CALIFORNIA EPA

Paper-Trail Cleanup Memo Sparks Furor

The California Environmental Protection Agency (CalEPA) is in an uproar over a proposed policy that would require some agency scientists to destroy initial drafts, electronic mail, and other documents that do not reflect final regulatory rules. Last week, CalEPA officials put the proposed policy on hold after environmental and journalist organizations filed a lawsuit. But the episode has provided a golden opportunity for the agency's critics to charge that the "shredder" policy is an attempt to stifle scientific dissent on sensitive environmental regulations.

The controversy centers on a four-page memo circulated on 19 April by Charles Shulock, chief deputy director of CalEPA's Office of Environmental Health Hazard Assessment (OEHHA). Called the Records Retention Policy, it directs staff to "dispose of" "all pre-decisional deliberative material not reflected in the final decision or document," including electronic mail, drafts, and "other communications." According to the memo, the policy's objective is to "[protect] ... candid, uninhibited scientific exchange" and "guard against confusion caused by conflicting statements made in the course of deliberations and discussions."

OEHHA scientists began complaining about the memo to their union, the California Association of Professional Scientists. And on 1 October, the Society of Professional Journalists and two environmental groups, the Natural Resources Defense Council (NRDC) and the Environmental Law Foundation, filed a suit in Superior Court in San Francisco challenging the policy. OEHHA director Richard Becker suspended action the same day, saying no documents had been destroyed. He later told *Science* that the memo would not have required staff to destroy scientific data, and that he "freely admits" that it caused "considerable confusion." At press time, NRDC and CalEPA were negotiating a revised strategy for handling internal documents.

Observers say that the proposed clampdown came as no surprise. CalEPA is constantly contending with queries from environmentalists who often find fault with agency decisions. "I think it's an attempt to keep disparate opinions out of the hands of people who could inflate them for their own purposes," says Thomas Mack, a University of Southern California epidemiologist who chairs a CalEPA advisory committee.

Not surprisingly, environmental organizations see the memo in a somewhat darker light. William Pease of the Environmental Defense Fund, an environmental organization which is working with the NRDC on the issue, contends that it is part of a pattern of agency managers censoring scientists' decisions on sensitive matters, such as a recent report on pesticide spraying near the town of Lompoc in Santa Barbara County. Becker, however, counters that "there is no connection between [the memo] and any study."

Few agency researchers have spoken publicly about the issue, but one midlevel scientist spoke to *Science* on condition of anonymity: "Management is telling senior staff that this is what they're going to send out the door and don't bother with any further analysis." The scientist also contends that over the past 2 years, staff had increasingly been told to revise and even change conclusions. "That has infuriated basically all [of us]."

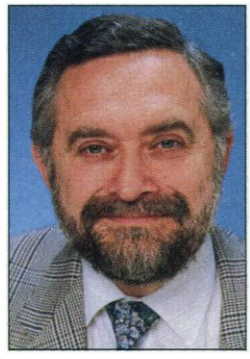
Mack says, however, that he is skeptical of the charges that managers—whose job is to combine scientific information with economic considerations—have been quashing dissent. He characterizes the memo more sympathetically as a "clumsy attempt to speak with one voice as an agency." Epidemiologist Richard Jackson, who left the agency in 1992 and 2 years ago became head of the Centers for Disease Control and Prevention's National Center for Environmental Health, offers another view. When asked whether managers have tampered with scientists' conclusions, Jackson responded: "I've observed increasing mistrust between the management and the scientists within OEHHA over a long period of time. I think the memo was simply a breaking point for a lot of people."

–Jocelyn Kaiser

SCIENCE PRIZES

Critics Say Laskers Omitted NO Pioneer

Teamwork and cooperation are widely praised in science. Yet when prizes are given for scientific achievement, the committees that pick winners often have to narrow their vision mercilessly. They dissect big discoveries to the core, limiting honors to the smallest possible number of contributors. (The Nobel Prize, for example, can be shared by no more than three people.) This method of allocating credit can be harsh, and it can lead to postprize disappointment—usually muted. But this year, several distinguished scientists—including at least three Nobel winners—have made a quasi-public protest over the handling of the Albert Lasker Basic Medical Research Award, which many people regard as a precursor to winning the Nobel.



NO prize. Salvador Moncada did key experiments.

The award, which has included as many as five people, was given last week to two Americans for "seminal and ingenious discoveries which led to the fundamental understanding of the role of nitric oxide [NO] in health and disease" (*Science*, 4 October, p. 39). But the recipient list should have been longer, say the dissenters. Not that the two men named as winners by the Lasker committee—Robert Furchgott of the State University of New York Health Science Center in Brooklyn, and Ferid Murad, former CEO of Molecular Geriatrics Corp. in Lake Bluff, Illinois—were chosen wrongly, they say. Rather, they claim that the Lasker committee failed to name a pioneer in this field: Salvador Moncada of University College, London. And some say that a fourth important leader was left out: Lou Ignarro of the University of California, Los Angeles.

The most outspoken in the dissenting group is Sir John Vane of Cambridge University, an expert on the vascular system, former Burroughs Wellcome researcher, and one of three who shared the Nobel Prize in 1982 for research on prostaglandins. Vane says he heard about the Lasker prize selection about 2 weeks before it was announced, and he "was devastated." Moncada had been Vane's student and friend, and, as a postdoc, he had done a lot of research that was involved in Vane's Nobel.

Vane acknowledges that Furchgott and Ignarro were the first to suggest in 1986 that an elusive vasodilator then known as endothelial derived relaxing factor (EDRF) was in fact probably nitric oxide. Murad's contribution, according to the Lasker awards citation, was to identify a class of nitrogen-containing agents that stimulate the formation of EDRF. He also suggested that these compounds might all be metabolized to nitric oxide, the actual messenger. Moncada, however, "actually showed it," says Vane, publishing experimental results in 1987 demonstrating that EDRF was nitric oxide. Indeed, Vane says that Moncada "really created the field [of nitric oxide physiology] in terms of doing important experiments, discoveries, and going

on from there" to expand the discovery into other areas of physiology and possible medical applications. "It's all very well to make suggestions," says Vane. "It's different to make the actual discovery."

Believing that it was "unjust and unfair" to omit Moncada from the prize, Vane wrote a letter, before the prize was announced, to the Albert and Mary Lasker Foundation, hoping to influence the announcement—or at least draw attention to the narrowness of the selection. He also circulated copies among members of the U.S. National Academy of Sciences, of which he is a member. Others have also expressed concern, including Gertrude Elion, a Burroughs Wellcome scientist who won the Nobel Prize in 1988 for a variety of drug discoveries, including acyclovir, and Max Perutz of Cambridge University, winner of the 1962 Nobel for structural studies of globin proteins. Elion declined to comment. Perutz described Moncada as "the chief pioneer of the physiologic function of nitric oxide." Perutz wrote to the Lasker prize committee, too, and says he received a routine response noting that the prize decision was reached by a "large and competent committee." But, Perutz adds, "I don't agree with it."

Furchgott declined to comment on the dispute, although he called Moncada "a brilliant scientist," and noted that France's Roussel-UCLAF prize in 1994 was awarded to himself, Ignarro, and Moncada. Moncada, who was elected to the National Academy of Sciences in 1994 on the basis of his research on nitric oxide, also declined comment.

As for the Lasker group, neither the director of the prize, Jordan Gutterman of the M.D. Anderson Cancer Center in Houston, nor the leader of the jury in this case, Joseph Goldstein of the Southwestern Medical Center at the University of Texas, Dallas, would comment on how it selected the two winners this year. But Gutterman stated that "important work done later by other investigators is not precluded from other awards."

A U.S. member of the National Academy of Sciences familiar with the case commented on condition of anonymity that "there were a lot of people who made contributions" to the pioneering work in nitric oxide physiology: "A very good case can be made that Moncada was an important contributor, and a very good case could be made that the way the [prize committee] formulated it was equally appropriate." He added, "a good case can be made that [Ignarro] should be included" as well, particularly because of his fundamental studies on how nitroglycerin is converted to nitric oxide, and how it acts to relax the blood vessels. Awarding credit is "very tricky," he says, noting that he regards the whole affair as "an honest difference of opinion."

–Eliot Marshall

EPIDEMIOLOGY

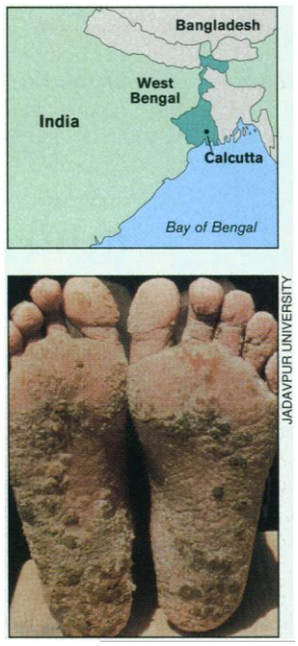
India's Spreading Health Crisis Draws Global Arsenic Experts

NEW DELHI—A potentially devastating health crisis is quietly unfolding in West Bengal, India, where high levels of arsenic have leached from natural underground sources into thousands of village wells. More than 1 million Indians are drinking arsenic-laced water, and tens of millions more could be at risk in areas not yet tested for contamination. An estimated 200,000 people already have arsenic-induced skin lesions, and many of them also have hyperkeratoses, hardened patches of skin that may develop into cancers.

The immense scale of the human tragedy has begun to attract the attention of scientists from around the world. They see in this grim event an unprecedented chance to learn more about the health effects of arsenic, a known carcinogen. "We're talking about numbers [of arsenic-poisoning victims] that have never been seen before in the world," says University of California, Berkeley, epidemiologist Allan Smith.

What is learned in West Bengal could help other countries, including Chile, Taiwan, and Mongolia, cope with arsenic-tainted drinking water. It could also help regulators decide what constitutes an acceptable level of arsenic in drinking water. New legislation requires the U.S. Environmental Protection Agency (EPA), for example, to revise the maximum arsenic level in water by the year 2000. It is considering reducing the current standard by 90%, a change that could be very costly for many small communities.

The exact mechanism behind this widespread poisoning is still uncertain, and it is not clear how the water supply can be made safe. "There's a clear division of opinion about what ought to be done, what the problem is, and how much research should be devoted to it," says one foreign scientist who requested anonymity. "It's a very difficult question in a resource-starved country." Debabar Banerji, professor emeritus at the Centre of Social Medicine and Community Health at the Jawaharlal Nehru University in New Delhi, says that "there has been a certain lethargy in the intellectual intelligentsia, because of which so many questions still remain unanswered."



Deadly trail. Seven districts in West Bengal have been hit hard by arsenic poisoning from tube wells along the Indian-Bangladeshi border. *(Above)* Nodular keratoses on a victim's feet.

How it began. The first cases of arsenic poisoning in West Bengal turned up in the early 1980s, and water from tube wells was quickly fingered as the culprit. These wells, which reach down anywhere from 20 to 150 meters, were dug beginning in the early 1960s to provide year-round support for a new, irrigation-intensive kind of rice that fueled the so-called Green Revolution. Although the arsenic-tainted water at first came mainly from the middle of three aquifers in West Bengal, researchers now believe the problem is more extensive. "No tube well of any depth is safe in the arsenic-affected villages," says chemist Dipankar Chakraborti of the School of Environmental Sciences at Jadavpur University in Calcutta, whose team has worked on the problem for nearly a decade.

Drill cores from Chakraborti's team have yielded layers of arsenic-rich sediments in which the arsenic seems to be associated with pyrite (iron sulfide). However, more detailed boring and analysis is needed before researchers can be certain about the form of arsenic that is to blame, as well as the geochemical process by which it is released. "Identifying the exact source of arsenic is still a ticklish question," says Narayanaswamy Kittu, a member of the Ministry of Water's Central Ground Water Board.

Chakraborti and others suspect that the problem is related to the large-scale withdrawal of ground water. The seasonal fluctuation of the water table results in rapid and regular intake of oxygen within the pore space of the sediments, he says. This inflow breaks down sulfides in the arsenic-laden pyrite rock through oxidization and thus releases arsenic into the water. Hydrogeologist Sukumar Mallick of the Council of Scientific and Industrial Research says that the rapid