in New Orleans reports. "This is the highest prevalence rate of chlamydial infections ever reported in women studied outside a venereal disease clinic setting," Martin says. Martin and colleagues examined the regular sexual partners of infected women. More than half these men were also infected, although few showed any relevant symptoms. "This observation indicates that asymptomatic infections in males are much more common than had been recognized previously," Martin says. "They undoubtedly play an important role in the continued dissemination of the disease."

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EARTH SCIENCES

Radon: Cause for interest, not alarm

The recent flurry of publicity notwithstanding, scientists in California studying levels of radon and other possible precursors of earthquake activity are far from being able to predict reliably that a major earthquake will occur in the near future. A written statement issued by John Filson, chief of the United States Geological Survey's Office of Earthquake Studies in Reston, Va., stresses that there is no reason to change the usgs notification in July 1980 that "a major earthquake could occur in southern California within an indefinite time (possibly a few months or years)."

During one in a series of meetings over the last few years to review data related to earthquake prediction, scientists meeting November 4 at the California Institute of Technology in Pasadena described increased seismic activity since 1978 in both northern and southern California. In southern California, quakes with magnitudes 5.0 or greater (Richter) or "intense swarms" of earthquakes have occurred every three to four months. This incidence is three to five times the level between 1952 and 1978 but comparable to that of the period before 1952. Participants also reiterated reports of anomalous levels of strain, water and radon gas (SN: 10/17/81, p. 247).

Fluctuations in levels of radon, a radioactive inert gas with a short half-life, may be a precursor for earthquake activity. Mark Shapiro of the W. K. Kellogg Radiation Laboratory at Caltech explains that scientists lack a statistical basis for understanding what percentage of the time such anomalies precede major quakes. "Still, the probability of a moderate to strong earthquake of magnitude 6.0 or greater is higher with the presence of these anomalies than without them." Kate Hutton, also of Caltech, suggests that the recent increase in seismic activity may be short term or that it could result from nonuniform plate motion and a change in accumulation of strain. In 1952 a quake of magnitude 7.7 occurred in Kern County. "This may have relieved stress enough that we haven't seen the usual activity," she said.

In July, Caltech and Gulf Science and Technology Co., a subsidiary of Gulf Oil Corp., began a project to continuously monitor gases including hydrogen, helium, carbon dioxide and methane emanating from the ground near earthquake faults. It is hoped that information on other gases may be complementary to the radon data in predicting earthquakes. The scientists also hope to test a controversial theory of Thomas Gold of Cornell University in Ithaca, N.Y., that huge amounts of methane, trapped during the earth's formation, remain between 15,000 and 30,000 feet beneath the earth's surface (SN: 4/25/81, p. 267).

If a tree falls and no one hears . . .

When Mt. St. Helens erupted in May 1980, the blast snapped off trees in a 500-square-kilometer area as though they were so many matchsticks. The din must have been thunderous, but most survivors report a sense of calm and quiet, never mentioning the sounds of a forest crashing down around them. Susan W. Kieffer, a geologist with the U.S. Geological Survey in Flagstaff, Ariz., explains that in the blast zone the dense concentrations of dust and pine needles would have caused the sound waves to attenuate much as they do during a heavy snowstorm. In clear air, sound carries 10 to 20 kilometers, but in the Mt. St. Helens dust cloud, sound carried perhaps only 10 meters. Also, Kieffer reports, within about 11 kilometers of the vent, the blast — a supersonic flow composed of gas, liquid and solids — would have pushed sound before it. Had witnesses survived within the zone of supersonic flow, they probably would have heard trees snapping off as the blast wave approached, but would have seen the trees break soundlessly as the wave proceeded past them down the slope.

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