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JPRS Report

Environmental Issues

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Environmental Issues

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Burmese Delegates Defend Logging Policy at UN Meeting

*BK1210061690 Bangkok THE NATION in English
12 Oct 90 p A1*

[By Yindi Loetcharoenchok and Ann Danai Usher]

[Text] Burmese delegates at the United Nations environment conference [in Bangkok] yesterday defended the country's logging policy, but an independent analysis of satellite images suggests that the rate of deforestation in Thailand's neighbour is the third highest in the world.

U Ba Thwin of Burma's Foreign Ministry, an official delegate at the week-long Asia-Pacific Conference on Environment and Development, said his country has a "very well-managed forestry system, which is ingrained in the minds of the people from birth".

He said loss of forests in Burma remains at only 0.3 percent of forest cover per year, or 1,050 square kilometres annually. Interestingly, these figures correspond with estimates quoted from World Resource Institute statistics for the 1975-1981 period, in ESCAP's State of the Environment in Asia and the Pacific report.

But a separate 1989 analysis of satellite photographs suggests that deforestation rates in Burma skyrocketed from 1,000 to 8,000 square kilometres after the 1989 logging ban was declared in Thailand and logging concessions along the Burmese border were granted to Thai companies.

The 8,000 square kilometre figure was calculated by British forest scientist Norman Myers as part of the on-going research of the Inter-governmental Panel on Climate Change, and was quoted by the Permanent Secretary of the Ministry of Science, Technology and Energy, Dr. Sa-nga Saphasi.

Myers' study shows that such a rate of deforestation leads to the release of 83 million tonnes of carbon into the atmosphere annually, adding six percent to the world's total load of carbon emissions from deforestation of 1,400 million tonnes. It also notes that annual forest destruction in Brazil is 50,000 square kilometres and in Indonesia, 12,000 square kilometres, with each country releasing about 454 million tonnes and 124 million tonnes of carbon, respectively.

Accordingly to a 1988 report, Brazil remained the country with the highest deforestation rate, with Indonesia second, Colombia third, Ivory Coast fourth, Thailand fifth and Burma ninth.

Sa-nga told THE NATION that the difference in the two studies indicates that since the exponential increase in logging along the Thai-Burmese border, Burma has overtaken Thailand in its rate of forest loss, moving up to third place and leaving Thailand in sixth. But the Burmese officials at the environment conference yesterday stressed that only "mature trees" are felled in the logging concessions given out to Thai companies.

About 40 logging concessions have been awarded mainly to Thai companies during the past two years, but so far not more than 20 projects have been implemented because of continuous fighting in several areas.

"Thailand is developing fast, so we feel we should develop in cooperation with our close neighbour, but we are very cautious and careful to keep environmental impact in mind," said Ba Thwin. He maintained that the Burmese government's forest policy is in line with the concepts of "sustainable development" being discussed at the ESCAP meeting.

Ba Thwin attacked the world media, members of international community and private agencies for being "hostile and biased" for criticizing the central authority in Rangoon for their "legal" timber business, and accused critics of failing to mention "the illegal logging activities of the ethnic Karen insurgents for the past forty years".

He disputed reports that logs are being cut down randomly by Thai concessionaires, especially in areas under the control of minority groups, saying that Rangoon has a Forest Act that punishes those who breach state laws.

However, the junta has no policy of giving out more concessions at the moment, and have recently issued a new set of stricter guidelines for Thai companies in an apparent desperate attempt to control unruly loggers.

Thai Protest to GATT Planned on U.S. Seafood Import Laws

*BK0810025590 Bangkok BANGKOK POST in English
8 Oct 90 p 17*

[By Ratchaphon Laowanit]

[Text] Thailand will protest to the General Agreement on Tariffs and Trade about United States' environment-related trade protection measures which are adversely affecting Thai canned seafood exports.

The Commerce Ministry will tomorrow ask the Cabinet to approve an official protest against the U.S. action, an informed ministry source said.

Several U.S. laws related to environmental protection block imports of canned seafoods from other countries, especially Thai canned tuna.

Washington's move constitutes trade harassment and is a distortion of U.S. laws, according to Thailand.

Nor does it comply with the GATT's rules which do not permit any country to use internal laws against other countries.

Although the environment issue is very important among developed countries, it does not mean the U.S. is authorised to act as judge of the world on the matter, the source said.

"Every country is concerned about the environment, including Thailand, but it is not necessary to do things this way."

The Thai protest follows a letter to the ministry from the U.S. Embassy on September 27 asking the ministry to certify that Thailand will enact, by November 6, a ban on imports of yellow-fin tuna and yellow-fin tuna products from Panama. Thailand must provide documentary proof to the U.S. by December 7.

From September 7, Washington embargoed imports of yellow-fin tuna and related products from Panama under provisions of the Marine Mammals Protection Act (MMPA) and, as a result, the U.S. court ordered Panama to cease drift-net fishing in the eastern tropical Pacific Ocean because dolphins were being netted.

A 1988 amendment to the marine act extended the ban to products not just from harvesting nations but also intermediary nations, such as Thailand.

Countries buying tuna from Panama are "ordered" by the U.S. to ban fish trade with Panama within 60 days and report to the U.S. within 90 days or they will be blocked from exporting to the U.S.

The source said most tuna imported by Thai processors are caught in the western Pacific, but Thailand, unrealistically, still faces U.S. action.

Last June, Thai tuna packers decided to stop buying yellow-fin tuna caught in drift-nets in the eastern Pacific to avert any criticism from environmentalists, especially Greenpeace, which might try to discourage people from buying products processed at the expense of dolphins' lives.

In a related development, Thai Food Processors' Association President Mongkhon Saraniyatham said that although the Government may protest to the GATT, the association for now has to stop buying yellow-fin tuna from Panama to avert U.S. retaliation.

Albanian, Italian Officials Hold Talks on Adriatic Ecology

*AU0410165390 Tirana ATA in English 0825 GMT
3 Oct 90*

[Excerpt] Tirana, October 2 (ATA)—Official talks were conducted today at the Ministry of Foreign Affairs of the PSR [People's Socialist Republic] of Albania between the foreign deputy minister of the PSR of Albania, Sokrat Plaka, and the foreign deputy minister of the Italian Republic, Senator Ivo Butini.

During the talks, both parties exchanged opinions on the Adriatic initiative and dwelt particularly on the promotion of cooperation on ecological problems, the preservation and protection of the environment of the Adriatic Sea.

They pointed out that the necessity of cooperation between the states of this region and concrete possibilities existing in this direction in the fields of transport, trade, fishing, tourism etc. Likewise, they talked on the coordination of efforts by both parties in the framework of the Barcelona Convention for the preservation and protection of the Mediterranean Sea, of which both countries are members.

The two deputy ministers exchanged opinions also on the promotion of the relations between Albania and Italy, as well as on their further promotion in mutually beneficial fields.

On this occasion they spoke also on problems of the foreign policy, on stands towards international problems of mutual benefit.

The talks were also attended by Giorgio de Andreis, ambassador extraordinary and plenipotentiary of the Italian Republic in Tirana. [passage omitted]

Expedition Monitoring Black Sea Pollution

*PM0510160190 Moscow Television Service in Russian
1800 GMT 4 Oct 90*

[From the "Vremya" newscast: Report by S. Fateyev, identified by caption]

[Excerpt] [Newscaster] An international scientific expedition "Black Sea-90" set off from Odessa today.

[Reporter] The Black Sea is sick, very seriously sick. Scientists are talking with alarm about the sharp increase of concentrations of noxious substances and hydrogen sulphide in the water. This summer zero oxygen saturation was registered for the first time in the water in Odessa Bay. The highly dangerous so-called "gribnevik" ["grib" means fungus] has also appeared here. It has been brought in from other seas and has already killed off the Azov Sea. Only a joint effort will make it possible to save the Black Sea. Therefore the present international ecological expedition "Black Sea-90" is the main action this year of the International Ecoforum for Peace, which comprises scientists from 22 countries. [video shows Black Sea, research ship Akademik Vernadskiy, ships in background; passage omitted]

International Conference on Black Sea Ecology Concludes

*AU1310194990 Sofia BTA in English 1821 GMT
13 Oct 90*

[Text] Varna, October 13 (BTA)—The World Movement Ecoforum for Peace held an international conference on the environmental condition of the Black Sea on board the Soviet research ship "Akademik Vernadskiy." Taking part were about 120 scientists, experts and representatives of various research centres and government institutions of the USSR, Italy, Austria, the United States, Romania, Bulgaria, Yugoslavia, Germany, France, Britain and Turkey.

Today the ship arrived in Varna from Istanbul, where some 20 researchers from the Universities of Istanbul and the Bosphorus and from the technical university joined the discussion. They were willing to cooperate in the solution of the ecological problems of the Black Sea. Agreement was reached on the key points and above all on the main purpose of the conference: to work out a single coordinated research framework for an intergovernmental convention on the protection of the Black Sea.

At the end of the conference, the participants adopted and signed a resolution which recommended the establishment of an international centre for Black Sea studies and the creation of an international foundation to finance research work on Black Sea environment problems, to set up, within the World Movement Ecoforum for Peace, a Standing Committee which should pool the efforts of scientists and the public for mitigation of the present ecological condition of the Black Sea and the adjoining areas.

Nordic Countries' Four-Billion-Kroner Soviet Kola Clean-up Project Outlined

*90WN0308A Oslo AFTENPOSTEN in Norwegian
18 Sep 90 p 16*

[Article by Jan Gunnar Furuly—first paragraph is AFTENPOSTEN introduction]

[Text] Four billion kroner would halt the air pollution from the Soviet Union. On Thursday the Nordic countries will present their proposal for financing the so-called Kola project. This calls for modernizing two nickel plants with western technology.

Yesterday a Nordic working group held its final meeting in Oslo. On Thursday it will be the task of Finnish Prime Minister Harri Holkeri to present the financing package to Soviet Deputy Prime Minister Stefan Sitarajan. This will be done at a meeting in Helsinki.

Yesterday Deputy Secretary Jan Thompson of the Environmental Affairs Ministry could provide very few details concerning what the Nordic countries will contribute in the way of environmental assistance.

"Much depends on which technological solution is preferred. The Soviets themselves will make that choice," he stressed.

Prime Minister Jan P. Syse has already made it clear that Norway is willing to provide as much as 300 million kroner in economic aid if Norwegian firms receive contracts for the project in return. Finnish authorities have also indicated that they are willing to provide this kind of aid, but they have not mentioned a specific amount.

The contest now involves several technical solutions, according to Deputy Secretary Thompson. Soviet experts strongly favor their own newly-developed autonomous smelting process, which admittedly exists only on

the drawing board so far. The Nordic experts think the best technology is found in the West. The Finnish firm Outokompo is probably in the best position to get the major part of the contract if western solutions win out. Norway's Elkem would then be one of the subcontractors and land orders worth several hundred million kroner.

"An agreement with the Soviet Union on Nordic participation will probably not become a reality before sometime next year," Thompson said. "The modernization work will take a long time and it will take four to five years of construction time before the sulfur-spewing chimneys on Kola come under proper control."

Kirkenes has been named as a location for one of the bases for the future project work. Members of the working group as well as Outokompo representatives have mentioned this. These prospects are now being greeted with pleasure by chairman Halvard Kvamsdal of Sor-Varanger municipality. But Kvamsdal emphasized that the primary concern is to get the pollution under control; jobs come second.

"The decisive thing now is to present the Soviets with a financing package that is so good that they cannot say no to western technology. If this leads to new jobs for us, nothing could be better. We view environmental problems as our major enemy right now," said Kvamsdal.

Germany, CSFR Sign Elbe River Clean-up Treaty

*LD0810114690 Berlin ADN International Service
in German 0950 GMT 8 Oct 90*

[Text] Magdeburg (ADN)—The first international treaty of the united Germany was signed in Magdeburg on Monday by Federal Environment Minister Dr. Klaus Toepfer, his Czechoslovak counterpart Josef Vavrousek, and the EC Commission for Environmental Affairs, Dr. Laurens Jan Brinkhorst. It provides for the cleaning up of the 1,165-kilometer Elbe from its source in the CSFR to its mouth in Hamburg, so that in future drinking water can be produced from filtered river water. The pollution of the North Sea in the area of the Elbe estuary is to be permanently reduced.

At the same time the International Commission for the Protection of the Elbe will establish a permanent secretariat in Magdeburg.

Gulf of Finland Pollution, Murmansk Nuclear Power Seminar Noted

*PM3009171590 Moscow Television Service in Russian
0830 GMT 26 Sep 90*

[From the "Vremya" newscast: Report by V. Batalov and V. Zhuravlev, followed by report by Yu. Filippov and Ye. Abramov, all identified by caption]

[Excerpt] [Reporter] Important and unexpected results have been obtained by the participants in an expedition researching the ecological situation in the Gulf of Finland aboard the scientific ship Akademik Krylov. They

returned to Leningrad with a large amount of data which, regrettably, are no cause for celebration. They testify to catastrophic pollution of the seabed with heavy metals, pesticides, and herbicides. Diving in a minisubmarine, the scientists recorded this violation of the seabed for the first time. These are the results of our economic activity and mismanagement. Certain parts of the Gulf of Finland felt Chernobyl's radioactive breath. This was the conclusion reached by the scientists from the Krylov Central Scientific Research Institute and the All-Union Geological Institute, which were behind the exhibition.

[M.S. Spiridonov, scientific leader of the expedition, identified by caption] By eating contaminated food and other biological material, we subject certain organs in our bodies—the stomach, the intestines, the liver, and so on—to the effects of radiation. This is a very unpleasant situation. It produces a whole number of known and very serious diseases. But the point is that it is possible to exclude certain areas from the food chain—by banning fishing in certain parts of the Gulf of Finland, for instance. We already have proposals of this sort for specific areas. One such area is Luga Bay—part of the Gulf of Finland.

[Reporter] As of next year, scientists from Leningrad and Finland will carry out maritime geo-ecological patrols. [Video shows research vessel] These will help to heal the criminal sores that formed in the Gulf of Finland following the Chernobyl disaster.

[Newscaster] I think that this information will be taken into account by the participants in the "Nuclear Power at Sea: Safety and Ecology" seminar currently being held in Murmansk.

[Reporter] [Video shows shots of port, ships] The organizers of the seminar—the USSR Nuclear Society—are staging it on board ships of the Murmansk Shipping Company, with which all our country's civil nuclear-powered vessels are registered. Hitherto, Soviet nuclear scientists have been working in an environment of restricted information. The policy of openness and glasnost which came to the country with perestroika has made this information accessible to all. The forum is being attended by opponents of nuclear power at sea, as well as by its supporters. [Passage omitted. Video ends with shot of Japanese officials attending seminar]

Baltic Environmental Conference Viewed

Situation in Baltic Republics

90WN0299A Stockholm DAGENS NYHETER
in Swedish 30 Aug 90 p 23

[Article by Erik Wahlstrom: "Predator Population Measures Nature's Health"—first two paragraphs are DAGENS NYHETER introduction]

[Text] Guest correspondent Erik Wahlstrom is an environmental reporter in Helsinki. He is now preparing an

environmental report for the Finnish environmental affairs minister. Wahlstrom feels the eastern Baltic states show signs of having a healthier environment than Sweden.

In connection with the summit meeting on the Baltic Sea to be held in Ronneby on 2-3 September DAGENS NYHETER [DN] asked a Finnish and a Polish environmental reporter to contribute guest articles. Erik Wahlstrom, a Finnish environmental reporter, starts by criticizing the Nordic mass media's reporting of the environmental crisis in the east. Foreign catastrophes from the Amazon or the Mediterranean arouse more indignation than our own problems, he states. The biggest environmental danger here is that the consumption habits of free and prosperous northerners are spreading.

We northerners have quickly fallen into the habit of complaining about environmental pollution along the eastern coast of the Baltic. The criticism is justified. But the fact is that the environment is often better preserved in those areas of the Soviet Union that border on the Nordic region than it is in the Nordic lands themselves.

It is true that there are extremely big discharges of sulfur, metals and dust in specific locations on the Kola peninsula, in Karelia and in Estonia and we are quite justified in demanding that these levels be reduced, preferably with the help of purification technology purchased from us. The natural landscape in the vicinity of these discharge sites has been replaced with chemical wastelands.

Paradoxically, in spite of this fact many ecosystems are better preserved there than they are in the Nordic countries. One of the main reasons is that one big environmental hazard is missing: the free and prosperous western citizen with all the comforts he requires in order to enjoy what nature has to offer.

Pioneering Report

Recently an environmental report on the situation in Estonia was published, "Keskond 1989," which is also available in English under the title "Environment 1989, Estonia Survey." The report is a pioneering document, sovereign Estonia's first effort to achieve a better environment. The report gives an impression of frankness and contains many critical passages. It tells all about mining operations in Rakvere and Kohtla-Jarve, the declining health among people who live near polluting industries, the inexplicable loss of hair among children in Sillamae, things that have already been the subject of many alarming reports in the western mass media.

Signs of Balance

But it also contains information that indicates a healthy ecosystem. In 1989 Estonia had 130 wolves, 890 lynxes and 780 bears. In Sweden wolves are teetering on the edge of extinction. According to the Swedish Environmental Protection Board's unit on game and fauna preservation, there are 400 lynxes and 500 bears. In

Finland the corresponding figures are 100 wolves, 750 lynxes and 400 bears. When we compare the figures we must also bear in mind that Estonia has a surface area of only 45,100 square kilometers compared with Sweden's 450,000 and Finland's 337,000 square kilometers. The density of the Estonian animal population, figured as the number of animals per hectare of land, is thus much higher than it is here.

But why be concerned about the fate of predators?

Large predators are sensitive indicators of conditions in the environment as a whole. They need large undisturbed hunting grounds and environmental poisons accumulate at the top of the food pyramid, something that has been noted in eagles and seals. Territorial, physical and chemical threats to the environment all affect them.

If eagles, wolves and bears are doing well one can be reasonably certain that other species are also doing so. If the opposite condition prevails and the predator population is faring poorly it is a sure sign that something is wrong in the ecosystem as a whole. The large predators are classic game animals and their survival depends on national conservation measures. They also provide a good indication of how tolerant a society is toward competition; wolves that maim or kill hunting dogs, beavers that cause flooding, bears that frighten berry pickers. The Russian folk culture is not significantly more "predator-tolerant" than the Nordic one in this respect.

Forestry a Threat

Without people the Nordic environment would have considerably fewer species than it has. The wealth of variation in cultivated land has made a strong contribution during the time it existed together with large wilderness areas.

But species come and go. In the 1970's so-called red books were kept in many countries: inventories of animals and plants threatened with extinction. They revealed that modern forestry threatens the largest number of species in the northern conifer belt. In Finland's red book forestry is listed as the primary threat to 424 of the total of 1,051 species. The most harmful practice is the elimination of the meadow and pastureland in cultivated areas in favor of extensive wasteland or steppe-like areas.

Efficient forestry is already an immediate threat. When Gorbachev visited Finland in the fall of 1989 the Finnish forest industry lost no time in presenting final plans to exploit the forests of the Karelian Republic. Where the Finnish tanks were stopped in World War II Finnish forestry tractors now advance victorious.

Genetic Reservoir

Wolves and bears help us understand the risks from a natural perspective. The Swedish wolf population is

dependent on additions from Finland and Finland's wolf population depends on the Karelian wolves. The Karelian Republic constitutes the common genetic reservoir on which the Nordic beasts of prey depend. The importance of the reservoir for other lesser known species is something we can only guess at.

In Estonia, on the other hand, both forestry and agriculture are more backward and thus more environmentally compatible than they are in Sweden and Finland. Estonia is also backward and more in harmony with the environment when it comes to individual freedom, the standard of living and consumption, the effects of which can be read in Finland's red book. Summer cabins, cars in the yard and rowboats with outboard motors are less common there. Ski areas, marinas and campgrounds are lacking.

Skiing With Machinery

Estonian journalists do not encourage people to engage in active pursuits in their free time, something that is often synonymous with motorized leisure when people travel by car or boat to pursue their activities. Skiers, for example, first drive to a hotel in the mountains and must then be brought to the top of the hill by a machine before they can ski down.

The foremost symbol of active leisure in Sweden is the sporty young sailor king. Today all sailboats are also motorboats with the motor being used on the way to and from home port.

When Nordic environmental politicians meet their eastern colleagues they want them to learn something from our experiences. For example, how does one implement more environmentally compatible and less intensive forms of forestry and agriculture? How does one restore wetlands? Instead the obvious danger is that a free and affluent Nordic lifestyle will spread eastward bringing summer cabins, slalom skis and ocean cruisers in its wake. The potential effects of this kind of environmental pollution are as harmful as sulfur—which crosses our border in the opposite direction.

Our mass media love foreign environmental scandals like the destruction of the Amazon rain forest or the fouling of the Mediterranean tourist paradise. But the destruction of our own landscape, our mountains and archipelagos, caused by our domestic tourist industry, does not arouse such great interest. A municipal politician was recently interviewed in a Finnish newspaper by a very sympathetic reporter.

He spoke of the pain he felt when plans for a big tourist center in his town were scrapped because it would be situated on a beach that was scheduled to be placed on the protected list. The same newspaper printed a report on tourist flight from the filthy Adriatic coast on the foreign news page.

The Nordic environmental organizations also contribute to the distorted way of looking at countries on the east

and west sides of the Baltic. They argue in favor of technical pro-environmental solutions and forget that the most important thing is to cut total consumption. It is better to do nothing at all than to operate businesses in a pro-environmental way.

Lax Environmental Movement

The textbook example was the international environmental struggle that raged between Finland and Sweden at the end of the 1980's. It concerned our wood industry's discharge of chlorine into the Gulf of Bothnia. The Swedish line consisted of criticizing the Finnish wood industry's large discharge of chlorine per ton of bleached pulp, a line backed by Swedish environmentalists. They demanded that Finnish industries introduce the oxygen bleaching of pulp, which was based on the purchase of Swedish purification technology.

It is no wonder that Finnish industrial leaders complained privately that Swedish industry had succeeded in hitching the Swedish environmental movement to its cart.

At the same time Finnish industry's absolute discharge of chlorine into the Gulf of Bothnia was only half the amount dumped by Swedish industry. And of course it is the absolute amount of chlorine and not the relative amount that has an impact on the organisms in the Gulf of Bothnia. From their point of view Finnish industries had behaved much better than Swedish ones by producing smaller quantities of bleached pulp.

New International Struggle

Today the Finns have bought up the Swedish companies that sell the purification technology. The conditions have been equalized and the international environmental contest has been called off. But it has been renewed—further to the east, between Finland and the Soviet Union.

The industries on the Kola peninsula threaten the forests in eastern Lapland. Leningrad is polluting the Baltic Sea. Now Finnish environmentalists are acting as the unpaid salesmen of Finnish industry. The Russians are exhorted to buy purification technology from Outokumpu to bring the nickel smelting plants on the Kola peninsula under control. (Of course you remember Outokumpu, the company that polluted the Swedish border areas around Haparanda with chromium and other heavy metals.)

Finland is also demanding that the Russians install water purification technology in high-density population areas on the Gulf of Finland, an investment of 17 billion kronor. No one knows the size of the GNP, calculated in western currency, in the Soviet area that borders on the Nordic region. However 17 billion kronor in western currency must be a substantial part of the available capital. At the same time we should devote a sizable part of our own gross national product to saving our shrinking wilderness areas.

Cleanup Effort

*90WN0299B Stockholm DAGENS NYHETER
in Swedish 27 Aug 90 p 17*

[Article by Erika Bjerstrom: "Flourishing Kelp Gives New Hope for Baltic Sea"—first paragraph is DAGENS NYHETER introduction]

[Text] Askö—The detoxification of the Baltic Sea has begun. But it is going much too slowly. And certain dead bottom areas are lost forever. That is what Professor Bengt-Ove Jansson of the Askö Marine Biological Station told us. He and his colleagues are the Baltic's own doctors who are keeping an eye of the physical condition of the old inland sea.

Throughout the 1980's the public has been presented with alarming reports on the Baltic Sea. If they were all put together the conclusion would be that the Baltic has died a painful death at least 20 times over. But that is not the case. The number of species has not declined. Several of the worst environmental poisons such as mercury, lead, arsenic and PCB show encouragingly downward trends. This is shown in a new report from the Baltic Sea Commission that will be released tomorrow.

One yardstick is the mercury content in the feathers of the guillemot. It has declined to the same level found at the end of the 19th century.

On the other hand unidentified chlorinated pollution is rising, with dioxin as one of the components. So far this is just the tip of an iceberg as researchers have only been able to identify five percent of the elements involved.

Marine Optimism

A third of the ocean floor has been knocked out as a result of overfertilization and the living area for fish has shrunk.

"The Baltic Sea is not a dying sea. It is true that it contains too many environmental poisons and fertilizers but we are starting to get results from a long list of bans on waste discharge. There is reason to feel restrained optimism, in spite of the fact that we will never restore the Baltic as it was in the 1940's," said Professor Bengt-Ove Jansson.

He is the head of the Askö Marine Biological Station out in the Trosa archipelago. For more than 30 years he has studied the Baltic Sea in minute detail. His doctoral thesis concerned the microscopic life between grains of sand.

Increased Visibility

DN visited the Askö laboratory on a bright day in August, the kind of day when the work of marine biologists looks like an ideal job. In shorts and T-shirts the scientists sat on the bridge and studied their measurement results.

The research vessel was tied up in the boathouse and on the edge of the beach the water was clear as crystal with flourishing kelp stands climbing the rocks. There was no choking green algae in sight.

"The recovery of the Baltic can first be noticed along the shore. The situation can improve just from one summer to the next. Depth visibility increases, the slimy green algae disappear and the inlets are full of small fish. One example is Gryts archipelago where the shores are relatively healthy. But out in the deep sea it takes at least 10 years before the life environment recovers," said Bengt-Ove Jansson.

Around 100,000 square kilometers of the Baltic Sea floor are dead. The reason is the large discharge of phosphorus and nitrogen from the countries around the Baltic Sea.

Bottom Life Choked

Phosphorus and nitrogen are not poisons per se but if they are added in too large quantities they choke the life on the sea floor. The nitrogen comes from traffic, runoff from agricultural land, fallout from the air and waste water.

The shallower sea floors that are dead and are covered with stinking hydrogen sulfide can be restored to health. Hydrogen sulfide breaks down when oxygen-rich water flows in. But some areas are lost. And if the cleanup of the Baltic does not go faster even more bottom areas can be destroyed, some of them permanently.

"The Gotland trough is an example, it has been oxygen-free since the 1950's. The Landsort trough is also lost, as well as the Bornholm trough which is also the biggest loss," said Bengt-Ove Jansson. "It was an important spawning ground for cod because fish roe can only hatch at a depth of 70-80 meters. If the water contains no oxygen the eggs rot.

"The cod is the fish that suffers the most stress as a result of overfertilization of the sea. Herring, Baltic herring and to some extent perch have actually benefited from the increased availability of plankton."

Narrow Margins

The Baltic Sea was once called the Amber Sea. Traders from the Orient came north to view the sea that concealed amber deposits and was celebrated for its beauty.

Even today it is a source of relaxation, fishing, and transportation for the millions of people who live along its shores.

The unique thing about the Baltic Sea is its brackish water and the special fauna and flora found there. The heavier salt water from the North Sea seeps in along the bottom from the narrow Oresund passage. The lighter fresh water stays on top.

It is hard for the oxygen-rich surface water to penetrate down to the saltier but oxygen-depleted sea water. The

mixture of the waters is inadequate and slow and for natural reasons the margins are very narrow as far as the health of the Baltic Sea is concerned.

The Baltic receives large quantities of pollutants from the land and from the air. Some 30-40 percent of all the fertilizing nitrogen falls from the air and comes from traffic.

"This fact alone is sufficient reason to end the bickering over automobile tariffs," said Professor Jansson.

Agriculture is another big discharge source, intensive farming produces fertilizer runoff that seeps into the Baltic.

Poland's Wisla River alone releases more nitrogen into the Baltic Sea than all the Swedish discharge combined.

Broader View

During the 1980's oceanographers had to learn to think along broader lines. New observations showed quite clearly that the fortunes of the Baltic are linked to the state of the environment on land and in the air. The perspective has expanded.

"The change has been enormous. In the 1960's we studied only individual species. In the 1970's the ecosystem was in fashion and during the 1980's influences from the land and atmosphere were added. During the 1990's we must start to include global threats to the environment such as the greenhouse effect and the thinning of the ozone layer in our research. Otherwise we cannot make accurate contributions to the national debate," Bengt-Ove Jansson stated.

Sulfur Studies

Meteorological studies are now being conducted in accordance with the new research directives on Cornelis Vreeswijk's old houseboat.

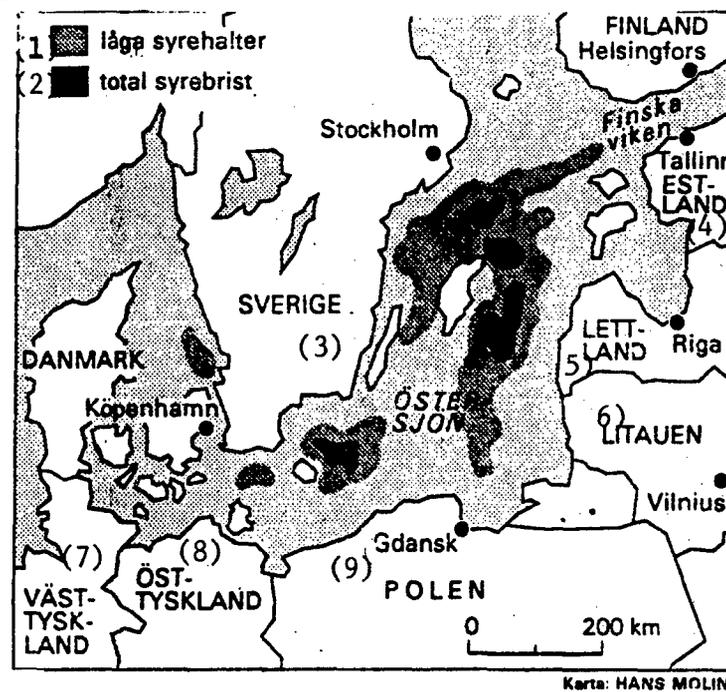
The boat sank in Strommen and the Asko laboratory bought it and towed it out to the station.

Here meteorologist Harriet Allee takes regular measurements of how much sulfur the sea gives off.

"We must know how much sulfur the Baltic Sea releases to be able to arrive at how much sulfur is being added to the sea," she explained. Her studies are the first of their kind and she scans the curve that emerges on the computer screen intently.

Her research results are also applicable in the global environmental context.

"It has become important to find out how much sulfur the sea gives off because it affects the cloudiness of the water. This in turn affects how much sunlight penetrates. Increased cloudiness can be desirable in protecting the earth from the stronger ultraviolet light—a result of the thinner ozone layer," Harriet Allee explained.

**Key:**

1. Low oxygen content
2. Total lack of oxygen
3. Sweden
4. Estonia
5. Latvia

6. Lithuania
7. West Germany
8. East Germany
9. Poland

Toxins Stored

Decades of toxic discharges are stored in the sediment in the shallow Baltic.

The researchers are not sure how this will affect life in the Baltic Sea in the future. Are these deposits buried when fresh sediment is added on top in a protective layer? Or do they slowly leak out?

"We fear a toxic shock when oxygen-rich water again flows in over dead sea floor areas. Some of the toxins could then be released," said Bengt-Ove Jansson.

"It is a very interesting perspective."

A transparent pipe of thick plastic from Himmerfjorden shows what is happening. On top is a thin fresh layer of reddish-brown sea floor. The rest is black and dead. That is where the scientists find the deposits of buried environmental toxins.

Current Health Status

The ban on environmental toxins has started to produce results and several of the most harmful toxins show downward trends. But at the same time disturbing signals are found, among other things the terrible family of organic chlorine compounds is increasing rapidly.

These environmental poisons are declining: PCB, DDT, lead, mercury, arsenic. These are increasing: other organic chlorine compounds, cadmium, zinc, and copper.

Overfertilization from phosphorus and nitrogen is unchanged.

UNEP Head Interviewed on Cooperation To Protect Environment

OW1210023390 Beijing XINHUA in English
0044 GMT 12 Oct 90

["Major Developing Countries Need Cooperation in Protecting Environment, Says UNEP Chief (by Zhang Yishi)"—XINHUA headline]

[Text] Nairobi, October 11 (XINHUA)—Executive Director of the United Nations Environment Program (UNEP) Mostafa Tolba said here today that there is an urgent need for major developing countries to cooperate in protecting the environment.

He told XINHUA in an interview that major developing countries such as China, India, Brazil, Mexico, Nigeria and Egypt need development at a greater pace to help solve the problems of education, housing, health, poverty and illiteracy.

But he argued that in the process of development, they should not neglect the issue of conserving energy as half of global warming is caused by carbon dioxide gas from fossil fuel burning.

Those developing countries should pool some of their resources in finding ways of producing [the] same products with less energy because they have technologies and the industrial base to develop new technologies that would suit the common conditions of the Third World.

But he said that none of those countries alone would be capable of doing this.

"I really don't want to see the developing countries constantly waiting for technologies to come from the West which they fight to get it after a very long period." [sentence as received]

Dr. Tolba, who has been the UNEP chief since 1976, proposed that major developing countries cooperate in research and investments in new sources of energy like solar and wind.

"We have all those new sources in the Third World and we can get them developed rather than wait for others to develop for us," he noted.

Although it is difficult for many developing countries to put aside money to correct environmental mistakes in the next 10 years, he said, they still have to look into the long-term because they cannot afford to correct the mistakes by the time when the cost of energy is huge the labor is more costly and raw materials are harder to get.

"It is high time that we really adjust the economy and ask economists to tell the truth about the ecological damage, that is the real price of any goods or service including the cost to the society and the cost to the environment," said Dr. Tolba.

He urged all the developing countries not to tread on the heels of industrialized countries in developing their economies because developed countries themselves are now "paying a very high price" for the destruction and pollution that mainly took place in the past 40 to 50 years. The UNEP chief called for the adjustment of economic values and processes because it is necessary for both the market economy and the centrally planned economy to put the exact prices of goods and services that are given as far as they are affecting the environment.

In this way, he noted, the adjustment of the resources of budget would be on a much better and clearer basis without all these fights among the ministers who want to take a better share of the cake.

Human activities have induced unfortunate changes, said Dr. Tolba, adding that the ozone layer that man destroyed would not be healed before the year 2700 even if the international community takes resolute actions.

"We are not committing ourselves to the environment and we are not committing to new and younger generations which are not yet born at all," he argued.

His anxiety for the future of the environment—the earth's life support system—could be matched by an oil painting he put up in his drawing room, which depicts a man just coming out of the eggshell that nurtured him only to find he faces a land of desert under the scorching sun.

"I really don't know if we can rehabilitate the environment to the stages of our grandparents. But what the human beings can at least do is to come back to their senses and stop the further destruction of the environment," added the UNEP executive director.

Indian Minister Gandhi's View on Protecting Ozone Layer

Montreal Protocol Supported

90WD0563A Calcutta THE TELEGRAPH in English
10 Jul 90 p 5

[Text] New Delhi, July 9 (PTI): The Union minister of state for environment and forests, Ms. Maneka Gandhi, has strongly recommended that the government sign the Montreal Protocol to protect the ozone layer since all "discriminatory clauses against developing countries had now been removed."

Ms. Gandhi said in an interview today that she was preparing a detailed note on this which would be placed before the Cabinet for approval. "It is the Cabinet which has to take a final decision on the matter," she said.

Ms. Gandhi said India had refused to sign the protocol all these years as there was no commitment from the developed countries on either the transfer of technology to help phase out chlorofluorocarbons that destroy the ozone layer or on the creation of a permanent fund for this purpose.

Ms. Gandhi had recently led the Indian delegation to the ministerial-level meeting in London on the 1987 Montreal protocol which aims at phasing out substances that deplete the ozone layer by the turn of the century.

"The protocol as it stands now is extremely favorable to us. Every discriminatory clause has been removed and this is a major victory for the developing countries," Ms. Gandhi said.

She said the government would come out with a national plan to phase out the use of chlorofluorocarbons and would hold discussions with the industry in this regard.

The minister said India would, over the next three years, get \$40 million as grant-in-aid for developing technologies that would help in phasing out chlorofluorocarbons commonly used in refrigeration and air-conditioning. "Although this amount is very little compared to our total requirements," she said India hoped to get at least

\$700 million from a permanent fund over the next 10 years. This money may be in terms of technology transfer, equipment or expertise, she said.

Ms. Gandhi explained that a lot of effort had gone into amending the protocol and now the obligation for phasing out chlorofluorocarbons was no longer that of the developing countries, but of developed countries which were primarily responsible for the damage to the ozone layer.

Role at London Meeting

90WD0563B Bombay *THE TIMES OF INDIA*
in English 1 Jul 90 p 9

[Article by L.K. Sharma]

[Excerpt] London, June 30. India will draw up a national plan to gradually phase out the consumption and production of ozone-destroying chlorofluorocarbons, according to the minister of state for environment, Mrs. Maneka Gandhi.

She regretted that new units to manufacture this were still being licensed in the country while the effort should be to check the increase in their numbers. As a result of the modifications in the Montreal protocol and the consequent Indian willingness to join it, these harmful chemicals will be banned when environment-friendly but more expensive substitutes along with the Western aid to switch over to these are available.

Mrs. Gandhi, assisted by the environment secretary, Mr. Mahesh Prasad, played a key role in persuading the London conference to transform the Montreal protocol on phasing out the use of CFCs into a less unfair and more rigorous international agreement. It is now expected to be signed by India, China and some other developing countries which had earlier refused to ratify it and which together can defeat the purpose of the protocol—to save the earth's protective ozone layer. This ozone agreement marked a new chapter in North-South cooperation. It also reflects the collective international will to deal with a global problem earlier shown in an agreement on chemical weapons.

India and China, being nonsignatories to the Montreal protocol, participated in the conference as observers and insisted on suitable provisions regarding a fund and its administration and for technology transfer before signaling their willingness to join the protocol. The resources and transfer of technology will help developing countries in phasing out the use of harmful chemicals.

Mrs. Gandhi through her interest in the subject and plain-speaking set a new standard in environmental diplomacy worth emulating by developing countries during North-South economic negotiations. Mrs. Gandhi was able to articulate India's position well before a media which is currently showing considerable interest in environmental issues. This was in a sharp contrast to the past in a similar conference when the then minister, Dr. Z.R. Ansari, had functioned almost as an absentee.

Enjoying the world media attention, Mrs. Gandhi kept telling inside and outside the conference that "polluters must pay." The developed countries which produce and consume 90 percent of these chemicals have indulged in this profligacy for several years exploiting the cheap route to the refrigeration industry. First these countries unloaded these technologies on a country like India and now when India needs a large refrigeration industry it is being unfairly asked to close it down and buy more expensive technology.

"Give us money and give us technology and we will help you," she kept persisting. The message went home with the cause of developing countries projected in the world media quite favorably. Mrs. Gandhi's freckled face, her gender and her age all helped. Even at the late night dinners, her counterparts found it tough to persuade the "young lady."

After initial resistance the advanced countries agreed to considerable give and take with a view to securing the cooperation of countries such as India and China which have the potential of large production and consumption of CFCs, mainly used by the refrigeration industry.

The conference agreed to set up an international fund with contributions from developed countries totalling \$160 million for a three-year budget. The sum will be enhanced by another \$40 million when India ratifies the protocol.

New Zealand Scientist Reports Ozone Hole Over Antarctica Larger

BK1110073490 Hong Kong AFP in English 0155 GMT
11 Oct 90

[Text] Wellington, Oct 11 (AFP)—New data shows the hole in the ozone layer over Antarctica is bigger than expected, forcing scientists to rethink how the annual hole forms, New Zealand meteorologist Sylvia Nichols says.

As of last weekend, ozone in the "hole" was as low as 160 Dobson units (one hundred Dobson units equals about one millimetre thickness of ozone), she told the *DOMINION* newspaper in an interview published Thursday.

A U.S. satellite recorded 175 Dobson units in mid-September. Before 1980, ozone was as thick as 300 units. Ms. Nichols said ozone depletion was marginally more severe than last year, calling into question the theory that ozone-depletion was worse in odd-numbered years because of a weather system which transported heat from the tropics in a two-yearly cycle.

She said all ozone between 12 and 20 kilometres (seven to 12 miles) from the earth's surface appeared to have been wiped out.

"It's unusual to get this two years in a row," she said.

Chilean Foreign Ministry Official on Upcoming Antarctic Meetings

PY1510210790 Santiago Television Nacional de Chile Network in Spanish 1700 GMT 15 Oct 90

[Text] Jorge Berguno, Foreign Ministry director for special policy, has announced that three Antarctic meetings will take place in Chile in November. Berguno explained that the 39 nations that have signed the Antarctic Treaty will participate in these meetings between 19 November and 6 December. He emphasized that the most important of these three meetings will be the 11th Special Consultative Meeting which will discuss the protection of the Antarctic environment. He also stressed that this meeting is taking place in Chile, which will benefit most from an effective environmental policy because Chile is the country that is closest to the Antarctic.

Five Nations Sign Joint Document on Antarctic Environment

PY2909231890 Buenos Aires TELAM in Spanish 1646 GMT 28 Sep 90

[Text] Buenos Aires, 28 Sep (TELAM)—Argentina, Uruguay, the United States, Great Britain, and Norway have

agreed "to take a common position on protection of the Antarctic environment."

Today the Foreign Ministry released a joint document, which was prepared by all five countries, on "comprehensive measures for protection of the Antarctic environment and its dependent and associate ecosystems."

The document proposes a "protocol complementary to the Antarctic Treaty, which, without modification, would set general principles and compulsory norms for protection of the local environment."

According to the Foreign Ministry's joint document, "the proposal reaffirms Antarctica's value as an ideal region for scientific investigation of phenomena that affect the global environment," and warns that "all human activities must avert adverse impact on Antarctica's ecosystems."

This joint initiative will be presented to the 11th Special Consultative Meeting of the Antarctic Treaty, which will be held in Chile this November.

CAMEROON

100,000 Hectares Sprayed Against Locusts

91WN0006A Yaounde CAMEROON TRIBUNE
in French 22-23 Jul 90 p 8

[Article by Ndongo Ondua: "Constant Efforts"; first paragraph is CAMEROON TRIBUNE introduction]

[Text] When the meeting of the National Anti-Locust Coordinating Committee came to an end, the necessity of combining efforts during the next campaign was clearly felt. But the fight against locusts has since begun, despite inadequate means.

The warning has been out since the day before yesterday. Unless necessary arrangements are made in time, the north of our country will be hit with a massive assault of grasshoppers and locusts. This was affirmed by the minister of agriculture, accompanied by the secretary of state Mr. Tikela Kemone, the day before yesterday as he presided over the second 1990 meeting of the national anti-locust coordinating committee.

But the minister's observation was in no way fatalistic or resigned, far from it. It simply underscored the need to take immediate and effective measures, locate vital equipment, and mobilize both anti-locust teams and moneylenders to draft an overall strategy for dealing with the threat. The latter is each year omnipresent, especially in the northern part of the country. And this year, matters seem all the worse in that breeding grounds for certain grasshopper species have been spotted on both sides of the border separating Cameroon and Chad. The plague is therefore already in our house. It must be fought with every ounce of energy we possess.

And there was a ray of hope the day before yesterday at the end of the meeting. Promises to bolster anti-locust equipment were made during the discussions. One commitment was made by the FAO [Food and Agriculture Organization], which plans to take responsibility for financial aspects. France has promised the support of the ECO-FORCE [expansion unknown] intervention team should the need arise. And this is cause for cheer when you remember last year's experience, when Cameroon had to resort to ECO-FORCE at the last minute because our Airborne Spraying Union (UTAVA) planes were grounded for technical reasons. Moreover, anti-locust equipment is said to be on its way to Cameroon. This can only bolster our resources, despite [still unmet] basic needs such as aircraft repair, acquisition of light and heavy vehicles, purchase of pesticides, and improvement of the radio system, to name just those.

Constant Fight

But in fact, our intervention system has always had to function with greater or lesser equipment. For we have been fighting this stubborn and dangerous scourge, which cyclically strikes our country for decades. Even last year, although the 400,000 hectares to be sprayed

were not fully covered, a quarter of the area, that is 100,000 seriously infested hectares, was nonetheless treated. Likewise, in Pitoa, 212 infested hectares were covered by using 250 liters of pesticides spread with T15 dusting devices, then with sprayers. The results were significant. With this in mind, a seminar was organized to prepare technicians to make efficient use of the equipment they have.

A year earlier, that is in 1989, mobile teams of the Diamare plant-health brigade, assisted by Logone-et-Chari peasants, were able to check the plague that threatened 200,000 hectares. In Cameroon, the need to involve rural people in the battle against locusts is understood.

If there was another year of great mobilization against locusts, it was 1988, when migratory crickets attacked the extreme north. The alert was sounded, two UTAVA airplanes were mobilized, and the locusts were brought under control in time. Six brigades fanned out over the region, friendly countries participated: In short, it was a success.

Given all these experiences, the fight against locusts should no longer be arduous. It is constant and cyclical. It is a matter of organizing in time, based on former campaigns, while each time assessing the situation and specifics of the moment. If the current anti-locust campaign is approached this way—intimately involving rural folk in the fight, defining clear short- and long-term strategies, and coordinating our efforts with those of neighboring countries—then grasshoppers and locusts will no longer take us by surprise.

KENYA

Finland Financing Wood Fuel Forestry Project

90WN0282A Helsinki HELSINGIN SANOMAT
in Finnish 31 Aug 90 p D1

[Article by Pertti Harstela: "Stoves and Utopia in Backwoods of Kenya"]

[Text] The introduction of technological advances that work well in Western countries has often proven to be a difficult proposition in developing countries since even something as simple as a stove may require a long period of persuasion before it will be adopted. An innovation may, however, also have its good sides which no one even dreamed of when aid was being planned. Prof. Pertti Harstela was the director of the Finnish-financed Bura firewood project in Kenya in 1988-1989.

We would not have really noticed that we had landed on the high plateau if we had not been met with a hot breath like that of a sauna that is being heated. The huts came to an end. Ahead of us was a vast prickly bush wasteland without waterholes and therefore without human settlements.

Only an occasional Somali with his camels or a string of thirsty cattle drovers animated the monotonous plateau. Every now and then gerenuks appeared, as did multicolored birds, sometimes ostriches or an occasional giraffe.

Farther than the eye could see, the silent wilderness seemed hostile and the bandits that mingle with the local population are hostile too. We crossed the area with a police escort who were supposed to protect us. The bandits are always successful when they attack.

We were in the vast eastern backwoods of Kenya, far from the Kenya whose coast and highlands tourists are familiar with. Not even Kenya's highland tribes, schooled by the colonialists, are familiar with it.

Government Has Declared War on Elephant-Hunting, Pillaging Bandits

The government would like to control the disputed eastern districts and tribes. It has declared war on the elephant-hunting, pillaging bandits and is now slowly building a road.

Leaving the signs of the road construction site behind us, the road became a rut that had to be driven with a jeep and was easily washed out in spots by the rains. The government has also built settlements along the Tana River to grow cotton.

Once, when the escort was widely scattered on the road ruined by rains, and trucks and buses were bogged down in the mire and the escort's four-wheel drive was pulling our jouncing jeep only with difficulty, we came across a police Land Rover bogged down in the mire. They had raised the front end of the car up out of the mire with their jack, but they needed our jack to free the rear end.

A policeman speaking broken English answered our question as to where they had come from: "Chasing shiftas (bandits)." He jumped theatrically onto the top of the car, pointed to the bushes with his assault rifle and explained: "We found shiftas, shot lots of them, but too many shiftas. Had to flee."

Kambas, Somalis, and Ormas still live the kind of life in these remote parts that used to preserve the natural balance of things. It was a cruel balance from which people tried to escape if they could.

There is no longer a balance. Some people attribute the already wide fluctuations in weather conditions or at least the predicted increase in drought to a change in climate, and therefore to people. In any event, the disappearance of trees is turning the region into a desert. Without aid programs, when the cattle die, people will also die.

Many Would Be Satisfied With a Hectare of Land and Earning a Living on Outer Fringes

A new era, a new way of life has been introduced alongside the tracks the jeeps and Land Rovers use. It

extends its tentacles from the highlands to the heat of the savannas like an octopus. And it has not yet lowered the population growth.

A peculiar case of coexistence: An expressionless nomad wending his centuries-old way past the cloud of dust raised by the cars.

The world of technology is tied to its roads, settlements, machines, and oil. Friendly Orma nomads and secretive Malakots from the riverside forest surround the settlements.

The official goal behind the establishment of the settlements was to move people pressured by overpopulation from the highlands—"the landless and unemployed picked up out of the gutter," as one official put it—to the irrigation canals to become tenant farmers.

Many of them would be satisfied with a hectare of land and earning a living on the outer fringes of the country if the firewood of the savannas was not being exhausted, if the irrigation system worked, and if the extermination of destructive insects was effective.

Gift of Three Firestones From Mother Brings Luck

But the high tech system along with its pumps has proven to be a utopia. Eversince the World Bank-funded foreign experts left, everything has been operating only with difficulty. It is clear that the capital [that was borrowed] will never be amortized.

Now, they are trying to save whatever can be saved: to get the settlements to produce a steady flow [of products] and new investments. To do this, however, reorganization and investments—foreign donors—are needed.

But there was another threat. "We'll have to leave here if we don't get firewood," a tired farmer anxiously said. "We haven't had any hot food for two weeks now."

The firewood and stove programs are adapted to the grass-roots level and are producing results, since the desert created by the unproductive utopia is beginning to turn green. A small green drop in the dust cloud of the new world.

The people of the highlands did not want stoves because the campfires kept them warm on cold nights. In some places they have gotten used to keeping insects away with the smoke from the fires. In some places a mother gives her daughter three stones from the campfire which she may not give up. It helps matters if the stones are built into a new stove.

No more heat is wanted here, but the grass-roots fabric of their culture is nonetheless manifold. The farmers of these settlements want to get rid of the smoke and they want to have two pots cooking on the stove. A clay stove for one pot that can be quickly built, but which releases smoke into the flimsy cooking shack, was developed for the Orma nomads.

A woman complained that the smoke does not go out through the stovepipe. When we went into the shack, the flames were cheerfully leaping from the stove, along with the smoke, of course. Stones had been placed between the pot and the opening on top of the stove and a needlessly large amount of wood had been put into the stove, which of course resulted in wasted heat.

The reason for this was that the fact that the soup was boiling meant nothing to the villagers. They believe that it is the flames that cook the food. And if you don't see any flames, the food will not get done. Unless the stove programs are accompanied by constant advice and followup, the promising results may be to no avail.

Sometimes nothing seems to be successful and sometimes their success is surprising. Working with nomads is regarded as a particularly difficult endeavor.

When drought killed a considerable number of the Orma tribe's cattle, many Ormas settled on the fringes of the settlement looking for occasional jobs and sold firewood. This made the shortage of firewood even worse.

You Get Food and a Man Into the Hut Quickly With a Good Stove

The group of advisers achieved a small triumph when they adapted a Louca-type stove, which they dubbed with a local name, Dokemasi (sand and clay). The group leader wrote in his report: "We built a demonstration

stove in the village of Soya. And hurrah! In five days the Ormas had already built 28 stoves."

Inspired by their success, I asked an Orma woman about the usefulness of the stove. She extolled its excellence: "When a man comes into the village from tending cattle, I get the food ready faster than the other women do and so the man comes to my hut."

In passing, she admitted that the stove saved on firewood too. And she was not averse to agreeing that the stove is safer for small children and that food can be left cooking without having to worry about it while doing other chores. With this model the pot fits so deeply into the stove that there is no way a child can tip the pot over onto himself.

The settlement's houses are made of clay. They are built on a framework composed of rods and poles. In the room there is an earthen floor, a few home-made chairs for guests, and a small table. It's more comfortable to sit outside and one gets used to the dirtiness of the yards. The wood produced by the project is already providing shade against the exhausting heat.

In the evening, after a hard day's work, I sit in the village with my back against the cracking clay wall of the hut. The mesquite sticks afford meager shade against the already sinking sun. John brings me a Coca-Cola bought with his last penny. I close my eyes and listen to the sounds of the village and I think: this remarkable, remarkable world.

Heilongjiang Announces New Measures To Treat Water Pollution

91P30011A Harbin HEILONGJIANG RIBAO
in Chinese 9 Sep 90 p 1

[Text] By the close of today's first Heilongjiang Provincial Water Pollution Treatment Working Conference, Heilongjiang Province made definite achievements in treating water pollution and helped resolve the trend of worsening ground water quality. However, the water contamination situation is still very grave.

According to statistics, the processing rate of industrial waste water for Heilongjiang Province was 36 percent in 1985, and rose to 40.06 percent by 1989. The rate at which processing of industrial waste water achieved its target rose from 34 percent in 1985 to 73.6 percent 1989. In 1985, 329.09 million tons of industrial waste water were disposed of; this increased to 441.38 million tons in 1989. Nonetheless, many problems remain in the province's efforts to prevent and treat water pollution. In 1989 the total amount of waste water that was disposed of was about 1.48 billion tons, an increase of 185 million tons over 1985. The province's major rivers have been polluted to varying degrees.

In response to these problems, the Heilongjiang Provincial Environmental Protection Bureau is advancing additional water treatment measures. The province will establish a protected area for drinking water resources where polluting enterprises and pollution-producing tourists, sports, and entertainment facilities are prohibited. Contamination disposal units situated in these areas are prohibited from disposing of pollutants on site. As of today, Heilongjiang Province will phase in a permit system for disposing of water waste matter in Harbin, Qiqihar, Mudanjiang, Jiamusi, and ten other cities under provincial jurisdiction. In this way, the bureau will have complete control over the disposal of pollutant materials. Rural and small town enterprises that create serious water pollution and fail to prevent or treat it are without exception not permitted to set up operations. Polluting enterprises located in areas where water

resources are protected, and in scenic areas, will be closed, suspended, merged, transformed, or moved, one after another. If these measures are well implemented, Heilongjiang Province can expect to attain control over pollution of the Songhua River system by 1992.

Preparations Made To Improve Grasslands in Sichuan Province

OW0710153490 Beijing XINHUA in English
1448 GMT 7 Oct 90

[Text] Chengdu, October 7 (XINHUA)—Thousands of Chinese scientists and technicians are now making investigations in northwest Sichuan Province to prepare for amelioration of grassland in this area, according to the provincial agricultural bureau.

The 24 million hectares of grassland in northwestern Sichuan, one of the five major pastures in China, has been designated as a pilot area for comprehensive amelioration, and the experience will be spread to other parts of the country.

China has 400 million hectares of pastures, covering 40 percent of its land area.

According to local experts, the pasture in northwestern Sichuan is typical among grasslands in China. It is plagued by rats, pests, overgrazing and desertification, which affects the growth of livestock.

The Chengdu Institute of Biology of the Chinese Academy of Sciences, Sichuan University and ten other colleges and institutes are jointly undertaking the current project for amelioration of grassland in northwest Sichuan Province.

So far, scientists and technicians engaged in the project have completed a survey of 20 items, including resources and natural conditions of the grassland. They have also made achievements in research of 30 subjects in this field, including biological control of some harmful insects and rats on grassland.

INTER-ASIAN

UN Official Cited on Burmese, Thai Forestry Policies

*BK1310022890 Bangkok THE NATION in English
13 Oct 90 p A2*

[By Ann Danaiya Usher and Nanthiya Tangwisuthichit]

[Text] Officials of the United Nations Development Programme [UNDP] yesterday defended the agency's development assistance to Rangoon, in the wake of criticism by Burmese student dissidents.

Arguing that all UN agencies are "non-political," New York-based Deputy Regional Director for Asia Arthur Holcombe said, "we do not try to judge the character of the governments ... we only work to improve the quality of life of the people."

The All-Burma Students' Democratic Front (ABSDF), which had received news of an expansion in the UNDP programme in Burma, issued a statement this week condemning the agency for "insensitivity to the struggle of Burma for human rights."

But Holcombe said UNDP works in several other countries that suffer from political unrest, such as North Korea, Bangladesh and Afghanistan without becoming involved in internal political affairs.

He said UNDP would only suspend programmes if agency staff were endangered, as they did after the student uprising in September 1988, during which hundreds or possibly thousands of protesters were killed during pro-democracy demonstrations.

"We closed down for about nine months for the safety of our staff, not for political reasons," he said.

Programmes have now resumed with a budget of U.S.\$53 million over five years for economic reform, education, health, agriculture and forestry projects.

UNDP also denied press reports that the State Law and Order Restoration Council [SLORC] has asked the agency to coordinate non-American voluntary agencies to work in the country as long as they are not currently working with ethnic groups.

Rangoon-based UNDP official Michel Gautier said that during a preliminary meeting with four agencies last month, it was "a coincidence" that none was American.

Meanwhile, the students' statement called for a national development and environment policy which gives people "a voice in decision making."

But during this week's Asian governments' environment conference, Burmese delegate U Ba Thwin told THE NATION that they have no need for input into the deliberations because Burma's policies are already environmentally sustainable.

Denying reports that deforestation has increased exponentially since Thai logging companies were granted concessions along the Thai-Burmese border in 1988, Ba Thwin said, "loss of forest is mostly caused by fuelwood extraction by local people."

Echoing the Burmese delegate's comments, Gautier commented that Thai logging has "little impact on the overall forest resources of the country because they are only operating along the border." He also said the most serious deforestation is currently being caused by slash-and-burn agriculture practised by highland peoples.

Gautier said UNDP is teaching watershed management, encouraging hill people to move into the lowlands, promoting the exploitation of lesser-known species (other than teak) and cash crop cultivation.

"The Rangoon Government is sincere in its efforts to upgrade its forest management system to ensure reasonable logging that won't endanger the forest resources," said Gautier.

UNDP undertook a forest inventory to assess the rate of cutting and forest cover, which has served as the basis of Burma's Tropical Forestry Action Plan.

But the study was completed between 1981 and 1987. And a 1989 analysis of Burma's forest situation from satellite images suggests that annual deforestation has increased eight-fold to 8,000 square kilometres (five million rai) since Thai companies began logging in Burma.

Though both UNDP and the Burmese officials in Bangkok this week staunchly defended Burmese forest policies and practices, Rangoon appears to be at loggerheads with Thai companies who are lobbying for a relaxation of regulations.

In an apparent attempt to control unruly loggers, however, Rangoon has proposed even stricter rules, which include: informing Burmese military before entering a new area; not hiring ethnic minorities to work on concessions; taking responsibility for any "acts of terrorism" that occur within the concession areas.

—On Thailand's other border, Laos is also feeling the impact of increased logging by Thai timber companies in search of alternate supplies after the January 1989 cancellation of logging concessions in Thailand due to environmental problems.

"After Thailand closed its own forests, saw mills of Thai investors increased 30 percent in our country," said Chanthaviphone Inthavong, director of national project from Ministry of Agriculture and Forestry of Laos.

JAPAN

Government Sets Deadline To Stabilize Carbon Dioxide Emissions

OW1610091590 Tokyo KYODO in English 0808 GMT 16 Oct 90

[Text] Tokyo, Oct. 16 KYODO—Japan plans to stabilize its carbon dioxide emissions at this year's level by the year 2000, Environment Agency Director General Ishimatsu Kitagawa said Tuesday.

Kitagawa told a press conference after a regular cabinet meeting that he is determined to achieve the target of stabilizing the level of emissions of the gas—a cause of global warming—adding that Japan needs to present a positive policy at an upcoming international climate conference in November.

The agency, in conjunction with the Ministry of International Trade and Industry (MITI) is now finalizing the target for emissions of the gas in the action program to prevent global warming, which the government is expected to authorize next Tuesday. MITI insists that an increase to 16 percent above the 1988 level is unavoidable by 2000.

Meanwhile, in Bangkok, a representative of the European Community (EC) told an environmental conference of the Economic and Social Commission for Asia and the Pacific (ESCAP) that the EC also aims to freeze carbon dioxide emissions at the current level by 2000 or 2005, agency officials said.

It is the first time that the EC has announced a collective European target on reduction of carbon dioxide emissions.

The EC is expected to officially approve the target before the end of the year with a condition that the United States implement similar measures, the Japanese officials said, quoting reports from Bangkok.

SOUTH KOREA

Ministry Outlines Steps To Punish 'Sea Polluters'

SK1010005490 Seoul THE KOREA TIMES in English 10 Oct 90 p 3

[Text] The Environment Ministry has drafted a revision bill to the Marine Pollution Prevention Act to strengthen punishment for sea polluters, a spokesman said yesterday.

The ministry move was designed to induce vessel owners to take precautions to prevent oil leaks which cause serious damage to marine life.

Sea polluters and their vessel owners will face up to five years in jail or up to 100 million won in fines, the ministry said.

Besides imprisonment or fines, they will be responsible for compensating residents for their property losses and cleaning up polluted regions, it said.

Meanwhile, a task force in charge of prevention of marine pollution will set up a branch office in the Home Ministry, assuming the role of maritime police.

THAILAND

Logging Ban Reduces Forest Destruction by 84 Percent

BK2210032090 Bangkok BANGKOK POST in English 22 Oct 90 p 2

[Text] The logging ban decree has considerably decreased the rate of forest destruction, the Forest Protection Task Force Centre of the Forestry Department said yesterday.

The centre reported that forest destruction during 1985-1988 averaged about 1,471,389 rai [1 rai = 1,600 sq. meters] a year, which fell to about 241,390 rai a year during 1988-1989, a reduction of about 83.5 per cent. The logging ban took effect in February 1988.

From 1989, the ban has saved about 1.9 million cubic metres of wood from being cut.

However, the report said violations of the forestry law increased by 8.4 per cent and the volume of confiscated logs and wooden planks has risen by 46.92 per cent.

The number of forest protection units increased to 491 this year from 243 in 1988. More vehicles, radios and firearms have been provided, enabling them to launch extensive patrols, leading to more arrests.

The centre said former Agriculture Minister Sanan Kachonprasat initiated the recruitment of 3,856 villagers in forested areas to join the protection campaign. They have played a key role in informing on violators.

Many logging concessions have been declared part of 31 national parks and two wildlife sanctuaries.

The centre has been put in charge of 126 million rai of forest nationwide excluding national parks and wildlife sanctuaries. The budget last year was 438,361,400 baht for its 5,732 officials in 491 forest protection units. Each official is responsible for 21,981 rai.

INTRABLOC

**Polish Minister on CSFR-Polish Disagreement
Over Environment***AU0910100990 Prague SVOBODNE SLOVO in Czech
29 Sep 90 p 2*

[Unattributed report: "Poland Feels Threatened"]

[Text] Warsaw—Poland is threatened by ecological aggression. Waste flows to Poland through the waters of the Odra, Luzicka Nisa, and Bug Rivers. Cooperation with neighbors has been inefficient so far and the conflicts at the border must not be concealed, said B. Kaminski, minister for the protection of the environment and natural resources. Asked by a CTK correspondent whether there have been any changes in the Czechoslovak authorities' course of action since the November revolution, the Polish minister said that the atmosphere of cooperation was better now, yet results are what is needed. Czechoslovak "ex-gratia" compensation for the pollution of Odra River is unacceptable, because the issue is not a gesture toward Poland but a compensation for caused damages. Asked whether Poland intends to file charges against Czechoslovakia for the "Stonava Coke Plant" case with the International Court in The Hague, he said that he intended to address international organizations but would make a decision only after a meeting with Minister Vavrousek in mid-November. Poland has not yet received an answer to its "no" to the Stonava Coke Plant.

**Bulgaria Urges Romania To Observe Ecological
Agreements***AU0810213390 Sofia BTA in English 1910 GMT
8 Oct 90*

[Text] Sofia, October 8 (BTA)—Mr. Lyuben Gotsev, minister of foreign affairs, today received the Romanian ambassador here in connection with the environmental problem in the area of Ruse and Giurgiu. The ambassador was told that despite the common understanding that no hazardous emissions affecting Ruse should be allowed from the Romanian bank until an international expert examination is carried out, the readings on September 17, 20, 21 and 23 showed concentrations of vulcrites and chlorine ions which were from 0.5- to 2.5-fold the maximum permissible limits.

The Romanian side was also notified that on September 18 and 24 the town of Nikopol was affected by an emission of ammonia from the chemical combined works in the town of Turnu Magurele in a concentration of up to 2.5-fold higher than the acceptable levels. In this connection, the minister of foreign affairs insisted that Romania observe strictly the common understanding reached by the two countries' prime ministers on July 4, 1990.

The sides also discussed questions concerning the mechanism of the forthcoming international expert examination.

**Romania Parliament Favors 'Constructive
Dialogue' With Bulgaria***AU1110122090 Bucharest ROMPRES in English
0914 GMT 11 Oct 90*

[Text] Bucharest, ROMPRES 11/10/1990—Romania's Parliament is in favour of continuing the constructive dialogue between the two countries in view of seeking out the best ways to settle matters of mutual interest, with a view to strengthening good neighbourliness and the traditional understanding between our peoples, shows the Romanian Parliament in its reply to the appeal of the Bulgarian Constituent Assembly.

We fully share the idea that "the ecological dossier" of our frontier zones can be settled only through the resolution of complex economic and social problems, through keeping the population in the two countries abreast with them and with the efforts required by their settlement, the reply of the Romanian Parliament reads.

Prompted by the wish to seek out mutually acceptable solutions to improve the ecological situation of the Giurgiu-Ruse zone, the Romanian authorities have already stopped the operation of certain productive installations of the Giurgiu chemical combine.

It is however necessary to objectively analyze the ecological problems of the respective zone, which requires the extension of the investigation to the sources of pollution of Ruse town, which cannot be blamed only on the chemical combine in Giurgiu. As a matter of fact, the report of a joint expert commission records the existence of several economic units in the zone of Ruse town which directly add to the pollution.

Besides, we think it absolutely necessary that all aspects of pollution be analyzed with good will and responsibility, all its sources be investigated, including the radioactive ones, as well as the real risk entailed for the population of both countries by the nuclear installations at Kozloduy and Belene in their present condition.

It is also necessary that the population, public opinion in the two countries be given objective information of the complex nature of the ecological situation in the frontier zones and of the measures being taken for its improvement, so as to create the climate of understanding and cooperativeness apt to help settling the extant issues.

In consideration of the above, the Romanian Parliament agrees to expert investigations being performed by joint commissions in the enterprises in the frontier zone, which are sources of pollution of any kind and, if necessary, we should agree to inviting international organizations that should guarantee the objectiveness of the measurement.

Romania's Parliament speaks up for the negotiation and signing of a convention to establish duties of both parties as regards the way of settlement of the problems generated by all sources of pollution in the frontier zone or near it.

BULGARIA

Ruse Marks Ecological Movement Day

*AU2809190390 Sofia Domestic Service in Bulgarian
1730 GMT 28 Sep 90*

[Text] Marking the Day of National Ecological Protest, a religious ceremony took place this evening on Freedom Square in Ruse, the site of the first public protest demonstration prior to 10 November 1989 in our country, held 3 years ago. At the call of the Ruse Ecoglasnost Movement, numerous Ruse citizens gathered in the city and expressed their request that Ruse's ecological problems which have been affecting the city for almost 10 years should be promptly resolved.

The silent vigil observed by the people holding candles lasted for nearly an hour. Rumyan Ganchev, leader of the Ruse Ecoglasnost movement declared that the movement is defending and expanding its program and shall not stop its actions as long as the Ruse citizens cannot live in peace without being afraid for their children's health and lives.

Workers Claim Kozloduy Sixth Reactor Unsafe

*AU0310095690 Sofia BTA in English 0918 GMT
3 Oct 90*

["Kozloduy Reactor 6 Unsafe, Workers Claim"—BTA headline]

[Text] Sofia, October 3 (BTA)—"We don't want another Chernobyl," write the workers at Generating Units Nos. 5 and 6 of the Kozloduy Nuclear Power Plant in an open letter carried in today's TRUD. They claim that the start-up of Unit No.6 would be tantamount to a crime.

Yesterday the prime minister, Mr. Andrey Lukanov, visited the power plant and told a news conference later in the day that with the shortage of liquid fuel, the going-into-operation of Generating Unit No. 6 at Kozloduy is a way out of the energy crisis. The trouble is, he says, that despite the high pay, the facility is understaffed.

In their open letter, the workers at Units 5 and 6 advance another argument: "At Unit 6, the systems keep being cleared for operation with reservations on faults which are not repaired. The faults discovered in the clearance of Unit 5 have not been repaired, either. The radioactive waste storage facility extension has not been completed for lack of reagents, chemicals and electric motors."

So far the start-up preparations at Unit 6, where the fewer-than-required workers work overtime, have not

involved nuclear fuel in the reactor, and the only risk was to damage the expensive equipment. "After the nuclear fuel is loaded, however, the work already involves an explosion hazard," the authors of the letter emphasize. They are categorical that under the circumstances, it would be a crime to start up Unit 6. "We don't want another Chernobyl," they write at the close of their letter.

Nuclear Agency To Inspect Kozloduy Nuclear Plant

*AU1010210790 Sofia Domestic Service in Bulgarian
1730 GMT 10 Oct 90*

[Text] On the basis of an agreement between the Agency on Peaceful Use of Nuclear Energy in Vienna, represented by Mr. Rosen, director of the Nuclear Safety Department, and the Bulgarian ambassador in Vienna, on 15 October an international mission [word indistinct] will begin its work at the fifth reactor of the Kozloduy Nuclear Plant. For 12 days a group of experts will inspect the technical state, use, maintenance, and repair of the 1,000- megawatt nuclear reactor. The Bulgarian public will be acquainted with the mission's final protocol.

IAEA Experts Conclude Sofia Reactor Can Operate Safely

AU0710180790 Sofia DUMA in Bulgarian 4 Oct 90 p 2

[Boris Gergov report]

[Text] The IAEA [International Atomic Energy Authority] experts who completed an investigation of the condition of the nuclear reactor at the Nuclear Center in Sofia issued a recommendation that after reconstruction it will be able to function without danger to the population and the environment. This was announced on 3 October by Professor Valentin Konshin, director of an IAEA department. The experts' final report will be received in Sofia in two weeks time.

I do not want to connect my coming to Sofia with any attempt to exert influence on whether the nuclear reactor, which was shut down in the summer of 1989, should be started or not, said Prof. Konshin. This is not the concern of our international organization, which only provides objective examinations by experts. The Bulgarian Government will make the decision, he said.

The commission recommends replacement of the reactor's core and the installation of a new water tank. In addition, a number of monitoring sensors should be fitted. The staff is sufficiently well qualified, and the dosimetric monitoring system is satisfactory. If these measures are carried out, Prof. Konshin continued, the reactor can be restarted. It will then present no danger for either the population or the environment.

Some 400-450 research reactors exist throughout the world. About 40 percent of them are 30 years old, like

the reactor in Sofia. Prof. Konshin added that the IAEA will probably allocate substantial material funds for the reactor's reconstruction.

CZECHOSLOVAKIA

New Environment Minister Discusses Strategies

90WN0287A Oslo ARBEIDERBLADET in Norwegian
7 Aug 90 p 12

[Article including interview with Environmental Affairs Minister Josef Vavrousek by ARBEIDERBLADET correspondent Audun Bakkerud: "Prague's New Watchdog"—date and place not given]

[Text] Prague—Czechoslovakia's brand new environmental affairs minister, Josef Vavrousek, has asked journalists to serve as baying watchdogs on ecological issues.

"Together we must create a pressure that increases ecological awareness at all levels of society," he said.

"But as journalists you must be absolutely independent of us. You must press us, give us hell, cut us to pieces for poor theory and poor practice. That will provide us with the best basis for doing a satisfactory job," the country's first environmental affairs minister continued.

Expert

It is no surprise that Vavrousek was picked for the challenging post of environmental affairs minister after the victory of Citizens' Forum in the June election. He has long been regarded as a leading expert on ecology in Czechoslovakia.

Along with his colleague in the Czechoslovak Government, Bedrich Moldan, he has led the way with extensive reports on the country's environmental problems in recent years.

Cleaner Food

In a conversation with ARBEIDERBLADET, Vavrousek said that the Environmental Affairs Ministry will assign the highest priority to a big cleanup in the area of food production. The whole cycle, from farm soil to finished products on the dinner table, must be cleaned up, according to Vavrousek.

"We are poisoning the basis of our subsistence. This applies to the soil, sources of drinking water, agricultural production and the processing of products, for example in the packing industry," said Vavrousek.

[Bakkerud] Can we assume that state control of agriculture will make it easier to implement a new agricultural policy?

[Vavrousek] I am afraid that in the last 20-30 years collective management has been one of the strongest contributing factors in the steady deterioration of the

ecological situation. Big changes will now be made in agriculture, especially with regard to ownership conditions. At this time 94 percent of agriculture has been collectivized and placed under state management. It is difficult to predict how quickly privatization will be implemented.

Industrial Closings

Large segments of industry in Czechoslovakia must be reorganized or shut down. The chemical and metallurgical industries will be among the first branches to be affected.

There are two main reasons for possible reorganization. One is pollution and the production of harmful products. The other is wastefulness in the use of power.

[Vavrousek] We must limit the concentration of air pollution in many areas. We must tackle the problems of toxic emissions and waste products. We must take drastic steps to counteract dying forests. And within a short time we must reduce power consumption by 20-30 percent. What we need is an overall ecological policy that will place these measures in a systematic framework.

Wasting Energy

Large segments of industry waste energy. Often plants are also unprofitable. Even though this means that there are both economic and ecological reasons to close them the risk of mass unemployment makes it necessary to weigh the advantages and disadvantages against each other.

[Vavrousek] Environmental protection will have a much stronger position than it has had in recent years. But at the same time we will be forced to view ecology, the economy and social policy in a total context. We cannot simply stress environmental protection, we must find an integrated solution.

Vavrousek sees energy consumption as a very central problem. Up to now energy consumption has increased steadily from year to year. That must stop:

[Vavrousek] It is not only feasible, it is an urgent necessity. It is hard to be specific about how this can be changed. To a large extent it will depend on how the economic system functions. But we will have to place great emphasis on the development of renewable energy resources in the long run.

Hazardous Power Needed

Czechoslovakia is dependent on brown coal and nuclear power. Both forms of energy are a threat to the environment. The ability to change over to other energy resources along with the reduction of wasteful energy consumption will be vital keys to some of the environmental problems.

[Vavrousek] In the short term brown coal energy is much worse than nuclear energy. But in the longer term nuclear

energy is much more hazardous. This means we must weigh two different risks against each other. I do not think it is possible to regard one as better than the other. And I am afraid that we will have to continue both forms of energy production for at least another 10 years.

[Bakkerud] Do you intend to expand nuclear power even more? Or are you more inclined to go the other way?

[Vavrousek] We must keep nuclear power at the lowest possible level. I cannot say how low that level will be.

Capitalism and the Environment

Vavrousek does not embrace the joys of capitalism without reservations. He regards it as a threat to environmental protection if liberal economic tendencies are allowed to go too far. It will be necessary to give environmental considerations a high priority in political planning and incorporate environmental protection guarantees in legislation.

[Vavrousek] However I hope we can accomplish both tasks, establish a market economy as well as a system to protect the environment.

He himself was trained as an economist, but as a researcher at the Institute for Scientific Development he worked his way up to becoming a leading expert on ecology in the country.

Need for Information

Vavrousek thinks there should be a ban on exporting polluting technology to East Europe. The most important aid from the West in his opinion is the exchange of knowledge. Czechoslovakia needs information, expert assistance and an exchange of experiences. But initially technical and financial aid would also be welcome.

The environmental affairs minister takes a positive view of the environmental protection fund Gro Harlem Brundtland took the initiative in setting up, and hopes Czechoslovakia can benefit from it.

His tone is different with regard to the Bergen conference, which he attended: "It was disappointing that so little came out of it and that the final document was so vague and nonbinding."

Capital Investments Needed To Save Ecology

90WN0268D Prague ZEMEDELSKE NOVINY
(supplement) in Czech 18 Jul 90 p 3

[Article by Dr. Eng. Borek Jankovsky, candidate for doctor of science, Club of Economists, Alliance of Farmers and the Countryside: "Will Investments Help the Environment? The Basic Theme of the Ecological Program"]

[Text] We all know that our countryside is on the verge of an ecological shock. The air, the soil, and the water are polluted with foreign matter, and nature has been

destroyed. This is the toll from the development of industry and civilization, and the insensitive approach to nature, aggravated by the pursuit of quantity and not quality. The past years in our country were marked by striving only for temporary material goods, while ignoring the consequences.

In developed countries 10-12 percent of the volume of investments in the national economy are annually allocated to ecological projects and environmental recovery and protection. In our country, for many years the volume of these investments was around one percent. In this sector the domestic debt is roughly equal to 200 percent of the annual investments. That is why it is necessary to allocate at least 15 percent of investments to environmental recovery and protection in every business year; to draft a complex system of ecologic legal standards; to ensure strict adherence to them; and not to permit the execution of investments that are not in accordance with economic demands. Ecological investments into the agricultural and forestry complex must be administered by the Soil Resources and the Agricultural and Forestry parliament (of the Chamber of the Republic), while removing the dependence that prevents state administrative agencies from fully utilizing legal measures in respect to individual users of the environment in the administered territory.

Financial resources to remove the consequences of ecological losses in the environment must come from stable contributions established for users of the environment, commensurate with their share in its pollution, from fines for ecological breakdowns and grants from the state budget.

A system of tax relief will support ecological measures taken by polluters.

It is absolutely necessary to create a complex system of supra-departmental state supervision and control in the area of ecology and quality of foodstuffs.

In agricultural production, without delay, one must change the system of farming to one that respects ecological principles, primarily through protective green belts around towns, on the most fertile land, and in areas where the environment has suffered the least destruction. Because it is necessary to start producing significantly purer foods, especially for child nutrition, on these lands from the ecological point of view, and to modify their prices so that they will be accessible to the citizens. (For instance, rations for children at substantially lower prices.) Considering the lower expected returns on these soils, it is necessary to subsidize this ecological production from the state budget. This is connected with the production and import of agrochemicals polluted by foreign matter and the prohibition of the use of unsuitable chemical substances. A moratorium on the annexation of agricultural or forestry lands around towns is becoming ever more important. Introducing biotechnology is one of the ways to achieve a

decrease in energy demands of agriculture, and biotechnological protection of plants. Considering the fact that more than half of the arable and other agricultural land has been negatively affected by excessive compaction and solidification of the subsoil, a complex program must be prepared to rehabilitate the hydrologic, air, and biologic regimes of these soils.

Radical protection of water resources is necessary. This can primarily be achieved through substantial extension of protective belts, stiffer state supervision and control in these areas, and through economic tools that are made mandatory for enterprises that produce in these sectors.

Simultaneously with this, it is necessary to ensure the purification of drinking water for the citizens with the help of well-known filtration systems, that are used extensively in developed countries. Subsidies and investments into these systems must necessarily be accepted as normal expenses for new construction and for investment for citizens both in the towns and in the country.

Ecological consultation centers should help in solving the problem in the educational sector and in expanding the ecological consciousness of the citizens—within the framework of the Chambers of Agriculture and Forestry. Simultaneously, it is necessary to combine the education and information systems with a scientific research development basis that will solve ecological problems.

In the environmental sector, the economic system that is being reborn must be founded on the specific facts of the given environmental state. This must be implemented immediately, through a registration system for individual users of the environment, in order to ascertain who, how, in what way, and to what extent they are polluting the environment. On this basis it will then be necessary to ensure the investment creation of ecological facilities, the activities of individual users, and finally the system of economic tools for the protection and creation of the environment. Without this registration system for the environment, established to determine the individual users, it will not be possible systematically to rehabilitate and protect the countryside. One must consider the registration system to be the basis for monitoring the environment.

Ecological Programs To Be Expensive

90WN0268A Prague ZEMEDELSKE NOVINY
in Czech 17 Aug 90 p 3

[Article by Jan Bauer: "One Area Where We Must Have Foreign Aid: Ecology Isn't Free"]

[Text] Improving our environment, the quality of which is one of the worst in Europe, will; not be an easy task, and it will require significant financial sacrifices. The restructuring of the national economy itself, which is a basic prerequisite for the improvement, clearly cannot be executed without price fluctuations, unemployment, and social upheavals. But, in addition to the macroeconomic changes, the necessary improvement in the

quality of the environment will also require numerous ecological programs and projects, such as are included in the draft of the plan for the state ecological policies that were recently debated by the federal government.

There can be no doubt that every program costs money. Environmental protection is not cheap. This is particularly true in our case, where the representatives of the former regime considered ecological demands to be "ideological deviation" and simply ignored the wretched state of the country, that manifested itself in the deteriorating state of health of the citizens and in the continuing destruction of natural resources. Now the time has come when we must pay for these wasted years.

Naturally, we cannot realize many of the costly projects alone. At the European Regional Conference on Actions for a Joint Future, held in May this year in Bergen, Norway, and at the slightly later conference of the Ministers of the Environment of the European Community in Dublin, Ireland, it was suggested, that ecological help should be an integral part of the economic aid to the new East European democracies. This is especially pertinent, since environmental problems do not respect borders, and long-distance transmission of harmful substances from us could endanger countries anywhere in Europe. Let us remember that sulfur oxides from North Bohemian electricity generating plants are contributing to the acidification of Swedish lakes, and that our pollution of the Elbe river is contributing to the threat of the ecological break-down of the North Sea.

For example, the system of integrated monitoring of the quality of the environment, the system of recording the sources of environmental pollution, the construction of a center to dispose of toxic wastes including PCB's, the construction of factories for the recovery of used lubricants, the desulfurization of the electricity generating plants Pocerady, Prunerov II, Melnik I and II, Chvaletice, the use of burners and furnaces with low nitrogen oxide emissions, the improvement of the water resources in the watersheds of the Elbe, Oder, Danube, and furthermore, improvement in the safety of operating nuclear power stations in the specified programs will all require financial aid from abroad. In other words, we are generally dealing with projects, which we cannot realize without developed Western technology that, due to our considerable technical backwardness, we would be incapable of developing ourselves.

In some other projects, foreign aid will be in the form of expertise. This, for instance, concerns the Gabčík waterworks, the Prague-Zizkov television transmitter, the aluminum works in Ziar nad Hronom, the proposed transfer and decontamination of the chemical waste dumps in Chabarovice, large-scale decontamination of areas after the Soviet armies have left, etc.

On the other hand, we cannot simply stand there with our hand outstretched. As Josef Vavrousek, the minister appointed to manage the Federal Committee for the Environment, emphasized, we ourselves want to help in

the environmental field in developing countries or elsewhere, wherever our expert help could be needed. In any case, we must realize that repairing the damage to the environment will be a long-term and extremely expensive matter. Yet, At the same time, cutting costs in this area could endanger us and maybe future generations.

Siemens Offers To Build Prototype Nuclear Heating Plant

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[Editorial Report] Prague HOSPODARSKE NOVINY in Czech on 11 October on page 3 carries a 900-word Richard Stregl article entitled "Atomic Fire in the Plzen Valley." The article deals with the "offer" of the West German Siemens company to build in Plzen, West Bohemia, a 200-megawatt nuclear heating plant. According to Stregl, the West German company has promised to build the plant within three years. It has also reduced the original price of 220 million German marks to 120 million because the Plzen plant would be a "prototype" and would serve as a reference project.

According to Stregl, the project has both advocates and adversaries. The advocates argue that, because of the relatively low capacity of 200-megawatts, the danger of an accident would be relatively small. Besides, the reactor would be built underground, would be equipped with a containment shell, and the whole project is designed in such a way as to withstand the fall of the largest aircraft and a strong earthquake. The advocates also point out that the current heat supply system in Plzen is unable to cope with temperatures below minus 12 degrees centigrade and that the construction of a new coal-fired heating plant could not be completed before the year 1998. The new plant would also make it possible to eliminate some of the 450 outdated boiler rooms in the city that are responsible for its polluted air.

The main argument of the critics of the project, according to Stregl, is that the project exists "on paper only" and that Czechoslovakia should not introduce technology that has not been tested elsewhere (the only nuclear heating plant ever built by Siemens reportedly has an output of only five megawatts). The opponents also criticize the price of 120 million German marks as "illusory" because it does not include the cost of the heat supply system and the cost of fuel.

Nuclear Plant Waste Disposal Problems Discussed

*90CH0289A Prague ZAPISNIK in Czech
May 90 pp 16-19*

[Article by Vlastimir Talas: "What Do You Do With Trash When It Comes From a Nuclear Power Plant?"]

[Text] The experts from nuclear power plants know well that the activists in the Greenpeace movement at times like to exaggerate, appeal to superficial studies, and

mainly exploit the shameful, catastrophic ignorance of our citizens in the fight to close down nuclear power plants.

There is some hidden truth in their information. For a long time here things have simply unnecessarily and eagerly been kept secret and people naturally have then turned their backs on all wise and scientifically demonstrated arguments which support the development of nuclear power since they consider everything kept secret as suspect and thus to a certain degree dangerous. No one can be surprised then when they easily parrot the statements of "foreign experts."

Just in the past few months, as a result of public pressure, they have finally started to set up meetings with the citizens, discussion forums, and visits to nuclear power stations. And it proved that people can be persuaded. They calm down when they get exhaustive and well-based answers from the most professional people, for example, from the power station employees, who do not hold anything back or distort anything. They then know better how to overcome the sometimes laughable, sometimes dangerous rumors and conjectures.

We also went on a tour. We headed for one of the best and safest nuclear power plants in the world (according to the conclusions of the international monitoring mission OSART [not further expanded] of September 1989) in Dukovany in southern Moravia, not far from the town of Trebic. We were concerned about what waste materials are created here, how they handle them, and how they get rid of or store them.

While we are waiting at the gate for permission to enter, I repeat in my mind some of the data I found out beforehand. For example, French sources state that in 1982 alone the waste from the nuclear industry amounted to about one kilogram per person, while industrial and domestic waste together amounted to 2.5 tons per person. One other comparison—in the production of 1,000 MW in a nuclear power plant there is only about 50 cubic meters of solid radioactive waste of low and medium levels created annually, while a thermal electric plant of the same output would fill 36,500 trucks a year with ash. And the radioactivity of the radium and thorium in the coal ash is the source of 180 times higher exposure for the populace than the nuclear power plant would be capable of. If the strict hygienic standards on the emission of radioactivity used for the nuclear power plants were applied to the coal-burning power plants, they would have to be closed down and demolished without delay.

Engineer Zbynek Grunda, chief of the operations department of the primary section, takes charge of us. On the way past the armed members of the SNB (State Security Corps) who continuously guard this installation of strategic importance, we learn that an inexorable hard law applies here that an organization which produces man-made radioactivity of even the smallest level must take

care of it and keep it apart from the surrounding environment. All material which comes into the controlled zone (which is what they call the zone where there is the potential possibility of contact with ionizing radiation) cannot leave it without thorough checking. Everything is automatically potentially active—tools, leftover materials, rags, paper, protective aids—and of course also our things, the camera bags and such. There are 35 people concerned with handling and disposing of waste in Dukovany. In the changing room we get a white coat, cap, and coverings for our shoes.

Into the Controlled Zone

The tangle of staircases which look like a maze to the uninitiated leads into the building with the radioactive auxiliary operations where all radioactive materials are stored. On the way we are surprised by the laboratory cleanliness everywhere without even a speck of dust anywhere.

"We have 12 cleaning women for the two production sections in the primary part of the power stations. Twice a week they scrub down all the corridors, stairs, and various areas. They have two cleaning machines for this, but they have to clean the corners that the machines cannot get into by using the traditional cleaning tools. To give you an idea, we have a total of 11,000 square meters of open surfaces here. Figured another way, that would be, say, 100 stairways two meters wide and 55 meters long," explains Eng. Grunda. "Cleanliness is of basic importance and every person here is responsible for seeing to it."

Several times we pass simple stands with "igelite" plastic bags. "There are 14 of these fixed solid waste stations in each double section of the plant. Moreover, at temporary work sites every work supervisor must set up other auxiliary stations. The waste is then transferred to the permanent work sites. It is regularly collected and emptied. The attendants bring all the waste by truck to the sorting area which we will show you in a minute."

We find ourselves in a large hall where two men are working. The first of them gets a quick measurement reading of the plastic bags brought in and carries out the primary sorting of the solid waste according to the level of radioactivity. He then puts the bags into the sorting carousel on which a reading of the contents is automatically made and which puts the bags into one of four categories according to the level of radioactivity determined.

The first category of inactive waste travels to a special place from which it can then be transported to the incinerator or to controlled storage. In comparison with industrial waste, this is harmless trash.

The second category is left alone for about two months to "mellow" so that the radioactive isotopes with short half-lives will break down. Then the bag is again measured to be sure and usually put in the first category.

The third category of solid wastes is emptied out of the bag into a separation box which is unique in its own way and was developed for the Dukovany nuclear power plant (EDU) by the employees of the Uranium Industry Pribram. They also got praise for it from the international OSART mission which recommended the installation of the equipment at other power plants as well, both in this country and abroad. In the box the contents of the bag are separated into radioactive waste and that which is not radioactive. We already know the route of the inactive waste; the active waste is put back into plastic bags and these are stored in metal pallets. The fourth category bags are also put directly into them without any separation.

A crane then places the pallets into 12-meter deep shafts one after the other until the shaft is filled up. There are a lot of these shafts at the temporary storage site and they will be enough for a number of years. The station for soft and slightly solid wastes is still not finished, however. After completion of the facility for further processing of wastes, next year the final product will be a 200-liter steel barrel into which this solid radioactive material will be compressed which will then be transported to a special storage site for radioactive wastes on the grounds of the electric power plant which is also being completed. We will speak of this later.

Liquid Wastes

We again walk through a complex system of stairways and equipment and carefully watch where we are going so as not to bump into anything with our heads or to trip on anything. The equipment is just too complicated. After several minutes we are standing in a long corridor where we see a number of massive red-painted steel doors in both walls. What is hidden behind them? Is it not dangerous to go through them at all? Our fears elicit an indulgent smile from Eng. Grunda, "Come right on in with me."

There is a small gallery behind the steel doors. From it we can just get to an enormous closed tank of stainless steel. "So here is where we temporarily store concentrated radioactive liquid wastes," explains Eng. Grunda. "After processing is completed we transform this concentrate into a solid form with cement or bitumen, fill up the barrels, and store it in the regional storage site just like the solid wastes."

There is a free space around the tank and then massive concrete walls that form a cell which is also covered on the inside with a layer of stainless plate and creates its own additional internal basin. This is so that, if there would somehow be a rupture in the water-tightness of the tank, the unattractive contents would not run out. "But do not be afraid, the level would not reach up to this gallery," my guide reassured me. All the liquid wastes at the power plant are secured this way.

We leave there for the laboratory for monitoring the technology of solidifying the radioactive wastes. Along the way we make a short stop in the hall with the control

tanks into which the waste water is pumped as practically not radioactive after a complicated path of boiling off, condensation, and purification. Despite this, it is still monitored and drastically diluted before it can be released into the retention tanks outside the controlled zone of the power plant. The waste water is also further diluted there before it is released into the river.

"From the standpoint of overall radioactivity, the waste water from a nuclear power plant at the outflow pipe is practically no different from river water," Eng. Jiri Vild states in the laboratory. "Some chemical substances which you can routinely buy in the stores such as, for example, potassium permanganate, because of the natural radionuclides have a greater level of radioactivity than the water flowing from the power plant into the river. I must emphasize that all the water coming out of the controlled zone of the power plant is passed through a separate set of pipes into the collection reservoirs and undergoes several processes during which the volume is reduced and the waste water is separated into nonradioactive water and radioactive concentrate. You have already seen how it is stored. We should also go take a look at the outside radioactive waste storage, the so-called regional storage site."

We then return to the dressing room and turn in our coveralls and caps, throwing the plastic shoe coverings into a plastic bag. We can already imagine where it will end up since they have little or no radioactivity. But they must be uncontaminated or else all the measuring instruments with which we were "frisked" would have to have been broken, along with our personal dosimeter which we returned in an honest manner.

We go out of the building and cross the entire area of the power plant to its furthestmost point. We put up with the armed guards like old hands.

A Burial Site for Three-Hundred Years

The fears of the public were quite great that supposedly they would put spent fuel rods in the radioactive waste storage site, that the radioactive waste would radiate out into the surrounding areas, that...who knows what all.

The fact is that the spent fuel rods are sent to the Jaslovské Bohunice nuclear plant where they will be stored until such time as there is some resolution to the Soviet financial demands which we so far find unacceptable..

We arrive at the almost finished storage site. There are only two such sites on the territory of our country, in Mochovce and here. It is good that there are only two because each additional storage site means another, even though strictly monitored and secured, risk.

The above-ground construction, far above the level of the water table, is actually a collection of reservoirs of special concrete sealed on all sides and secured against the entry of any water. Of course, any radioactivity

which escaped would have to overcome several barriers—including the envelope of the barrel, the special asphalt sealing, the storage site, and the drainage system—before the "hot" water would begin to pass through the soil away from the storage site. The path would be affected, however, by the chemical properties of the geological substrate and the radionuclides would be "captured." The technical design of the storage site is outstanding and the monitors who came here from the OSART mission could only shake their heads as to the amount of money that we are spending for securing waste materials in this fashion. In France, for example, the waste is also stored in a surface storage site, but one far simpler. In the case of an accident there is also the capability for supplemental action around the storage site. In other countries the wastes are transported to empty salt mines, but in them it is hard to control the behavior of the wastes over the long term. Our storage site is really one of the best in the world.

Eng. Vild reacted through intuition to our unstated question, "We strongly reject the attempts to store wastes from somewhere else, for example, from the Institute for Research, Production, and Utilization of Radioisotopes. Their wastes are of a different type than ours and would have to be stored on a permanent basis, practically forever, and this is in conflict with our safety philosophy. Moreover it is possible that the other producers would not be as careful not to produce waste as we are when they have someone else to take care of it for them."

It struck me that there is also a risk in the road transportation of the barrels with waste from the Temelin nuclear plant. But then I had read that in the United States, for instance, where they have only three storage sites for solid waste for 106 nuclear power plants (the situation as of 1 January 1988), in 25 years there have been 30 accidents with transportation, none of which resulted in any threat to the environment.

On the way back we learned about an entirely different problem from Eng. Grunda. "Even though we have sorted out the nonradioactive and safely burnable waste, we do not take it to the public incinerator for political reasons because at this moment we are 'under suspicion.' Even though our paper and rags are only clean trash as compared to the tons of garbage which are transformed in the incinerator into tricky gases freely released into the atmosphere. The solution would be to have our own incinerator on the grounds of the power plant in the place where there was formerly a boiler room for the construction workers. We know of one type of incinerator from the SRN [not further expanded] which is almost perfect as far as protecting the atmosphere and getting rid of poisonous waste products. We do not take the nonradioactive waste from the controlled zone even to any controlled storage point outside the grounds of the nuclear power plant."

Ignorance is supposedly not a sin but ignorance about nuclear power plants is a grave matter.

According to the date of the International Agency for Atomic Energy (which among other things will send the OSART mission back to Dukovany for a checkup in four years), at the start of 1988 there were 416 nuclear power sections in operation in 26 countries in the world and they produced 16 percent of the energy produced in the world. Despite the Chernobyl accident, construction is continuing with a further 74 sections in 15 of the 22 industrialized countries.

The nuclear energy field remains a competitive alternative source of energy even with the declining rate of growth in the consumption of electrical energy, high capital investment expenses, growing costs to ensure the safety of work, and a drop in the costs of fuel for thermal electric power plants. We have been building power plants just as long as they have outside this country and we have very good passive security which we can improve by importing computer equipment and control systems, for example, from France. We have to figure in also our problems with "nuclear" wastes of all types from waste water cisterns, from households, from thermal power plants (including SO₂ and NO_x), from industrial enterprises, from agriculture, and from other human activities. The amount of trash from a nuclear power plant is truly only a drop in the bucket and one which is strictly monitored and safely stored.

Air Pollution Composition Viewed

90WN0268E Prague ZEMEDELSE NOVINY
in Czech 19 Jul 90 p 3

[Article by BAU: What Are We Really Breathing?]

[Text] On the pages of Zemedelske Noviny we have already mentioned the Blue Book, which maps the state of our environment. But maybe it would not do any harm to take a more detailed look at this significant publication, the exact title of which is The Environment of the Czech Republic (Development and State to the End of 1989)—if for no other reason, then because many ecological data and much information on the health of our citizens were intentionally kept secret in our country for a long time.

Czechoslovakia is one of the worst polluters of air in Europe. In 1987 it occupied sixth place in sulfur dioxide emissions and among West European countries it was only surpassed by Great Britain and Spain. In the concentration of emissions per square kilometer of state territory, we are, in fact, in second place after the GDR (according to 1988 data), with an amount of 22.4 tons per year. Yet only seven European countries produce more than ten tons of sulfur dioxide per square kilometer. After making a comparative analysis of the data, one can say that more than 100 tons were produced in northern Bohemia and in Prague.

According to data from 1987, the greatest source of sulfur dioxide emissions, with an annual production of

202 thousand tons, is the Prunerov 2 electricity generating plant. This is followed by the Pocerady electricity generating plant, producing 123 thousand tons. On the other hand, the Pocerady power plant leads in nitrogen oxide emissions, of which it disgorges 64 thousand tons per year. The largest producers of solid emissions are the Novaky electrical power plant in Slovakia, producing 54 thousand tons, and the Komorany heating plant, producing 43 thousand tons. On the European ladder of the largest sources of sulfur dioxide, Prunerov 1 and 2 power plant is, admittedly at eighth place behind sources from Spain, the GDR, Great Britain, and the USSR, but if we consider the powerful cluster of mass polluters Prunerov 1 and 2 and Tusimice 1 and 2 within an area of approximately 13 kilometers, then we are left with a total aggregate of half a million tons of sulfur dioxide emissions per year, which is the second largest emissions value from a single source in Europe.

The regions of northern Bohemia and the capital city, Prague, are hardest hit by air pollution. Though the highest permissible daily concentration of sulfur dioxide and airborne dust is 150 micrograms per cubic meter, 1,000 have been measured in a number of stations in northern Bohemia. However, the highest values have been found in Oseka at the foot of the Krusna Mountains, which measured 2,440 micrograms, while in Prague the count has been as high as 3,193 micrograms of sulfur dioxide. The longest single period of high air pollution was measured in 1982 in northern Bohemia, when unfavorable dispersion conditions, with a record inversion temperature caused an average daily concentration of sulfur dioxide in excess of 400 microgram per cubic meter of air, which lasted for ten days!

Czechoslovakia, as one of the signatories of the "Agreement on long-distance transmission of air pollution across state borders" and of its execution protocols has pledged itself to reduce sulfur dioxide emissions by 30 percent of the 1980 values by 1993. A slow-down in the construction of nuclear power stations, and a basic failure in putting into operation the first large desulfurization facility in Tusimice will make it impossible to meet this obligation, even if the deadline were pushed back to 1995. Yet at this time, most of the West European countries have met their obligations ahead of time, and many have, in fact, reduced emissions by 50 percent.

Incidentally, the average annual occurrence of acute respiratory illnesses among children under the age of five in the CR is 1,665 cases per 1,000 children. In northern Bohemia this is 50 percent higher. Sulfur dioxide itself increases the morbidity of a child by one percent for every 0.7 micrograms per cubic meter. Children in polluted regions also more frequently have enlarged lymph nodes, inflammation of facial antra, furthermore, it has been observed that their skeletal structure matures more slowly, there is a lower activity in some blood enzymes, and there are other disorders.

Solutions to PCB Problems Sought

90WN0268B Prague ZEMEDELSKE NOVINY
in Czech 17 Aug 90 p 7

[Article by Dana Kalousova: "Problems of the ZD [Agricultural Cooperatives] in Velke Prilepy: PCB—Everybody's Problem"]

[Text] At the end of June this year, a seminar called "PCB and Other Toxic Materials in the Milk and Meat of Our Farm Animals" was held at the Agricultural College Praha-Suchdol. It was no coincidence that the Agricultural Cooperative Velke Prilepy in the Praha-West Okres was asked to arrange it. At that time, it was clear to the farmers that the PCB's in that Okres were becoming so wide-spread that quick action was needed. That is why they hoped the seminar would provide some experience and some advice toward a solution.

Up till now they have felt alone and almost defenseless in their fight against polychlorinated biphenyls. The financial resources used in relation to PCB's already amount to millions. How much longer will this "vampire" drain them?

Among other things, it was stated at the seminar that an agricultural enterprise may not use expensive means to remove alleged sources of PCB's, unless these sources have been explicitly traced and identified. Frequently, this would be a useless waste of human work and financial resources. Furthermore, this is a problem that the farmers did not cause, and for which they are not to blame. If the sources are not known, compensation cannot be claimed from the culprit. However, it is known that the culprits are outside the agricultural sector. The amount of decreased earnings threatens the profitability of milk production in the affected cowsheds, and until the problem is resolved it will naturally lead to the destruction of cattle raising. This all leads to considerable financial burdens on the agricultural enterprise, which often cannot meet them alone. Financial reimbursement for the decreased earnings for milk containing foreign matter, the removal of PCB sources, and the possible destruction of the herd, must be borne by the culprit. If he is not known, this must be done by the state.

Approximately two months have passed since the seminar was held. At the Velke Prilepy ZD I asked the manager of livestock production, Eng. Antonin Stetka, candidate for doctor of science, what the situation is like there now, and whether the seminar at least gave an impetus toward solving the PCB problem.

"We sent a publication to all the participants in the seminar, which became the first public written material on polychlorinated biphenyls in agriculture. However, we have no analogous material on the environment, the effect of landfills, and air pollution caused by industrial enterprises. At this time, farmers are labelled as the "offenders." Our question is: Who was it that sold the paints, asphalt, propellants, and other products that

contain PCB's? We are still the last link in the chain that outwardly threatens the health of people, but so far no one has totally realized that the chain: field—animal—livestock products—environment—person form a closed circle. The dairy gave us an ultimatum that it would stop buying contaminated milk from us on 31 August 1990. There is no way for us to solve this situation. We suggested to the Ministry of Agriculture that we should speed up the destruction of the entire herd of 1026 milk cows and 97 highly pregnant heifers. The loss represents an amount of Kcs15 million, and we would also have the problem of employing 42 people, ensuring the planned production volume through substitutes, and maintaining the workers' interest in livestock production. It is harmful to society to continue to breed affected stock and to produce butter designated for freezing plants, and waiting for liquidation in special ovens that we have to buy abroad. Only recently has information from the Ministry of Agriculture convinced us that the whole of our society is beginning to solve the problem of PCB's."

It is extremely necessary for all society to concern itself with hazardous biphenyls. After all, in respect to health, the results of research carried out by the International Research Agency for Cancer (IRAC), have included PCB's in group 2B, i.e., they are classified as materials where the possibility that they are carcinogens cannot be eliminated.

Introduction of Pigeon Grain Cultivation Method Discussed

90WN0268C Prague ROLNICKE NOVINY
in Slovak 1 Aug 90 p 3

[Article by Martin Buk: "Grain According to the Mysterious Pigeon: Farmers From the Tatra Foothills Adopt a Cultivation Method Based on Peasants' Wisdom"]

[Text] During the recent working trip to Austria, which was arranged by the ICI Agrochemicals Company for a group of our agricultural experts, we were told about cultivating grain "according to a Pigeon" more than once. Naturally the mysterious name caught our attention. Well, now we have discovered the answer to this puzzle.

First, one should explain that according to the familiar, slogan-like name, "Holub" [Pigeon] refers to Mr. Pigeon. The name alone shows that his baptismal certificate was not issued in the foothills of the Tatra. However, our farmers, who have already adopted the previously little-known method translated the name of the originator literally into their mother tongue. Thus the Pigeon, and the Pigeon Movement were born.

Mr. Pigeon is affiliated with the chemical company ICI. The representative of this world-famous producer of agrochemicals in the Slovak Republic, Eng. Jozef Zvolensky, stated:

—In the Movement, founded by Mr. Pigeon, emphasis is laid on the economic and ecological aspects when cultivating grain. It is a matter of ensuring that the soil is not overloaded with chemicals but, at the same time, that it will bear the largest crop possible.

The author of the method allegedly studied various cultivation methods in the world. Then he chose the most essential and important features from them. He based his "teachings" on a return to naturalness and to peasants' wisdom. In this movement, for example, herbicides are frequently really considered only as a last and marginal resort to affect cultivation.

In the Czech and Slovak Federal Republic approximately 50 agricultural enterprises have set out on an unprecedented, innovative road. The Slovak agrocomplex has about one-third representation in this group. Members of the cooperative from Kalnej nad Hronom in the Levice Okres have had positive experiences with the Pigeon movement. "We gained our first experiences back in 1987 when we implemented the method on 30 hectares," explains the vice president of this cooperative, Eng. Zoltan Kulcsar.

The new idea caught on in Kalnej. A year later, they expanded the plot of land to 50 hectares. Last year they doubled the area, and this season they have reached 200 hectares, which is 15 percent of the total area seeded with grain in this enterprise.

Some experts are opposed to the method. Allegedly, "the early and shallow seeding brings the danger that the wheat will freeze" says Eng. Kulcsar, "but in our case, these fears have so far not been realized. On the contrary, we have had lower expenses for cultivation, and the harvests increased by 0.5 to one ton in all seasons."

The members of the Hornej Micinej Cooperative in Banska Bystrica have had a similar experience. This is the third year they are using the Pigeon method. They started with 20 hectares and they are doubling the cultivated area from season to season.

"With this method we are achieving 2.5 ton larger harvests than the enterprise's average," states the chief agronomist of the cooperative, Eng. Stanislav Hajducek. "We believe that some opponents' fears about the crops freezing are unnecessary. After all, Mr. Pigeon tested his method on a 200 hectare area near Moscow. He imported mechanization, used higher-quality materials, and increased the original two-and-a-half ton crop harvest to eight tons."

Thus it seems that the nontraditional method is struggling hard. But what are the differences between it and the common cultivation of wheat and barley, the crops to which this method applies?

"The differences already begin with the varieties chosen," states Eng. Z. Kulcsar, "those where the ears create the harvest are best, for example, Danubia, Hana, and Viginta. Effective soaking of the seed is important,

so that there will be sufficient protection against disease from the start. We minimize when preparing the soil. This means that we turn over the soil only to a depth of 8 cms. And we sow only to a depth of 3 cms instead of 5 cms. We do this ten to fourteen days earlier than normal cultivation. We eliminate nitrogen from the fertilizer, so that the plants will produce an abundant root system before winter comes, and so that they will form good shoots."

"In the fall, up to 15 October, in our cooperative we apply 40 Kg nitrogen per hectare. It will continue to work almost till spring," adds Eng. S. Hajducek. "We provide the crop with Fundazol, along with the nitrogen."

"In Kalnej we add Fundazol in spring. Especially if the previous crop was susceptible to root disease," Eng. Z. Kulcsar shares his experiences. "We try to implement regenerative fertilization as early as possible in the spring. We apply 60 Kg nitrogen per hectare. We adapt the later production dose to the number of units and the expected harvest. We have discovered that we should fertilize in two doses of 40 KG for hectares with eight tons of grain. For smaller harvests, we apply just one dose of 60-70 Kg. In the fall we also treat the crop with herbicides."

"In spring in Micinej we supplement the fertilization with an additional 30 Kg nitrogen per hectare," Eng. S. Hajducek clarifies. "Due to the harsher climatic conditions, we have to hurry with the sowing. We have to have it ready by 10 September. But we do not always make it in time, for instance if the preceding crop is potatoes. In Autumn we fertilize until the temperature of the soil drops below five degrees Centigrade."

These are some of the most important principles of cultivating grain according to Pigeon. Naturally, producers who decide to try out the new method on their own land can get more detailed information from the middlemen of this movement in Kalnej or in Hornej Micinej. They will also certainly not be refused by representatives of the ICI Agrotechnicals Company in Bratislava. In Bohemia and Moravia some enthusiastic advocates of the Pigeon movement are workers at the Agricultural College in Prague. It is to be expected that the Agricultural College at Nitra in Slovakia will take on this task.

"Indeed, due to the conditions in Slovakia, some problems must still be resolved. For instance, the problem of soaking the seed for this method," Eng. J. Zvolensky emphasizes. "We are not aiming to make the movement into a fashionable campaign. Its implementation does have limits. However, we are convinced that this method of cultivation has a promising future."

The experience of the members of the cooperatives from Kalnej nad Hronom and Hornej Micinej support these prognoses. Next year the farmers from Levice next year want to allot 300 hectares to the Pigeon method, and their colleagues from central Slovakia will allot an area

of 100 hectares. If the new method were not proving effective, if it were not bringing benefits, they would surely not be providing such large areas of their land.

ROMANIA

IAEA To Inspect Cernavoda Nuclear Power Plant

AU0410101790 Bucharest ROMPRES in English
0920 GMT 4 Oct 90

[Text] Bucharest ROMPRES 4/10/1990—A group of experts of the International Atomic Energy Agency (IAEA) are making a technical expertise [evaluation] to establish the measures to be taken so that deficiencies be removed and the security of the atomic energy plant at Cernavoda be ensured. Taking into consideration the compromises having been made during last years under the former leadership, the electric power department of the Ministry of Resources and Industry was forced to apply for that expertise so that works be resumed and made in complete security.

The mission of the experts of the International Atomic Energy Agency will conclude on October 12.

Measures Taken To Fight Pollution in Alba Iulia

AU0810113890 Bucharest ROMPRES in English
1021 GMT 8 Oct 90

[Text] Bucharest, ROMPRES, 8/10/1990—Overhauls are drawing to an end at the refractory materials factory in Alba Iulia, one aim of which is to recover the heat from the manufacturing process, which had hitherto been released in the atmosphere. A large capacity electric filter will also be mounted to reduce air pollution. By the end of March 1990, thermal energy equivalent to 6,000 tonnes of coking coal will be recovered, enough to meet

consumption demands in the area while the quantity of noxious gases in the air will be diminished from 3,000 to 1,000 tonnes per year.

Other steps to be further taken aim at increasing retention of noxious particles to 99.96 percent, which will enable the farmers in the neighboring villages to return to horticulture, an occupation that brought them fame.

Bucharest Ecological University Opens

AU0110193190 Bucharest ROMPRES in English
1853 GMT 1 Oct 90

[Text] Bucharest ROMPRES, 1/10/1990—The Ecological University of Bucharest, the first private higher education establishment in post-revolutionary Romania, held its opening ceremony in the Great Palace Hall, in the presence of its 1,600 students, as well as of scientists, men of letters, political leaders, members of the diplomatic corps, journalists. In his address, Professor Dolphi Drimer, the rector of this institution which will train specialists in medicine, law, engineering, agronomics, natural sciences and sports, showed that it was not incidental that an ecological university aroused so many negative passions in a country that has the lowest per capita number of students in Europe. This university, he said, is an alternative to higher learning schemes, based on different principles, free of tight control and planning. He further said that while the university has no premises of its own, an appropriate location, and not because Bucharest could not offer one, it has, instead, the bricks each of its student and professors stands for in their endeavour to relay the gains of science to the next generation. [sentence as received] "This ardent wish to defeat communism where it had struck deepest, in education, will stimulate us to overcome the numerous difficulties of the beginning," stressed the rector.

Father Galeriu, an Orthodox priest, gave the blessing.

INTER-AMERICAN AFFAIRS

Caribbean, Latin American Environment Ministers To Develop Action Plan

*FL1210151590 Bridgetown CANA in English
1344 GMT 12 Oct 90*

[Text] Port of Spain, Trinidad, Oct 12, CANA—Environment ministers from 33 countries in the Caribbean and Latin America will meet at the Trinidad Hilton next week. The Environment Ministry here said the October 22-23 meeting will look at an environmental action plan for the region.

The ministers will prepare for the two-week United Nations conference on environment and development scheduled for Brazil in 1992. The meeting here will be officially opened by Trinidad and Tobago Prime Minister A. N. R. Robinson.

This week National Security Minister Selwyn Richardson said that while there was greater understanding of hazards, countries were still becoming more vulnerable because of the way the environment was treated.

"Firstly, the population continues to grow and concentrate into cities and other areas of high risk such as flood plains, coasts, and landslide slopes," he explained. "Secondly, we have actually contributed to the severity of many hazards by altering the natural environment... The third factor in increasing vulnerability is the enormous stock of hazardous dwellings and public buildings which are in use today." In addition, "the greenhouse effect will almost certainly bring changes in hurricane activity," said Richardson.

ARGENTINA

Atomic Energy Commission Denies Radioactive Contamination Claim

*PY0610012090 Buenos Aires BUENOS AIRES
HERALD in English 5 Oct 90 p 11*

[Text] (NA-DYN)—The State-owned oil company YPF stated yesterday that the yellow-green cloud which was seen on Tuesday over La Plata and Ensenada "was caused by a non-toxic industrial process." The incident took place at the La Plata refinery. "This happens when the plant is put to work after being idle for a long time," YPF said. In related news, the National Atomic Energy Commission (CNEA) denied the existence of radioactive contamination of drinking water in the Greater Buenos Aires neighbourhood of Esteban Echeverria. A local family had accused the CNEA of polluting their water, but a CNEA document issued yesterday stated that samples of that water were studied and "the presence of radioactive elements was not detected."

BOLIVIA

Official Rejects U.S. Military Assistance in Tarija Erosion Control

*PY0410113490 La Paz EL DIARIO in Spanish
26 Sep 90 p 7*

[Text] Tarija, 25 Sep (EL DIARIO)—Julio Rodriguez Torres, COD [Departmental Labor Federation] Relations Secretary, has said that Tarija does not need the help of U.S. soldiers to control the erosion in the central valley because we have an organization to handle this type of work. Rodriguez also termed the announcement by the Tarija Prefect as hasty.

Rodriguez said that Tarija will reject any attempt to resort to the use of U.S. military men for this task because it may be a pretext to meet other objectives, such as the case of Potosi where toxic waste was reportedly buried.

Tarija Prefect Gustavo Aguirre Perez has announced that he has asked the president of the republic and the defense minister to authorize U.S. military experts to control the erosion, an escalating problem which demands international cooperation.

Rodriguez also said that organizations such as the CODETAR [expansion unknown], PERTT [expansion unknown], SENAC [National Highway Service], the Mayor's office, and others may use the machines to move soil and to build dams.

Aguirre had said that U.S. experts will remove soil and build dams using sophisticated machines and equipment which will greatly help to control erosion in the Tarija central valley and in other areas.

BRAZIL

President Seeks Expanded Environment, Nuclear Policy Role for Secretariat

*PY0210195390 Sao Paulo FOLHA DE SAO PAULO
in Portuguese 30 Sep 90 p A-7*

[By Gilberto Dimenstein]

[Text] According to an official document obtained by FOLHA DE SAO PAULO, President Fernando Collor has decided to enhance the Secretariat for Strategic Matters [SAE] by granting it more powers than its predecessor, the National Intelligence Service (SNI). These powers are defined in the multiyear plan in which the government establishes its goals. This plan must be submitted to Congress as established by the Constitution.

According to this document the SAE, which is headed by Pedro Paulo Leone Ramos, must "develop the national nuclear expertise, seeking to strengthen the nuclear sector."

During the administration of Joao Baptista Figueiredo [Brazilian president 1979 - 1985], the SNI conducted clandestine nuclear activities that included war projects with Iraq. These projects were headed by Octavio de Medeiros, who was at that time was the SNI chief. President Fernando Collor has reasserted that today the nuclear program is "transparent" and that it is purely for peaceful purposes.

According to this document, the SAE has been entrusted with the following duties in the national nuclear sector: "To implement nuclear programs which emphasize in the following areas: 1) To carry out applied research, seeking to achieve national autonomy in the sector; 2) To produce nuclear devices and heavy equipment for the national industry, particularly for nuclear plants; and 3) To develop technology and issue regulations for the safe operation of nuclear and radioactive installations."

The SAE's role is so vast that it encompasses the activities of the Science and Technology; Environment, Planning ; and Regional Affairs secretariats. It also encompasses the activities of the now extinct National Security Council; it is empowered for example "to draft medium and long-term strategic programs; it also studies specific strategies that seek to insert Brazil in the First World and to solve domestic problems and regional and social imbalances."

It is empowered to draft the "Brazil 21 Century" program that strives to "eradicate urban and rural poverty" through the implementation of strategies in the technological, industrial, and foreign trade sectors. In the environment sector, the SAE must implement a national "ecological-economic" zoning program.

From the National Security Council, the SAE has absorbed tasks like the Calha Norte project, in addition to the other border programs that assist the local municipalities. These programs encompass investments in infrastructure, basic sanitation, health, and education, and supplies for 397 Brazilian municipalities located along the land border area.

This document shows that the SAE will also seek to improve the performance of the SNI.

Report on Nuclear Program Views Environmental Effects

PY0410014990 Rio de Janeiro O GLOBO in Portuguese 30 Sep 90 p 58

[Text] The country today has a stock of 25,000 tons of cake II [torta II] from the extraction of minerals and some 1,000 tons of low- and middle-intensity waste in Angra-1 and Goiania. There is also waste produced by Aramar and research institutes and the processed fuel from reactors.

In section six of a report submitted by the Strategic Affairs Secretariat [SAE], a group of civilian and military scientists in charge of studying the effects of nuclear

activities on the environment recommended the urgent selection of a "single place to serve as a nuclear dump" (italicized in the text). The report also recommended a formal ban on the "definitive dumping of liquids and gases..."

Almost four pages—82 lines—of the 63-page report deal with nuclear technology and the preservation of the environment. The scientists discouraged "the temporary dumping of waste," noting that the lack of accurate information available to the public has been one of the main reasons for the growing rejection of nuclear programs. The SAE report recommends an increase in channels used to convey information to the public on the operation of nuclear centers, the use of energy, actual risks, and safety regulations. On page 50 the report states:

"The following factors have significantly fostered opposition to the development of the nuclear sector: the fact that these activities have been linked to military weapons; the environment of secrecy which has at times unnecessarily surrounded nuclear activities; fear of the effects of radiation; distrust regarding safety conditions in nuclear facilities; doubts about the existence of safe methods for handling and dumping radioactive waste; and the failures of the nuclear program, in addition to its high cost."

The accident in Goiania was not an isolated occurrence. The risk of a new accident, the report states, calls for the creation of a system for the permanent control of nuclear medical equipment and facilities that house radioactive materials.

The section concluded by saying that the government should extend its full support to the efforts that the CNEN [National Commission for Nuclear Energy] has made to urgently remove the drums from Abadia, Goiania.

Environmental Affairs Institute Fines Illegal Amazon Lumber Operation

PY0910131890 Rio de Janeiro Rede Globo Television in Portuguese 2300 GMT 8 Oct 90

[Text] The IBAMA [Brazilian Institute for Environmental Affairs and Renewable Natural Resources] has fined a company the record sum of 190 million cruzeiros for illegally cutting trees in the Amazon jungle. This is another achievement of the Amazonia Operation, which oversees deforestation activities in the region.

The (Getal) Lumber Company has been fined for having a storage area and a huge stockpile of wood without a permit. The fine, which is the largest ever charged in the country, totals 190 million cruzeiros.

IBAMA Chairperson Tania Munhoz traveled to the region by helicopter and flew over deforested areas and burned out areas along the Amazon River, where the

people who live near the banks have already cut down almost all of the native trees.

Thanks to helicopter overflights, IBAMA located the (Getal) storage area last week. This is the fourth such stockpile found during the second stage of the Amazonia Operation. The wood that can be seen floating on the river is only one-third of the total that has been cut. The rest of the wood—all of it first class, excellent wood—is submerged. IBAMA agents believe that in this storage area alone there are 8,000 cubic meters of wood.

This multinational company has been working in the region for four years and it is impossible to establish how much wood it has illegally exploited during this period.

This storage area is located at a curve in the Amazon River, 120 km from Manaus. It has facilities for 40 employees, cranes to hoist the wood, and radio sets to communicate with their base. The deposit campsite was almost empty because of today's holiday. The IBAMA wrote out two 95,224,000-cruzeiro fines and gave them to the employee in charge of the storage area.

The wood, consisting of kapok ceiba, virola, muiratima, Brazilian beautyleaf, and copal—a tree that even the local natives don't cut—has all been seized and the storage area closed down.

[Being Munhoz recording] The deforestation problems we are worried about are those created by the poor settlers, whom we have to educate and show how to preserve the forest. Companies like this one, however, with all this infrastructure, are not small companies. We cannot allow them to profit at the expense of the environment. That is not possible. [end recording]

Company Executive Arrested on River Pollution Charges

PY1110185390 Rio de Janeiro Rede Globo Television in Portuguese 1600 GMT 11 Oct 90

[Text] The Rio Grande do Sul police have caught red-handed three directors of the Rio Guaiba industrial company, Brazil's largest wool cloth manufacturer. The company did not comply with a Secretariat of Health regulation under which the company was ordered to construct a processing plant to reduce the pollution of the Guaiba River, which supplies potable water to Porto Alegre.

The crime is punishable with 15 days to six months imprisonment. The directors, however, can be bailed. The detainees are company director president (Wolfgang Gruemberger), manager (Dilson Antunez), and business-woman (Laura Salim).

HONDURAS

President Inaugurates Environmental Commission

91WN0004A Tegucigalpa EL HERALDO in Spanish 29 Aug 90 p 38

[Text] Last night the president of the republic, Rafael Leonardo Callejas, inaugurated and installed the National Commission on Environment and Development (CONAMA).

The agency will be headed by the chief executive, and comprised of authorities from the Secretariat of Planning, Coordination, and Budget (SECPLAN), and members of both the Armed Forces of Honduras and the United Nations Program.

Also joining it will be a representative from the Honduran Council for Private Enterprise (COHEP), a member of the peasants and workers organizations, and representatives from higher education and from the Secretariat of Natural Resources.

Callejas symbolically signed the resolution creating CONAMA, and appointed its executive secretary, Franklin Beltran Anduray.

Through Executive Resolution No. 0800-90, the government pledged to create CONAMA with a permanent status and as an agency attached to the Presidency of the Republic. Its function will be to advise on and promote action aimed at formulating and implementing national policy for the appropriate management of national resources, as well as the protection and improvement of the quality of the environment in the country.

CONAMA's specific functions are to advise the Executive Branch in matters relating to the protection, conservation, and improvement of the environment and of natural resources.

This commission will have as its mission to oversee compliance with international conventions and treaties on natural resources and the environment.

To enable that environmental agency to operate, the Presidency of the Republic will make the appropriation of the necessary funds in its budget.

In his remarks Callejas declared that the transformation of a society entails the improvement of governmental management, because many things may be considered but, if the necessary elements are lacking, the efforts are futile.

Yojoa Lake Filling With Silt

91WN0004B San Pedro Sula LA PRENSA in Spanish 1 Sep 90 p 9

[Text] San Pedro Sula—The Regional Agricultural Committee (CAR) completed an analysis on the status of

Yojoa Lake, which is annually receiving 1,000 tons of silt. This will soon cause serious damage to the natural dam.

The regional director of natural resources, Fernando Alvarez, explained that, on 24 August of this year, the committee members met to analyze the factors that are destroying the watershed feeding the rivers and streams that empty into the lake.

In 1971 the Honduran Corporation for Forest Development, COHDEFOR, declared that basin a protected forest zone.

During the CAR meeting, COHDEFOR, represented by engineer Obdulio Vasquez, explained that, each year, between 400 and 600 hectares of woods are lost in the basin, where some 30,000 persons who engage in agriculture reside.

He also noted that, as a result of meager soil conservation, the lake has been refilling annually with 1,000 tons of silt, carried by the rain and deposited at the bottom.

He also explained that the chemical waste dumped by the company operating the El Mochito mineral company is devastating the aquatic life. It is estimated that over 50 percent of the fish have died.

On 20 September at Yojoa Lake, CAR will submit a technical analysis of this situation to the minister of natural resources, the executive director of the National Agrarian Institute (INA), the manager of COHDEFOR, and the National Congress deputies. Alvarez claimed that the purpose of this is to prompt them to become concerned about adopting measures to save this natural paradise.

The project calls for the training of the inhabitants living in the vicinity of the lake to protect the forest and to conserve the soil with suitable crops.

He remarked that, when this report is submitted, the committee hopes that immediate action will be taken. The latter would include "the creation of the Yojoa Lake Management Unit, endowed with full legal authority to control by force the situations that are occurring in the lake."

The natural resources director claimed that El Cajon has not harmed the lake at all, because there is no interference. He explained: "Those are different waters, and there is no interference."

PANAMA

Engineers, Architects Group Urges Recycling, Waste Management Efforts

PA1510165590 Panama City EL PANAMA AMERICA
in Spanish 12 Oct 90 p 1

[Text] The Panamanian Association of Engineers and Architects (SPIA) yesterday issued a communique to

denounce the serious situation created by the garbage dump located in the reverted area, complaining that it is contaminating a large part of Panama City and San Miguelito.

The SPIA put forward important proposals intended to resolve this problem, such as implementing a national recycling program to eliminate urban waste.

Also, the engineers and architects asked the Health Ministry to organize a national education campaign to get the community to separate various categories of waste material.

The SPIA communique, signed by its president, architect Alberto Osorio, states:

There is a garbage dump in one of the most strategic points of the reverted area of Panama City that has been used solely as a sanitary landfill.

With this garbage dump we are contaminating a large part of Panama City and San Miguelito, as well as a part of the reverted area.

Currently, the disposal of urban waste material constitutes one of the most serious problems that humanity faces. Techniques have been developed at the international level to dispose of waste material, which has resulted in many countries building costly installations to recycle waste.

Over the past 20 years, the SPIA has been promoting, through specialized congresses related to our association, the technology of recycling as a solution to the problem of disposing of urban waste.

Architect Julio I. Rovi, an outstanding member of this organization and currently the director of the Metropolitan Sanitation Directorate [DIMAS], is a specialist in recycling techniques and a visionary and a tireless investigator since he was a university student. The dynamic action of Architect Rovi as the head of the DIMAS has already produced the following specific steps, among others:

A national recycling plan that has benefited 30 schools, which receive income from the application of recycling techniques.

The birth of a new industry that utilizes waste material.

Income from the export of cardboard and scrap metal.

The organizing of private recycling mini-enterprises, which will increase the buying power of many Panamanian families.

PERU

Court Nullifies Soviet Fishing Contracts; Biomass Depletion Noted

*PY1310172290 Lima Television Peruana in Spanish
0100 GMT 13 Oct 90*

[Text] The Peruvian Supreme Court has ruled in favor of a group of businessmen from the National Fishing Association [Sociedad Nacional de Pesqueria] who asked the court in July 1989 to declare the supreme decrees regulating fishing contracts with the Soviet Union null and void. The Supreme Court has now declared these decrees illegal.

[Begin recording] [Unidentified spokesman] The Supreme Court has overturned these decrees and ruled that the executive branch exceeded its authority by making use of Paragraph 20 [not further identified] and the budget law to legalize these decrees.

[Unidentified reporter] What does this writ of amparo mean? Does it mean that the Soviet Union will have to leave our sea?

[Spokesman] Well, the contracts, lacking legal backing, are definitely null and void as of now. I would imagine that the Soviet Union will be extremely worried because

it means they will have to pay back taxes just as any Peruvian private or public company.

[Reporter] How much will that be?

[Spokesman] It is impossible to estimate. We can mention any figure we like. However, without knowing how much they have taken out of Peru, how much has been exported, how many dollars they have taken out, and what their profits are, it will be very difficult to figure out how much they must pay in back taxes.

[Reporter] In your opinion, how much did this contract cost our country?

[Spokesman] As I have already said, there are losses stemming from unpaid taxes....

[Reporter, interrupting] But what about the biomass?

[Spokesman] I was just about to mention it. The real problem is the harm caused to the biomass. In this respect, we must abrogate several agreements. We do not really know what the Soviet fleet is doing beyond 200 miles. Some 20 years ago the biomass in Peruvian waters was estimated at 60 million tons, now the Inarpe [Sea Institute of Peru] is talking about only 15 million tons. [end recording]

INDIA

Singh Addresses Wastelands Development Board

90WD0768A Madras *THE HINDU* in English
18 Aug 90 p 7

[Excerpt] New Delhi, Aug. 17—Apart from protecting and improving the environment, wasteland development can play a special role in providing jobs for the unemployed rural poor. The Prime Minister, Mr. V. P. Singh, gave this advice to the members of the reconstituted National Wasteland Development Board after presenting the Indira Priyadarshini Vrikshamitra Awards, 1989, to 10 individuals and organisations here this morning.

The Prime Minister began his speech by expressing happiness over the fact that most of the awards had gone to individuals and organisations outside the Government setup. He said this highlighted the significant role of non-government individuals and organisations in the challenging task of afforestation and wasteland development.

Mr. Singh said it was not possible for any government to carry out the task of national reconstruction without the active support of the people, especially at the grassroots level. It was only through sustained effort that a people's movement could arise, he said, and hoped that the example set by the award winners would be emulated by many others all over the country, so that a mass movement became a reality soon.

Raising fund: Pointing out that the task of 'greening' 129 million hectares of wasteland and 35 million hectares of degraded forest land was a gigantic one, the Prime Minister said it required a national effort in which every citizen may participate to the best of his capacity. "To provide a mechanism for this, we have set up the National Fund for Afforestation and Wasteland Development. Contributions to this fund will be eligible for tax exemptions. I hope that, with the support of everyone, a substantial fund can be created to finance projects to regenerate our degraded lands in a sustainable way."

The task of regeneration of wasteland must be viewed in the context of a situation where nearly two-fifths of the population is living below the poverty line, where limited agricultural land has to produce more and more for a growing population, where increasing livestock population adds to the pressure on land and where any development effort has to be attempted keeping in view equity and social justice.

The Prime Minister said these concerns led the Government to restructure the board and its mandate. The composition of the board had been made more broad-based and its objective redefined with focus on an integrated approach towards development to meet the needs of the rural people in respect of fodder, fuelwood and forest produce.

"I am glad the members of the reconstituted National Wasteland Development Board are here and I am told that they are going to meet for the first time later today. I hope that the revised mandate will enable the board to discharge its functions more effectively than hitherto. The Board has to play a nodal role and it must also be a leading role. But its efforts will have to be fully backed by the concerned ministries and departments at both the Central and State levels," he stressed.

Mr. Singh noted that while talking of wasteland development, "we have to address ourselves to the whole question of land use planning. We cannot partition land into wasteland and good land in an ad hoc manner, and assume that there is no linkage between the two. Checking land degradation is as important as upgrading the quality of lands which have already become degraded. What is needed is a holistic approach, which alone can enable planning for a rational and integrated management of the natural resource base including land. Unless we think systematically and plan for total land use, we will not succeed in our development efforts. Such thinking has to be based on a deep understanding of the social and economic processes at work."

Earlier, welcoming Mr. Singh and other guests, Mrs. Maneka Gandhi, Union Minister of State for Environment and Forests, said she and the Government would like to be remembered for their efforts to save the environment by planting trees. She said the experts had warned that if land continued to be degraded at the current rate, the temperature of the globe would rise by two to four degrees Celsius by 2010, that is in just 20 years from now. The Indian subcontinent would suffer the most from the global warming which will cause natural calamities such as floods and inundation of coastal areas. So, it was important for all to do their best in greening the country by planting trees. [passage omitted]

Bihar: Commentary Views Rivers, Forest Mismanagement

90P40148Z New Delhi *DINMAN TIMES* in Hindi
12-18 Aug 90 p 8

[Article by Kiran Dwivedi: "Changing Landscape Due to Deforestation and Polluted Rivers—Water Resources Mismanagement Resulting in Backwardness in Farming and Death-inflicting Floods]

[Excerpts] Bihar State is backward in agriculture inspite of being one of the best endowed with water resources. Water is not available for every field. Yet, at the same time, extensive damage also occurs due to floods. There is an annual loss of lives and materials. There is a dearth of irrigation equipment. The total area of Bihar is 1,73,877 square km. Of this, about 17,33,74 square km is under the waters of big rivers. Rivers whose water expanse is greater than 20 thousand square km are considered to be large rivers.

The problem with the rivers is that their pollution is increasing. There were dense forests on the banks of many of these rivers at one time. Over time, trees were getting cut, but no new trees were planted. This resulted in soil erosion. This also caused losses in agriculture. Mining is also affecting the ecology adversely. Domestic sewage and industrial waste has polluted the waters of many rivers. The Damodar River has already become an "industrial gutter."

There are 14 large rivers in the country. Of these, the Ganges is the largest and the Suvarnarekha is the smallest. Bihar shares in their waters. In addition, there are the Mahanadi and Brahmani rivers also. [passage omitted] If water pollution and soil erosion is to be controlled in this region, then at least two thirds of this area will have to be afforested.

The entire Suvarnarekha area is bestowed with mineral wealth. Mining and mineral related industries are developing fast in this area. In ancient times, this area was clothed in dense forests and it is possible that lotuses were blooming in the slow waters. It is referred to as "Kumudavati" [bearer of lotuses] in ancient literature. The calm, secluded, and clean waters of one time which were laden with lotuses and hidden in the jungles, have been drowned in the explosions of dynamite and in the loud noises of earth cutting machines. The mining is done in an unplanned manner here. The full exploitation of the mines seems to be the only goal. No one seems to care about the harm caused to the environment in the process.

There are mines of copper, iron, uranium, gold, vanadium, chromide, apatite, asbestos, chinaclay, lime, dolomite, and talc in this area. In addition, there are also many quarries from where rock for building construction is dug out in large quantities. There are uranium mines in Jaduguda. This is an extremely radioactive mineral, but its mining is done with great carelessness. There are no safeguards for the laborers' health or to protect them from being exposed to radiation. There is the danger of radio-pollution of rivers and ground water from the piles of radioactive ore in the rainy season. In heavy rains some of it can flow right into the river and pollute it.

In the Suvarnarekha area, [passage omitted] Ranchi and Jamshedpur are two towns with more than a lakh residents. There are two towns with populations between 50,000 to one lakh and 21 with 5,000 to 50,000 people. The combined water consumption of Ranchi, Singhbhum, and Hazaribagh districts is 4,23,500 cubic meters and 2,52,652 cubic meters of domestic waste is produced. Some of it ends up in the river affecting the quality of its waters.

The Ganges divides Bihar into northern and southern halves by flowing approximately in the middle crosswise. [passage omitted] The river is voluminous here since many tributaries such as Sone, Kosi, Punpun, Gandak, Burhi Gandak, Ghaghra, and Phalgu flow into it. The river Damodar, which is also a tributary, does not meet

the Ganges in Bihar. [passage omitted] This river flows from Palamu district from the southeast and passes through the industrial towns and coal mines of Bokaro, Dhanbad, and Jharia. As a result it is completely black at certain points, and is known as the "industrial gutter." In Bokaro and Dhanbad alone, there are 46 various industrial units functioning on this river's bank and 29 of these use coal. From these industries, poisonous and polluting waste is often allowed to mix into the river without being treated. In many places along its course, it is the only source of water and yet, cyanide, phenyl tar, and thiophenes can be found in the water in great amounts.

Bihar is backward in agriculture inspite of being one of the states with the best water resources because, to date, no scientific planning of river utilization has been done here. Consequently, there is a dearth of irrigation facilities. It is of course impossible to keep the rivers totally free of pollution, but at least an effort could be made to keep them up at minimally acceptable standards.

Claim of Irradiation From Monazite Sands Disputed

90WD0783A Bombay THE TIMES OF INDIA
in English 27 Aug 90 p 3

[Text] Quilon, August 26 (UNI)—The centre for industrial safety and environmental concerns, a Quilon-based non-governmental research group, has disputed the Union minister of state for science and technology, Prof. M.G.K. Menon's claim that no radiation effects on the population was seen in the monazite beaches of Kerala in any statistically significant manner.

The minister had made the statement in the Rajya Sabha in reply to a question on August 7.

In a statement here today, the centre said a 30-month-long study undertaken by it along the monazite beaches of Quilon district showed that the incidence of several mutable diseases was higher among the exposed population. The study was taken up by the centre against the background of the "deliberate inaction" on the part of the Bhabha Atomic Research Centre (BARC) in taking up a detailed study in the area as suggested by the World Health Organisation.

The centre said as early as in 1957, the WHO had identified the people of this area as the most suitable population for a study for valuable information on radiation-caused genetic disorders. By the end of the sixties, the BARC conducted an ad hoc demographic survey which showed a higher infant mortality rate among the surveyed population.

A team of the All-India Institute of Medical Sciences, consisting of Dr. N. Kochu Pillai, Dr. V. Ramalingasamy and others also found in a study that there were 12 cases of Down's syndrome in a population of 12,000 in the monazite beaches as against none in an Alleppey village

without the radiation effect. They also observed a higher rate of mental retardation and chromosome aberrations among the exposed people.

The centre said the AIIMS team had prepared a detailed project proposal for more elaborate study. The BARC was supposed to meet half the cost of the study, but it withdrew from the venture [as printed] later. The BARC, which still held a virtual monopoly over all radiation research, had refused to undertake the study for the last three decades.

It was against this background of "deliberate inaction and cover up" that the centre for Industrial Safety undertook the 30-month study, it said.

Referring to Prof. Menon's statement that the Centre for Industrial Safety had not submitted any report to the expert committee appointed by the ministry of environment and forests, it said the preliminary report of the study was presented at a symposium organised by the

AIIMS and the United States Environmental Protection Agency in May 1990. The minister of state for environment, Ms. Maneka Gandhi, who inaugurated the symposium, had made specific reference to the study and had requested the participants to discuss the findings thread-bare.

The centre said that considering the social implications of the findings at the local, national and even global level, it had sought a meeting with Prof. Menon and Ms. Maneka Gandhi in March 1990 through its president, Justice V. R. Krishna Iyer, retired judge of the supreme court. The response from the ministries was "not at all positive" it added.

Holding that the Kerala study might reveal "a near accurate picture" of the genetic risk due to radiation, the centre said if Prof. Menon was sincerely interested in knowing what exactly went on in this narrow coastal strip, his ministry should consider a national debate on this issue.

Environmental Ship Greenpeace Calls at Murmansk

*PM2809110390 Moscow PRAVDA in Russian
24 Sep 90 Second Edition p 1*

[Report by PRAVDA freelance correspondent A. Khramtsov under "From Scene of Event" rubric: "Greenpeace on Visit to Our Country"; first paragraph is editorial introduction]

[Text] Greenpeace, the ship belonging to the international environmental organization, has entered Kolskiy Zaliv and made fast at the moorings of Murmansk Passenger Port. The ship is a doughty adversary of warships carrying nuclear weapons, regardless of whether they belong to the United States, the USSR, Britain, or France. In August 1989 its international crew intrepidly entered the 50-mile maritime zone where testing of a Trident nuclear ballistic missile was being prepared and frustrated its launch from a U.S. Navy submarine.

Greenpeace was not in Murmansk on routine "combat duty." Eleonora O'Hanlon and John Sprendzh [name as transliterated], coordinators of the Nuclear-Free Seas program, spoke of their intentions at a meeting with journalists.

"Greenpeace's visit to Murmansk forms part of our environmental program," said Sprendzh. "The aim of the program is a complete ban on the use of any sources of energy, particularly nuclear weapons, at sea by all countries." [sentence as published]

The "irreconcilables," who have come to the arctic port for the first time, are interested in the attitude of the people living in the Far North to the Green movement. They therefore want to meet with scientists of the Polar marine fisheries and oceanography institute and fishermen and visit the "Atomflot" service and supply enterprise, where the nuclear-powered icebreakers of the Murmansk Shipping Company are repaired.

The arrival of the international public organization's ship in the northern Soviet port has coincided with the start in Murmansk of the work of the international seminar "Nuclear Energy on the Seas: Safety and Ecology." More than 100 specialists and scientists engaged in studying the problems of nuclear-powered ships from the USSR, Japan, the United States, Finland, and Denmark are taking part in it. The seminar participants' aim is to exchange technical information about nuclear power plants which are environmentally clean and safe to operate and to find ways to "foster confidence" in the peaceful use of atomic energy in the population.

The Greens' task, however, as we see it, is sharply at variance with the seminar's objective. They brought with them to Murmansk a Russian translation of a report prepared by the organization and called "Nuclear Warships and Naval Nuclear Weapons, 1990: Material and

Production Stocks." And they invited aboard all inhabitants of Murmansk who wished to do so to learn about the results of the Greenpeace organization's practical activity. But the visit to the ship on the first day of its arrival in port was prevented by antiquated instructions governing the procedure for Soviet citizens' access to foreign ships. The ship's gangway was barred by soldiers wearing green service caps. A special decision by the oblispolkom [oblast soviet executive committee] was needed in order to organize trips on the environmental ship for the city's residents.

Greenpeace Activists Set Sail for Nuclear Test Site

*LD0310114390 Moscow TASS in English
0942 GMT 3 Oct 90*

[By TASS correspondent Vladimir Anufriyev]

[Text] Arkhangelsk October 3 [TASS]—The Greenpeace, a motorship of the international environmental organization, left the Russian northern port of Arkhangelsk last night, setting sail for the polar Novaya Zemlya archipelago, long a Soviet nuclear test site.

The ship is carrying Greenpeace activists from Austria, Britain, Germany, the Netherlands, Denmark and the United States, as well as members of the Soviet anti-nuclear movements Nevada-Semipalatinsk and Novaya Zemlya-Nevada, parliamentary deputies and reporters.

The journey is part of the "Let's Disarm the Seas" campaign, Greenpeace coordinator Stephen Shallhorn told a news conference here before their departure for Novaya Zemlya.

"Our meetings in cold Arkhangelsk (air temperatures here hovered around freezing over the past few days) were remarkably warm, and we did not encounter a single person supportive of nuclear testing either on Novaya Zemlya or anywhere else," he said.

The Greenpeace crew, which earlier visited the Soviet polar port of Murmansk, hopes to reach Novaya Zemlya on Friday after first dropping anchor in the mouth of the Pechora River for a meeting with anti-nuclear activists from the city of Naryan Mar.

Novaya Zemlya began to be used as a nuclear test site in the early 1950s, when native Nenets—nomadic reindeer breeders who had inhabited those extremely inhospitable and lean islands since time immemorial—were resettled on the mainland.

The military has since been the only master of the archipelago, which does not have any civilian authorities to this day.

Until 1963, when the nuclear powers signed a partial nuclear test ban treaty, nuclear explosions were staged in the atmosphere. The last underground blast there took place two years ago. The test site has been silent since then.

The Greenpeace set out to the closely guarded archipelago without any official authorisation, but Shallhorn said they hoped to get one en route.

He said the cruise to Novaya Zemlya was the first in a series of three journeys to Soviet, French and U.S. nuclear test sites in a bid to push for a comprehensive nuclear test ban.

KGB Account of Greenpeace Novaya Zemlya Incident

*PM1110134190 Moscow IZVESTIYA in Russian
11 Oct 90 Union Edition p 3*

[F. Ivanov "Details For IZVESTIYA": "'26th CPSU Congress' Arrests 'Greenpeace'"]

[Text] On 8 October the Soviet coastguard ship "26th CPSU Congress" arrested the ship "Greenpeace," belonging to the organization of that name, in USSR territorial waters.

Your IZVESTIYA correspondent was informed by the USSR KGB Border Guards Directorate that the "Greenpeace" was in the Soviet ports of Murmansk, Arkhangelsk, and Naryan-Mar between 22 September and 7 October. There were 34 people on board, seven of them Soviet citizens, including USSR people's deputy Zolotkov. On 7 October, after leaving Naryan-Mar, bound for Murmansk, "Greenpeace" deviated from its route and headed for the Novaya Zemlya islands. While sailing by Novaya Zemlya the ship entered USSR territorial waters.

The commander of coastguard ship "26th CPSU Congress" repeatedly warned the ship about its illegal actions and violations of the USSR state border and in the end demanded that it leave Soviet territorial waters. The captain of the "Greenpeace" responded by saying that he did not recognize Soviet borders, and since there were Soviet representatives on the ship he could go where he liked.

All this entitled the coastguard commander to stop and arrest the ship. But it was not possible at the time, because a storm had blown up off the Novaya Zemlya coast. Around 0200 hours on 8 October the ship broke off communications with the coastguard ship and made for the shore of one of the Novaya Zemlya islands. In doing so, it performed a dangerous maneuver, creating an emergency situation for the coastguard ship. At 0300 hours the ship lowered launches, which made for the shore. The "Greenpeace" captain did not respond to the coastguard ship's demands to stop what he was doing.

At 0415 hours the coastguard issued a warning by firing its machinegun. Whereupon the "Greenpeace" came to a stop. In accordance with legislation, the coastguard commander put a five-man inspection party on the ship. The crew of the "Greenpeace" tried to prevent the group from boarding, so the border guards had to use grappling hooks to bring it alongside. However, members of the

crew detained the group astern and would not let them enter the accommodation. Therefore, the coastguard ship commander decided to put two more similar groups of border guards aboard the "Greenpeace." The captain of the ship and the crew continued to hinder the inspection, refused to present ship's documents, and soon shut themselves in their cabins and refused to have anything to do with the border guards.

In the end, with the help of USSR people's deputy Zolotkov, it was possible to establish contact with the "Greenpeace" captain. The inspection group commander told him that he was arresting the ship in connection with the deliberate violation of the border, the refusal to submit to the border guards, and the landing of people in unspecified places. He also demanded a reply to the question: Is everyone on board? It turned out that four people had already landed on Novaya Zemlya. But, despite the fact that the "volunteers" lives were in danger in that totally uninhabited area, the ship's captain refused to say where they had landed and said that they were equipped for long-term survival in those conditions. According to the border guards, he displayed a fine knowledge of Russian—at least the dirty words.

The coastguard ship commander dispatched a search group to Novaya Zemlya, which found four people together with four rucksacks filled with earth. The detainees were taken to the coastguard ship. The "Greenpeace" was then taken in tow by the coastguard ship "Yenisey" when it arrived, because its captain had refused to sail under his own steam.

At midday on 10 October the ship reached the passage into Kola Bay, where it is expected at 2300 hours on 11 October. There were no casualties on board. When it arrives in Kola Bay the USSR Prosecutor's Office will start investigating the reasons for and circumstances of the ship's violation of Soviet laws. According to the border guards' information, there were no official requests to visit Novaya Zemlya either from the ship's captain or from the "Greenpeace" organization.

Greenpeace Account of Novaya Zemlya Landing Cited

*PM2210093790 Moscow KOMSOMOLSKAYA
PRAVDA in Russian 19 Oct 90 p 1*

[Extracts from "report...submitted to KOMSOMOLSKAYA PRAVDA" by participants in the Greenpeace expedition to Novaya Zemlya: "'Greens' Pretend To Be Stones"; first three paragraphs are editorial introduction]

[Text] How the "Greenpeace" expedition landed on Novaya Zemlya:

The landing party which disembarked from the "Greenpeace" ship on the island of Novaya Zemlya was in fact the first expedition of non-army scientists to come so close to a place where nuclear tests had previously been

carried out (the last underground test was carried out 4 December 1988, according to "Greenpeace" information). Their observations confirmed their suspicions: There was pollution and radioactive leakage from the shaft and from cracks and fissures—over a year after tests were suspended.

We present an extract from the report which participants in the landing, G.N. Gormeyn [name as transliterated], D. Haye, T. Hood, and V. Yekern [name as transliterated] submitted to KOMSOMOLSKAYA PRAVDA.

[Extract begins] From the coast we walked about one kilometer up a slope bearing northeast and we saw the old test range (it was not shown exactly accurately on the map). At that moment we heard the noise of an engine and hid in a small crevice. The people in the car did not notice our tracks—we had tried to tread as lightly as possible...

...The cable stretching from Severnaya crossed a crevasse and was lost from view. One of its strands ran out along the empty buildings and another along the test range structures. And here our pickups started to give the signal: The counter showed 25 becquerels per square cm in and to the left of the abandoned area (note: 3 becquerels is already considered a high level). Nevertheless we crossed the hollow, heading south: 11 becquerels/square cm.

We also examined the shaft and the equipment. The level of pollution was high here too. On the slope we discovered three "hot spots" of up to 50 becquerels/square cm. They are located 300-400 meters from the shaft.

At 1430 hours the helicopter reappeared. We tried to hide among the rocks, but to no avail: The helicopter put down next to us.

The following things were taken away from us: instruments, cameras, film, respirators, a knife, a tape recorder, and so on. They put us in four cabins.

Everything was returned to us apart from the samples, films, and video recordings.

This is what we are now saying:

- 1) Why did the authorities take away our photographs and samples?
- 2) Our visit to a place with such a high level of pollution leads to the conclusion that there are problems with radioactivity on Novaya Zemlya.
- 3) The authorities must adopt a program to clean up the test range.
- 4) The authorities must not exacerbate things by continuing tests.

Incidentally: From a political statement by Major General A. Koltunov, chief of the political department of the Red Banner Northern Command and Russian Soviet

Federated Socialist Republic people's deputy: "I demand a concrete decision—instead of wordy assurances—at republic and union level on a ban on expanding nuclear tests and the suspension of all work concerned with setting up new projects on the test range on Novaya Zemlya."

Soviet Peace Committee Apologizes to Greenpeace

*LD2010031790 Moscow TASS in English 2052 GMT
19 Oct 90*

[Text] Moscow October 19 TASS—The Soviet Peace Committee has expressed heartfelt regret over the incident with the Greenpeace vessel near Novaya Zemlya.

"We fully share your concern over the tragic ecological situation in the north of our country, which poses a moral threat not only to Soviet people, but also to all those living in that region and in the world in general," says a telegram sent by the committee to the international Greenpeace organisation.

"The implementation of plans of the Soviet military to revive a nuclear test site in Novaya Zemlya will lead to a dramatic deterioration of the ecological situation and, undoubtedly, to a new stage of the world arms race," the telegram pointed out. The Soviet Peace Committee was one of the organisations, which successfully campaigned for a unilateral Soviet moratorium on nuclear tests. Unfortunately, the tests were resumed, and the refusal of the United States and other nuclear powers to follow this example was one of the main reasons for it.

Now we are again working for a complete termination of all nuclear explosions, even on a unilateral basis. "At the same time, we realise that this idea will be supported by the broad public circles only if similar measures are taken by other nuclear powers," the Soviet Peace Committee pointed out.

Greenpeace Plans No Protest Acts During Arctic Visit

*PM0510134590 Moscow KRASNAYA ZVEZDA
in Russian 30 Sep 90 First Edition p 4*

[Report by KRASNAYA ZVEZDA nonstaff correspondent Senior Lieutenant A. Bystrov: "Greenpeace in Murmansk"]

[Excerpts] The world-renowned Greenpeace ship recently put in at Murmansk. Its crew members are described as nature's intrepid champions. This is indeed the case in many respects. [passage omitted]

Last year the brave Greenpeace deliberately entered the special 50-mile exclusion zone for a Trident missile test launch from a U.S. submarine, and spoiled these tests.

"Of course, we did not avoid conflict," the crew members said. "Two U.S. ships attacked and even rammed us. There was a huge hole here in the side."

"Do crew members have any intention of taking any protest action against Soviet warships during their time in the Barents Sea," I asked 29-year old Eleonora O'Hanlon, one of the coordinators of the "Nuclear-Free Seas" program.

"What do you mean?" she asked in amazement. "Although this cruise in the Arctic basin is part of our program, it would be rude to respond to the chance we have been given to visit Murmansk and get to know your people by taking action of any kind."

During this time, the Greenpeace was visited by hundreds of Murmansk residents. The vessel (58 m long, maximum speed 14 knots) was built in the Netherlands in 1959. However, it looks like new as a result of the crew's endeavors. It has a helicopter and two rubber launches, and is most environmentally friendly.

The Greenpeace crew is international, with seamen from 10 countries. Vladimir Sukhoparov is from the USSR. Many people know several languages in addition to their onboard speciality, and have a scientific education (they include a biologist, an ichthyologist, a specialist in radioactive waste, and so on).

"We will achieve our program's final goal," Greenpeace Captain Ulrich Juergens reckons. "Not straightaway, but we will achieve it. We have already won some victories: France has put a stop to nuclear tests in the Pacific, Europe has adopted a ban on dumping toxic waste in the sea, and a ban has been imposed on the import of sealskins, and thus hunting is being restricted. So, nothing is impossible."

UN Mission Visits Chernobyl-Affected Areas

LD2909160990 Moscow TASS International Service in Russian 0848 GMT 29 Sep 90

[By TASS correspondent Yuriy Lodkin]

[Excerpt] Bryansk, 29 Sep (TASS)—Today, for the first time since the accident at the Chernobyl Nuclear Power Station, a UN mission, headed by Gerald Hinteregger, assistant UN secretary general and leader of the UN Economic Commission for Europe, visited regions of Russia afflicted as a result of that catastrophe.

The UN representatives saw the town of Novozybkov (500 km southwest of Moscow), situated in a zone of permanent radiological monitoring, in which the density of radiation pollution exceeds 16 curies per square kilometer.

Igor Gavrilov, deputy chairman of RSFSR Council of Ministers, told the members of the mission that "a whole series of oblasts in Russia suffered. But Bryansk Oblast suffered most severely. There are 115,000 people (more than in Belorussia or the Ukraine) living here, in a zone of strict and permanent monitoring, who have to be resettled to clean territories by 1996."

The UN delegation visited a hospital, a radiology laboratory, and an orthodox church. [passage omitted]

Chernobyl Clean-up Cooperation To Be Expanded

LD0410215790 Moscow TASS in English 2103 GMT 4 Oct 90

[By TASS correspondent Andrey Surzhanskiy]

[Text] Moscow October 4 TASS—International cooperation in the Chernobyl clean-up operations will be expanded, Vladimir Sokolov, representative of the recently created State Committee for the Elimination of Consequences of the Chernobyl Accident, has told TASS. He believes that a visit to the USSR of a U.N. mission, which discussed concrete measures to help the Soviet Union, was a major step promoting this process.

Sokolov recalled that the July session of the U.N. Economic and Social Council (ECOSOC) had adopted a resolution on cooperation in alleviating and overcoming of consequences of the accident. The tasks set by it are aimed at pooling the efforts of the world community both within the U.N. framework and on a national level in separate countries. The U.N. secretary-general was assigned to submit to the 45th General Assembly session a comprehensive report with recommendations on the assistance to be rendered to the Soviet Union.

With this in view, Sokolov continued, the U.N. missions, led by Gerald Hinteregger, familiarised itself with the situation in the regions that suffered from radioactive contamination. The information obtained by the mission will supplement the estimates made by Soviet specialists and will make it possible to determine more accurately the volume and character of consequences of the accident and outline additional measures to eliminate them.

During the talks between members of the mission and Soviet Deputy Prime Minister Vitaliy Doguzhiyev, who heads the State Commission for Emergency Situations, it was pointed out that the international consultative committee, created under the aegis of the International Atomic Energy Agency, would soon complete the examination by experts of the concept of safe living in contaminated zones, accepted in the USSR.

Sokolov said that a special law and a number of programs for the Chernobyl clean-up are being worked out, which will ensure social protection to the people affected by the accident.

Fissures Appear in Chernobyl Sarcophagus

LD1310173590 Moscow Domestic Service in Russian 1900 GMT 12 Oct 90

[Text] A Seminar entitled "The Current State of Chernobyl and the Prospects for Minimizing Detrimental consequences" began in Moscow today. It is being held in connection with the plenum of the USSR Union of

Scientists taking place at the moment. Our correspondent interviewed a participant in the seminar, Doctor of Physico-Mathematical Science Aleksandr Aleksandrovich Borovoy, deputy head of an integrated expedition of the Kurchatov Institute of Atomic Energy.

[Correspondent] Aleksandr Aleksandrovich, more and more often we hear said among the population, and we read it, too, that the situation at Chernobyl, in particular the reactor, is worrying, that there is the danger of an explosion, that it is creating new misfortunes which we still do not know about, and which we are not aware of. Is this the case?

[Borovoy] When construction of the sarcophagus was completed in November 1986, this was in itself a very important step in eliminating the consequences of the accident. It was a very important step, but not the final one. This must be understood. As we viewed the situation then, those 180 tonnes of nuclear fuel concentrated inside the sarcophagus, slightly over 180 tonnes in fact, 183 tonnes, represented a nuclear danger. We were concerned about preventing a fresh nuclear reaction from suddenly starting up. Now, as a result of these years of very intense research, during which workers managed to penetrate those enclosed areas, including the reactor shaft where the accident actually started, where the active zone was, we have obtained some very important information.

The first very important discovery we made is that the state of the fuel rules out the occurrence of a spontaneous nuclear reaction. But there is a second danger—the discharge of radioactive dust through fissures in the sarcophagus. The combined area of these fissures in the sarcophagus is about 1,000 square meters. They occurred during the construction of the sarcophagus, and it is difficult to blame anybody for this. After all, this construction work took place in such difficult conditions that the very completion of the sarcophagus can be regarded as an absolutely heroic thing. But, of course, something had, willy-nilly, to be sacrificed in the process of building work conducted by remote control. Hence, the 1,000 square meters of fissures.

[Correspondent] Aleksandr Aleksandrovich, there is also a large hole in the roof through which gas or radiation is escaping.

[Borovoy] No, No. There is a technological aperture in the roof. There is also a flue through which air is supposed to flow, so to speak. But, given the large number of fissures, the flue does not play a decisive role.

Now, is radioactivity now being discharged? Scientists are monitoring this extremely closely. Special gauges have been installed around the fissures. There are special metering points at the corners of the area occupied by the sarcophagus. Up to now, we can state, with joy, that dust is not being discharged. The measures which we are taking inside the sarcophagus are preventing the discharge of this dust. But this does not mean that we should relax.

UN Officials View Belorussian Bid for Chernobyl Aid

*PM0910140590 Moscow IZVESTIYA in Russian
6 Oct 90 Union Edition p 2*

[IZVESTIYA correspondent Mikhail Shimanskiy report under the "Direct Line" rubric: "Belorussia Seeks UN Aid"]

[Text] Minsk—In his speech at the UN General Assembly session the head of the Belorussian Government proposed adopting a special resolution in connection with the aftermath of the Chernobyl catastrophe.

The day before a group of UN staffers headed by Gerald Hinteregger, executive secretary of the UN Economic Commission for Europe, visited Belorussia. They are studying the situation in order to work out recommendations regarding the elimination of the aftermath of the disaster, whose resolution requires the involvement of the international community. Special attention has been devoted to supplying the afflicted areas with the latest medical equipment, medicines, and baby foods.

IZVESTIYA has already reported that this summer the Belorussian SSR [Soviet Socialist Republic] Supreme Soviet declared the republic a national ecological disaster zone. How has the United Nations reacted to this decision adopted by the Belorussian parliament? This question was put to the group leader. Hinteregger replied that this is a new question for the United Nations, and this means that it has not yet worked out a concept on how to react to a decision of this kind.

Belorussian newspapers published the speech delivered at the 45th UN General Assembly session by V. Kebich, chairman of the Belorussian SSR Council of Ministers. In particular, the head of the Belorussian Government said that a special UN resolution must be adopted, reflecting the understanding of the planetary nature of the Chernobyl disaster and formulating steps to coordinate the actions to be taken by specialized establishments within the UN system to overcome the global and localized consequences of the disaster. V. Kebich also proposed transferring the Belorussian SSR from the category of donor country to the category of recipient of UN technical aid for the reconstruction period.

Scientist on Dealing With Long Term Effects Of Chernobyl

*90UN2683A Kiev SILSKI VISTI in Ukrainian
8 Aug 90 p 2*

[Interview with Vitaly Kostyantynovych Chumak, chairman of the Center for Ecological Problems Related to Nuclear Energy at the Academy of Sciences of the Ukrainian SSR and candidate of medical sciences, by UKRINFORM correspondent D. Kiyansky: "The Land, the Water, and Radionuclides: How the Sharp Ecological Problems Linked With Chernobyl are Being Decided"]

[Text] In order to give recommendations on how to eliminate the effects of the accident at the Chernobyl Nuclear Power Plant [AES], some experts from the International Atomic Energy Agency [IAEA] came to Kiev. But having become familiar with the circumstances of the suffering rayons, some of them honestly stated that after a few months, as was noticed earlier, no conclusions could be drawn. Everything has turned out to be much more complicated than was expected. Nothing similar has ever been encountered in world affairs.

Yes, the atomic catastrophe has put thousands of difficult questions to the specialists, yet until now there have been few answers, unfortunately, to most of the questions. This applies fully to ecological matters as well. The surrounding environment after Chernobyl is the subject of an UKRINFORM correspondent's conversation with the chairman of the Ukrainian SSR AN [Academy of Sciences] Center of Ecological Problems of Atomic Energy and candidate of medical sciences, V. K. Chumak.

[Correspondent] One of the possibilities for eliminating the effects of the accident foresees a complete dismantling of the ruined fourth block and the construction on top of it of a "sarcophagus." As regards this fact, the supporters of the idea of a "small green field," though they do understand this expression figuratively, do not exclude the possibility of farming the territory in the future. Are you in agreement with such a prognosis?

[Chumak] No, it is absolutely unrealistic. The "small green field" could only give pleasure to one's eye—nothing more. The irradiation of dangerous alpha particles—the elements of transplutonium and transuranium—have virtually not left the 30-kilometer zone. But as a result of the fallout of plutonium-241, with time, a no less dangerous element will be created, americium-241, whose qualities are entirely different. It is much more active; it passes easily through the alimentary tract, ending up in the soil in fruits, milk, and meat. Besides that, in only 90 years in the 30-kilometer zone, there will be even more of it [americium-241], than the plutonium found there now. And while plutonium is hardly absorbed by the digestive tract at all, the americium is easily appropriated by the organism. Thus one can not even think of doing any type of farming in the most distant future.

[Correspondent] But cannot these type of particles from the zone end up in the adjacent rayons? For example, by means of the wind or as a result of the migration of animals?

[Chumak] Hardly any particles are being carried out. Today one can speak about this very confidently. In regards to birds, hoofed animals, foxes, even wild dogs and cats, collectively, they cannot carry out of the "circle," in excess of five curium—in comparison with

the amount of curium which lies within the 30-kilometer zone and past its boundaries—this amount is simply minuscule.

In other words, I am not at all confirming the fact that today or in the coming years we will not be able to reveal new, dangerous areas. The picture of the extent of pollution is very spotty. However, I would like to emphasize: the radiation will be from the [contaminated] spots made in 1986, which we have still not managed to reveal, and not the result of some kind of recent emission of radionuclides.

[Correspondent] But really besides the wind, there is still one more possible carrier—the water.

[Chumak] With water everything gets more complicated. On the one hand, in the zone there are dozens of quickly constructed shelters set up for all kinds of radioactive materials and constructions made of metal, wood, rags. On the other hand, the ground water in the area of the zone is fairly close to the top level of the soil. Its high level was also noticed earlier before the accident. But in the course of the liquidation of the accident, in small rivers and drainage canals that serve to protect against sudden floods, a whole series of dams was constructed. As a result, the drainage network, which was being created for years, was being ruined, and the water in many places flowed upwards to the surface. What happened further is not hard to imagine. The water came into contact with the radioactive substances, and later the chemical compounds which dissolved in it ended up in the Prypyat and Dnieper. The dams, which did not prove themselves to be useful, were taken apart, but unfortunately, too late.

[Correspondent] Fortunately, after the accident at the Chernobyl AES, there was not a single instance of high flooding. But when this occurs, will the water wash all the polluted soil off into the rivers?

[Chumak] I think the situation will not be as dramatic as one can imagine it to be. The radioactivity will increase every year in those areas, where it in good time ended up. Presently close to 90 percent of the nuclides are found at a depth of 5 centimeters [in the ground]. Here they enter into all kinds of chemical and physical ties. That is why, for them to be washed away during a flood, is not that simple a process. Especially because a portion of the radioactive substances has already been removed by the water. True, it is not ruled out, that in time the hot particles will begin to decay...

[Correspondent] They [radioactive particles] are presently causing great uneasiness in the population of the rayons that have suffered. Therefore, if you will, tell us about them in greater detail.

[Chumak] The hot particles of various sizes were emitted during the reactor's explosion and were thrown outward during the next few days. Each one of them has a particular rate of activity from 0.1 microcurium and up. We are especially agitated by the dust particles smaller

then five microns. Larger particles normally remain on the surface of respiratory passages and are coughed up later. If swallowed, they are conveyed like food. But the micron particles will settle on the alveoli and begin to intensively irradiate the nearby tissue, yielding micron level doses that number in the thousands of radioactive particles.

Unfortunately, the hot particles landed past the 30-kilometer zone, and wherever they have been found, agricultural work becomes a definitely dangerous proposition. They can tell me that the machine operators in such areas reside in sealed cabins. But the entire problem lies in the fact that they do not allow the widely distributed particles to penetrate [into the soil], which are particles that on the whole, do not make us uneasy, but which do create obstacles for the less widely distributed particles. That is why in areas where the plutonium is greater than .12 curium per square kilometer, the machine operators' work poses a certain risk to their health.

The hot particles, though not beginning with the first post-accident days—we will acknowledge this—warrant special attention. Specialists, specifically, have determined that when the density of contamination of an area nears 0.5 curium per square kilometer, a natural rise of dust can lead to a point at which the number of particles of plutonium, which are in the air, will be equal to their highest allowable concentration.

[Correspondent] That means that a precise map is needed of the contamination in various rayons of the republic?

[Chumak] Yes, such is the data which has been collected by the Ukrainian SSR AN Institute of Nuclear Research, which was given to the State Committee of Hydrometeorology and which became the basis for the special maps. And all the same, I think, that the situation is still not completely clear. There are serious grounds for thinking that in Belorussia and in the western trail [of radiation], we can reveal there are local areas, where there is more than 0.1 curium of plutonium per square kilometer.

Speaking about the pollution of the soil with radionuclides, I would like to emphasize that absolutely correct prescriptions for all the accidents in life do not exist. Here, as nowhere else, a differentiated approach is needed. Yes, in a number of rayons of the Kiev, Zhytomyr, and Rovno Oblasts, which ended up in the zone of the western trail [of radiation], high levels of radioactive contamination covered the naturally peculiar sandy soils of the Belorussian-Ukrainian Polissya area. As a result, the cesium here enters into the agricultural products 10-100 times faster. And once this is so, the allowable level of contamination of the soil that was established in 1986, does not guarantee a limit to the amount of radionuclides allowable in raising livestock that is within the limits of the temporarily established norms. Today in

practice they [the allowable limits] have already been rejected. One needs to immediately cancel them and in an official manner.

[Correspondent] Several months ago, the information was quickly passed around that genetic defects in animals have been discovered in Zhitomir Oblast. The subject here, specifically, is a calf, which was born with one eye, without fully developed extremities, and without a tail. And immediately specialists were found, who categorically stated: this has no relation to Chernobyl, such things happened in the past. What point of view do you hold to?

[Chumak] The time of the sweet-voiced consolers has past, I hope, irreversibly. Here, doubtlessly, one can see the effects of radiation, but not only radiation. I think, chemicals contributed their share also.

[Correspondent] You have in mind the various instruments applied in the "struggle" for larger harvests?

[Chumak] Yes, herbicides, and pesticides, and completely preposterous doses of mineral fertilizers, and compounds, which are used in the agricultural subdivisions, which in various ways link the strontium and cesium in the soil. There were 1,000 tons of chemical compounds added to the soil, which naturally could have left its mark. However, and this is far from everything. In a number of rayons, which suffered as a result of the Chernobyl catastrophe, along with radioactivity, one notices the pollution in terms of heavy metals—lead, boron, lanthanum, and other metals were thrown out of the reactor during the liquidation of the effects of the accident. And now there appears such a "bouquet" of negative factors, which on a similar scale and with such compounds have still not been formed anywhere in the world.

[Correspondent] It turns out that earlier such a complicated influence on a living organism of radiation, chemicals, and other accompanying factors was not studied?

[Chumak] It was studied, but unfortunately, not to a sufficient extent. This is very painstaking work, which demands a lot of time and energy. This means that one needs to conduct experiments on several generations of animals and plants. From 1986 in Chernobyl, a special research base for making such observations has been established.

[Correspondent] I want to pose a question that applies to a different field. Scholars study the radiation situation in the fields and forests. And what is happening in our living quarters? What kind of doses of irradiation are we being exposed to, sitting at a table, or, let us say, lying in bed? The question is not completely inane. Recently I was given the radiometer "Beta," and it turned out that in our living quarters, the bathroom had the highest beta-activity in the area—in the toilet and, forgive the crudeness, in the bed pan.

[Chumak] There is nothing strange, if one is to take into account that your wife, as thousands of other Kiev residents after 1986, after washing the floor poured the dirty water into the bed pan and toilet bowl. I think, that it has come time to concern ourselves with living quarters. At the Ukrainian SSR AN Institute of Nuclear Research, for example, on a cooperational basis, a brigade was created, which will inspect the buildings in the Pechersky Rayon of Kiev, and if they reveal an increase in the emission of gamma-rays, they will recommend the owners of the residents of the buildings conduct a de-activization... Such sub-groups equipped with special technology, can work in other areas, but they should be much larger.

[Correspondent] But isn't it simpler to establish a measure of security, by supplying the residents with radiometers, similar to the "Beta"?

[Chumak] In my view, this is not rational. The "Beta" is a complicated instrument. Such an instrument is better for an enterprise to have and in the rural regions—for a school to have. In regards to the population, there are inexpensive and relatively simple instruments-indicators which can detect gamma and beta irradiation. In other words, the gamma-rays and the radioactive contamination of a surface area. But it is a great pity that until now they are not being produced, though all the fixed dates for producing them have passed by.

[Correspondent] It is said that well informed optimists become pessimists. You, Vitaly Kostyantynovych, naturally, are familiar with the ecological situation which has taken shape. In what category would you place it?

[Chumak] I am a specialist. I think that says enough. A flashy appearance of boldness and the aspiration to keep up a good expression on one's face in a foul game are as amoral, as to flat out lie, which some individuals in the government in the post-Chernobyl years did to obtain their successes. The AES disaster has inflicted enormous damage on the country, and I think, quite a lot of problems related to Chernobyl await us in the future. Here there should not be anything that is left incompletely stated or left unsaid. But this does not at all mean that one must sit idle. Much can be prevented. The situation to a considerable extent depends on us.

Nuclear Society Seeks Greater Public Role in Power Plant Siting

*PM0210141590 Moscow PRAVDA in Russian
28 Sep 90 Second Edition p 2*

[N. Knyazkaya report under the rubric "For the First Time": "Talking Candidly About the Atom"]

[Text] It was probably primarily as a criticism of themselves that the participants in the plenum of the USSR Nuclear Society's Central Board cited the results of a French public opinion poll.

For example, asked what threat to the environment causes them greatest concern, French people placed nuclear power last. In their view, the risk from the use of organic energy sources connected with the greenhouse effect, acid rain, and exhaust fumes is considerably greater.

This is the result of the openness of the nuclear power industry and of paying great attention to providing full and reliable information to the population on its characteristics. And these same aims face the USSR Nuclear Society. Hence it is understandable that speakers at the plenum talked about the need for a more vigorous and purposeful dialogue with the population.

For example, when deciding the location of nuclear power stations in the future there must be none of the arbitrary methods whereby stations were imposed on places (as has happened until now) but instead incomparably more effective—economic and legal—methods should be used. In particular, regions where nuclear power stations are being built or are already operating should be given great economic autonomy in making decisions affecting the development of the nuclear power industry, and the population living near nuclear stations should be compensated accordingly. All this must be reflected in the law on the nuclear power industry now being prepared.

The plenum elected a new president of the Nuclear Society. He is Doctor of Physico-Mathematical Sciences V.V. Orlov, the society's former vice president.

Radioactivity Level in Azerbaijan's Sheki Rayon Studied

*NC1410070090 Baku Domestic Service in Azeri
1700 GMT 8 Oct 90*

[Text] Research conducted by a group of USSR Ministry of Geology experts and their colleagues in Azerbaijan to study the situation of radioactivity in Sheki Rayon has yielded hope-inspiring results. The research was the result of an initiative made by the Sheki City People's Deputies Soviet.

According to the results of nearly six months' research work, the experts have concluded that the level of radioactivity in Sheki has been low for many years. This is now an established fact. The city's people, including those in the large industrial establishments and vacation centers, are informed on the situation of radioactivity by the local radio every day. The residents of Sheki [words indistinct]. Meanwhile, the (?examination) of the food-stuffs, particularly the flour and sugar imported from the Ukrainian SSR and the Belorussian SSR, has removed their uneasiness.

The ecological research, which is being carried out in stages, will be continued to determine the extent of air and water pollution and the extent of contamination in

plants. Meanwhile, plans have also been made to determine the extent to which people are affected by the noise of the production process in Sheki's industrial establishments.

New Greens' Party in Leningrad

90UN2717A Leningrad LENINGRADSKAYA PRAVDA in Russian 15 Aug 90 p 2

[Unattributed article: "Who are the Greens?"]

[Text] As soon as the Third Congress of USSR People's Deputies had changed Article 6 of the country's Constitution, a new party, the Greens' Party, was registered at a meeting of the city's Moskovskiy Rayon Soviet Executive Committee.

Its charter states that it is a voluntary public organization that carries out actions aimed at resolving vitally important questions of protecting and restoring nature, creating a favorable habitat, defending peace, and developing and spreading knowledge of ecology.

Today the Greens' Party of the city on the Neva numbers about 300 people. They are workers and students, engineers, scientists and representatives of the creative intelligentsia, retirees, and deputies to the Leningrad City Soviet and rayon soviets. They work in various sections of the party. They include a group for combating the radiation hazard, an environmental inspection unit, and a group concerned with protected natural territories. There is an active committee for combating ecological crimes. The party is establishing close ties with Greens from abroad, who are generously sharing their experience in environmental-protection activities with the Leningraders.

In the photograph: During an environmental-protection raid, Greens' Party members Mikhail Edvardovich Drozdov, senior scientific associate with the Anpo Scientific and Technological Cooperative; Valentin Aleksandrovich Panov (center), cochairman of the Greens' Party and people's deputy to the Leningrad City Soviet; and Grigoriy Nikolayevich Vasilyev (at the right), scientific associate at Leningrad State University, discovered an open sewer draining into the Neva River from the oblast infectious disease hospital in the area of the settlement of Ust-Izhor.

Finnish Group Studies Kola, Karelia Pollution

90WN0253A Helsinki HELSINGIN SANOMAT in Finnish 7 Aug 90 p 2

[Guest commentary by Professor Jari Parviainen, director of the Forestry Research Institute: "Only Promptly Imposed Curbs Can Save Forests of Eastern Borderland"]

[Text] The countryside within a radius of several kilometers of the Kola Peninsula's industrial plants has been completely destroyed. Natural resources have been

unscrupulously exploited in sparsely populated areas. Money must quickly be found for research so that curbs on effluents can best be justified.

A group of Finnish forestry researchers visited areas of Karelia and the Kola Peninsula in June. The group traveled to Kovdor and Kostamus for the first time.

Finnish visitors have been shocked by the sight of environmental damage caused by industrial plants on the Kola Peninsula. In the neighborhood of Monchegorsk's copper-nickel-and-cobalt processing plant, the ground cover and trees have been destroyed, varying with wind direction, within a radius of 5-7 kilometers. Part of the adjacent district has burned up in forest fires.

Thinning out of the conifers can be seen some 30-40 kilometers from the factories. Farther out in the forest, however, no external symptoms can be discerned.

The local environmental damage caused by industrial plants in Monchegorsk is typical. The relationship between cause and effect is a fact.

Damage to the barren landscape is blatantly visible and extends a good distance. Forests in the environs of Monchegorsk are not utilized economically.

Yet large-scale exploitation of natural resources at the environment's expense is not unique. Natural resources have also been carelessly exploited in uninhabited or sparsely inhabited regions. Examples are found in Brazil, Canada, the Soviet Union, and the United States, among other places.

On the other hand, environmental destruction on a similar scale has not been allowed to occur in densely populated regions.

Several Local Disaster Areas

The Kola Peninsula's worst disaster areas are in the neighborhood of Nikel, Zapolyarnyy, and Monchegorsk. It is estimated that more than 500,000 tons of sulfur dioxide are emitted yearly in these areas.

Moving from north to south, we also see the mining industry in Kovdor and Kostamus. In both localities, iron ore is excavated from open pits.

To the naked eye, the forests surrounding Kovdor still appear robust. Environmental destruction similar to that in Monchegorsk cannot be seen.

The Soviets responsible for mining operations consider the Kovdor area effluents a minor nuisance. The Kovdor processing plant is small compared to the Olenegorsk-Monchegorsk facilities. The phosphorus factory to be built in Kovdor is obviously a substantially more serious threat to the countryside.

Kostamus Should Not Be Forgotten

The mining and enrichment collective combine based on the magnetite ore pocket in Kostamus, which is located

in Karelia, began operations in 1982-83. The combine's goal is to produce 9 million tons of iron pellets annually.

Kostamus produces one third of Karelia's sulfur dioxide effluents. The amount of effluents is estimated at 60,000 tons of sulfur dioxide a year, and fallout at five kilos per hectare a year.

At the moment, no serious external symptoms of pollution damage are visible in the forests around Kostamus. Beard moss was found to have died, however, within a radius of several kilometers of the factories. Then again, it must be kept in mind that Kostamus has operated only seven years. There has not been time for the damage to accumulate.

Effluents from the mining industry of Karelia and the Kola Peninsula are a serious threat to the health of East Finland's forests. Trees that grow under the harsh conditions of the north tolerate poorly the additional burden of pollutants.

It is feared that the rise in sprout cankers in Salla is partly due to the Kola Peninsula's sulfur emissions, although the weather has been exceptional in recent years.

The factories closest to Finland's eastern border are in Nickel, Kovdor, and Kostamus, 30 kilometers from the border. The distance from Monchegorsk to the Finnish border is roughly 40 kilometers as the crow flies.

To make decisions, indisputable facts are needed about the forests' health and the factors affecting it and about the amount of pollutants and fallout.

Although estimates have been made of effluents, information about local atmospheric fallout and pollutants near Finland's eastern border is very scanty.

As long as there is no information about fallout, assessments of the causes of damage to forests will be unreliable and subject to dispute.

The only sure way to safeguard the health of Finland's eastern forests from the threat of pollution is to reduce the amount of effluents. This must be started immediately.

By tending to and redeveloping the damaged spots, the durability of the forests can be improved, but these measures cannot prevent pollutants from causing damage.

Agreement on precise reduction of effluents from industrial plants in Karelia and on the Kola Peninsula requires less ambiguous data. Research must be stepped up.

Fallout and pollutants must be measured more frequently along the eastern border.

The quality of air north of Joensuu is measured at seven different points, three of which are near Finland's eastern border. This is not adequate to pinpoint the

sources of the forests' stress. For example, the quantity of effluents from Kostamus can only be guessed at.

The establishment and maintenance of measuring stations belong, most logically, to the Institute of Meteorology, which is the most skilled at measurement.

Teamwork To Monitor Forests' Health

A regional experimental-plot network, which takes into account the location of industrial plants in Karelia and on the Kola Peninsula, is needed to monitor the forests' health. Construction of the experimental-plot network is a challenging task for researchers, because the sources of emissions are known and therefore the effect of pollutants on nature can be analyzed.

The monitoring will be carried out in cooperation with Soviet researchers. After all, joint research in the East Lapland forest-damage project has been conducted since last year. This research will yield detailed information about the state of northeastern Lapland's forests during the next few years.

Also needed is joint research—together with investigators from the Science Academy's Karelian Forestry Institute—on the effects of Kostamus effluents.

Petrozavodsk researchers have been organizing experimental plots in the environs of Kostamus since 1985. The network must be expanded to the Finnish side.

The state of the forests can be monitored by regional outposts of the Forestry Research Institute. The research stations at Muhos, Joensuu, and Rovaniemi can perform the task if they are granted the additional funds necessary.

The critical limits of tolerance for the northern forests must be determined. Because of the task's breadth and complexity, it is essential that the most important facilities which investigate environmental changes in eastern Finland concentrate on this research.

An overall picture of the forests' health can be drawn only on the basis of several different measurements. A good example of cooperation is the East Lapland forest-damage project. A separate study is needed for the Kostamus impact.

The health of the eastern forests—except for the northeastern part—is a bilateral Finnish-Soviet affair for which solution models do not have to be sought elsewhere.

Money must be obtained for the research, because Finland can base its demands only on research.

No matter how high, the costs of research are just a fraction of the economic impact on mining and forestry.

Supreme Soviet Ecology Committee Studying Chelyabinsk Nuclear Contamination

LD0510180990

[Editorial Report] Moscow Domestic Service in Russian at 1130 GMT on 5 October carries a nine-minute report by correspondent Andrey Nikiforov on the work of the USSR Supreme Soviet committees and commissions.

He notes that the commission for industry examined some questions connected with the implementation of the law on enterprises, the Ministry of Internal Affairs made an appeal on behalf of its enterprises, the Commission for the Development of Union and Autonomous Republics, Oblasts, and Okrugs is preparing its conclusions on the draft on employment. The SOVETSKAYA ROSSIYA article "Dangerous Passage" written by state planning specialists, is being considered by a number of committees and commissions. The author and representatives of a number of ministries and departments are attending a meeting of the Commission for Planning, Budget, and Finance, at which deputies from other committees and commissions are also present.

Nikiforov goes on to describe the meeting of the Ecology Committee, which is conducting a hearing on the ecological situation in Chelyabinsk Oblast resulting from "decades of abuse" by the nuclear power industry. Chaired by Aleksandr Nikolayevich Penyagin, "one of the leaders" of the committee, who actually comes from Chelyabinsk, the meeting is attended by representatives of the Ministry of Power and Electrification and other ministries and departments.

Nikiforov interviews Penyagin during a break in the proceedings. Penyagin begins by recalling the history of Chelyabinsk Oblast's ecological problems. Weapon-grade plutonium for the first Soviet atomic bomb had to be developed hastily in time for Stalin's birthday, Penyagin says. From then on, Chelyabinsk Oblast became a victim of the Ministry of the Nuclear Power Industry. The Techa River became heavily polluted by the dumping of radioactive effluent straight into the water, without regard for the safety of people living by the river. This form of waste disposal operated from 1949 to 1952, he says; it was only when people began to die that attention was drawn to the hazard, and the survivors were evacuated. Little else was done.

In 1957, Penyagin continues, there was the Kachtym accident [kachtymskaya avariya] in which a storage tank containing radioactive material exploded with devastating effect, releasing 20 million curies into the atmosphere—the world's first accident of this kind. Chernobyl released 50 million curies. The accident at Kachtym affected Chelyabinsk, Sverdlovsk, Kurgan, and Tyumen Oblasts. At least 271,000 people were subjected to its effects.

Penyagin says that Lake Karachey was also used as a dumping site for both high and low-concentration radioactive material, with the result that it now contains 20

million curies—the equivalent of two-and-a-half Chernobyls. Water is naturally seeping from the lake into the surrounding area, polluting large volumes of subsoil water. In 1967, a hot summer followed a dry winter. The water evaporated and the dust from the bottom of the lake was blown over a vast area, "up to 75 km long", affecting 41,000 people. The two accidents have caused chronic ailments in about 1,000 people—three times as many as in the case of Chernobyl.

At present, the USSR has 500 million cubic meters of radioactive open water, which could, in theory, cause irreparable harm to 7.5 million people who live near the Iset, Irtysh, and Ob Rivers.

Nikiforov then raises the question of the South Urals Nuclear Plant which is to be built in the affected area. Penyagin explains that the aim is to use the plant to begin to evaporate the contaminated water, since it cannot realistically be contained.

The plant would also solve another problem. He says: "Four of the five reactors making weapon-grade plutonium—that is, plutonium that is used in the manufacture of nuclear warheads—these reactors are being taken out of service, and over 4,000 people are without work—people, incidentally, of the highest professional standing, a whole school of nuclear scientists set up in our country over those years." These people could be employed on the new plant.

However, the South Urals area has suffered so much over the years that there is great reluctance to acquiesce in the construction of another nuclear installation, and the Ecology Committee is scrutinizing every detail of the proposed plant.

Nikiforov thanks Penyagin for his contribution and brings the report to an end at this point.

Kazakh President on Ulba Ecological Disaster

LD2809142490 Moscow TASS in English 1346 GMT
28 Sep 90

[Text] Alma-Ata September 28 TASS—President of Kazakhstan Nursultan Nazarbayev has sent a telegram to Prime Minister Nikolay Ryzhkov asking him to declare the East Kazakhstan region an ecological disaster area.

This request is due to the accident that occurred at the Ulba Metallurgical Plant on September 12. Extremely harmful beryllium compounds were released, affecting many inhabitants in the town of Ust-Kamenogorsk.

The Kazakh public and the town's population demand urgent measures and compensation for their damaged health. Responding to the will of their electors, the regional and town councils have already decided to declare the East Kazakhstan region an ecological disaster zone.

Supporting these demands, the president of Kazakhstan asked the federal prime minister to urgently dispatch experts to Ust-Kamenogorsk in order to examine the situation on the spot and to decide whether the Ulba Metallurgical Plant should be shut down or not. This enterprise is among the country's major suppliers of fuel for nuclear power plants. Unfortunately, it is located in a densely populated area of Ust-Kamenogorsk.

The telegram calls for a commission to carry out an independent ecological investigation with the participation of foreign experts.

Ust-Kamenogorsk Rally Demands Antipollution Action

PM1510125390 Moscow PRAVDA in Russian 11 Oct 90 Second Edition p 8

[PRAVDA freelance correspondent P. Shchuplov report: "We Don't Want To Breathe Smog. Emergency Situation"]

[Text] Ust-Kamenogorsk—The ecological rally just held in Ust-Kamenogorsk proved to be particularly well attended. The city's alarmed citizens filled the whole of Lenin Square and the adjacent streets. All the speakers were worried by Ust-Kamenogorsk's fate.

How long will we have to breathe poisonous gases? they said; when will the huge discharge of radioactive waste from the Ulba Metallurgical Plant finally be cleared away? In September the city's residents were scared by fires and explosions at the Ulba plant's beryllium shop, when a life-threatening beryllium cloud hung over them.

"We are located between two atomic test sites," said Zh. Sadykov, chairman of a department of the "Nevada-Semipalatinsk" society. "While enriching the country with nonferrous, rare, and precious metals, our workers receive in return cancerous tumors and illnesses that are difficult to cure."

The following facts and figures were quoted at the rally: Every year local plants belch out hundreds of thousands of tonnes of harmful substances into the atmosphere. The permissible concentration limits for lead, zinc, nitrogen peroxide, sulfur dioxide, carbon monoxide, and other dangerous compounds have been exceeded severalfold. The incidence of malignant formations and skin and blood disorders is double that in Semipalatinsk Oblast and 11 times greater than in Alma-Ata Oblast. The city has one of the worst population mortality indicators in the republic.

On behalf of the oblast center's 300,000-strong population the rally participants requested the USSR Supreme Soviet, USSR Council of Ministers, and Kazakh SSR [Soviet Socialist Republic] Supreme Soviet and Council of Ministers to declare the city of Ust-Kamenogorsk and the whole East Kazakhstan Oblast an ecological disaster zone. Managers of Ust-Kamenogorsk's lead and zinc and

titanium and manganese combines, the Ulba Metallurgical Plant, the capacitor plant, and the "Keramik" Plant have been asked to reduce their production volume in line with the capacity of cleansing facilities. Insistent demands to move the most dangerous production facilities beyond the city limits were also voiced.

In this resolution the rally participants demanded that the oblispolkom [oblast soviet executive committee] and gorispolkom [city soviet executive committee] formulate the status of the ecological disaster zone, setting parameters and a legal framework, and obtain its approval in the higher echelons of power. Soviets of people's deputies have been asked to freeze the profit deductions into the state and republic budgets and to the ministries and departments. These resources are to be channeled into cleaning up the environment in the region. It was also proposed to allocate to all Ust-Kamenogorsk inhabitants, and to children first, a new "nemzabsorbent" preparation which purifies the blood and extracts toxic substances from the organism, since the Ulba Metallurgical Plant produces this preparation.

In connection with the serious ecological situation and the associated public tension, rally participants recommended the city's working people not to hold holiday demonstrations 7 November but to confine themselves to laying flowers at the V.I. Lenin memorial. It was also decided to hold a repeat ecological rally 9 November in Lenin Square, at which oblast and city authorities are to report back on the fulfillment of the stated demands for all points of the resolution.

More on Ust-Kamenogorsk Plant Explosion

91US0044A Alma-Ata KAZAKHSTANSKAYA PRAVDA in Russian 22 Sep 90 p 3

[Article by Gennadiy Medvedev: "A Silent Chernobyl, or the Confession of a Man From Room Six"]

[Text] [Following paragraph is published in a box in the middle of the article.] Chernobyl and the peaceful use of nuclear energy will not be reconciled in our consciousness. Chernobyl has become synonymous with the slovenliness of semiprofessionals and a lack of technical culture. The woes that Chernobyl brought will not be tallied up even decades later. It is inhuman to compare the losses caused by the shattered fourth unit of the nuclear power station with the shattered lives of those resettled, with the loss of life and health. It would appear that now, after what has happened, it is altogether necessary to reveal such hotbeds of slovenliness and to place a concrete obstacle in the path of the 20th century cavemen. Alas, everything is not all that simple. [end box]

I will now name a city which lies thousands of kilometers away from Chernobyl and which has long needed such an obstacle. Reactors have not blown up in it, though this city has something to do with them. In this city they load fuel elements for nuclear reactors. This city is called Ust-Kamenogorsk. It is not safe for the people to live

here. Here almost all the plants are located in the city center. I would like to dwell on one of them in particular. Previously, it was referred to as Post Office Box No. 10, and now it is the UMZ [Ulba Metallurgical Plant]. So, between 1949 and 1990 this plant emitted about 100,000 tons of radioactive waste within the city limits of Ust-Kamenogorsk. It is a giant among plants of this type in the Soviet Union. It alone produces more than 80 percent of all rare earth and radioactive elements. Dozens of other plants contribute the missing 20 percent of the necessary products.

One gets the impression that radiation in the city should be at unthinkable levels, but no, radiation in terms of the gamma background is the same as in Moscow. I stress: the gamma background. However, here is a strange thing. In East Kazakhstan Oblast, the incidence of oncological diseases is 11 times higher than in Alma-Ata Oblast, and two times higher than in Semipalatinsk Oblast. I understand that, apart from the UMZ, other plants in Ust-Kamenogorsk have made their contributions, if I may put it that way. However, this is the circumstance which I would like to dwell on. Uranium-238 and thorium-232 are the two main elements among the radioactive elements discharged by the UMZ plant. According to a reference book, the rate of alpha disintegration of uranium-238 is 98 percent, and that of thorium-232 is almost 100 percent.

An instrument is displayed at the Palace of Sports in Ust-Kamenogorsk which indicates time, the temperature of the surrounding air, and the gamma background in roentgen. You could hang such instruments all over Ust-Kamenogorsk, and the gamma background would be within the limit everywhere. However, the backgrounds generated by the radioactive waste sitting on the dump are almost 100 percent alpha backgrounds. Special instruments are necessary to measure the alpha background. The UMZ plant has such devices. Specialists from the plant do take readings, but if you try finding out what the results are you will be told that everything is all right, everything is within the limit. They will also tell you that the "secret" classification of the plant still has not been revoked, and that all readings taken in the compound of the plant and the dump are not to be divulged. They may also say that alpha radiation is not dangerous, and that clothing or just a newspaper page can protect you from it.

However, radiology textbooks say the opposite. Alpha radiation is dangerous when its source ends up in the lungs and the stomach together with dust. Some time later, an inner organ will be affected in this place, and nobody will guarantee that a malignant tumor will not develop there. It is not important that a regular newspaper may protect you against alpha radiation; it is important that an alpha particle colliding with matter transfers all of its energy to it.

I would like to recount how I undertook a survey of the UMZ plant radioactive waste on my own and what resulted from it. I had heard a lot about this waste, but,

as they say, one picture is worth a thousand words. Therefore, in the fall of 1989 I went to the dump compound on my bicycle absolutely unchallenged, taking along a self-made Geiger counter. I call the place a dump though officially it is referred to as a tailing dump. What I saw made me disillusioned with our reality yet another time.

Imagine a mound approximately five to six meters high and about 250 meters by 250 meters in size. This is where the radioactive waste was found. Dozens of caprone [Soviet brand of nylon] containers sat at the foot of the mound; when I approached them my counter began clicking furiously. As I subsequently found out, they contained uranium-238 waste. Many of these containers had fallen apart due to the impact of radiation or some other factors, and their contents had spilled onto the sand. I imagined how all of this gets lifted into the air—all it takes is a strong wind to blow. There was a lake right nearby, with a liquid pouring into it from pipes. Having approached the lake, I understood from the meter readings that the liquid streaming out of the pipes was radioactive and that its banks were also radioactive. The bank of the lake was sandy, and the sand was definitely blown about by the wind.

About one week later, I once again ended up in the vicinity of the tailing dump, and decided to cycle along its perimeter. Once again, what I saw made me despondent. All five gates were wide open. Fencing had fallen over or was partially absent in many places. There were no guards at all. There was not even a single cautionary sign. Cows and calves freely roamed the compound, and some people were mowing grass. Guards were present at one gate only. Trucks brought the waste in through these gates. First, this entire area must be secure if there is radioactive waste in the tailing-dump compound; second, prohibitive signs reading approximately "Stop! Entry strictly forbidden, radiation!" should be posted on the fence. Third, all five gates should be closed. Unfortunately, it was all the other way around.

Having come home, I reflected for a long time on what was to be done. Nothing good could be expected if I approached the UMZ management. For decades, the management had been happy with the condition of the waste storage. They would hardly change something after listening to me, a common man. However, if someone from above told them about outrages at the tailing dump we could expect changes for the better...

I wrote my first letter to the newspaper IZVESTIYA. A response came very quickly. They notified me that when such an article became necessary excerpts from my letter would be included, but for now... I sent my second letter to Central Television, to the VZGLYAD program. I received an answer quite promptly: My letter had been referred to the oblast executive committee. Some time later I received answers from the oblast executive committee, the oblast SES [Public Health and Disease Control Station], and the UMZ management. The three

answers, like three peas in a pod, were repetitive: Everything is within the limit in the tailing-dump compound; the wind never blows radioactive dust about, it is simply ruled out.

I did not delude myself with hopes of getting a different response from these people. In a fit of temper, I wrote a second letter to the VZGLYAD program. Having deliberated for half a year, VZGLYAD referred the letter to the USSR Goskompriroda [State Committee for Environmental Protection] in April 1990. This, however, happened in April. In the meantime, I had meetings with Colonel N. Petrushenko, USSR people's deputy, at the environmental-protection office of East Kazakhstan. The environmental protection organs of the city of Ust-Kamenogorsk heard me out, interrupting me impatiently. Supposedly, they had long had it in for this enterprise, but still did not have an official permit to visit and inspect it because the enterprise was of a secret one. I saw Colonel Petrushenko for the first time at a meeting with miners of the Belousovka mine. Toward the end of the meeting, I came up to him and asked:

"Comrade Petrushenko, are you aware that the UMZ plant has dumped a tremendous amount of radioactive waste within the city limits of Ust-Kamenogorsk, and that the wind blows radioactive dust all over the city?"

The colonel answered: "Yes, I know about the waste, but I am not aware that it is in this condition. If this is true I will have the USSR procurator general take the UMZ management to court."

Having said this, he handed me his business card and asked me to call him within several days. The second meeting with Colonel Petrushenko was strikingly different from the first. Having read my petition and the letters written in response, he suddenly switched with ease to the familiar form of address and spoke in a loud and distinct voice:

"Who do you think you are? What do you know about radiation? Electrician mechanic Medvedev, but not a radiology specialist! All of you have gotten used to not minding your own business! Everybody is a master critic, but what do you propose to do under these circumstances?"

Taken aback by such pressure, I began to say that an independent commission could be created, and if it were to find that conditions for the storage of radioactive waste were being violated, he could do what he had proposed, that is, take the UMZ management to court.

Taking my petition and the three answers, the colonel said: "Fine, I will send your petition through channels."

Why did he also take the responses? Could it be that this was in order to expose the officials as liars? This is what I thought when I came home. This was in February. In March, I visited the oblast environmental protection office again. They reassured me: "We are waiting for the snow to melt, and then we will take care of it."

Then came 17 April. On that day Denisov, a representative of the USSR Goskompriroda, descended on us (the VZGLYAD people had referred my letter to him). Lyusenkov from the Kazakh SSR [Soviet Socialist Republic] Goskompriroda flew in. They set up a commission in the city of Ust-Kamenogorsk which consisted of Deputy Chairman Vasilyev, representing the oblast environmental protection office; Deputy Chief Engineer Khlebnikov and chemistry and radiology expert Slobodin, representing the UMZ; Samoylov representing the SES MSCh [Medical and Public Health Unit]; Solopov, chief of the tailing dump; three dosimeter operators, and me.

We drove into the tailing dump compound in a car absolutely without hindrance, as I had once done. We walked the route which I had walked originally. The commission saw the same sight at the foot of the mound as in the fall of last year. Caprone containers gave background readings of 500 to 600 microroentgens per hour. Approximately 70 meters from the radioactive lake, the instrument indicated 50 microroentgen per hour. Fresh tracks of cows and calves were clearly seen on the sand nearby.

A protocol was drawn up which said that by 1 June the plant would repair the fence and post on it signs appropriate for this particular tailing dump, that all the gates would be closed and guards would be assigned; they were instructed to bury caprone cans with waste and radioactive sand...

I started keeping a diary that day.

23 April 1990, Monday. In the morning, the black Volga car of the UMZ chief engineer pulled up in front of my house. Slobodin came in and said:

"Everything has been removed and buried. The sand on which the cans used to sit is less radioactive than Georgian tea."

However, when we went there and took readings we saw that there was still a lot of radioactive contamination. Looking at this, Solopov, chief of the tailing dump, and Khlebnikov, UMZ deputy chief engineer, said:

"It will be clean within days."

We climbed up the mound of radioactive waste a bit. We saw a multitude of caprone cans in a large dug-out hole. We took a reading from the top, without descending. The instrument indicated 400 microroentgens per hour.

Solopov and Khlebnikov said simultaneously on impulse: "We will fill it in within days."

Later that day I went to the oblast environmental protection office and told Deputy Chairmen Popova and Savelyev about what I had seen. I suggested that we set up our own commission, with an independent radiologist-dosimeter operator, and survey the entire burial area of radioactive waste. We decided to undertake such a trip on 27 April.

27 April 1990, Friday. Neither Popova nor Savelyev went there, stating that they were too busy. A dosimeter operator from Altaygeologiya [expansion unknown] went instead of them. Unfortunately, I do not remember his name. He was a professional who knew his job very well. We found so much radioactive contamination that I was bitterly disappointed that the 17 April commission headed by Denisov had not seen any of this. We discovered hundreds, if not thousands, of caprone cans with radioactive waste. Metal equipment parts were strewn there as well, and all of this gave background readings of several hundred microrentgens per hour. Dump trucks with tightly closed windows busily poked about in our vicinity. Their drivers wore masks. They were carrying earth and burying radioactive gypsum, an entire soccer field of radioactive gypsum crushed by the dump trucks to the consistency of dust. There were also just heaps of gypsum. A dosimeter operator stood next to one of those heaps and turned the subrange selection switch. The heap gave off more than 1,000 microrentgens per hour in background.

What we saw at the tailing dump was not reflected in a protocol because the dosimeter operator and I were common people rather than common deputies. The dosimeter operator and I went to Adamov, chairman of the Environmental Protection Office, and told him everything. Having heard us out, he said:

"We urgently need to do a walking survey of the gamma background at the tailing dump, and in the future we need an aerial survey of the entire city."

3 May 1990, Thursday. That day I met Colonel N. Petrushenko, USSR people's deputy, for the third time.

The colonel began to speak: "I sent a commission from Semipalatinsk to Ust-Kamenogorsk, to the UMZ tailing dump. The commission was eager to find someone else's radiation because everyone criticizes the Semipalatinsk Nuclear Testing Ground. However, the radioactive waste at the tailing dump is stored without violations; radiation is within the limits."

3 June 1990, Sunday. A very strong, almost hurricane-force wind started blowing at noon. Tree branches were broken, and dust was carried in the air. I went to the tailing dump just to see how the radioactive waste was stored "without violations." A wide tail of white and gray powder stretched from the heap, reaching the residents of Zashchita-2 Street. They "got luckier" than anyone else. Their street is located between the UMZ plant and the tailing dump. I decided to go around the tailing dump in order to see what the condition of the fencing, signs, and gates was. The protocol read "to eliminate by 1 June," and it was 3 June. I determined that the fence had been repaired. There were no signs; of five gates, three were wide open and two were closed and guarded.

6 June 1990, Wednesday. Today they took my tissue samples at a hospital to test for an oncological disease.

That same day I went to Zashchita-2 Street and took along the Geiger counter. It is a horror how these people live! There is no water; it is trucked in. They are choked by the smoke of factories: It is either the UMZ, or the STsK [Lead and Zinc Combine], or the GETs [Hydropower Station], or the asphalt plant, or the TMK [Titanium and Magnesium Combine]; either dust is blown from the ash heap of the TETs [Heat and Electric Power Station], or radioactive dust is from the tailing dump. There are 49 private houses which look like shacks and several barracks dating back to World War I. Overhead pipes through which the UMZ plant pumps liquids to the tailing dump, including radioactive liquids, run through their streets. These pipes have leaked over decades of use. The land around the pipes is radioactive. Cows, pigs, and geese roam right there.

Boys about 12 years old came up to me and looked with curiosity at what I was doing. I explained to them that private cattle should not be allowed to approach the pipes because the land and the grass around them are radioactive. I went into the houses and explained this to the adults. They nodded their heads in agreement and looked at me indifferently. It turned out they did not believe anybody or anything anymore. Bureaucratic deafness had ground them down during the long years of painful experience associated with trying in vain to improve their housing conditions.

8 June 1990, Friday. I called Slobodin at the UMZ concerning the testing of radioactive products for alpha-disintegration. According to the protocol, the UMZ laboratory was supposed to do this back in May.

Slobodin responded: "Indeed, testing has been done."

"Have you found alpha-disintegration?"

"No, we have not."

"Have you indeed found none at all?"

A hint by the UMZ plant chemistry and radiology specialist followed: "You see, the 'secret' classification of our plant has not yet been revoked; this is why they may have responded this way in the laboratory."

I met deputies from the UMZ plant that same day and told them about my gloomy business regarding the tailing dump. Their complete lack of knowledge of the radioactive waste from the plant at which they had worked for many years struck me.

That day I went to Zashchita-2 Street again. It seemed to me that I knew everything about these people, but the actual reality made my jaw drop in amazement. It turned out that boys from this street had been swimming in the radioactive lake. They said: "The water in it stings." And this was not even all! They had brought home caprone containers for uranium waste from the tailing dump and kept water in them. After all, their water is trucked in. I went to the yards, looked at the vegetable gardens, and saw dozens of these containers. To be sure, boys will be boys everywhere, but I consider the fact that the UMZ

management deliberately keeps silent about radiation at the tailing dump and has never explained the present danger to these people to be a crime. They must resettle all the residents of Zashchita-2 Street at a location safe for residential purposes. One building with 100 apartments would suffice.

14 June 1990, Thursday. I called the USSR Goskomprirroda in Moscow and talked to Denisov. I told him everything new that I had learned about the tailing dump. I asked him to come again, but this time with his own specialists and instruments in order to finally find the truth. To this Denisov responded that he profoundly felt for us, the residents of the city of Ust-Kamenogorsk, but that during his visit there in April he had had a conversation with Lyusenkov, the Kazakh SSR Goskomprirroda representative. Lyusenkov had really gotten hot under the collar over "the encroachment of Moscow on the affairs of an independent republic" and had hinted that they were up to the task themselves, they could cope without the center.

In the evening I was present at an ecological rally in the city. It is a pity that I did not take the floor myself. However, I did meet IZVESTIYA special correspondent V. Mirolevich and KAZAKHSTANSKAYA PRAVDA staff correspondent A. Akava. I told them about the ecological troubles and the radiation.

Akava asked me to write down everything I knew and to send it to the newspaper KAZAKHSTANSKAYA PRAVDA.

18 June 1990, Monday. I met Zhenis Sadykov, chairman of the Nevada-Semipalatinsk movement in Eastern Kazakhstan. He invited me to visit him. We talked a lot, well into the night.

19 June 1990, Tuesday. At the hospital, they once again took a tissue sample to test for an oncological disease.

20 June 1990, Wednesday. I went to Zashchita-2 Street. I asked one of the active women to write a statement for USSR People's Deputy O. Suleymenov with a detailed description of all their woes and needs. I also took pictures of the slums.

28 June 1990, Thursday. The diagnosis was confirmed. I was sick.

28 June 1990, Thursday. I went to a city ecological rally. I could not resist it and took the floor. The "conductor" of the rally gave me a limit of five minutes; it is a pity I did not say everything. Perhaps, we can solve our problems only with women. Only women were in many of the front rows, and only in their eyes did I see involvement and interest. I saw handfuls of "city fathers" behind them. Next to them some photographers in plainclothes walked about. Quite far away, men who supposedly just happened by were smoking in the shadow of trees...

2 July 1990, Monday. Early in the morning, I reported to the Ust-Kamenogorsk TV studio. I must have looked all worked up, and a director and a cameraman caught my

condition. I told them briefly about my worries. Without much deliberation, they put me in the car, and soon we were in the vicinity of those ill-fated places. From a distance we shot the mound where 100,000 tons of radioactive waste were deposited, and later an episode with the slums and their residents. Once again I found out how active women were. Only women came up to us, and they talked sharply, with pain and resentment. They said that there was not a single healthy person on their street, that women gave birth to either deformed babies or babies like themselves, that is, sick, and that their living conditions were horrible. In some cases, six people lived on 11 square meters of floor space. There was no school nearby, no shop, no water, and so on.

In the evening I flew to Alma-Ata for treatment.

3 July 1990, Tuesday. Having languished through the night in the airport, I went to the republic TV station in the morning. I talked for about an hour and a half. I noticed that they were interested. They promised to help me and shoot a sequence with my participation. At noon I came to the "Nevada-Semipalatinsk" headquarters. They received me well, listened to me, and promised to take part in curing the ecology of Eastern Kazakhstan. In the evening, I was admitted to the hospital.

12 July 1990, Thursday. After many tests and one more confirmation of an oncological disease, they finally started my treatment, and then only due to the intercession of Professor Nelli Ivanovna Kolocheva.

26 July 1990, Thursday. A piece was recorded today at the TV station for the EKHO broadcast with the participation of Vdovichenko, chief of the republic SES division, to inform the populace of the radiation situation. I was the second one in the program.

15 August 1990, Wednesday. I wrote and mailed two letters to the Kazakh SSR Supreme Soviet. One letter was to the Health Care Department and the other to the Environmental Protection Department. I described what concerned me and what robbed me of the peace of mind. Several days later I called them and found out that the Supreme Soviet was sending a commission to Ust-Kamenogorsk.

29 August 1990, Wednesday. I visited the republic TV station. We called the Ust-Kamenogorsk TV station. I learned some news. The UMZ management had banned the airing of the footage shot at the tailing dump on oblast television. We had not shot military installations or divulged any secrets. What was the point? Apparently, the point was that everybody would see the deception, the imaginary concern for the people.

Later I called the Nevada-Semipalatinsk headquarters and talked to nuclear physicist Professor Bagdat Totiyevich Tuseyev. I learned the happy news from him. On 14 September, a special committee from the

Academy of Sciences, with the most modern instruments, would fly to Ust-Kamenogorsk from Moscow. God help us in moving our righteous cause off dead center!

3 September 1990. I will take my writings to the newspaper KAZAKHSTANSKAYA PRAVDA today. I very much hope to see them published.

[Signed] Gennadiy Medvedev, temporarily unemployed, Alma-Ata, the Oncology and Radiology Institute, Room No 6.

EDITORIAL NOTE. A report on an accidental discharge of radioactive dust at the UMZ beryllium production facility came when these notes were being prepared for publication.

After a thorough discussion of the situation, the Presidium of the Oblast Soviet of People's Deputies adopted a resolution on closing down the beryllium production facility of the Ulba Metallurgical Plant Association. The Minatomenergoprom [Ministry of the Nuclear Energy Industry] was asked to develop measures aimed at converting production. The same resolution proclaimed East Kazakhstan Oblast an ecological disaster zone.

Operation To Clear Space Debris From Kazakh Steppes Begins

*PM0310095090 Moscow IZVESTIYA in Russian
25 Sep 90 Union Edition p 2*

[Oleg Stefashin dispatch under the "Direct Line" rubric: "Collecting Space 'Debris'"]

[Text] Dzhezkazgan—A special subunit of the USSR Main Administration for the Creation and Utilization of Space Technology has launched a broad "offensive" operation in the Dzhezkazgan steppes.

This action is being carried out at the urgent request of the public, worried by the critical condition of the once fruitful lands and pastures.

"Since they started launching space rockets from Baykonur," explains Sh. Shardarbekov, chairman of Dzhezkazgan Oblispolkom [Oblast Soviet Executive Committee], "a huge part of our territory has been practically turned into a scrap metal dump. For reasons of secrecy the military exploded used rocket stages on the spot. This led to pollution of the land by toxic substances and numerous fragments. Nobody has collected them. By our estimates, around 890 whole and exploded stages of multi-ton rockets have been scattered in two rayons alone. Farms have suffered millions in losses because hayfields and pastures have been taken out of rotation, but the space department didn't give a damn about it."

This year Dzhezkazgan has been swept by a wave of rallies at which the population has requested that the military clear the steppe of all dangerous objects. By a decision of the USSR Main Administration for the Creation and Utilization of Space Technology, a special

subunit of about 300 people has been formed. Almost 100 items of powerful aircraft and ground equipment have been attached to it.

As A. Tselikin, chief of one of "Baykonur" spaceport's administration departments, stated, the new formation has been deployed along the whole "front" and is operating very effectively: Six rayons have already been cleared of space debris. The work is scheduled to be fully completed by winter.

Space Agency 'Forced' To Clear Debris From Arctic Area

*PM1010080590 Moscow IZVESTIYA in Russian
6 Oct 90 Union Edition p 2*

[Ivan Bentsa report: "Space Debris"]

[Text] Naryan-Mar—The reindeer breeders' confidence in the USSR Main Administration for the Creation and Utilization of Space Technology [Glavkosmos], which gave a firm promise to clear their pastures of rocket debris, has vanished with the first snow to cover the tundra.

Spent rocket stages launched from the Plesetsk cosmodrome fall onto the Nenets tundra. A good master would have arranged for these items made of valuable metal to be collected and processed right from the first launch. But the space department has operated differently for a long time: The stages were blown up where they fell, scattering sharp fragments over the reindeer moss. The reindeer injure their hooves in these "space dumps" and then die.

"Many hundreds of hectares of reindeer moss have to all intents and purposes been taken out of circulation for pasturing purposes," L. Sablin, chairman of the Nenets Okrug Soviet, said. "Reindeer breeding farms are suffering losses."

However, this year under public pressure the USSR Glavkosmos was forced to create special subunits to clear the territories of the space debris... Two dozen servicemen aboard a couple of helicopters spent three difficult months "clearing 215 areas—and Glavkosmos has no money for more," A. Shcherbakov, head of this subunit, said.

Kazakh Nuclear Fuel Plant Explosion Aftermath Outlined

*914E0001A Moscow RABOCHAYA TRIBUNA
in Russian 5 Oct 90 p 2*

[Statement by B. Barchenko, Kazakh SSR people's deputy, worker of the Ust-Kamenogorsk Lead and Zinc Combine, recorded by RABOCHAYA TRIBUNA staff correspondent Yu. Kirinitsyanov: "Before and After the Accident"]

[Text] B. Barchenko, Kazakh Soviet Socialist Republic [SSR] people's deputy, worker of the Ust-Kamenogorsk

Lead and Zinc Combine, reflects on the lessons of a tragedy that took place in his native city: an explosion at a nuclear fuel plant (see RABOCHAYA TRIBUNA, 16 and 21 September 1990).

I learned about what had happened from my daughter. Calling me from Ust-Kamenogorsk, she said that there was panic in the city. People wearing gas masks and respirators were running through the streets. I reassured her as best I could. I advised her to close the transom and not to leave home. After all, I worked for 30 years in a harmful production environment.

When I started dialing Ust-Kamenogorsk later, nothing happened. Even the reception room of the party oblast committee [obkom] first secretary did not answer. They put me through to the reception room only after I called a long-distance telephone exchange using the government communications line. A secretary told me that a meeting of the Oblast Soviet Presidium was in progress. There was no other information. As far as the rest of the phones were concerned, fuses blew at the exchanges, according to the official version. When they finally switched back on, one of the activists who supported me in my election campaign managed to call me. He reported that officials, and primarily the management of the plant at which the accident occurred, concealed the true picture from the people. This was when I decided to fly to Ust-Kamenogorsk.

The data I was given by ecologist voters differed substantially from the official data.

I rushed to an extraordinary session of the city soviet. Chairman of the city soviet N. Nosikov gave me the floor very reluctantly. However, at this point I was given a letter from the workers of the Eastern Machine Building Plant, incidentally, my constituents. The people demanded honest and complete information.

One of the managers from the Ulba Metallurgical Plant poured oil on the fire. In the evening, speaking on television, he stated: There is no need to check children in the city, because even the rescue personnel putting out the fire in the center of the accident area were not injured... It turned out later that, putting it mildly, this was not quite so.

On the following day, a meeting of the city emergency headquarters was held. Certain discordant notes had to be introduced into the overall chorus of soothing voices. It turned out that the plant does not have an accident contingency plan, surprising as it may be. Indeed, Chernobyl did not teach us anything. Meanwhile, the "master" of both accidents is one and the same, the Ministry of the Atomic Power Industry. However, the fact that the ministry is imperiling the physical health of people is not the only scary one. It also cripples the people morally. I visited the Ulba Metallurgical Plant and met with General Director V. Mette. It appeared that his optimistic declarations did not reassure the people, just merely dampened their ardor.

Civil defense is a separate topic. Its representatives displayed complete helplessness once again. A message was broadcast on the radio after a long delay, and only on one channel rather than on three. Following a similar "glitch" during an earthquake, I addressed a deputy inquiry to them, but did not get a reply. Another detail: It turns out that the bulk of the means of individual protection are located in a village dozens of kilometers away from the city.

Finally, the mechanism was set in motion, if not without friction. Municipal services are washing the city and physicians are examining the sick. Finally, the Presidium of the oblast soviet made the decision to close down beryllium production. This is supposed to be a victory, but there is a strong bitter aftertaste. I foresee most powerful pressure from the mighty ministry. This is not the only thing that bothers me, though. I am afraid that the attitude toward the nuclear plant will be extended to its completely innocent workers.

The citizens found themselves in a disaster area, not only as a result of this accident, but also as a result of the long operation of giant nonferrous metallurgy and defense industry enterprise within the city limits. I propose to envisage for the citizens income tax relief and an improved supply of foodstuffs (meat, milk, fruits). To this end, deliveries to all-Union stocks from East Kazakhstan Oblast should be reduced at least temporarily. It is necessary to consider the issue of evacuating children to holiday homes and country schools.

However, this is not enough. I believe that the Ust-Kamenogorsk accident should become a stern lesson for all ministries, including "my own" ministry, the USSR Ministry of Nonferrous Metallurgy. We should finally resolve to suspend all harmful production, and repair and adjust ecological facilities within a short period of time. Where are we to get money? Taking into account new approaches to taxing industrial enterprises, it is necessary to envisage the possibility of reducing contributions to the state budget and to superior establishments for a certain period of time. This will make it possible to allocate the funds saved for target-oriented ecological programs and reduce the probability of new catastrophes.

New Zealand To Test for Radiation Contamination in USSR

*OW0110094390 Beijing XINHUA in English
0844 GMT 1 Oct 90*

[Text] Wellington, October 1 (XINHUA)—The New Zealand Dairy Board is today looking at ways of testing for contamination at two freezing works on the Soviet-Mongolian border after a nuclear plant explosion in the region last month.

The two plants, 250 km away from the accident site, are being developed by the dairy subsidiary Sovenz and are designed to process venison and deer antlers, local press reported today.

Authorities in Kazakhstan have declared the area around the city of Ust-Kamenogorsk a disaster area, saying the explosion that sent toxic beryllium oxide gas into the atmosphere may have contaminated 120,000 people.

The test would be developed with the Department of Scientific and Industrial Research of New Zealand, the board Public Affairs Manager Neville Martin said.

The Sovenz General Manager, who had just returned from the accident area, said there was no evidence of sickness. It was unlikely contamination had reached the plants in which 28 New Zealanders are employed, he added.

The two plants, which are due to be completed by the end of this year, would help strengthen relations between the Soviet Union and New Zealand, the general manager said.

Armenian Parliament Considers Reopening Nairit Chemical Works

*LD1010050690 Moscow TASS in English
2150 GMT 9 Oct 90*

[By TASS correspondent Garriy Galustiyani]

[Text] Yerevan October 10 TASS—The Armenian parliament was discussing on Tuesday the restarting of the Nairit chemical firm in Yerevan, which was shut down last January due to environmental pollution. The firm is the only enterprise in the USSR producing many types of goods. [sentence as received]

Republic Prime Minister Vazgen Manukyan told the session that a government commission was set up to

restart pollution-free workshops of the firm. It consists of researchers and various specialists.

As for the output of ecologically harmful substances, including chloroprene rubber, the decision will be taken later.

A nationwide shortage of chemicals manufactured in Yerevan puts into jeopardy the production of many goods, including cars, lorries, tractors, shoes and medicines.

The damage to the Soviet economy will total about 14 billion roubles this year alone.

In the opinion of President of the republic parliament Levon Ter-Petrosyan, the restarting of the chemical firm will also be of great importance for the republic, provided the enterprise uses new technology and reliable filters which will help bring the nature-protection level to international standards.

Today's session again discussed the bill on the Armenian government.

Baku Halves Sewage Emissions Into Caspian

*LD0210034890 Moscow Domestic Service in Russian
2200 GMT 1 Oct 90*

[Text] It has been reported from Baku that sewage emissions in the Caspian Sea have been halved, thanks to municipal authorities tightening up the controls over the local industrial enterprises. The reconstruction of all communication of this port has been carried out, and construction of new purification installations has begun at the request of the soviet of people's deputies.

EUROPEAN AFFAIRS

European Satellite To Supply Images for Environment Data Base

90MI0335A Bonn WISSENSCHAFT WIRTSCHAFT POLITIK in German No 33, 15 Aug 90 p 6

[Text] The FRG Aerospace Research Institute (DLR) is setting up a satellite image environment data base on environmental remote sensing. This facility will process data from remote sensing satellites and give various users access to it. One of these satellites, due for launch in 1991, is expected to provide quite a flood of data, especially from the ERS-1 (European Remote-Sensing Satellite), which works on a radar basis. With a whole "parcel" of microwave sensors on board, it is equipped to measure a wide range of environmental parameters and carry out geodetic surveys. Thus, along with the NOAA [U.S. National Oceanic and Atmospheric Administration] and other similar satellites, the European environmental satellite will be the major source of information for the future DLR data base, which is linked to the FRG Remote-Sensing Data Center at the DLR in Oberpfaffenhofen. In addition to ocean observation of surface temperature, currents, and waves, and tropical rain forests surveying (mapping), a priority topic for ERS-1 will be to measure Antarctica. A ground station there will receive the satellite data and pass it on to the DLR, where it will be filed in a "processing and archiving facility" and made accessible to future users.

Scandinavian Anti-Pollution Plan of Action Detailed

90WN0303A Geneva JOURNAL DE GENEVE in French 16 Aug 90 pp 1-2

[Article by Helene Vacher: "Scandinavians Mobilize for a 'Green GNP'"—first paragraph is JOURNAL DE GENEVE introduction]

[Text] The Nordic countries are closely linked to their mare nostrum by history and economics. The political process set in motion in East Europe, by offering new perspectives to Scandinavian countries, also raises the issue of redefining the rights and duties of those who live on the banks of the Baltic Sea. Faced with what will probably become shared economic and political management of this environment, the Nordic Council is hoping to make the 1974 Helsinki Convention a special instrument.

The population that lives near the Baltic coasts is relatively small—about 30 million—but concentrated in a few big cities and industrial centers such as Copenhagen, Stockholm, Helsinki, Leningrad, Riga, or Gdansk. The often wooded and deserted coasts are still very little urbanized. Though the seas and oceans are destined to play a growing economic role, the Baltic affords Scandinavians considerable resources, through fishing, beekeeping, and tourism, while remaining an essential commercial route. There are many signs, however, that the

marine environment is threatened. After looking to the west side of the North Sea, the Scandinavians note that the Baltic is condemned to a slow but inexorable death unless there is large-scale intervention.

The Nordic Plan of Action

The Nordic plan has been working to achieve this for several years by trying to get the states bordering the Baltic to adopt measures to protect the marine environment and coasts. This very closed body of water, accessible only by a few straits on the Kattegat before it flows into the waters of the North Sea, is shallow. The many rivers which pour into it are a significant source of fresh water. As a result, the sea's often blue waters are not highly saline, and there is little mixing with ocean waters. These different factors linked to great temperature contrasts contribute to making the Baltic a fragile and vulnerable environment. There is creeping spread of coastal beds deserted by marine flora and fauna.

A perusal of the studies of the biologist Petersen conducted at the beginning of the century on Kattegat fauna indicates that the ecosystem has changed greatly and has been significantly impoverished. For the last 10 years, a systematic lack of oxygen has been recorded each summer in certain areas, and the alarming proliferation of algae, including toxic species, can sometimes become catastrophic, as in May and June of 1988. The Norwegians estimated losses on their "marine farms" at 4 to 5 million dollars. The finger has been pointed at organic waste products, whether directly dumped in the sea or washed into it from fertilizer-glutted soil.

A "Green GNP"

The Nordic countries' plan highlights the link between energy consumption and environmental degradation. It consequently recommends preventive directives and the drafting of production criteria that respect quality of life. Mrs. Gro Harlem Brundtland, who currently leads the opposition in Norway, and northern Europe's environmental ministers, nicknamed the Walkyries, again brought this to general attention by defending the idea of a "green GNP" during the Bergen conference of Western industrial countries in mid-May.

A few years ago, the presence of DDT, PCB, and metals such as mercury had become worrisome enough to prompt the Swedes to limit their consumption of fish. The highly prized herring had become noxious and had practically disappeared from menus. In Copenhagen, the head waiter told us that the fish came from Greenland. But the Nordic countries were able to implement a strategy that paid off, since metal concentrations are now at a level comparable to that of the North Atlantic, and PCB and DDT rates have in fact dropped. The June 1988 Nordic Council report on the plan to combat pollution of the marine environment underscores another dread danger, the constant increase in fertilizers. The latter seems to be closely linked to the eutrophication observed since 1963 in the Baltic Sea.

The quality of the environment is undoubtedly a major concern of Scandinavian societies. With nearly 300,000 members, the Danish association to protect nature is one of the biggest in the country. Many other groups make the environment their hobby-horse and the entire political class incorporates it into its platforms. Mrs. Lone Dybkjaer, minister of environment, readily employs the media to defend the cause of a government plan such as the one on water quality and, more broadly, to promote the idea of a "green economy."

The peaceful image of the farmer, gardener, and friend of nature seems destined to yield to that of the polluter. Mrs. Dybkjaer recently compared the Danish agricultural sector to the Ruhr Valley. It turns out that the massive use of nitrates and phosphates by the country's farmers is largely responsible for the accelerated deterioration of the western Baltic Sea. That is what the minister emphasized to the parliament in May, when she presented a report on the national water protection plan passed in 1987: "The latest analyses indicate that the eastern Baltic countries' nitrate pollution has a limited effect on the lack of oxygen in Danish waters." The plan is addressed to manufacturers, communes, and farmers. It stipulates that all municipal waste waters will be treated between now and 1994. In Copenhagen, 1.5 billion has been set aside to double the capacity of the capital's purification facility. If manufacturers and farmers follow the plan's directives, the country's entire agricultural development will be called into question to meet the plan's overall goal: halving nitrate waste between now and 1993.

Legal Constraints

Analogous measures are being taken in Norway, Sweden, and Finland. Mr. Depledge, professor of ecotoxicology, points out the difficulties in harmonizing standards from the many organizations—international, European, and national—for protection of the marine environment. Denmark "especially illustrates this problem, since as a member of the EC it must draft its directives in accordance with several systems of standards, without neglecting its national interests." Adds Mr. Depledge: "government organizations, which are caught in an increasingly complex labyrinth of legal constraints, do not pay enough attention to researchers." The Environmental Directorate, one of whose important duties is to test chemical products on the market, must take into account several imperatives that are not solely scientific. "Generally speaking, administrative measures on marine pollution are inadequate or insufficient." Yet according to the professor, who works on marine environments at the Odense Institute of Biology, the Baltic region's experience suggests that cooperation in identifying pollution problems and controls makes it possible to take effective national measures.

So while Copenhagen seems well positioned to capture the seat of the new European Environmental Agency, Scandinavian countries are trying to step up their

regional efforts, to guarantee the future of the formidable natural reserve of the Baltic for the Europe of tomorrow.

GERMANY

Minister Lists Factors Linking Economy, Environment

90MI0331A Bonn *TECHNOLOGIE NACHRICHTEN-MANAGEMENT INFORMATIONEN* in German
15 Aug 90 pp 6-7

[Text] A glance at the situation in the GDR and in Eastern Europe clearly shows that a dynamic economy and environmental protection are inextricably linked: No planned-economy system has managed to come even close to achieving the improvements in the environmental standards of the Western industrial states. Conversely, a successful conversion of the former socialist states into a market-economy future is inconceivable without early attention to matters of environmental protection.

The view of Federal Economics Minister Dr. Helmut Haussmann is that the interactions between economic and environmental objectives must be utilized for coping with the central challenges—global climatic protection and the ecological and economic recovery of Eastern Europe. Dr. Haussmann summed up his thoughts on the subject in the following list of 10 factors linking economics and the environment.

The protection of natural living conditions is essential to safeguard the Federal Republic as an industrial area. The state has the task of maintaining the balance in nature and the efficiency of the economy.

The greater costs of environmental protection measures must be paid through higher productivity. This extra income must not be used to raise pay or shorten man-hours lest price stability and employment be jeopardized.

It is easier to make headway in environmental protection in an expanding economy; along with as growing gross national product environment-conserving investments are subsidized and conversions to ecologically compatible production processes and products are facilitated. The great tasks of environmental protection in the GDR and in Eastern Europe—our common environment—can be solved only if the economy there is allowed to accumulate the required funds.

Environmental protection policy cannot do without the traditional instruments of regulatory legislation to protect health and avoid hazards. But a policy of merely commanding and prohibiting will not suffice. It is necessary to attain more and less expensive protection of the environment through the application of economic instruments. These include taxes (for example, automobile exhaust tax), dues, voluntary agreements, and product identification.

Industry initiative must not be suffocated by a constantly increasing, complicated flood of environmental regulations; corrections to environmental legislation and the collection of all relevant provisions in a standard environmental law can remedy the situation

Now that we in the Federal Republic have achieved clear successes in the removal of sulfur and nitrogens, the protection of the earth's atmosphere is one of the most important future tasks. The main problem of climatic protection today is carbon dioxide CO₂. Despite unanswered scientific questions, the principle of prevention demands swift and efficient action. Since this is a worldwide problem an international approach is absolutely necessary; what is possible on a national level must not, however, be shelved pending the conclusion of international agreements.

A clear reduction in the carbon dioxide emissions resulting from energy generation must be pursued as an important component of a national strategy. An inter-ministry work group appointed by the Federal government is to look into what can be done. As an orientation for the preparation of concrete proposals the group has been given the target of 25 percent reduction by the year 2005. The federal government does not consider the 25 percent figure an absolute obligation since the effects ensuing from the measures to be proposed must be heeded. But the target is a useful yardstick for international comparison. A climate-protection tax on fossil energy sources is an ecologically effective and—as an instrument of the market economy—an economically sensible measure for the protection of earth's atmosphere. It must be coordinated at least on the EC level so as to induce as many producers of hothouse gases as possible to reduce these emissions and to avoid competition distortions. The saving and effective utilization of energy constitute a priority issue in our efforts toward a better environment, for they contribute to a necessary worldwide reduction in carbon dioxide emissions. At the same time this will relieve pressure on scarce resources.

Carbon dioxide-free nuclear energy also contributes toward climatic protection. Replacing it therefore, will be possible only when other, ecological and economical energy sources can take over that portion of energy supply.

For reasons of resource preservation and climatic protection, it is necessary to increase the share of renewable energies in the power supply on a long-term basis. This requires a structural change.

This is why the Federal Minister of the Economy has put forward subsidy plan. It provides newly designed options of depreciation in the field of renewable energy for both the private and the industrial sectors, an intensified promotion of information and consultation, and improved training and postgraduate training of architects, engineers, technicians, and artisans. In addition, the Federal Ministry of Economics is mapping out a bill

for improvement in the charges for electric current from renewable energies fed into the public power grid.

The constantly scarcer waste-dump space and the dangers to man and nature caused by the conventional disposal of waste and garbage make it necessary to increase the proportion of reusable packaging and to set up a comprehensive, privately organized and financed recycling system for valuable materials (dual waste management system). Granted, this requires a legally binding framework; coercive measures, such as obligatory recycling by the producer, however, should be mandated only to the extent that they are required for health protection and that voluntary measures are not taken. Rates tailored to the producer and a waste-dump fee, respectively, should be provided for the disposal of the remaining waste (the task of the communities) and as an incentive for avoiding problems.

Ministry Launches Waste Management Subsidy Program

90MI0330A Bonn *TECHNOLOGIE NACHRICHTEN-MANAGEMENT INFORMATIONEN in German*
15 Aug 90 pp 4-5

[Excerpt] Surveys carried out by the Federal Office of Statistics have shown that a total of about 230 million tons of waste material currently accumulate in the FRG each year, as opposed to 220 million tons in 1984. Decreasing availability of dump sites and reduced possibility of the establishment of new waste-management installations require measures for reducing waste accumulation. Continuation of the dumping practices hitherto followed is intolerable. A massive change in attitude is required both by industry and the consumer.

The activities of the Federal Ministry for Research and Technology (BMFT) provide support for the legislative measures of the Federal government. During the past 15 years the BMFT subsidized about 350 waste management projects with more than 400 million Deutsche marks [DM]. Including the funds put up by the subsidy recipients, the total expenditures amounted to more than DM750 million. The subsidies concentrated on quantitatively significant and particularly dangerous waste materials such as weak acid, used foundry sands, dioxin in waste incinerators, and liquids and gasses emanating from garbage dumps.

The new subsidy program titled "Waste Management and Abandoned Waste Dump Sites - Burdens," for which funds of more than DM280 million are available for the period from 1990 to 1994, is part of the program for "Environment Research and Environment Technology 1989-1994." The program conforms to the priorities of the waste material act of 1986, first avoiding pollution, then recycling, then disposal.

This program is aimed at encouraging applied research and development to avoid harm to the environment in the future and to existing environmental damage. This is possible through the direct application of the processes

developed for that purpose in the management of waste. It is also important, however, that the state of the art be further developed by means of the subsidies from the BMFT. Then the legislators can tighten the requirements on pollutant emission or prescribe the recycling of waste flows when they are technically possible and economically justifiable.

Avoiding and Recycling Waste

In avoiding and recycling waste materials specific to production, as many waste material flows as possible should be prevented from occurring at all, or should be reused as secondary raw material, such as salt slag, varnish and paint sludge, galvanic waste, oil based waste, inorganic acids, and so forth. In addition to the development of ecological production processes it is also necessary to make the products suitable for recycling. It is generally known that especially modern high-tech products such as television sets, computers, electric ranges, microwave ovens, mercury vapor lamps, refrigerators and freezers, and automobile parts contain materials which are often difficult to breakdown and many of which are toxic. Their disposal is highly problematic. Big companies, for instance in the automobile industry have recognized this fact: they embarked on activities of their own, without any BMFT support. Such an involvement of industry is all the more important considering that roughly two million passenger cars are scrapped in the FRG annually. About 25 percent of the material thus recovered has not been reusable to date. While about 70 percent ferrous scrap metal and about 3 percent nonferrous metals can be reclaimed and recycled, the rest must be removed as "shredder waste" largely containing plastic materials, glass, rust, wood, rubber, and textiles. The problem will become even more acute because it is likely that the proportion of plastic materials used in automobile construction will further increase.

The subsidies from the BMFT for the development of ecological production processes are intended, above all, to make it possible for small and medium-sized companies to make their products suitable for recycling.

Incineration

Waste combustion is absolutely necessary for ecological waste removal. In the case of waste material which cannot be utilized as material any longer, it allows at least the utilization of their energy content; beyond that it is an important preparatory stage for safe, storage because of the considerable reduction in volume and extensive mineralization of the waste materials involved.

The objectives of the program are the further improvement in pollutant emissions as well as the increase in the proportion of reusable residue materials, as, for instance, ashes. The low dioxin emissions aimed for waste combustion can in part be attained only through a series of activated carbon filters. Now it is the goal of the new subsidy plan to maintain these values even without

filters, through research and development; for the extraction of metals, homogenization and into the combustion process itself, as for example localized air injection and a corresponding exhaust system. It is planned to subsidize the pyrolysis and hydrogenation especially of mixed plastic-material waste as additional thermal processes of the future.

Waste-Dump Technology

Desirable as it may be, there cannot be any such thing as a zero accumulation of waste in our industrial society. It is, therefore, necessary to insure that the present-day and future waste dump will not turn into a continuing burden tomorrow or the day after. The "waste dump of the future" will be devised on the basis of a "multibarrier concept," with the structure representing the first internal barrier. The geology of the site and technical sealing systems constitute additional barriers. Research projects for practical testing have already been started.

Removal of Old Sites

Old burdens result from careless, uncontrolled handling of waste and environment-jeopardizing raw materials. They occur in the form of old dumps (unlicensed waste dumps) or deserted former industrial locations. The number of areas suspected of harboring old sites the Federal Laender estimate, amounts to more than 50,000, about 20 percent of them needing sanitation. Following the development of efficient individual processes, the emphasis of subsidization has now been placed on the model-type sanitation of old sites. Selected for this purpose were typical contaminations and representative locations. Typical in that respect are old deposits of household and industrial waste, former industrial sites with organic pollutions such as gasworks and coking plants, former industrial sites with heavy-metal pollution such as sites of metallurgical plants or storage battery factories, and old arms production sites with trinitrotoluol and related substances. The results achieved are to serve as reference material for planning and implementing similar cases of sanitation. The establishment of data banks with an up-to-date documentation of the experiences and ratings gained and the development of expert systems are, therefore, likewise eligible for subsidization.

Waste Management and Old Sites in the GDR

The forthcoming unification with the GDR will entail coordinated, joint research policy in the waste sector, in waste management and old sites as well. The GDR needs to cover a lot of lost ground in that regard. This does not, however, primarily apply to the development of new technologies but rather to the modification and testing of existing technologies. It is impossible to tell at this time, to what extent there is a need for research and development concerning specific GDR problem solutions. Applications for a number of planned projects are expected to arrive shortly, for example, the reclamation of old dumps like the Vorkepzin and Schoeneiche

dumps, or the use of treated water for the sewage treatment plants to increase the ground water. Under the subsidy plan now available it is definitely possible to carry out research and development projects necessary for the solutions of problems that are specific to the GDR. A system to measure pollutants emitted and introduced into the atmosphere, developed with the support of the BMFT is already in use in a mobile unit in the Berlin area. [Passage omitted]

Environment Ministry Acts To Reduce Auto Emissions

90MI0356A Bonn WISSENSCHAFT WIRTSCHAFT POLITIK in German No 30, 25 Jul 90 p 3

[Text]

Cleaner Fuels

The FRG's Minister of the Environment, Professor Klaus Toepfer, has introduced a law that bans the use of scavengers in leaded gasoline. Scavengers are the chlorine and bromine components of lead knocking agents in gasoline which ensure that lead compounds do not remain in the engine. Since these compounds emit dioxin and furane the use of scavengers will be prohibited under the law. The ban should therefore put an end to dioxin emissions from automobiles in the FRG. A research project involving the petroleum sector and the automobile industry, has demonstrated that it is possible to do without scavengers in view of current lead contents. The FRG is the first country in the world to prohibit the use of scavengers as a gasoline additive.

Environment Ministry Introduces Gas Displacement Process

About 100,000 tonnes of gasoline fumes are currently emitted each year during the distribution of gasoline from the refinery to the filling stations. An additional 45,000 tonnes more are emitted when automobiles are refueled. The law by the FRG's Environment Minister involving the introduction of gas displacement systems should reduce emissions at filling stations during automobile refueling and the filling of storage tanks by 85 percent. New plants will be required to have gas feedback systems as soon as the law comes into effect. Even old plants will be required to do so two years to five years, depending on their location (for instance, in a polluted area) and on the annual emissions from filling stations. According to the FRG's Environment Ministry, EC approval is not required.

Ministry Presents Renewable Resource Cultivation Program

90MI0343A Bonn WISSENSCHAFT WIRTSCHAFT POLITIK in German No 35, 15 Aug 90 p 5

[Text] Experts estimate that about one-quarter of the FRG's arable land will be used to grow renewable raw material resources by the year 2005. This would be an area of about one million hectares. Presenting the new

research subsidy program on "Renewable Raw Materials," the Parliamentary Secretary of State at the Federal Ministry of Research and Technology (BMFT) dispelled exaggerated misconceptions: "Growing plants as renewable raw materials cannot solve the problems of agricultural overproduction." However, it could make an important contribution to extending the range of raw materials available to industry and improving the environment.

The term "Renewable Raw Materials" covers a wide variety of raw materials from agriculture and forestry (e.g., sugar and starch from sugar beet, potatoes, maize and peas; vegetable oils and fats from rapeseed or linseed; cellulose and lignin from wood). Each is treated by a specific process and used in equally specific industrial, technical, and energy-generating applications. Ten percent of the quantity and 25 percent of the value of the raw materials currently processed in the chemical industry are already of vegetable origin, although most are imported.

According to Dr. Probst, greater use of renewable raw material resources would call for improved cost-effectiveness, with optimum plant selection, targeted breeding, improved cultivation and processing methods, and inclusion in the European Community Agricultural Policy. Plant breeding and biotechnological methods are used to develop plants that meet the needs of industry. This could reduce the cost of isolating and processing the desired contents. Initial results, e.g., those achieved in breeding oil-bearing plants, are encouraging.

The Federal Research Ministry intends to provide approximately 50 million Deutsche marks per annum for the research subsidy program on "Renewable Raw Materials 1990 to 1995." At the national level, the subsidy program is in line with the overall program on "Renewable Raw Materials" funded by the federal and land governments, and is further supported by the subsidies provided by the Federal Ministry of Food, Agriculture, and Forestry for the practical application and conversion of research results, the Secretary of State at the BMFT said in Bonn.

Social Democrats Propose Civilian Alternatives to Jaeger 90

90WN0241B Duesseldorf HANDELSBLATT in German 25 Jul 90 p 3

[Unattributed article: "Development of Environmentally Responsible Civilian Aviation Technologies Called For"; first paragraph is HANDELSBLATT introduction]

[Text] Bonn, 24 Jul—The federal government should withdraw from the Jaeger 90 project and link this withdrawal with a replacement program for development of environmentally responsible civilian aviation technologies. Hermann Scheer, chairman of the Disarmament

and Arms Control Committee of the Social Democratic Party [SPD] Bundestag delegation, made this proposal Tuesday [24 Jul].

With this proposal, the SPD delegation was reacting to the federal government's recent report on costs for discontinuing development of the Jaeger 90. The costs were calculated at DM4.5 billion. The SPD points out that the German share in the costs of the program amounts to DM6.4 billion. Because 20 percent of that has already been spent, withdrawal from Jaeger 90 development would cost almost the same as its continuation.

The continuation of the development planned by the federal government is supposed to help maintain the German aviation industry, postulates Bundestag member Scheer, but he points out that this goal could also be achieved by linking withdrawal from the Jaeger 90 project with entry into environmentally responsible technological development of civilian aviation. This necessity has emerged as a result of aviation's increasing contribution to the greenhouse effect.

In detail, Scheer proposes the following plan:

- Support for development of hydrogen engines for jet and propeller aircraft, development of retrofittable combustion chambers which give off only very limited amounts of nitrogen oxides, development of an international flight control system for flights below 8,000 meters to prevent the formation of atmospheric ice caused by the discharge of water vapor which contributes to the greenhouse effect.
- The federal government should propose to the Jaeger 90 partner countries England, Italy, and France that they also jointly support this alternative project. Alone, the FRG could contribute about DM5 billion; all partners together, DM15 billion. Additionally, the SPD recommended that this future project be started jointly with the Soviet Union.
- The budget funding for this civilian cooperation program could be extended over time, because less money would be needed for this development in the startup period.
- Simultaneously with this development project the federal government should cooperate with its European partner countries to promote production of hydrogen using less expensive water power in Scandinavia, including the necessary transport system for it. For this, preliminary work of the Research Institute of the European Community, the Ludwig Boelkow Foundation, and the Union for Introduction of Hydrogen Into the Energy Industry in Hamburg could be supported.

Thus, in Scheer's opinion, "the most expensive arms project of the postwar period in Europe could become the most extensive conversion project ever implemented."

U.S., Soviet Forces Leave Environmental Damage

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in German 0858 GMT 29 Sep 90

[Text] Hamburg (ADN)—Soviet and U.S. military forces have caused serious environmental damage in both parts of Germany, the Hamburg-based news magazine DER SPIEGEL reports in its latest edition. In its information on the environmental damage in the GDR the magazine quotes documents belonging to the Environment Ministry in East Berlin, which have hitherto been kept secret. In this 90 particularly severely damaged Red Army bases are listed, which have caused unforeseeable damage through "carelessness" and "insufficient knowledge."

Included among these, according to the magazine, are in many cases "danger to the supply of drinking water," "restrictions on local recreation" and "disruption to production processes." The cause of this is untreated effluent and old oil from barracks and production plants, for galvanized materials for example, which entered into the soil and bodies of water. A ministry expert stated, "Wherever there are bases we can expect a time bomb." Everywhere the land was "churned up, devastated, destroyed," the head of the department responsible for nature and soil conservation, Alfons Hesse, summed up.

At the same time the magazine publishes details of considerable environmental damage caused by U.S. troops at West German bases. Poisonous chemicals, fuel, and ammunition are contaminating the sites of most U.S. military bases in the Federal Republic. The cost of the clean-up is estimated at several billion dollars in U.S. Defense Department documents.

SPIEGEL goes on to report that the Rhineland Palatinate State Government intends to apply for financial aid from Bonn and the allies for removing ecological damage. Clean-up measures will be necessary for the American exercise areas at Grafenwoehr and Hohenfels (Bavaria), a U.S. oil depot at Germersheim in the Palatinate and an enormous pollution of the Rhine-Main airbase near Frankfurt am Main with kerosene.

While the Palatinate State Government intended to start a land register of what has been left behind at military bases, the Environment Ministry in East Berlin in the first instance registers the most seriously polluted areas. A quarter of the most dangerously polluted areas are around the Berlin area alone.

Military Ecologist on Risk Factor of Old Weapons

AU0310190290 Berlin DER MORGEN in German
1 Oct 90 p 2

[Report by "O.Z.": "Decade-Old Grenades Have Become Ecological Bombs"]

[Text] Berlin—A meeting on the registration of old weapons in Germany was held in Offenbach last week. Military ecologist Sven Lychatz of the Disarmament

Ministry reported on how far registration has proceeded on the territory of the GDR.

[DER MORGEN] Since when has this problem existed in the GDR?

[Lychatz] Leading scientists said for years that the chemical weapons of World War II have been totally abolished on the territory of the GDR. As a result, extreme ecological dangers were declared nonexistent.

[DER MORGEN] How about the regions where the National People's Army [NVA] was deployed?

[Lychatz] Until the fall of 1989, these old weapons were only disposed of selectively. Following the salvage actions in the fifties, when ammunition was disposed of in the Baltic Sea, no relevant measures were taken to cover all of the GDR territory, not to mention that not a single known site was thoroughly decontaminated. Thus, additional discoveries and, as a result of the long storage, serious water and soil contaminations are very likely. The respective investigations are focused on the Frankfurt/Oder Bezirk, which is a former main fighting area.

[DER MORGEN] Have the deployment areas of the Soviet Army ever been investigated?

[Lychatz] Until recently, nothing was possible there. Nor do we know much more about the state of old weapons now. The only thing we know is that there are production sites, chemical storage facilities, and depots for all of its arms production on an area of 300,000 hectares.

[DER MORGEN] Which old arms depots are currently known?

[Lychatz] We know of about 21 facilities on NVA sites, including five ammunition depots, eight ammunition facilities, two dumps, and six major bunkers. Among others, there are the special dumping ground in Delitzsch and the former ammunition factory in Elsnig. The facilities in civilian areas are not included. In this respect, we know about many more regions. Investigations are being continued in Ammendorf, where yperite was found. In Kapen near Dessau, an old ammunition facility, we must above all investigate the contamination of the soil. In addition, there are chemical weapons in the pits of "Berlepsch-Meybach" near Stassfurt, "Alexandershall" near Eisenach, and near Lossa. The chemical weapons production sites of Haselhorst, Stassfurt, Wolfen, Schkopau, and Weissig have not yet been investigated. Based on initial research, it may be assumed that the underground production facilities in Falkenhagen, Dora, Hermsdorf, Kahla, and Halberstadt were not investigated in the past.

[DER MORGEN] How could this work be handled in the future?

[Lychatz] Because responsibility for the old weapons will be transferred to the laender as of 3 October, and these are totally overtaxed financially, we should consider

whether an expert group, to be financed and authorized by the government, should systematically register the old weapons.

Joint Environmental Monitoring Project Set

90MI0337A Bonn WISSENSCHAFT WIRTSCHAFT POLITIK in German No 32, 8 Aug 90 p 7

[Text] Negotiations on cooperation between the FRG Aerospace Research Institute (DLR) and the Remote Sensing, Industrial and Research Flight Department of Interflug GmbH were at the top of the agenda when a DLR delegation visited Berlin-Schoenefeld. It was the first time that the DLR research aircraft, a Falcon equipped to carry out ecological remote sensing measurement, had landed at a GDR airport. The main purpose of the meeting was to reach agreements on a pilot project for measuring environmental data from the air. A variety of procedures will be demonstrated to interested parties from the national economy and scientific establishments during one week's deployment between July and October 1990. For example, aerial measurements to assess air pollution will be performed. For many years now, the DLR has been operating an environmental measurement aircraft, which helps to clarify how air pollutants are transported and transformed and what effect they have. The Daedalus multi-spectral scanner may also be used. This facility, which will be available for the first time in the GDR, will be used primarily to acquire data on pollution and the influence that environmental pollutants exert on vegetation.

Oxygen Used To Reduce Carbon Monoxide Emissions

90WN0283B Frankfurt/Main FRANKFURTER ZEITUNG/BLICK DURCH DIE WIRTSCHAFT in German 30 Aug 90 p 8

[Article: "Introduction of Oxygen Helps With Disposal of Industrial Wastes: New Process Significantly Reduces Carbon Monoxide Emissions/Tests Performed by HIM in Biebelheim"]

[Text] Frankfurt 29 Aug—The disposal of industrial wastes is becoming increasingly difficult. Suitable landfills with adequate capacities will not be available for all time to come. Approximately 40 percent of industrial wastes are disposed of by burning them whereby the conventional incinerators use predominantly oxygen in the air as oxidizing agent. On occasion, incinerators will experience an oxygen shortage when large amounts of waste with high caloric content are burnt within a relatively short period of time.

For instance, the incineration of barrels often results in high emissions of carbon monoxides. To reduce these emissions and, simultaneously, to improve the incinerators' throughput the Frankfurt-based company Messer, Griesheim GmbH developed a process using oxygen. This process was tested for the first time at the industrial

waste incinerator plant of the Hessischer Industriemuell GmbH (HIM) in Biebelheim.

The entire plant consists of two independently operating incineration lines with a thermal performance of 17.5 megawatt. The rotary furnaces are charged with waste, both liquids and pastes, via lances positioned at the head of the cylindrical rotary kiln. Solids and barrels are transported to the furnace via transfer tubes and a conveyor chute and subsequently incinerated at 1,200 Centigrades.

HIM was concerned, above all, to effect a better burn-out of the emissions in certain stages of operation. To that end, oxygen lances with high outgoing speed were installed. Within the framework of a test series, the new incineration concept was analyzed with the oxygen being added to both the cylindrical rotary kiln as well as to the afterburner chamber.

The best results were achieved by injecting oxygen into the rotary cylinder or into both the rotary cylinder and afterburner chamber whereby the average daily concentrations of carbon monoxide ranged between 15 and 20 milligrams per cubic meter. Irrespective of the installations' stages of operation, the average daily concentration of carbon monoxide was far below 50 milligrams per cubic meter. The highest average daily concentration was 31 milligrams per cubic meter, the lowest 12.8 milligrams per cubic meter.

By comparison, the limit for carbon monoxide emission is currently (still) at 100 milligrams per cubic meter. However, a new regulation exists in draft form requiring a reduction of the limit to 50 milligrams per cubic meter, thus precipitating a further aggravation of the already existing problems with respect to the disposal of industrial wastes.

Using oxygen in the afterburning chamber with a throughput ranging from 300 to 800 cubic meter per hour has had no influence on an increased formation of nitrogen oxides whose concentration ranges between 110 and 215 milligram per cubic meter, thereby remaining in the same range as with the conventional incineration methods. The Messer Griesheim company views the use of oxygen in the rotary cylinder and in the afterburning chamber as a promising process to drastically reducing carbon monoxide emissions while simultaneously improving throughput. There are no problems associated with retrofitting existing industrial waste incinerator plants with oxygen lances.

Juelich Research Center Reports on PVC Disposal

90WN0241A Frankfurt/Main FRANKFURTER ZEITUNG/BLICK DURCH DIE WIRTSCHAFT in German 3 Aug 90 p 8

[Unattributed article: "Good Waste Disposal Plan Lacking for the Mass-Produced Plastic PVC"]

[Text] Frankfurt, 2 Aug—It is true that plastics made from polyvinyl chloride (PVC) make up less than one percent of household waste; however, they contribute 50 percent of the total chlorine charge in household waste incinerator installations. Annually approximately 160,000 metric tons of discarded PVC end up in household waste. Of that, approximately 110,000 metric tons are placed in dumps, whereas the remainder is incinerated.

Disposal plans which enable material recycling of PVC are currently unavailable, except in rare individual cases. Therefore, processes for dumping and incineration dominate in waste management. Given the small proportion of PVC in the total mass of waste, PVC currently represents a minimal environmental risk in well-managed dumps despite its harmful substances. However, in the future it will be necessary to contend with an increase in the total amount of waste PVC because of the long life of the material. PVC products often do not end up as waste until after as long as 50 years.

A Juelich Research Center GmbH study presented under the title "Material Streams and Emissions From Production, Use, and Disposal of PVC" draws attention to these facts. According to the study, a whole host of problems are linked with the use of PVC; these involve both the persistence, toxicity, and enrichment of many initial products and by-products of PVC manufacture as well as the release of plasticizers, the threat from decomposition products released in the event of fire, and the hazardous material contribution of PVC upon incineration of waste.

The authors report that strict limits are currently placed on the recycling of PVC wastes. New processes such as pyrolysis and hydration are not yet available on an industrial scale. Other processing of the material is more difficult than with other plastics. Whereas polyolefins such as polyethylenes are relatively stable under temperature stresses; with PVC, heating leads to decomposition of the polymer with the release of hydrogen chloride even at processing temperatures.

Also, reprocessed PVC is often unusable for applications with demanding specifications unless it is restabilized. However, the most effective stabilizers are heavy metal compounds. These lead to an increased proportion of additives as a result of PVC recycling. In the years from 1973 through 1983 alone, approximately 2,750 metric tons of cadmium were used as stabilizers for PVC window casement sections. Several hundreds of thousands of metric tons of lead have reportedly been incorporated in PVC products of all sorts.

The study's authors favor stopping the use of heavy metal stabilizers containing cadmium and lead in PVC products and using, for example, calcium/zinc stabilizers instead. PVC should be replaced by some other material in packaging materials and toys. Additionally, the authors recommend labeling all plastics as a basis for separation of wastes according to plastic content, a PVC

recycling obligation on the part of producers, as well as designing closed recycling loops for these materials. PVC should not end up in household waste or construction debris nor should it be incinerated with household waste, but should be stored in single-product dumps. Furthermore, processes for reclamation of valuable materials, by hydration, for example, should be promoted.

Alternative Energy Sources To Provide Electric Power

90WN0283A Frankfurt/Main FRANKFURTER ZEITUNG/BLICK DURCH DIE WIRTSCHAFT in German 31 Aug 90 p 8

[Article: "Electric Power Supply To Be Augmented by Alternative Energy Sources"]

[Text] Bonn 30 Aug (dpa/vwd)—The cabinet of the Federal Republic of Germany approved a bill on feeding electricity generated from renewable energy sources into the public power supply network. As of next year, the power utility companies will be required to feed power generated from water, wind, the sun, landfill and sewage gas, as well as agricultural and forest products and wastes into the power supply. As the Federal Ministry for Economic Affairs announced, the government is hoping to make a contribution to reducing the exploitation of natural resources and the greenhouse effect.

The minimum price paid by the utility companies to the manufacturers of electricity from sun and wind and from other alternative sources will be 90 percent and 75 percent, respectively, of average revenues charged by power suppliers to end users. This amounts to an average 14 German pfennigs vs. the previous nine pfennigs per kilowatt hour for electricity generated from small water power plants and biomass, stated the ministry. Electricity generated from sun and wind will cost between 16 and 17 German pfennigs.

It is estimated that initially the extra costs for the public power utility companies will be approximately 50 million German marks per year. This amount will rise as new plants are built and old plants for generating alternative power will be renovated. However, the consumer should not fear significantly higher prices, since the total costs of the power supply enterprises did not increase significantly.

Helmut Haussmann, minister of economic affairs, opposed an emergency plan for energy conservation as a measure to counter the recent increases in oil prices. In the Federal Republic of Germany, energy consumption has risen by 1.3 percent since 1973 whereas GNP went up by almost 40 percent. The chancellor and cabinet approved the bill by means of a "circulate-and-sign" procedure.

NORWAY

Government Environmental Policy Initiatives Discussed

90WN0275A Oslo AFTENPOSTEN in Norwegian 18 Aug 90 p 3

[Article by Ole Mathismoen: "Environmental Coup by Syse"—first paragraph is AFTENPOSTEN introduction]

[Text] Minister of Environmental Affairs Kristin Hille Valla has been sidelined by no less a person than the prime minister himself. In recent months Jan P. Syse has taken over the environmental initiative in the administration.

While the environment minister has been forced to be a kind of business manager for the environmental policies already adopted, it is Syse who has come up with ideas for rethinking, and a new environmental initiative. Not the least, his promise of 300 million kroner for Norwegian aid to the environment on the Kola peninsula, and the suggestion to bring the environment into the CSCE discussions, have created a stir both within and outside of Norway. These important environmental initiatives are thus not being proposed through the appropriate cabinet minister, as would be natural. Syse has not been content just to take the initiative, he takes a hand in the practical followup as well. State Secretary Kai Eide has been shuttling back and forth to the northern sector this summer in order to prepare the ground for the Kola effort.

Nonetheless, the environmental affairs minister's enterprising new secretary, Per Kristian Skulberg, has accompanied Eide on his trips recently. Obviously, it can be said that Syse has kept the Kola matter in his office in order in this way to put the maximum amount of pressure on the Soviet leadership. A prime minister still has greater influence than an environmental affairs minister. Moreover, the political leadership of the Ministry of Environmental Affairs has little international experience. State Secretary Kai Eide, who is himself the driving force behind Syse's action on the environment, has more than 15 years' experience in international diplomacy.

The Center Party Loses Territory

It is with increasing anxiety that the members of the Center Party see the Prime Minister's Office take over as the driving force in protecting the environment. That is, this is equally a concern of the parties: The Conservative Party is taking over political territory that initially was assigned to the Center Party within the coalition. In all the ongoing speculation about changes in the administration, Hille Valla is mentioned among those who sit the least securely. Especially after the Center Youth came out with such a strong criticism of their own environment minister earlier this summer, and came close to demanding her departure, there are many who smell new appointments.

Under the previous administration, much of the environmental initiative also came from the prime minister. As the leader of the World Commission for Environment and Development, it was natural that Gro Harlem Brundtland should take stronger control over environmental policy than her predecessors had. Many had thought that that would change with Syse at the helm. The surprise in the Ministry of Environmental Affairs itself, as well as in other parts of the administration, has been great at the fact that Syse on the contrary has taken over even more control of environmental matters than his predecessor.

Bluff or Effort?

For many years, politicians and environmental bureaucrats in the Western world have said that investments in the environment must be made where the environmental gain will be the greatest, all in all—even if that means spending money beyond the borders of their own countries. If Syse really is serious about his Kola effort and spends 300 million kroner to reduce the discharge of sulphur and heavy metals from the nickel works, today's Norwegian Government can be a trail blazer as well. Even if Syse can never "match" Gro Harlem Brundtland's international environmental star, it will create a stir if he seriously makes a priority of giant polluters outside the country's borders over further "fine-tuning" in Norway. And Syse, with his conservative ideology, has poised himself to make an impression in environmental matters, and can succeed if the Kola effort is big enough and not just a cosmetic bluff.

Money "Used Up"

Even if Kristin Hille Valla is officially in the Kola dance, for example when she meets her Soviet colleague this coming week for an environmental chat at the northern border, it is Syse's agenda which is being pursued. This is also reflected in the internal debate being conducted about where the millions for Kola should be taken from. Probably they must be taken from the budget of the Environmental Affairs Ministry, a budget which at the outset is not getting a particularly high increase. The extra kroner that Hille Valla's budget gets, thus seem to be already "used up" by Syse for his Kola action.

Another important environmental initiative Syse has brought up is that the question of protecting the environment must enter as a heavy factor into the on-going

negotiations on security and cooperation in Europe (CSCE). The political leadership in the Ministry of Environmental Affairs has not had very much to say here either. It is Syse's office that has brought up the suggestion, and it is his people who will "drive it forward" in the appropriate international forums. Here, too, Syse is trying to put into practice a phrase many have talked about for a long time: that the environmental catastrophe is a threat to our security at least as great as the military threat. Prime Minister Syse has also proclaimed himself leader of the newly established National Environmental Commission.

During the same period in which Syse has put forward his suggestions for the environment, Hille Valla has been forced to grant funds to maintain paper collection and tighten the discharge demands from Norwegian industry. She went recently to Nairobi to tell UN diplomats about the results of the Bergen conference. Thanks to the crafty international negotiators—Minister of Foreign Aid Tom Vraalsen, Under Secretary Oddmund Graham of the Environmental Affairs Ministry, and Department Head Kare Bryn of the Ministry of Foreign Affairs—who brought in a passable result from the Bergen conference, in spite of everything, she had something concrete to report in Nairobi.

The jump from the job of school principal at Nesbyen to the international power politics of the environmental arena was evidently too great for the environmental affairs minister. She herself has said that long-term results tell more than shortsighted press notices. And nobody will be able to accuse her of having run to the press in season and out, either. Nor does she seem disconcerted by a nagging environmental movement, which, by the way, has become considerably less active recently. Hille Valla is a workhorse of a kind seldom found. She has attacked difficult problems with an all-out effort, but since she became minister, only two or three items of business have been dispatched to the parliament in addition to a number of important decisions in individual cases, such as the Titania waste. A considerable number of cases of an administrative nature are nonetheless handled by the administration and the Prime Minister's Office. Partly because the results have been long in coming, and partly because Jan P. Syse himself wants environmental credit, Hille Valla has little to do today with important aspects of Norwegian environmental policy. Officially, it will only be said that it's a matter of good collaboration....

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