Environmental Awakening in the Soviet Union

Reluctant to admit ecological problems in the past, Soviets are now acknowledging "catastrophic pollution" nationwide

Moscow

IT'S EARTH DAY in the Soviet Union.

In a break from the past, Soviet government officials and the press are now openly acknowledging that from the Baltic to Vladivostok, the country is suffering from tremendous environmental pollution. Moreover, the state is actually allowing citizens to demonstrate in protest of environmental problems. The hope, according to environmental officials here, is that glasnost will literally provide a breath of fresh air (and cleaner water, among other things) to the Soviet Union.

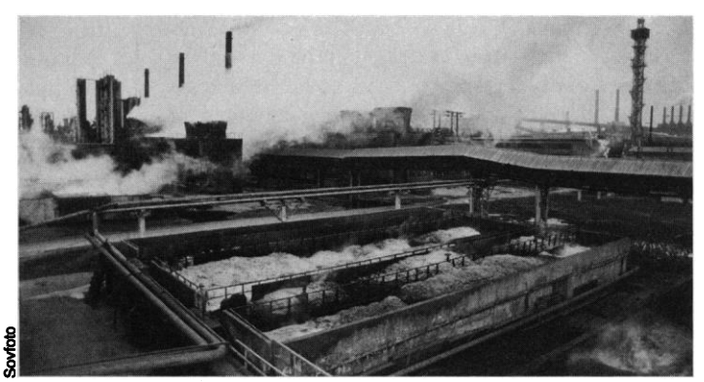
In a remarkable speech at the 19th party conference in July, Fyodor Morgun, chairman of the new State Committee for Environmental Protection, described a country with grave ecological problems: "One might say that for a whole era our party and professional propaganda and science have been intolerably passive as far as ecology is concerned. For many decades, the environment has been undergoing catastrophic pollution. . . . " The establishment of the new committee in and of itself marks a significant change.

Sidney Smith of the U.S. Environmental Protection Agency (EPA), who tracks Soviet environmental affairs, remarks that Morgun's speech was "startlingly frank. In general, the Soviets have never openly discussed environmental problems. Now they clearly want to reveal the problems and cope with them."

The brand of environmentalism allowed by the Soviet government, however, is not the kind that supports saving the trees for the trees' sake alone. Environmental officials here are linking the country's ecological problems to industrial inefficiency and an ailing economy. Pollution controls and cleanup are seen as a key to increased productivity of industry and agriculture. Morgun said at the party conference, "The problems of ecology are now of a broad social and economic nature."

Information gleaned from Morgun's speech, the Soviet press, and state committee officials indicates that many key areas of the country are on the verge of environmental disaster. Air and water pollution were obvious to a visitor on a recent trip. One of the most familiar panoramic views of Moscow is from atop the hill where Moscow University is located—that is, if you can see through the thick haze of gray-brown smog that hangs over the city. In Leningrad, the country's showcase city, the state tourist agency warns foreigners not to drink the tap water, a foul-smelling liquid that runs brown from the faucet. In Tblisi, the tourist and governmental capital of the Soviet republic of Georgia, the Dura River, the area's principal source of water, is opaque brown.

Many major bodies of water are heavily contaminated with toxic chemicals, harmful organisms, and fertilizer runoff. This summer, in actions that sound all too familiar here, authorities closed public beaches on the Black, Baltic, and Aral seas because of pollution problems. In April, there was another typhoid outbreak, this one in Georgia, according the Soviet press. The country's annual typhoid incidence is very high compared to the United States. In 1985, there were roughly 15,000 cases of typhoid in the Soviet Union compared to about 400 cases in the United States, according to official Soviet and U.S. figures.



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Pollution = economic inefficiency: *Uncontrolled emissions from a Sheksna steel mill 250 miles north of Moscow.*

The Caspian and Aral seas are so polluted that the "living conditions and everyday activities . . . have become extremely complicated" for 1 million residents, Morgun said. The Caspian Sea, the biggest lake in the world, and the Baltic contain phenol concentrations several times higher than the permitted norm, he said, without specifying the exact levels. Phenol is readily absorbed by the skin, and acute exposure can damage the central nervous system, kidneys, and liver, a 1986 EPA report says.

The Aral Sea, the world's fourth largest lake that is even bigger than Lake Huron, "is a zone of ecological disaster," Morgun declared. Soviet scientists predict that the Aral "will vanish by the year 2010," reported an *Izvestia* article last year. The sea is shrinking dramatically because two major rivers that feed into it have been diverted for irrigation.

Lake Baykal, the world's largest freshwater lake, is suffering from years of dumping by nearby pulp mills (*Science*, 5 June 1987, p. 1180). The Moscow River is polluted by toxic chemicals that purification plants are not equipped to handle, a city official stated last year.

Air pollution is another nationwide problem. Morgun said 50 million people in 102 cities are exposed to air pollutants that exceed national standards tenfold. (He did not specify what kind.) Valentin G. Sokolovskiy, first deputy of the Environmental Protection Committee, said in an interview with *Science* that emissions, including sulfur dioxide, nationwide have dropped in recent years by nearly 25% because industry has been converting from coal to natural gas. But he says emissions are still high.

Fumes from vehicles account for even more air pollution than industry, Morgun said. That is easy to believe in Moscow, where Soviet-made cars, trucks, and buses spew clouds of black smoke. And Soviet cars still run on leaded gas, says Guennady Biryukov, a deputy of the state environmental committee.

Sokolovskiy said that the Soviet Union suffers from acid deposition blowing across its border, but did not name specific countries. On the other hand, heavy emissions from Soviet nickel smelting plants are crossing into Norway, says Biryukov.

How did things get so bad? A combination of neglect, inefficiency, and a lack of technology. Soviet expert Murray Feshbach of Georgetown University says that many Soviet regulations are tough—even tougher than laws in the United States in some cases—but they have not been implemented. One regulation, for example, requires factories or plants to draw tap water from the water they expel, but it is not enforced, he

says. Biryukov says that generally, in the past, "a company was left to monitor itself. Nobody paid any attention."

Izvestia and *Pravda* articles have put much of the blame on the agency which until recently was in charge of environmental protection, the State Committee for Hydrometerology. The agency has now been restricted to its traditional role of monitoring the atmosphere and climate.

The Soviet Union also lacks modern technology to control pollution, Biryukov noted. Importing Western technology is severely hampered by that fact that it is expensive and that the ruble is not an exchangeable currency. What controls the Soviets have built are often not put to good use.

So the new committee headed by Morgun has its work cut out. It is charged with presenting the Central Committee with a comprehensive set of environmental laws next year that balances ecological protection with the country's economic needs. Officials say that one of their jobs now is to sort out which of the old laws to keep and decide what new ones are needed. The atmosphere of discussion "is like a giant pot boiling," said a committee spokesman. The committee also has been assigned the important task of planning better use of Soviet natural resources and designating protected areas.

The committee already has ambitious plans. Sokolovskiy said that before industry, for example, undertakes a major project, the committee must consider a detailed analysis that is like an enviromental impact statement in the United States. The committee also will decentralize its regulatory authority. The Moscow staff will total only 450, Sokolovskiy said, and will rely heavily on regional officials for enforcement. (So far, there are only about 100 on the Moscow staff.)

In a major reform, the committee plans to provide local officials with fresh incentive to use their regulatory stick. Sokolovskiy and Biryukov said that local governments, for the first time, can keep the money generated from penalties and fines they impose for pollution. Under Hydromet, this money was funneled into the national budget, which discouraged local enforcement, Biryukov explained.

The committee's regulatory clout with the government's industrial and mining ministries, which are under heavy pressure to improve production, is untested, however. Morgun is viewed as a potentially effective leader because of his important political ties as a former party leader in the Ukraine, Gorbachev's native republic. And Biryukov proudly points out, in the committee's new headquarters a few blocks from the Kremlin, that the committee was created with the strong backing of the Central Committee and the Council of Ministers at a time when reducing the size of the bureaucracy is a priority.

When asked whether the state committee, for example, could order the ministries in charge of car manufacturing to install catalytic converters on Soviet cars, Biryukov said, "I think the state can order [the installation of] converters. We have the right to stop production." But he added quickly, "It's not simple. We'll try to use economic incentives [penalties] to encourage conversion. I don't know when cars will have converters."

The Soviets intend to expand their cooperation on global environmental matters,

Glasnost: Soviet Computer Lag

Public expressions of gloom appear to be deepening in the Soviet Union over the slow rate of development of its computer industry, and consequently the country's growing lag behind the West in key fields of computer technology, particularly personal computers.

Igor Bukreyev, first deputy chairman of the U.S.S.R. State Committee for Computer Technology and Information Science, said in a radio interview last year that the nation was "4 to 5 years behind" the West in producing the software needed to operate the 1 million personal computers which it planned to have in the hands of users by 1990.

Earlier this month, during a press conference in Moscow in which he described Soviet computer policy as being in an "alarming situation" as a result of an excessively bureaucratic approach and the lack of a "unified technology policy," Bukreyev is reported to have said that he now feels computer technology in the Soviet Union to be "7 to 10 years" behind, and, as a result, "virtually incapable of competing with its foreign counterparts."

Bukreyev's statements came shortly after a joint session of the science and technology commissions of two legislative bodies of the U.S.S.R. Supreme Soviet in Moscow had discussed nationwide efforts to boost the production and use of computers throughout the economy, one of the top domestic priorities of Soviet leader Mikhail Gorbachev.

Some Western observers who have been tracking what is often perceived as an ever-widening computer gap between the Soviet Union and the West claim that the country's inability to keep pace with global trends in scientific and technological advances is the result of concern that widespread access to information technology could undermine the power of the Communist Party.

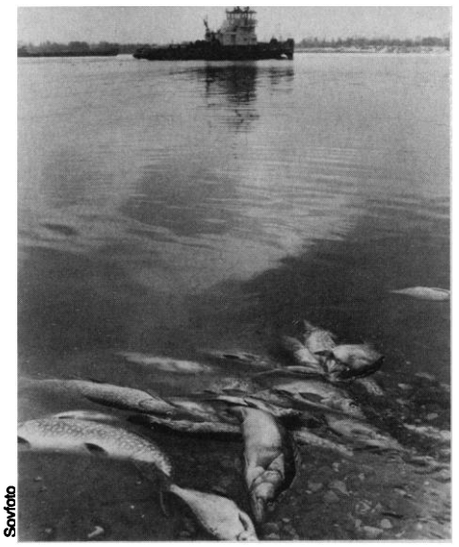
The Soviets themselves blame the delays that are being encountered in implementing their plans less on their political system than on the inflexibility of the government's administrative machinery—a principal target of Gorbachev's attempts to introduce perestroika—and a shortage of the necessary research and development funds.

According to Igor Glebov, for example, chairman of the Supreme Soviet's Science and Technology Commission, different ministries and organizations are producing various types of personal computers which are incompatible with each other, "and this will, of course, in future create very great difficulties in developing this area."

Glebov said in a radio interview that, even though the Soviet Union already had 300,000 trained computer programmers, they did not have the necessary equipment at their disposal, and their productivity was therefore low. It was necessary, he said, that the state committee for computer technology be given adequate financial resources "in order both to set tasks and to develop work in the sphere of scientific research and experimental design work."

At his press conference, Bukreyev, the committee's first deputy chairman, said that major efforts had been made to set up special centers selling games programs in towns throughout the country—it is planned to build about 200 of these within the current Five-Year Plan—and that computer teaching centers were proving to be "very popular."

However, the "urgent task" he said, was to create a software industry and give programming the status of an industrial technology. "The mass production of personal computers and the software for them has to begin, the training of experts for different branches of the national economy has to be organized, and professionally oriented data banks have to be set up," he said. ■ **DAVID DICKSON**



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Glasnost and the environment: *The effects of toxic chemical pollution near Sheksna.*

Biryukov said. The Soviet Union has a mixed track record in international cooperation, according to Western observers.

This spring, for example, it signed the Montreal Protocol on ozone. In other international accords, it has agreed to reduce sulfur dioxide and nitrogen oxide emissions. The Soviets recently permitted Norwegian officials to visit the nickel smelting area, said Biryukov.

But Kenneth Rahn of the University of Rhode Island, who studies air pollution in the Arctic, says, for example, that the Soviets have consistently declined to release to Western scientists samples of Arctic air from their territory. Soviet industrial pollution accounts for about half of the air pollution in the Arctic because of meteorological circumstances, says Rahn, who participates in scientific exchanges with the Soviet Union under the auspices of EPA.

But maybe that will change under the new committee. Biryukov declares that "Everything has changed here in the approach to international cooperation. Confrontation isn't productive at all. We should start talking and doing something instead of exchanging blows and accusations. We want to do more and to suggest new areas of cooperation," including climatic changes, desertification, deforestation, tropical rain forests, and polar areas.

Sokolovskiy readily acknowledges that the committee has a tough task ahead. But one of the keys to achieving its mission, he says, is "to build close ties with the mass media and public to stress importance of environmental problems." Some protests allowed have already prompted the ouster of Soviet officials.

"I am quite optimistic," said Sokolovskiy, a former Hydromet official. "We should use glasnost and democratization to promote" environmental protection.

■ MARJORIE SUN

NSB Ponders Science Policy Role

Seemingly prompted by the upsurge of interest in the federal science advisory system, the National Science Board has opened a cautious discussion of how it might stake out a broader science policy role for itself. What the board is mulling over now is a proposal from a three-member working group that the NSB, the policy-making body of the National Science Foundation, form a standing committee made up of members from government, industry, and academe as well as NSB to provide "impartial and informed advice" on major science and technology issues to the President and Congress.

As envisioned by the working group, the committee would draw on the expertise of NSF professionals rather than operate with a large staff. Cornell University president Frank H. T. Rhodes said the committee might provide advice, for example, on large projects such as mapping the human genome, on the science and technology implications of "post-1992 Europe," when the greater integration planned then is expected to transform the European community economically and politically, and on the question of the "long-term organization, funding, and relationships of the R&D enterprise in the United States."

A national policy role was mandated for the NSB when the foundation was chartered in 1950. The issue has been raised periodically, but the board has always backed away from seeking responsibility beyond that of guiding NSF.

At the board's 19 August meeting, Rhodes presented the working group's recommendations and said that the focus on the science advisory system had been inspired by the attention directed to it recently by National Academy of Sciences president Frank Press and others (*Science*, 4 March, p. 1082).

In addition to the proposal for an NSB advisory committee, the working group offered two other major recommendations. The first was that the post of science adviser to the President be upgraded. Elevation to cabinet rank should be considered. If it proved impractical to have a cabinet member without portfolio—that is without a department to run—the science adviser should be made a special assistant to the President, a rank that does not now go with the job.

The second recommendation was that the various congressional panels that deal with science and technology should form a joint coordinating committee to discuss their work and deal with the gaps that occur. Rhodes noted that nearly 100 House and Senate panels are engaged with science and technology matters.

Rhodes acknowledeged that the NSB had little leverage besides advocating these changes and the discussion at the board meeting concentrated on the putative NSB advisory committee. Rhodes emphasized that it would be "useful" to form such an advisory panel only if there was some indication from Congress and the President that they would "find it valuable."

In its dicussion of the proposal, board members raised questions about how an NSB committee would interact with the President's science adviser, officials of the National Academy of Sciences, and other players on the science advisory circuit. Concern was expressed that the advisory committee might become independent of the NSB. NSF director Erich Bloch, who also served on the work group, said that control could be assured if the NSB initiated the topics dealt with and the committee reported to the board.

The major worry, however, was that an NSB-sponsored committee might be suspected of a bias in favor of NSF. RPI president Roland Schmitt, former NSB chairman and a nominee for reappointment as a board member, asked that, when such a committee took up an issue clearly in the domain of another agency, "What does that do to the political status of NSF?"

In a meeting with reporters, NSB chairman Mary L. Good emphasized that the recommendations would be the subject of an "ongoing discussion," and offered a modest prognosis with the remark that she sees "some hopes that we can come to grips with that part of the NSF mandate."

The jurisdictional issue has been the chief reason that NSB has never bid for a bigger national policy role. In the past, the pattern when the matter came up has been for the NSB to hang its clothes on a hickory limb but not go near the water. Unless it can find a way to provide advice without prejudicing NSF's fortunes it is unlikely to take the policy plunge.

■ JOHN WALSH