

Soviets to allow monitoring in USSR

Beginning next year, the Soviet Union will grant U.S. scientists their first opportunities to monitor Soviet nuclear testing from within the USSR, according to the Natural Resources Defense Council (NRDC). The plans, announced by NRDC last week, come as part of a renewal of an agreement between the Soviet Academy of Sciences and the NRDC, a private advocacy group based in Washington, D.C. (SN: 5/30/87, p.345).

Also as part of the agreement, the USSR will set off a chemical explosion of known yield this August or September. The explosion will help geologists determine how seismic waves weaken as they travel through the ground from the Soviet test site in Kazakhstan, says Lynn Sykes of the Lamont-Doherty Geological Observatory in Palisades, N.Y.

According to S. Jacob Scherr, an NRDC official, last week's agreement will greatly enhance U.S. seismologists' ability to determine the yields of Soviet explosions. "For 40 years," he says, "the Soviets have treated seismic recordings of their nuclear tests as secret." Scherr believes the new seismic data will help prove that the issue of verification — one of the major stumbling blocks of negotiations on testing limits (SN: 10/26/85, p. 268) — is not a barrier to a future nuclear test ban.

Although both the U.S. and Soviet governments pledged in the 1970s to honor a testing limit of 150 kilotons, the two have yet to officially ratify any treaty that limits the threshold of nuclear weapons testing.

Last summer, scientists working with the NRDC set up three seismologic stations approximately 200 kilometers from Kazakhstan. However, since Soviet testing resumed last February after a self-imposed moratorium of 19 months, the

Soviets have required that the seismometers at these stations be turned off during testing. According to last week's agreement, the USSR will allow the seismometers to operate during upcoming tests, but NRDC must relocate the stations at least 1,000 km from the Kazakhstan site. The agreement also provides for the installation of two additional stations at this new distance.

As part of the ongoing agreement, similar seismic stations are being installed near the U.S. testing site in Nevada. A dedicated phone line will link the monitoring stations in the United States and the USSR, giving U.S. scientists access to the data from the stations in the USSR, and vice versa.

With the five future stations in the Soviet Union, U.S. seismologists should be able to reliably detect tests as small as 1 kiloton, which would enable verification down to that level, says Adrian DeWind of NRDC. "A test ban on any tests above 1 kiloton," says DeWind, "would be virtually a comprehensive test ban because there would be little or no military significance for testing at that level."

U.S. State Department reaction to this agreement echoes previous statements concerning the NRDC's negotiations with a wing of the Soviet government. "As we've said on previous occasions, we believe that issues with such strong national security implications as nuclear testing can only be resolved in the government-to-government context," says State Department spokesperson Bruce Ammerman.

Politics aside, seismologists in the United States welcome the opportunity to obtain seismic readings from within the USSR, says Sykes. "I think that's an important point: Is this a major effort of scientific quality, or is it something that's politics, masquerading as science?" he asks. "I think, clearly, there's good instrumentation and good data coming out of this."

— R. Monastersky

Using tires to track pollution

Like detectives, scientists must rely on telltale clues when tracking down the major sources that pollute water systems near cities. In one of the latest investigations, researchers suggest that microscopic bits of a tire tread will lead them to one of these sources of contamination: the toxic chemicals that run off roads into bays and estuaries.

These results come from an analysis of sediments from the bottom of San Francisco Bay. Scientists from the Lawrence Livermore National Laboratory in Livermore, Calif., report in the June 25 NATURE that they found high concentrations of an unknown substance, which they subsequently identified as rubber compounds from automobile

tires. They propose that these compounds, called benzthiazoles, could serve as a tracer for certain toxic chemicals called polynuclear aromatic hydrocarbons (PAHs).

PAHs are present in petroleum and are produced by incomplete combustion of anything from wood to gasoline. They are a major threat to the wildlife of estuaries, say Livermore scientists. As part of car exhaust, PAHs settle on the road and wash into water systems via runoff during rain. Other sources range from industrial discharge to oil spills, and scientists need to gauge how much each source contributes to the total amount of PAH contamination.

— R. Monastersky

Soft lens users: Clean 'em or weep

For some years, optometrists and ophthalmologists have noted an increase in the number of corneal infections associated with the use of soft contact lenses, but the precise cause of the problem has been difficult to determine. Now, researchers at the Centers for Disease Control (CDC) in Atlanta have released the results of a study that sought to identify risk factors linking soft lens wear with a rare amoebic infection of the cornea, *Acanthamoeba* keratitis. They conclude that *Acanthamoeba* infection rates appear to be closely related to improper maintenance and cleaning of soft lenses by users.

In particular, they report, improper use of homemade saline solutions may be a major cause of the amoebic infections, which have been reported to the CDC with increasing frequency among soft lens users since 1985. The amoeba can be found in water, soil and saline, where it feeds on yeast cells and bacteria. Ocular infection with *Acanthamoeba* can result in partial or total loss of vision.

Jeanette K. Stehr-Green and her colleagues report in the July 3 JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION that *Acanthamoeba* patients "were significantly more likely than controls to use homemade saline instead of commercially prepared saline and . . . to disinfect their lenses less frequently than recommended by lens manufacturers." Homemade saline solutions — made by dissolving salt tablets in water — are not sterile, they point out, even when made with distilled water, and can quickly become overgrown with potentially infectious bacteria and amoebas. These nonsterile salines are meant to be used only if the contact lenses are to be subsequently sterilized.

Richard Lippman, director of the Food and Drug Administration's Division of Ophthalmic Devices, told SCIENCE NEWS, "We're very concerned about the use of salt-tablet solution because people use it incorrectly as a rinse and as eyedrops." The FDA is currently talking to salt-tablet manufacturers about making warning labels "more readable," Lippman says. He notes that *Acanthamoeba* keratitis is still not common (only about 100 cases have been reported in the United States since 1973) in comparison to the bacterial infections and corneal ulcers that have for some time been associated with the use of soft contact lenses. Nevertheless, he says, "I have to factor in the seriousness of *Acanthamoeba*. Corneal ulcers can usually be caught and treated, but we throw everything in the book at these amoebas, and patients may still end up needing corneal transplants."

— R. Weiss