RANDOM SAMPLES

edited by IVAN AMATO

Making a Chemical Warfare Treaty Work

It often isn't hard to turn good chemistry into deadly chemistry. A solvent used to make ink for ballpoint pens, thiodiglycol, is a one-step conversion away from a chemical warfare agent, for example. Such dual-use chemicals are scheduled for new regulation under the long-awaited Chemical Weapons Convention (CWC), a global arms control treaty with the goal of eliminating chemical warfare. If enough signatories ratify it, the CWC could enter into force in early 1995. But how the chemical industry will cope with the treaty's verification regime, including unprecedented reporting and on-site inspection requirements, remains uncertain.

A background paper released on 4 August by the Office of Technology Assessment (OTA) outlines how complying with the CWC will affect United States industries that make, use, or buy treaty-controlled chemicals. It won't be easy. For dual-use compounds like thiodiglycol, compliance will mean creating new paper trails to track the chemicals. Even trickier will be protecting confidential business information, especially during routine on-site inspections, in which an international team of CWC inspectors could be scouring a declared commercial facility only 48 hours after notification. In chemical industries, where the competitive edge often depends on exclusive knowledge of unpatented trade secrets or process conditions, the presence of foreign inspectors raises concerns about spying. The CWC does have provisions that should enable companies to render the added threat of espionage marginal, the report says.

The inspections also raise certain legal issues since the Fourth Amendment to the Constitution protects citizens and corporations from "unreasonable searches and seizures." The domestic implementing legislation that will translate the treaty provisions into U.S. law will have to reconcile inspection protocols with the Amendment or some companies might refuse access.

"We are not trying to paint a bleak picture," stresses Jonathan B. Tucker, who was OTA's principal analyst for the study. "The thrust of the background paper is that there are tough challenges but they can all be addressed." The Chemical Manufacturers Association, which represents many companies that will be affected, agrees. Says Owen Kean, a spokesman: The CWC "is going to have its costs, but this industry is unconditionally behind the principles of the treaty."

PACIFIC NORTHWEST MUSEUM OF NAT. HIST.

Model museum. By next summer, Ashland, Oregon, should have a new museum of the region's natural history to offer visitors.

Oregon Natural History Gets Its Own Museum

Thirty-eight years ago, Ron Lamb, then a biology professor at Southern Oregon State College, had a dream: He wanted to build a museum dedicated to the flora and fauna of the Pacific Northwest. Now, the first walls surrounding what will be the 30,000-square-foot Pacific Northwest Museum of Natural History are standing in Ashland, Oregon. "The walls do give it a greater sense of reality," says Lamb, who is now retired and has the time to put in long hours as the fledgling museum's executive director.

He's happy to do it. After 8 years spent convincing government and industrial sources and even private individuals that his vision is worth backing, Lamb and his volunteers have raised three-quarters of what they need to finish the job. The $10 million facility, which will sit on a 15-acre parcel donated by Southern Oregon State, is scheduled to open next July.

Located at the base of a pass that marks the gateway to the Pacific Northwest, the museum is devoted to explaining the region's natural history. It will double as an information support center for people who want to know more about the U.S. Fish and Wildlife Service's Forensics Laboratory, which sits on an adjacent plot. In turn, the lab, whose scientists investigate poaching and other wildlife crimes, will loan the museum material for exhibits and programs. Lamb hopes it will be a stimulating collaboration. "I want the museum to do for the general public what I used to try to do for my college kids—fill them with a sense of wonder, and turn them on to science," he says.

DOE Doles Out Millions For High Tech Tools

Since 1984, science departments doing some energy-related research and in need of costly equipment to carry out the work have been able to ask the Department of Energy (DOE) for the bucks to pay for the tools. On July 22, two dozen science departments at 17 universities heard good news, collectively receiving $5.2 million under DOE's University Research Instrumentation Program.

The University of Utah cashed in the most, with a take of over $565,000. Its biology department will get $235,426 to buy a mass spectrometer specially suited for measuring isotope ratios; Utah chemists will get $330,000 for a new NMR spectrometer that can scan solid samples. Other institutions also hit the equipment jackpot. Cornell's chemistry department will soon be unpacking a battery of new lasers worth $236,325. For chemical engineers at the Virginia Polytechnic Institute and State University, it will be a $249,000 ultrahigh vacuum scanning tunneling microscope. Physicists at Kansas State will soon be watching the carnage occurring in a $185,185 ion-ion collision facility. Now the challenge is to translate those one-time instrument awards into multiple scientific payoffs.

DNA With a Designer Name

The disclaimer in an ad for a new fragrance called "DNA Perfume" could stand tall amongst the best zen koans: "DNA fragrances do not contain deoxyribonucleic acid (DNA) except as included in the ingredients list on product packaging." It would seem that DNA Perfume contains DNA and it doesn't contain DNA.

Scientists may have a hard time with this logic, but the ad is trying to sell a new fragrance designed by Bijan, an elite menswear designer, not nucleic acid research materials designed by Roche or Perkin Elmer.

Still, does Bijan's DNA Perfume contain DNA or not? Brett C. Neubig in Bijan's Beverly Hills public relations office explains that neither DNA Perfume for Women, which was introduced in April, nor DNA for Men, which will be introduced in October, contains any DNA whatsoever. A body moisturizing product that also goes under the DNA rubric, how-

BIJAN IN-HOUSE P.R.

ever, does contain DNA molecules as a component of caviar extract, which is a major ingredient in the moisturizer. "The moisturizing properties of DNA logically result from its richness in hydrophilic groups, which bind a large amount of water," Neubig relayed to *Science* in a fragrant press package. As for the DNA-free DNA fragrance koan, Bijan has a ready explanation: His three children, all of whom definitely contain DNA, are Daniella, Nicolas, and Alexandra.

All in all, it's the most mass marketing for life's master molecule since *The Double Helix* hit bookstores several decades ago. And to capitalize on the connection, Bijan's publicists say that he'll attend a banquet for corporate sponsors of a high-powered DNA conference at the University of Illinois at Chicago in October. Among other attendees: James Watson and Francis Crick.

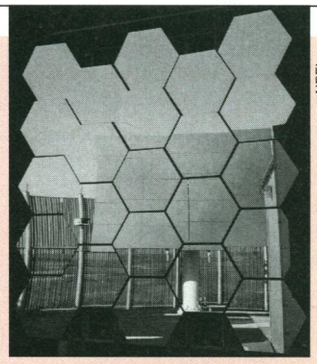
A Manhattan Project by Any Other Name...

When presidential candidate Bill Clinton promised a Manhattan Project for AIDS, many researchers balked at the notion, arguing that too much top-down direction would compromise investigator-initiated basic research. But a meeting held last week at the University of Wisconsin (UW) indicates that leading AIDS researchers—though loath to actually use the phrase "Manhattan Project"—believe the time is ripe for an expanded, more targeted approach to the disease.

Twenty leading AIDS researchers joined influential government officials and AIDS activists at the invitation-only 2-day meeting, intended to highlight ways to speed the search for an AIDS cure. No startling conclusions came from the discussion, although attendees described it as a "historic meeting." But a consensus statement drafted at the end of the gathering called for prioritizing and targeting research questions. The statement also emphasized the need to identify and fill research gaps, expand AIDS research beyond the National Institutes of Health (NIH), improve cooperation between privately and publicly funded researchers, and spend more money on both basic and applied HIV research.

Called "Future Directions in AIDS Research: Towards a Cure...," the 30-31 July meeting was sponsored by UW, the Harvard AIDS Institute, and the San Francisco-based AIDS activist group Project Inform. The list of attending agenda-setters included Anthony Fauci and Robert Gallo of NIH, Food and Drug Administration commissioner David Kessler, White House AIDS policy coordinator Kristine Gebbie, and AIDS activist Larry Kramer, who is known for publicly criticizing government officials and researchers. But not this time. "There was a camaraderie that, quite frankly, has not been in existence since the beginning [of the AIDS epidemic]," said Kramer. That's good, since the meeting is envisioned as the first of many.

Wanted: Work for 50,000 Suns



NREL

Mirror, mirror. Concentrated sunlight could spur industry.

The hole melted through a brick on display in Al Lewandowski's office looks like the work of a Star Wars laser. Actually the deed was done by the sun and an array of mirrors that greatly concentrated the sun's intensity. The array is the heart of the experimental High Flux Solar Furnace, run by Lewandowski and part of the National Renewable Energy Laboratory (NREL) in Golden, Colorado. Why would somebody want a furnace that can muster solar intensities up to 50,000 suns? The destruction of soil contaminants and depositing diamond films onto substrates for making electronic components are a couple of proven reasons. Still, during its 4-year existence, the furnace hasn't been in high demand. That is about to change, Lewandowski hopes.

On 16 July, the Department of Energy, NREL's parent agency, designated the furnace as a National User Facility, which means it could be open to any researcher willing to pay a negotiated fee. Lewandowski especially hopes that the new designation attracts more industrial prospectors, who might test the furnace's commercial potential and, if satisfied, build one of their own.

The garage station-sized facility, atop South Table Mountain, concentrates sunlight in two steps. First a heliostat, an array of mirrors that follows the sun, reflects sunlight onto a bank of hexagonal concentrator mirrors. These boost the sunlight to intensities of about 2500 suns. A secondary concentrator hoists the energy to 50,000 suns, making the High Flux Solar Furnace more powerful than any of the world's other ten or so solar furnaces.

Despite its size, the furnace has advantages over other high-temperature processing methods: It gets energy for free and delivers it more rapidly and uniformly over a larger areas. Those are big pluses, says Michael Anderson, marketing director for Brush Wellman Inc. The company is currently testing the furnace's ability to bond metal films onto ceramic substrates, which could end up as electronic components for the cellular telephone industry. Processing with the solar furnace "has exceeded our expectations," Anderson says, adding that the company is considering building a furnace of its own. If more companies follow suit now that the furnace is a National User Facility, the power of 50,000 suns could become commonplace.

Mt. Unzen Be Dammed!

In June 1991, Mt. Unzen awoke after a quiet 200 years, killing 43 people, including volcanologists from several countries. The Japanese volcano has been wreaking havoc ever since. The mountain has been spitting ash and rock onto its upper slopes; heavy rains then turn this debris into mud slides that wipe out houses and send residents fleeing for safety. The pattern is expected to continue for at least another decade.

Japan's Ministry of Construction has had enough. The agency is out to tame Mt. Unzen's mud flows and has asked for funding for control structures that it plans to start building in 1995. The first stage entails a series of earth or concrete embankments forming a 100-meter-wide channel to steer mud flows to the Ariake Sea. The second stage calls for dozens of dams and earth-retaining structures on the upper reaches of the river valleys on the mountain's southeast side, where the eruptions are occurring. The preliminary cost estimate for the plan: $800 million.

But some scientists feel that the mountain's fickleness could overwhelm the money's buying power. An eruption last June 23, for instance, coursed down a previously untouched river valley on the northeast slope, killing one and destroying 80 homes. Countering that threat would require additional costly control structures. "I'm afraid it would be a waste of money," says Setsuya Nakada, a volcanologist with Kyushu University's Shimabara Earthquake and Volcano Observatory. "The best thing would be to move those who live in dangerous areas to safer places," he says. Clearly, volcano control is not yet a mature field.