

procedures. For some individuals and groups, regulation alone acts as a deterrent."

Scientists who wrote in support of changing the guidelines from regulations to recommendations include Stanley N. Cohen and Paul Berg of Stanford and William J. Rutter and Howard M. Goodman of the University of California at San Francisco.

Some of the discussion at the Sept. 10 meeting focused on political and social functions of the guidelines. Berns reports that scientists at a prestigious meeting this summer, as well as his congressman, want some federal guidelines maintained to keep public confidence and avoid re-generation of public concern.

"We did provide Congress with the opportunity to say 'the problem is being handled, we don't need legislation,'" Baltimore says. "I think we [of the RAC] need to be here to give substance to the notion the federal government is still interested in the guidelines." □

Bacterial hazards at Mt. St. Helens

While Mt. St. Helens simmers without erupting, the gravest danger to those allowed within the restricted zone near the volcano may be posed by tiny airborne water droplets. Scientists testing water in the zone find that about half the samples show abundant levels of seven or eight different *Legionella* bacteria, although not all strains are capable of causing disease in humans.

Only one of the *Legionella* bacteria causes Legionnaires' disease, the illness that broke out in Philadelphia in 1976, says Clifford Dahm, a chemist at Oregon State University in Corvallis. Other less virulent strains also cause respiratory illness accompanied by headache, high fevers that persist for 24 to 48 hours and minor sore throats. Like Legionnaires' disease, the other strains are thought to be transmitted by water droplets.

In August scientists from Oregon State and the U.S. Forest Service recommended that caution signs be posted at mountain lakes to alert people of potential health hazards. When tourism increases, they say, so might the incidence of *Legionella*. The scientists are concerned that numbers of bacteria tend to increase in warmer waters, especially during August and September when water temperatures peak in the Northwest. If the volcano heats up again, Dahm says, the warming and the increase in nutrients to lakes and streams could result in further outbreaks.

Eight cases reported in the summer of 1980 and one this summer displayed *Legionella*-like symptoms, although none were confirmed through lab tests as *Legionella*, Dahm says. The illness responds well to erythromycin. □

Preventing hydrocephalus in infants

A tiny valve may for the first time hold out hope for the prevention of hydrocephalus, say two separate teams of scientists working with animal and human infants.

Valves implanted in the skulls of monkey fetuses suffering from "water on the brain" can reliably drain the fluid throughout pregnancy before a pressure build-up causes significant brain damage, report two researchers from the National Institutes of Health in Bethesda, Md. Together with the successful implantations of a similar valve in a human fetus by a team of Colorado surgeons in April, the NIH work—reported by Gary Hodgen and Maria Michejda in the Sept. 4 *JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION*—offers a preventative treatment for the estimated 4,000 hydrocephalic infants in the United States each year.

Hydrocephalus is one of a number of conditions that can be triggered by defects in the neural tube, the bundle of embryonic nerve fibers that becomes an infant's brain and spinal cord. Neural tube problems strike two of every 1,000 babies in the United States, often with devastating effects. Some of the defects, like mild cases of spina bifida, in which a gap in the spinal column permits the spinal cord to protrude to the surface of the infant's back, can be repaired successfully after birth. But until now, prenatal hydrocephalus, a condition often accompanying spina bifida, has damaged the developing fetal brain before surgeons could offer help.

When hydrocephalus strikes, a block in the neural tube prevents fluid that usually bathes the brain and spinal cord from circulating throughout the system; rather, the fluid is trapped in certain brain cavities, or ventricles. The cumulative pressure exerted by collecting fluid can result in mental retardation, convulsions, paralysis, and even death in many infants.

Physicians can detect hydrocephalus in ultrasound images as early as the twentieth week of pregnancy, but have been able to offer distraught parents only postnatal shunting of the fluid, which can help in milder cases, or abortion.

"When confronted with the consequences of severe fetal malformations," says Hodgen, "the adage 'an ounce of prevention is worth a pound of cure' seems worthy of serious consideration." To test their method of defect prevention, Hodgen and Michejda induced hydrocephaly in 36 rhesus monkey fetuses. Between the second and third trimesters of the mothers' pregnancy, the researchers, guided by ultrasound images, inserted the valve in some of the infants through a small incision in each mother's abdomen, and into a seam in the fetal skull.

Once the needle-thin tip of the device penetrated 14 millimeters of the fluid-filled ventricle, metal threads at the broader top

of the valve locked the vent in place, until its removal at the infant's birth. If pressure in the fetus's head rose above a normal 60 millimeters of water, the valve automatically shunted excess fluid into the surrounding amniotic sac.

Of the monkeys with valve implants, 80 percent survived birth and of those, nearly all seem healthy and neurologically normal nine months later, Michejda reports. But, she says, further tests of the developing animals' motor and cognitive skills will be needed to assess any subtle brain damage. Only 10 percent of the hydrocephalic monkeys without valves survived birth, and all died within two weeks.

The successful work in monkeys gained immediate human relevance earlier this year when a team led by William H. Clewell of the University of Colorado Health Sciences Center in Denver installed their own prosthesis in a 24-week-old hydrocephalic human fetus, using techniques similar to those used at NIH. The infant was delivered by Caesarean section several weeks prematurely in mid-July when the shunt clogged and pressure in the brain again began to build. A different type of shunt was inserted after birth and the youngster is "alive and eating and is now at home with the family," Michael L. Johnson, a member of the surgical team, told *SCIENCE NEWS*.

"Needless to say, we are very excited about this surgical procedure in the fetus and its potential implications for the unborn child with hydrocephalus," Johnson says. "Unfortunately, it may be some time yet before we can adequately evaluate the success of the procedure from a neurologic and developmental point of view." □

Valve vents excess fluid from brain of 120-day-old monkey fetus.



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