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JPRS Report

Environmental Issues

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CONTENTS

EAST ASIA

REGIONAL AFFAIRS

INDONESIA

JAPAN

SOUTH KOREA

MALAYSIA

NEW ZEALAND

THAILAND

VIETNAM

EAST EUROPE

REGIONAL AFFAIRS

CZECHOSLOVAKIA

POLAND

LATIN AMERICA

REGIONAL AFFAIRS

ARGENTINA

BRAZIL

NICARAGUA

ST. LUCIA

VENEZUELA

NEAR EAST/SOUTH ASIA

REGIONAL AFFAIRS

EGYPT

INDIA

IRAN

JORDAN

UNITED ARAB EMIRATES

CENTRAL EURASIA

WEST EUROPE

REGIONAL AFFAIRS

FRANCE

GERMANY

NETHERLANDS

NORWAY

SWEDEN

Russia, Norway Plan Northern Seas Nuclear Waste Mapping Project

92WN0127A Oslo AFTENPOSTEN in Norwegian 8 Nov 91 p 5

[Article by Erik Veigard: "Environmental Cooperation With Russia"]

[Text] Tromso—Norway expects to gain full insight when Russia and Norway start to work soon on a joint project to map the dumping of nuclear waste in the Barents and Kara Seas.

State Secretary Jens Stoltenberg of the Environmental Affairs Ministry met with Liya Shelest, first vice chairman of the Russian Environmental Affairs Ministry, in Tromso yesterday. During the meeting it became clear that Russia feels bound by the provisions agreed on in the Norwegian-Soviet environmental protection agreement from 1988. After the Soviet Union's Environmental Affairs Ministry was dismantled recently, the Norwegian ministry had no counterpart in the Norwegian-Soviet-Russian environmental cooperation. Thus uncertainty hung over the cooperation, but that problem has now been eliminated.

"This means that Norwegian-Russian environmental cooperation will not only continue as before but that it will be stepped up. The meeting was very pleasant and clarifying," said Stoltenberg.

Nuclear Dumping

Stoltenberg and Shelest announced that a joint group of experts will soon be established to map the dumping of nuclear waste in the Barents Sea and the Kara Sea, which lies east of Novaya Semlya. Before Christmas Norwegian authorities will present a proposal on how the group will work.

State Secretary Stoltenberg said he expects Norway to participate and secure full insight in this mapping cooperation and first vice chairman Shelest indirectly confirmed this.

The meeting in Tromso also made it clear that work by the eight groups of experts in the Norwegian-Soviet Environmental Commission will continue as before, now under Russian direction.

Uncertain About Nikel

With regard to the plans to remodel the heavily polluted nickel industry in Nikel and Zapolyarny, the outcome is still uncertain. The Finnish company Outokumpu joined Elkem in submitting a bid for remodeling and filtering emissions at a cost of 4 billion kroner.

First vice chairman Shelest said that a Russian group of experts is now studying the bid and that there will be a response from the Russian authorities within three months after the experts submit their report.

"However we must look at the nickel plants on the Kola peninsula in connection with raw material supplies and the metallurgy industry in the rest of the country. The plants along the Norwegian border may not be in operation 20 years from now and in that case it would be wrong to invest large amounts of money," Shelest said.

Georgia, Turkey To Establish Joint Ecological Center for Black Sea Research

92WN0150A Tbilisi SVOBODNAYA GRUZIYA in Russian 8 Nov 91 p 3

[Article by Konstantin Saradzhishvili, academic secretary of the National Committee of the UNESCO international program entitled: "Man and the Biosphere," under the presidium of the Georgian Academy of Sciences, candidate of biological sciences: "The Georgian-Turkish Ecological Center"]

[Text] As long ago as January 1990 the Georgian National Committee for the UNESCO international program entitled: "Man and the Biosphere" (MAB), under the presidium of the republic's Academy of Sciences, approached all the countries on the shores of the Black Sea with an initiative of jointly discussing the urgent, vitally important scientific and applied problems linked with pollution and the state of the sea's ecosystem. During the current year, on 21-23 January, the first meeting occurred for the Turkish-Georgian working group dealing with the problem: "The Ecological State and Improvement of the Use of the Resources of the Black Sea and Internal Bodies of Water." The participants in that meeting also included representatives from the United States, the Ukraine, and Russia. The practical result of that meeting was a protocol understanding between the two sides concerning the need for joint efforts in research on the Black Sea, was well as the possibility of creating joint enterprises dealing with questions of the fishing management. There was also a broad discussion of a question advanced by our side concerning the possibility of organizing a Center for Joint Research of the Ecology of the Black Sea. Representatives of the Trabzon Technical University and the Georgian National Committee for the UNESCO Program/MAB agreed to consult with their executive authorities and, at the next meeting in Turkey, to resolve the question of creating the joint center. In May of this year a delegation from Georgia consisting of eight specialists was invited to the next meeting of the working group in Trabzon, where, together with other topics, there was a rediscussion of the question of the joint ecological center for research of the Black Sea. The governor of Trabzon and the university rector, at a reception, emphasized with a tone of satisfaction the usefulness of creating the joint center. The practical result of that meeting was the making of a decision to establish the joint center for research on the Black Sea in Trabzon and in Batumi. The second important achievement was the holding of preliminary meetings and discussions with specialists in various areas of knowledge dealing with questions of forest management,

botany, zoology, geology, protection of forests, resort management, hydrology, protection of the shore, etc., and also with business circles having a lively interest in friendly bilateral scientific-economic ties. At these negotiations the Georgian side was given the responsibility of preparing a list of topics for joint research in a broad range of questions concerning the state of the environment and ecology not only of the Black Sea. That topical plan has already been prepared by us, has been discussed by our side, and in October of this year it was sent to the Turkish side for consideration. It must be emphasized that the list of topics for joint research is not only dynamic, but, simultaneously with its preparation, a treaty dealing with the fulfillment of several of its points was already formalized. For example, as a result of the meeting of the working groups in Batumi (20-23 October 1991), it was decided to carry out joint expeditionary research on the Black Sea. Four times a year (once each season), over a period of three years we have been allocated two ships, the Tao and the Fadiko Togonidze, on which seven specialists from each side will work. The research area encompasses the southeast part of the Black Sea in the confines of Georgia, from the Psou River to Sarpi, and within the confines of Turkey, from Sarpi to Sinop. Analyses of the test samples will be made in laboratories both in Turkey and in Georgia. Then the results will be discussed annually at joint conferences, symposiums, and conferences of the working groups. It is planned to publish the materials in the form of collections dealing with the results of the joint operations. Our reader will be systematically informed of all the subsequent matters and will even meet with members of the first joint expedition, who are already prepared for the competition and for field operations, are refining the methodologies, putting the equipment and instruments in order, refining the specific plans, etc.

Everything that was mentioned above is only the first steps, that are based on the personal initiative and good will of the scientists and practical workers who, without compensation or any special financial support, are carrying out their professional duty. However, it becomes clear to the inexperienced reader that the width and depth of the questions covered and the multifaceted nature of the prospective joint research in the near future will require systematic, well-coordinated actions and the integration of international cooperation and joint decisions, and this will not be within our committee's capability without minimal financial support, however tremendous our burning desire to work may be. It should be noted that the question of the Georgian-Turkish Ecological Center was discussed also at a session of the State Commission on "the concept of the Black Sea," where it was approved and included in the implementation plan. In October the idea of creating the center was discussed at the academic council of the School of Geography and Geology, Tbilisi State University imeni Ivane Dzhavakhishvili. The scientists expressed their unanimous approval and stated their desire to take part in the joint research. It should be noted that representatives of certain organizations and scientific institutions in the Ukraine and in Russia also expressed their desire to become part of this center, which has not yet been approved, but which, factually speaking, is already in existence. We hope that these first, modest undertakings will find the support of our government, professional scientists, and the broad public. On our part, we shall continue to apply all efforts to assure that the joint Georgian-Turkish Ecological Center, under the National Committee of the UNESCO Program entitled: "Man and the Biosphere," will successfully resolve both the scientific and applied questions of cooperation with foreign countries, and, in particular, with Turkey, primarily with regard to problems of the Black Sea.

World Ocean Conference Held in Lisbon

PM2412141591 Moscow PRAVDA in Russian 17 Dec 91 p 5

[Interview with Professor A.L. Kolodkin, president of Soviet International Law of Sea Association and vice president of International Maritime Committee, by correspondent Yuriy Vdovin; date, place not given: "What Should the World Ocean Be Like. Questions to 'Pacem in Maribus' Conference Participant"]

[Text] **The problem of the world ocean has long been regarded as being of a global nature. However, such an acknowledgment alone is insufficient in the present complex international relations. It has become obvious that it is necessary to manage states' activities concerning the utilization of seas and oceans. And, for this to be effective, it must be done on three levels—national, regional, and global. This vitally important problem was the subject of the 19th international "Pacem in Maribus" [Peace in the Ocean] conference, which was held in Lisbon recently. Our correspondent put several questions to one of its participants—Professor A.L. Kolodkin, president of the Soviet International Law of the Sea Association and vice president of the International Maritime Committee.**

[Correspondent] What are the aims of the "Pacem in Maribus" conferences, who participates in them, and what was discussed at the last meeting?

[Kolodkin] The conferences have been convened since 1970. It was then, as though continuing Pope John XXIII's encyclical "Peace on Earth," published in 1962, that the "Pacem in Maribus" movement began. It is headed by Prof. Elisabeth Mann-Borgese, daughter of the German antifascist writer Thomas Mann. Meetings have been held in Malta, Sweden, Japan, Sri Lanka, Mexico, the Netherlands, and Canada and, in 1985 and 1989, in our country. They are held by the "Pacem in Maribus" International Ocean Institute (headquarters in Malta). The 19th conference was held with the participation and assistance of the service for ocean affairs and maritime law under the UN secretary general, the UN International Maritime Organization, the UNESCO governmental oceanographic commission, the UN Environment Program, and others. Participating were jurists,

diplomats, oceanographers, economists, and other specialists in the sphere of the study and utilization of the world ocean who came from all continents and from more than 40 countries. The opening of the forum was addressed by Portuguese President M. Soares.

At the conference attention was drawn to the fact that problems concerning the use of energy and the state of the atmosphere and the problem of food, the environment, the climate, the legal regime, and the opening up of the ocean expanses and of outer space have become an object of special concern to all mankind. Hence the need to build a new universal structure, albeit within the UN framework, which would be designed to protect the world ocean and its resources and to peacefully resolve disputes associated with this, in other words a structure which, as it was pointed out, would become a model for the global, regional, and national management of maritime activity not only in this century but also in the 21st.

In this connection, incidentally, taking into account the interests of our country as a whole and of the republics particularly associated with maritime activity, special significance attaches to the conference's recommendations on the expediency of creating a corresponding global forum within the framework of the UN system, at which it would be possible to periodically discuss legal, economic, and other problems of the utilization and legal regime of the world ocean. It is proposed to create some kind of UN ocean assembly, which would operate in the form of special sessions of the UN General Assembly, periodic conferences of the states that are party to the 1982 UN convention on maritime law, or in another way. Such an ocean assembly would be an important means of observing and coordinating maritime activity.

These proposals are connected with the status of the aforesaid convention on maritime law. It is known that its provisions are designed to govern the regime of maritime expanses—open sea, territorial waters, continental shelf, 200-mile economic exclusion zone, and so on—and to regulate shipping, fishing, scientific research, and protection of the marine environment. A certain discrepancy between just one part of the convention—Part 11 (exploitation of the deep-sea bed)—and the interests of a number of industrial countries requires that a universal nature be imparted to this section, in other words to the whole treaty, which would make it acceptable to all states.

[Correspondent] What, in your opinion, is the significance of the conference's recommendations in the sphere of our striving for a rule-of-law state?

[Kolodkin] The conference's two appeals fully accord with our policy of creating a rule-of-law state and of the primacy of international law. First, the appeal to all developed and developing states to bring their legislation into line with the provisions of the 1982 convention. Second, the appeal for steadfast observance of the provisions of all other international treaties, conventions, and agreements concluded both on general questions of the maintenance of peace and law and order and on various problems of the utilization and study of the world ocean and the opening up of resources.

What is primarily meant here is conventions on the protection of the marine environment, the safeguarding of human life, the prevention of incidents on the open sea, the combatting of illegal acts against the safety of maritime shipping, and so on.

I must also point out the significance of the conference discussion of questions of the peaceful resolution of disputes arising in connection with various kinds of maritime activity.

[Correspondent] What place did questions of the maintenance of peace occupy at the conference?

[Kolodkin] Considerable attention was devoted to this problem. It should be pointed out that all participants approved the proposals to establish confidence-building measures for the purpose of reducing naval activity and limiting naval arms, to establish control in this area, and to withdraw nuclear forces from the ocean expanses.

I must point out the significance of the recommendation concerning the creation of a UN naval force on a permanent basis, which, as the conference document states, would be a constituent part of a UN collective security system.

REGIONAL AFFAIRS

West, Central Africa Port Association Monitors Toxic Waste Ships

92WN0159A Accra PEOPLE'S DAILY GRAPHIC in English 18 Oct 91 pp 1, 8-9

[Article by Debrah Fynn]

[Text] The Port Management Association of West and Central Africa (PMAWCA) has put into place a machinery to monitor the movements of ships suspected of carrying toxic wastes and to chase them away.

This involves the effective co-operation of the 28-member ports of the association in communicating such information among themselves and the association's secretariat, based in Lagos, Nigeria.

Mr. Pap Njanko Njie, Secretary General of PMAWCA, disclosed this in an interview with the GRAPHIC in Accra on Monday.

Mr. Njie, who is attending the Sixth African Port Symposium currently going on in Accra, said following the scandalous incidents involving the dumping of toxic wastes in Nigeria and Guinea between 1988 and 1989, the association has made all efforts to block suspected ships entering the ports.

The association, he said, realises the implications of protecting the environment and admitted that some appreciable amount of pollution goes on in ports operations.

This issue, Mr. Njie said, has been addressed at length and members ports have taken stringent measures to reduce pollution to the bearest minimum.

On the challenge posed by the economic unity of the European Community in 1992, Mr. Njie said it is part of evolutionary tendencies that makes it imperative for African ports to adapt both their equipment and administrations in order not to be overtaken by events.

He said even though most ports in Africa have undergone significant transformation, both in terms of equipment and infrastructure over the past two decades such ports lag behind in the development of human resources.

In addressing this problem, the association, Mr. Njie said, has established a training centre at Cotonou, Benin to train port personnel to meet the challenges.

Touching on the future prospects for African ports, he said since all African governments have realised the importance of ports in the development of their economies, it is imperative that something would be done to sustain the momentum in the improvement and development of the ports.

"The future is very challenging. It is very challenging particularly in the wake of Europe '92. But the future is also full of hopes and we are poised to meet the challenges," Mr. Njie stated.

MAURITIUS

Need for Industrial Pollution Control Highlighted

92WN0148A Port Louis WEEK-END in French 27 Oct 91 p 11

[Article by Shenaz Patel: "A Cry for Help in Pointe-aux-Sables"; passages within slantlines published in Creole]

[Text] For several weeks, the fishermen of Pointe-aux-Sables have complained bitterly: Every day, tank trucks dump industrial waste water into the main sewer behind the Ilois complex, which discharges its contents into the sea some 20 meters beyond the surf. As a result, the sea at this location can turn red, violet, or orange, and fish are dying in large numbers. Unfortunately, the problem is not new, nor is it confined to this location. But it calls attention again to the thorny problem of how to dispose of our industrial wastes. The authorities concerned say they are keeping a close watch and have announced numerous projects that include opening a sophisticated laboratory and building a Central Dyeing Park in Ferney. The need is urgent.

In Pointe-aux-Sables at 1500, in the shade of the tall trees by the boat landing, a few pirogues are drying. Across the road, the Ilois complex sleeps under an oppressive sun. Suddenly, the noise of a motor is heard. "Alalila! Alalila!" exclaims a fisherman with whom we had been keeping watch for less than half an hour. He was not singing the joyful song of the same name; rather, his voice was charged with anger: /"There is always a truck that comes to dump waste water of every color from the factory. It will end up in the sea, making it impossible for us to fish after that. Many fish have died and many others have been contaminated. We don't know if they are safe for our families to eat," said the fisherman./

According to our research, twice a day tank trucks rented by the S.F. arrive to discharge waste water containing dyes of one color or another into the main sewer opening in a vacant lot behind the Ilois complex. This morning, the color of the day is violet. As a result, a large pond, dark purple in color, surrounds the opening as the saturated soil cannot soak up all the dirty water allowed to escape from the truck. A woman who lives in the complex complained:/ "Every day when they raise the sewer cover, a stench reaches the Ilois complex."/

Legal Dumping

Our research shows that the factory is breaking the law by dumping its waste water at Pointe-aux-Sables. However, a number of companies, about 20 in all, have official permission to release wastes into the main sewer system. "Effluent can be discharged into our sewer systems either through sewerage pipes or by tank truck provided that it meets certain criteria and all toxicity is removed. Before permission is granted, we ask that initial and subsequent analyses be made of the waste," said Mr. Lauloo, an official in the Energy Ministry's Sewerage Department.

The system is far from ideal, as Mr. Lauloo himself acknowledges. "What is needed is an automatic sampling system in the factories," he stated. At present, the factories themselves have tests performed at one of the five private laboratories in Mauritius. But there is nothing to prove that the samples sent out to the labs are identical in content to the waste later discharged by the factories. Moreover, when the CWA [Central Water Authority] decides to take samples as a spot check, factory officials are notified in advance of the date of the CWA's visit. Another flaw is that the CWA has only two teams made up of two employees each to conduct its monitoring activities, clearly too few to keep track of the 560 factories that are spread across Mauritius.

An Appeal Often Ignored

Although marginal and localized at the start, the problem of discharged wastes has become more acute as the number of companies has grown at a rate we were evidently unable to accommodate. "When these industries arrived, they were not told that they would have to install purification systems," said Mr. A. Kauppaymuthoo, chief surveyor and water rights administrator at the CWA. "The population became more environmentally aware and began to protest the damage that was being done. We then tried to make the industries conscious of their actions and asked them to collaborate in the national effort to preserve the quality of our water. In some cases, the response was positive. Since 1989, 10 industries have installed treatment systems," he said. "Some of them were asked by us to submit monthly samples of their waste that are analyzed by our biochemist, Mr. Gopaul. The average quality of the effluent is calculated over a period of one year and recommendations to correct certain parameters are then made."

But, for the 10 companies that responded favorably and that treat their waste water before releasing it, countless others defy all requests or entreaties to respect our environment. /"We eventually grew tired of trying to protest a practice by a factory that takes our site for dumping ground,"/ said Mr. Denis Jackson, the president of an association of fishermen in Pointe-aux-Sables.

At times accused of inaction and even leniency, the authorities concerned say that they are doing everything in their power to combat the problem. The CWA cites the recent case of the company Crystal Textiles as an example. The company has a branch in the south that discharged its untreated waste water into a neighboring well and caves. "We ordered them to treat their waste but when they refused to comply, we referred the matter to the Supreme Court, which issued an injunction against the company. Judge Forget ordered them to halt the practice immediately and gave us permission to seal the caves with reinforced concrete," Mr. Kauppaymuthoo related. That was in April 1991.

Fear of Losing Face

Hopes were raised somewhat when a new environmental protection law aimed principally at the polluting industries went into effect on 1 July 1991. But to date, not a single violator has been fined or sanctioned under the new law, despite the fact that violations are visible almost everywhere. "The problem is that we are in a period of some uncertainty," said Mr. Raj Prayag, an official from the Bureau of the Environment. "There is a reluctance to take the risk of prosecuting these factories only to end up losing face in court," he continued.

Lose face? Mr. Raj Prayag's explanations shed new light on the situation: "Until now, our work had to be somewhat arbitrary because there were no established standards. For the past several months, we have had the assistance of an American expert, Miss Eiden. We have already drawn up standards for drinking water, noise pollution, odors, and pesticides used in growing sugar cane. At this very moment, we are working on standards for releasing waste into the waterways. By the end of November, we will have scientifically developed standards." In other words, the CWA and the energy ministry had certain standards but until now they were insufficiently grounded in science to stand up in court under the scrutiny of experts.

Another serious deficiency, according to the officials concerned, is the lack of a sophisticated governmental laboratory that would enable the authorities to conduct their own tests. That need should soon be met as between now and June 1991 [as published] a "Central Environmental Lab" is to be installed at the ministry of the environment and three branch labs set up—one at the CWA, another at the ministry of health, and the third at the ministry of agriculture. The cost of the project is 60 million rupees. As to the staff that will run the labs, there is said to be no lack of chemists in Mauritius. Two persons will be sent to England for specialized training to supplement the experience they already have.

"That is a project for the near term, but a much larger project is being planned to solve the problem of effluent pollution," it was indicated at the ministry of the environment. According to information obtained, this major project involves building a "Central Dyeing Park" at Ferney where all polluting factories—primarily the dyeing plants—would be centralized in facilities provided by the government for reliable and comprehensive "waste management." The cost of the project, to be financed by the World Bank, is estimated at 350 million

rupees. Construction is expected to begin in one year. That may be the light at the end of the tunnel, but in the meantime, vigilance is called for.

NIGERIA

Industries To Face Stricter Pollution Sanctions

92WN0193B Lagos THE GUARDIAN in English 4 Nov 91 p 13

[Article by Timeyin Uwejamomere]

[Excerpt] **'The new penalties—coming from FEPA [Federal Environmental Protection Agency] which, only penultimate week took sides with the industrialists in protesting the state pollution charges—are already contained in the FEPA Decree of 1988, but regulations engendering them have only just been given legal backing and made more encompassing and waste specific.'**

Lagos industrialists, still battling to ward off state-imposed levies under a 'polluter pay principle' policy introduced to curb environmental pollution, may soon face stricter sanctions under fresh national regulations being introduced by the FEPA.

Details of the new regulations which were first viewed by non-FEPA officials last week, stipulates two sets of rules, vis:

—The National Environmental Protection (Effluent Limitation) Regulations 1991, and

—The National Environmental Protection (Pollution Abatement in Industries and Facilities Generating Wastes) Regulations 1991.

The Effluent Limitation Regulations make it mandatory for all industries to install anti-pollution equipment for the detoxication of effluent and chemical discharges emanating from such industry, and stipulates that an installation made pursuant to the regulation should be based either on the Best Available Technology (BAT), the Best Practical Technology (BPT), or the Uniform Effluent Standards (UES).

Identifying 22 classifications or industries, under its first schedule the regulation provides two groups of selected waste water parameters under which the industries will be monitored to ensure compliance.

The first group contains the principal parameters by which effluent limits will be set, while the second group contains additional parameters, for further clarification.

Essentially, the effluent limitation regulation expects an industry which discharges effluents under 'Schedule Two' to treat the effluent to a uniform level as specified, to ensure assimilation by the receiving water into which the effluent is discharged.

Schedule Two lists 41 parameters (chemicals) and the limit—in units of milligramme per litre or as otherwise stated—for their discharge into surface water or for land application. For instance, the temperature of any effluent should not be more than 40 degrees centigrade within 15 meter of outfall when discharged into surface water or for land application.

Industries are expected to furnish the closest office of the agency from time to time with the composition of any effluent treated.

The third schedule lists the permissible levels of gaseous emissions and both liquid and solid wastes for 20 industrial groupings including iron and steel, petroleum refinery, brewery, automobile battery and sugar processing. These groups of industrial types are subject to additional sectoral effluent limitations.

A person who contravenes a provision of the regulation, according to the document, will be guilty of an offense and liable on conviction to the penalty specified in section 35 or 36 of the FEPA Decree of 1988.

Section 35, on general penalties, states, for instance, that "any person who contravenes any provisions of this decree or any regulation made thereunder commits an offense and shall on conviction, where no specific penalty is prescribed therefore, be liable to a fine not exceeding N20,000 or to imprisonment for a term not exceeding two years or to both such fine and imprisonment."

Section 36, on penalties for liable companies and firms, states that "where any offense against this Decree or any regulations made thereunder has been committed by a body corporate or by a member of a partnership or other firm or business, every director or officer of that body corporate or any member of the partnership or other person concerned with the management of such firm or business shall, on conviction, be liable to a fine not exceeding N500,000 for such offense and in addition shall be directed to pay compensation for any damage resulting from such breach thereof or to repair and restore the polluted environmental area to an acceptable level as approved by the Agency, unless he proves to the satisfaction of the court that.

[Passage omitted]

Erosion Control Efforts Continue in Eastern States

92WN0193A Lagos THE GUARDIAN in English 8 Nov 91 p 5

[Text] As reinforcements to the Anambra/Imo River Basin Development Authority in its war against erosion in the four eastern states, the Federal Government has so far disbursed N100 million, Water Resources Minister Alhaji Abubakar Hashidu has said.

The money was used to collect data on erosion sites and erect control walls in places that were hard hit.

Areas covered included Ulabi Road, Akwudor, Abriba, Onicha and Mbaise in Imo and Abia states; and Obollo Afore/Ikem and Enugu-Ukwu in Enugu and Anambra states.

Alhaji Hashidu spoke at the opening of a N5.7 million erosion control walls at Ohafia, Abia State.

Represented by the ministry's director-general, Dr. Alex Kadir, the minister said much money had also been spent in other parts of the four states to check the erosion. He cited the Itu Mba Uzo erosion control walls which he noted cost the government N4.9 million.

Records show that about 40 per cent of fertile land in the eastern states are plagued by erosion, he said, noting, however, that the problem is not [word indistinct] to the east.

SOUTH AFRICA

East Rand Opens Large Waste Disposal Site

92WN0203A Johannesburg ENGINEERING NEWS in English 8 Nov 91 p 5

[Article: "East Rand Opens Huge Waste Site"]

[Text] The solid waste management system of the East Rand Regional Services Council (ERRSC) has been opened at Platkop on the East Rand.

The 700 hectare facility, believed to be the largest of its kind in South Africa, has a disposal capacity of about 37 million cubic metres with an expected 30 year operational life.

The R3-million project has been developed to cater for the record growth of the East Rand, particularly in Black towns.

The compacted waste from three transfer stations, developed by the ERRSC at a total cost of R6-million, is accepted, compacted and covered at Platkop.

These regional transfer stations are at Katlehong, for Katlehong, Tokoza and Vosloorus; Kwa-Thema for Kwa-Thema and Tsakane and Heidelberg for Heidelberg, Shalimar Ridge and Ratanda.

The class two site, which is situated between Germiston and Heidelberg, handles an average mass of 1,000 tons of refuse a day.

The system is being used by nine of the 32 local bodies in the ERRSC region and more local bodies will utilise the system in future.

During August this year, Council acquired five portions of the farm Zesfontein, north of Benoni.

The farm will be developed as a regional disposal site for the northern part of the region at a later stage.

Stricter Regulations Issued To Protect Transkei Coastline

92WN0203C Johannesburg THE STAR in English 21 Nov 91 p 11

[Article by Julienne du Toit: "Strict Rules To Protect Transkei Coast and Prevent Exploitation of Perlemoen"]

[Text] Tourists who think they can whip buckets of crayfish or any perlemoen off the rocks at Transkei could spend the night in the local lock-up.

Transkei issued strict new regulations last week protecting its coastline and forbidding commercial fishing with nets and any exploitation of perlemoen.

The head of the zoology department at the University of Transkei, Professor Arthur Dye, said the new regulations were in come cases more progressive than those of South Africa.

Transkei's head of nature conservation, Don Bands, told journalists on the National Environmental Awareness Trust's coastal expedition that extra care had been taken to make sure that, unlike the last regulations, there were absolutely no ambiguities.

A regulation forbidding catching a certain species was now changed to forbidding the possession of that species.

"They can't say they did not catch it themselves, or that they caught it outside Transkei," said Mr. Bands.

"If they have it in their possession, they are liable."

Blitzes

Policing was still a problem, but the Transkei police were to set up a unit which would be trained with nature conservation guards to assist in cracking down on those illegally exploiting the coastline, he said.

Roadblocks and surprise blitzes would be conducted.

Mr. Bands said people who were caught were not in for a pleasant experience.

"In Transkei you will rarely get a magistrate the same day," he said,"so they would probably spend the night in the lock-up before being able to give a statement."

Bilateral

The bilateral agreement with South Africa on acting against foreign fishing trawlers coming in to rape the rich fishing grounds was almost through, he said.

This meant that patrol vessels of the Cape and Natal provincial administrations would, with Transkei air force helicopters, be involved in pursuing and apprehending trawlers fishing illegally in Transkei waters, said Mr. Bands.

Professor Dye said the only reservation he had was that there was no clause preventing people living off coastal resources exceeding limits set for each species.

The head of Transkei's military council, General Bantu Holomisa, said he would allow the Act to be publicly commented on for three to six months.

The regulations specify that:

—No nets whatsoever can be used when fishing, except landing nets for rod fishing.

—The only rock lobster that may be caught is East Coast rock lobster.

Possession of more than five lobsters at a time is now illegal.

—No one may catch, attempt to catch, pursue, possess or disturb whales, dolphins, sea turtles or great white sharks.

—No one may be in possession of abalone or perlemoen.

There are also strict regulations on rod-fishing.

Johannesburg Expanding Water Purification Plant

92WN0203D Johannesburg THE STAR in English 20 Nov 91 p 20

[Article: "R140-M To Be Spent on Water-Purifying Plant"]

[Text] An acknowledged world leader in water-waste purification is Johannesburg City Council, which is currently building an extension to its purification works in Diepsloot at a cost of R140 million.

"The extension under construction is the largest works to be built to date in southern Africa. Its control system will be fully computerised, making it one of the most technologically advanced waste-water purification systems in the world," says Watermeyer Legge partner Ian Rose-Innes.

The plant, located about 20 km north of Johannesburg, will process waste water from as far afield as Germiston, Edenvale, Kempton Park, Midrand, Bedfordview, Johannesburg, Sandton, Randburg, Roodepoort and Alexandra.

It will be phased into operation from November next year, to replace the old plant which has become overloaded.

Designed and built in 1960, with a capacity of 100 Ml a day, the old plant is not designed to cope with the higher water quality required in the '90s.

It was extended in the late '70s, but changes in technology and rapid population growth in the region have caused it to become outdated.

"The new plant uses the latest biological nutrient removal activated sludge technology, in which South Africa leads the world," Mr. Rose-Innes says.

"This technological expertise has been force grown as a result of pressure of circumstances. Most major cities are located on the coast or on a large river, and their waste is simply pumped into the water to dissipate naturally.

"Johannesburg is the only city of its size in the world, apart from Mexico City, which has to use scarce water resources for waste management."

After treatment, the sludge will be processed into compost—another operation in which Johannesburg is a world leader.

"The main disadvantage to human waste as a compost material is the presence of the ascaris intestinal parasite, which is very prevalent in South Africa."

At Diepsloot, however, the sludge will be composted to the point where no viable ascaris remains, when it will be sold for controlled use and used internally to improve the pasture on the neighbouring Diepsloot nature reserve, where the council runs 4,000 head of beef cattle.

The process design for the project has been undertaken in-house by the council, but the balance of the civil and electrical engineering design was carried out jointly by WLPU and Watson Edwards Van der Spuy. Gillis Mason is responsible for the construction.

A feature of the new plant is the safeguards against spillage which have been built into the design.

Any excess flow—caused, for instance, by a storm—will be discharged into holding dams, to be pumped back for treatment before it leaves the site.

By that stage, says Mr. Rose-Innes, the water is so clean it is claimed to improve the quality of the water in the Jukskei River.

"A waste water purification works is a concentrated source of potential pollution—and if the 350 Ml a day to be discharged by the plant were polluted, it would be a major source of trouble.

"With modern water-purification technology, however, the greater challenge is controlling pollution caused by old, blocked and overloaded sewerage systems, industrial dumping and the build-up of waste at squatter camps.

"Engineers need to bring their skills to bear in providing waste-water disposal, potable water supplies and sewage removal services in its informal settlements at a price the nation can afford," he says.

Demand for Water Said To Be Draining Vaal River

92WN0203B Johannesburg THE STAR in English 20 Nov 91 p 25

[Article: "Demand Draining the Vaal River"]

[Text] Water consumption in the region supplied by the Vaal River could increase more than four-fold during the next 35 years—and the area is already consuming far more water than the Vaal can supply.

"The Lesotho Highlands Water Project will go only part way towards meeting the need," claims Professor Des Midgley, consultant to WLPU [Watermeyer Legge Piesold & Uhlmann].

"Demand outstripped local supply in around 1974. Today it is about 2 billion cubic metres a year, and by 2025 demands on the Vaal system are protected to exceed 9 billion cubic metres a year.

"The Lesotho Highlands up to phase three can supply about 2 billion cubic metres; the Vaal's total capacity is 1,3 billion; and the Tugela can provide up to 3 billion cubic metres but it would be very costly and could have considerable socio-political and environmental impact."

In view of this, says Professor Midgley, South Africa must start thinking seriously of bringing water down from the Zambezi. Feasibility studies are already under way, investigating prospects for conveying water through Botswana to Johannesburg, from the Zambezi River upstream of Victoria Falls.

"A scheme like that would make us vulnerable in the present political environment—but once the Eskom power grid is set up across the whole of southern Africa, we and our neighbours will be in a position of mutual dependence."

WLPU is actively involved in the design of phase one of the multi-billion rand Lesotho Highlands scheme, as part of one of the professional teams.

The Department of Water Affairs put the team together on the basis of the professional skills each party had to offer—and the result was a fairly unwieldy grouping of nine local firms.

Three have since fallen away, and the consortium now comprises Ninham Shand, Keeve Steyn, Steffen Robertson & Kirsten, MJ Mountain, Van Niekerk Kleyn & Edwards, and Watermeyer Legge. This makes up half of the professional team—the other half comprising French and British firms.

Under the circumstances, it is remarkable that the project is running on schedule—but partner John Muller says that while the system is "an administrative nightmare" it has made for exceptionally high quality standards.

Design and planning began in 1987, culminating with the start of construction in January this year. Completion of the first phase is scheduled for 1996.

The final completion date for the second and third phases is around 2020, although Mr. Muller says, progress will be driven by demand.

"The project has had a dramatic impact on Lesotho. It has fuelled the building of a major road into the heart of the country, which has made vast new areas accessible. In the past, people took three days to get to town—and now they can do the journey by bus in a matter of hours.

"We are already seeing people moving from the congested, impoverished lowlands into the mountains, where they can enjoy a better quality of life."

Lead-Free Gas Expected To Be Available by 1995

MB1512143091 Johannesburg SUNDAY STAR in English 15 Dec 91 p 9

[Report by Brendan Seer: "Lead-Free Petrol Good News For Health"]

[Text] Environmental group Earthlife Africa has welcomed the Government's decision to introduce lead-free petrol in 1995, saying it is "good news" on medical, technological and economic grounds.

A spokesman for Earthlife Africa in Pretoria, George Ellison, said studies around the world had shown a "close link" between lead emissions from vehicles and "dangerously high" lead levels, particularly in young children. High lead levels appeared to retard normal growth processes, he added.

The introduction of lead-free petrol was also beneficial on technological grounds because, said Mr Ellison, it would lead to the introduction of modern engine management systems which would in turn help save fuel.

On economic grounds, the decision made sense because the current improvements in fuel refining capacity in the country provided the "ideal window of opportunity" for converting these facilities to the production of lead-free petrol. "Meanwhile, the extra running cost of refining lead-free petrol of about two to four cents per litre—can easily be accommodated within the present tax on petrol."

Mr Ellison believed lead-free and leaded petrol would probably have to be provided side-by-side in service stations for "at least another couple of decades" to allow for older vehicles which could not run on lead-free petrol.

"But we must start making a move, if nothing else than to keep up with the rest of the world. One day, everybody will be using lead-free (petrol), and we would have tremendous problems exporting our vehicles if they are not compatible.

New Game Park Embodies 'Revolutionary' Conservation Ideas

92WN0163A Johannesburg THE STAR in English 31 Oct 91 pp 10-11

[Article by Julienne du Toit: "Phinda Pointing the Way for Conservation Efforts"]

[Text] Phinda Izilwane in northern Natal could revolutionise South African conservation efforts.

The 15,000 ha resource reserve in Maputaland, which has its official opening this week, embodies principles that conservationists have talked of, but which have not yet been put into practice together.

They are:

—To make conservation of habitat and animals a commercially viable venture.

—To involve the community of that region in conservation and make them economically dependent on its viability, and

—To restore the land and wildlife to what it used to be.

If a poacher is found with one of the rare nyala, plentiful in the park, it is not taken away from him.

"Our game guards will take one of his goats or sheep. Then he sees the real value of the animal," said general manager of Phinda, Les Carlisle.

Otherwise, as has happened, permission for that particular community to benefit from tree-clearing is taken away. The man is then punished by his own chief.

"Already former poachers are waving cautiously at the guards instead of ducking into the bushes," said Mr. Carlisle.

In national game parks, game guards are often moved around so that they are not intimidated by local communities into turning a blind eye to poaching.

Because of this attitude of reforming poachers, Mr. Carlisle said game guards could be employed directly from neighbouring communities, in this case, poverty-stricken villages in KwaZulu.

About 220 people have already been employed at Phinda, 36 of them game guards. More will be employed when another three lodges are built on the resources reserve.

Phinda is South Africa's first resource reserve—where all the resources are used.

The ilala palm tappers have been allowed to stay on the property to tap the palms for wine, for example, said spokesman Jane Conyngham.

Communities have also been given access to much-needed thatch grass. Phinda management are also planning to help with improving the school facilities in the neighbouring communities with practical contributions such as building materials.

Twenty elephants have already been relocated to the Phinda Izilwane Game Park—the last ones were hunted out in the region 120 years ago.

Three of the "Big Five" are already there—leopard, rhino and elephant—and lion and buffalo will arrive soon, but the accent will not be only on them.

The area intersects four of Maputaland's six different eco-systems—giving Phinda an unusually rich diversity of landscapes.

Many rare suni—a tiny buck weighing only four kilograms—equally rare nyala, crested guinea-fowl, blue and red duiker are to be found there.

There are close to 470 species of birds, including the rare Pels fishing owl, the African finfoot and the Narina Trogon, as well as an infinite variety of insects.

The park is situated between the Lebombo mountains and the Mzinene river which feeds into Lake St. Lucia.

It contains one of the largest areas of dense sand forest and wetlands, bush clump grassland, riverine forest and ilala palm savannah. It also has a high water table, with many natural pans.

Visitors to the luxury lodge will not be restricted to game drives in the morning and evening, but can go out on the river barge for bird-watching, and be flown to nearby Sodwana Bay for scuba diving.

Finance

The financing of the park is also unique. Dave Varty of Londolozi and Alan Bernstein, managing director of J.H. Isaacs International, have created the Conservation Corporation.

This venture, the first of its kind in South Africa, is raising millions in equity through public investment in it, and is backed by the international bank Hambros.

The Zoological Society of London has established Phinda as its southern African resource base, and the Phinda project has been endorsed by the Southern African Nature Foundation and the Wildlife Society of Southern Africa.

Tourism To Help Promote Wildlife Conservation

Setting Aside More Land

92WN0175A Johannesburg THE WEEKLY MAIL in English 15-21 Nov 91 pp 1-2

[Article by Eddie Koch: "Getting Rid of Cows To Rustle Up Tourists"]

[Text] **A stretch of veld, a few reconditioned Landrovers and a bunch of tourists, each with a fistful of dollars. These ingredients have the makings of a fast growing sector in South Africa's otherwise flagging economy.**

Mines are closing down, thousands of jobs are being shed in the metal industry and white farmers are selling their land to get out of debt. But around the country, entrepreneurs are buying wild animals and returning them to land that is lying fallow.

It's called ecotourism. It's a boom industry that provides a key for preserving the country's dwindling plant and animal species. It has the potential to promote development and job-creation for impoverished rural communities.

Phinda Izilwane—Zulu words which mean "the return of animals"—is the name given to a multi-million rand game lodge set up to sell the attractions of Maputaland, an exquisite stretch of ecological diversity in northern Natal, to overseas tourists.

Then there's the Madikwe Game Reserve in the western Transvaal, where the Bophuthatswana Parks Board is setting up a new game reserve on the basis of a land-use study which showed that tourist safaris will provide economic returns far in excess of the profits to be made from cattle ranching.

And last month saw the opening of Bakubung, the closest game lodge to Johannesburg next to the southern entrance of the Pilanesberg Game Reserve, after it was built in record time to cater for the overflow of people trying to find accommodation in or around that reserve.

These are the economics that are driving a return to the wild by big business.

—A team of ecologists and economists who did a feasibility study for the Madikwe Reserve found conservation to be the best method of land use for the area, about 7,500 ha of marginal white farming land between Zeerust and the Botswana border. According to their report, cattle farming would generate 80 jobs on the land while six safari lodges that are planned for the reserve have the potential to employ 1,200 people.

—In 1990 more than a million tourists visited South Africa from overseas, bringing with them a R2.5-billion injection of foreign exchange into the economy. Noel de Villiers, the chairman of Satour [South African Tourist Board], believes the figure will double over the next four years as the country transforms itself into a democracy. If he is right, this will bring in another R2.5-billion and create some 300,000 jobs.

—The Conservation Corporation, set up by David Varty of Londolozi fame and Alan Bernstein from JH Isaacs, decided to proceed with the Phinda Resource Reserve in Maputaland after conducting research which showed that the Kruger National Part turns away four out of every five requests from visitors in peak season and private game lodges have increased their revenue by 1,000 percent over the last 10 years by picking up the backlog.

—Gert Brumme, director of operations for Pilanesberg Resorts, says his company built the Bakubung Game Lodge in just under a year to cater for local tourists as his other project, the kwaMaritane resort, has sold more than 80 percent of its timeshare units and experiences an almost total occupancy rate all year round.

Ecotourism has a number of advantages over alternative industrial uses for large sections of South Africa's countryside.

It is extremely environmentally friendly. All the new projects involve protecting plant and animal species that exist on the land. Most of them bring in new species. Phinda's team of game rangers don't spend all their time taking tourists around the resort. They also weed out invading plants, manage grasslands that were neglected by previous owners and fill in dongas left by badly built roads.

The commercial value of land utilised for conservation and the game lodge industry will be a powerful factor in any effort to increase the amount of land set aside for nature reserves.

The proportion of South Africa's land surface reserved for the preservation of nature is currently between four to six percent. The International Union for the Conservation of Nature is urging all countries to aim at setting 10 percent of their land aside for conservation in order to stem the destruction of species that is taking place worldwide.

Ecotourism is also a more sustainable activity than cattle farming, which exacts a heavy toll on indigenous vegetation, and controversial mining projects, which can obliterate rare ecosystems in rural areas.

The Phinda Reserve is located in the middle of a rural belt that will eventually form part of the Greater St Lucia Reserve which is being punted by conservationists as a more stable and sustainable alternative to the controversial scheme by Richards Bay Minerals to strip mine rare dune forests on the eastern shores of St Lucia for titanium.

"Ecotourism is just as stable as mining, if not more so," says Earthlife Africa representative Bryan Ashe. "We have just seen the bottom fall out of the platinum market and many mines are closing down. So who is to say that the same won't happen to titanium."

Johann Klopper, chief executive of Pilanesberg Resorts, says this about the decision to build Bakubung: "We believe this is the right route for long-term survival. The tourism option of land utilisation here is superior to any other... Even mineral deposits have a finite lifespan. Wildlife, well managed, can live forever."

The other major advantage of conservation as a form of rural land-use is its potential for generating employment and economic development in otherwise depressed areas. The Bongani Game Lodge, set up by the government of kaNgwane on the southern border of the Kruger National Park, is a good example of how community development can go hand-in-hand with conservation.

The lodge is jointly owned by the kaNgwane Parks Board and the tribal community that lives adjacent to the park. Revenues, shared on a 50-50 basis, are ploughed back into social projects such as clinics and creches. Local people are trained and employed in the resort. People are allowed into the reserve to harvest grass, roots and wood on a managed basis.

Some of the other ecotourism projects are, to some extent, trying to emulate the trend established at Bongani.

Phinda project's David Varty is attempting to attract investment of some R50-million from Europe and the United States for the Maputaland scheme.

Central to Phinda's appeal is the directors' claim that the project will improve the quality of life for rural people living next to the reserve. It was created on land formerly owned by a white safari operator and did not involve any removals to make way for the reserve. The Phinda Lodge will provide jobs for 230 people by the end of the year, generating R1.38-million in salaries.

Plans are afoot to create business enterprises that will be run jointly by local entrepreneurs and the management of the reserve. These include butcheries, transport, brick-making, charcoal manufacture (already underway) as well as poultry and fish farming.

Director Kevin Leo-Smith, who conceived the original plan to transform Phinda into a "resource reserve", says there are no unions currently active at the lodge but he is quite willing to negotiate work conditions with organised labour.

People from surrounding communities are allowed into the park to collect firewood and medicinal plants. The access is monitored and restricted and people are expected to pay affordable amounts for what they reap.

All of this is far removed from the situation under the old land owner, who prohibited access to his farm. As a result, rangers at Phinda say subsistence poaching has declined considerably. They used to find scores of snares every day when they began working. Now it is unusual to find animals that have been trapped by poachers.

"Up till now South African business has concentrated on the global competitive advantage it has in non-renewable resources such as the country's mineral wealth," says Frank Vorhies, an economist at the University of the Witwatersrand. "Attention is at last being paid to the renewable resources such as wildlife in which we also have a global competitive advantages."

Involving Villagers

92WN0175B Johannesburg THE WEEKLY MAIL in English 15-21 Nov 91 p 2

[Article by Eddie Koch: "Getting to the Grassroots of the Problem"]

[Text] Civic groups representing ordinary men and women are looking at ways in which tourism can be used to protect natural resources and promote development in depressed rural areas.

Late last month a number of organisations in the Maputaland region of Natal—including village committees, local tribal authorities and officials from a non-government development organisation—met to discuss ways in which villagers can take part in conservation and tourism projects.

Maputaland is an area of rare ecological beauty which stretches from the Lebombo Mountains in the west, across Natal's northern border with Mozambique, to Kosi Bay in the east.

The conference, one of the first to involve "grassroots" communities in environmental planning, decided to look into the creation of a Conservation Trust to ensure that conservation projects in the Maputaland region look after the interests of rank-and-file residents.

It is likely to have a considerable impact on conservation thinking in the country as Maputaland—which possesses an interlinking chain of five rare ecosystems, including some of southern Africa's only coral reefs and turtle breeding grounds—is the focus of ambitious plans to build a vast nature reserve in Natal.

Participants—who included tribal chiefs, peasant farmers, professional conservationists and development workers—said they recognised the private sector had an important role to play in promoting conservation programmes.

But they stressed that, for these projects to win the support of local people, they had to provide tangible benefits to residents and be planned after "adequate and meaningful negotiation and consultation".

Community leaders also insisted that ecotourism schemes should "not deprive residents of the benefits that they would ordinarily derive from their own sustainable exploitation of resources in the area".

If the conservation trust is set up it will be "representative of the tribal authorities and residents of Maputaland" and "oversee all aspects of the conservation and tourism and protect the rights and interests of the people of Maputaland in that regard".

Delegates to the conference—who came from the Tembe Tribal Authority, the Maputaland Development Organisation and the Combined Pongola Water Committees to attend the conference in the tribal hall at Manguzi near Kosi Bay—stressed it was "the inalienable right of the

people living in any area to be fully involved in the planning, management and implementation of conservation measures in their area".

The conference decided to unite various tribal authorities in the region and work with them to draft "a comprehensive policy of conservation and tourism acceptable to the people of Maputaland".

Illegal Trade Monitor

92WN0175C Johannesburg THE WEEKLY MAIL in English 15-21 Nov 91 p 2

[Article by Eddie Koch: "Clamp on Illegal Trade"]

[Text] An independent office to monitor trade in illegal ivory, rhino horn and other endangered species from South Africa will be established in Johannesburg late this year.

The office, set up by the Southern African Nature Foundation (SANF), will be affiliated to the world's largest wildlife monitoring programme, the Traffic Network.

The objective of the project is to rigorously monitor illegal trade in endangered species and to inform the police and public about these activities.

"Our beauty is more than just a pleasure for the eye. It provides Africa with employment and opportunity—and if properly managed, could provide prosperity for many more," says the SANF.

"But the African cornucopia is being drained—by an illegal trade in wildlife that is driving many plant and animal species to the brink of extinction. And South Africa is an outlet for the major smuggling routes."

The Traffic monitoring project will be supported by the Endangered Wildlife Trust and the Wildlife Society of Southern Africa and will be located at the EWT's office in Johannesburg.

Tembe Elephant Park

92WN0175D Johannesburg THE WEEKLY MAIL in English 15-21 Nov 91 p 3

[Article by Kevin Carter: "Protecting Africa's Pachyderm"]

[Text] Decimated by poachers and the war in Mozambique, Tembe Park's elephants are all that remain of the herds that once roamed from Tanzania to Natal. Now the reserve has opened its gates to the public.

He looked like a loner at first, suddenly appearing at the water's edge, trunk curved high above his head, its tip twisting and turning periscope-like, to test the wind.

The great ears flapped. From where we were, on a wooden platform high in the branches of a tall tree across the water, we could hear the gentle percussion. The wind was with us. Down below, African jacanas tittupped over the water-lilies. Across the water, above the great head, vervet monkeys tumbled in an acacia tree, serenely ignored by a fish eagle poised motionless on a branch. Out of the reeds emerged a second bull, moving slowly and deliberately to join the first in delicately siphoning water into his mouth. Green pigeons burbled in the trees. Somewhere, a purple-crested lourie called.

The stage was being set, but none of us were prepared for the show that followed.

Two more bulls came ambling into view. When elephant meet, they greet: a gentle caress with the trunk. But there was something in the air that day, and when one bull's caress turned into a playful shove, the game was on.

First one, then the others came plunging into the water, churning its depths with their huge bodies. The water washing over their backs, they entwined trunks and ducked, pushed and shoved one another, their mammoth forms black and glistening in the sun. Leviathans at play in the heat of the day, in a majestic water ballet seen only by us, the monkeys, the motionless fish eagle—and the jacanas, dithering about the radical rearrangement of their water-lilies.

We were in Tembe Elephant Park, set high in Maputaland, where the northern reaches of kwaZulu touch the border with Mozambique. Totalling 29,000 ha of dense sand forest, woodland, savannah and swampland, it was proclaimed in 1983 for the specific purpose of ensuring the survival of the last of the Natal elephant—and the rare suni antelope.

Despite its proclamation, Tembe remained off-limits to the public until only recently. Now groups of up to eight people can enter the park, providing they have a four-wheel drive vehicle to cope with the sandy, rutted roads. Accommodation is a tented camp with hot and cold running water. Visitors must bring their own food and drink, but everything else is provided, including the services of a cook.

The kwaZulu Bureau of Natural Resources, which administers the reserve, intends increasing the number of camps—but there are no plans at this stage to turn Tembe into a Kruger National Park clone. Part of the magic of the place depends on its remoteness and wildness, reflected in the skittishness of the game.

In Kruger, with its tarred roads and many tourists, some animals are so tame motorists can nudge them out of the way with their bumpers. Not so in Tembe. Visitors may only leave their cars at specially demarcated places, and must be accompanied on outings by a game scout well-versed in dealing with an unpredictable pachyderm.

Tembe's elephant—their numbers are estimated at about 90—are all that remain of the once-great herds which roamed the length and breadth of southern Africa's

low-lying eastern flank. Recent decades have seen them decimated by the war raging in Mozambique and persecuted by poachers.

Today some of Tembe's bull elephant still carry the scars of bullet wounds. Others have foreshortened trunks—courtesy of poachers' snares.

Ed Ostrosky is the kwaZulu Bureau of Natural Resources' principal conservator in charge of the Tembe and Ndumo complex. The Ndumo reserve lies almost adjacent to Tembe, separated by a stretch of land known as the Mbangweni corridor, which the bureau is negotiating to have incorporated into the complex.

One of Ostrosky's chief priorities is to link the two reserves. Another priority is maintaining the security of the reserve. Sited as it is on an international border, the threat from poachers and other malevolent forces is severe.

Tembe is entirely fenced off with about 95 km of solar-powered electric fencing. The aim of the fence is to keep the elephant within the reserve's borders. However this has also been interpreted as an attempt to keep local people out, and has caused some tension between the bureau and local residents.

The relocation of people who were living within the boundaries of the reserve when it was proclaimed, and squabbles over compensation and loss of tribal lands, made Tembe's proclamation somewhat controversial. According to Ostrosky, however, the bureau's credibility received a boost when people realised the fence was keeping the elephant away from trampling their crops. There have been no breakouts by Tembe elephant on any of the reserve's borders with South Africa since the area was fenced.

In terms of the bureau's conservation policy, local people are allowed, on a controlled basis, to enter the reserve under the protection of a game scout in order to collect reeds for thatching, muti plants and other natural resources.

In addition, 25 percent of whatever revenue Tembe earns from tourism will be diverted to the local tribal authority, to be spent on providing or improving communal facilities.

- To get there, one travels about 80 km from Jozini to the park's gate at Sihangwane. There is a R300 night minimum charge; otherwise the rate is R75 a person. Bookings can be made by phoning (0331) 946698 or 946204.

New Project in Maputaland

92WN0175E Johannesburg THE WEEKLY MAIL in English 15-21 Nov 91 p 3

[Article by Eddie Koch: "The Return of the Animals"]

[Text] Maputaland—It's an ecologist's paradise that stretches from the Lebombo Mountains in the west across the northern plains of Natal to sweeping white beaches and some of the only turtle breeding grounds in southern Africa in the east.

The Phinda Resource Reserve, located some 40 km north of Kosi Bay in the middle of this environmental oasis, is a new project designed to make money by maintaining the diversity of plant and animal species that survive in Maputaland.

The reserve will be stocked with the "big five" to attract dollar-carrying tourists from overseas. But, as the name implies, Phinda Izilwane's (the return of the animals) main appeal is to those interested in the preservation of a wide range of plant and animal species.

Located on 14,000 ha of land between the Mkuze Game Reserve and state forests at Sodwana, the Phinda project offers visitors access to rare ecosystems.

"Maputaland's unspoilt beaches have been the breeding ground of the giant Leatherback and rare Loggerhead turtles for millions of years," says Phinda's brochure.

It also boasts access to coral reefs off Sodwana and Kosi Bay. Visitors will have the option of driving to Sodwana where there are facilities for a one-day course that prepares you for diving into the reefs.

Historically, all the large mammals as well as 15 species of antelope occurred in the Maputaland region. Phinda plans to restock the reserve with all of these species but it already has rhino, leopard, hyena, giraffe, relatively rare nyala and the rare suni antelope.

The reserve contains five ecosystems including flood plains, mountain grass zones and rare sand forests that host a unique combination of tree species.

There is also a navigable stretch of river which now has a cruise boat from which tourists can sip gin and tonic as the sun sets over the reserve.

Phinda is firmly located at the upper end of the affordability range with a lodge that boasts indigenous cuisine, luxury accommodation and custom-made game drives and expeditions into the reserve.

The revenue derived from those who can afford to visit Phinda will be ploughed back into the protection of natural resources.

According to Phinda's directors, the reserve brings together three fundamental principles of commercial conservation: commercial viability; ecological harmony and sustainability; and the incorporation of local communities as partners in some of the reserve's economic activities.

Kruger Park, SADF

92WN0175F Johannesburg THE WEEKLY MAIL in English 15-21 Nov 91 pp 4-5

[Article by Eddie Koch: "Time To Make Peace With People and the Environment"]

[Text] South Africa's game reserves will have to be untangled from the complex ties they have with the SADF if they are to survive the country's current period of political turmoil.

A new BBC television documentary about South Africa's game parks begins with the sequence of a crowd toyi-toyiing in the gravel road that separates their township from the Kruger National Park and singing about how, when freedom has been won, they will reclaim their land on the other side of the fence.

These angry people went out into the streets to protest about "Kruger"—a place where animals can roam in freedom but people who venture over the border can be arrested for collecting firewood—because they associate game parks with apartheid: forced removals, clamps on freedom of movement and unfriendly security forces. These negative perceptions of nature reserves, which will create serious problems for conservation when rural people in desperate need of more land acquire political muscle, are nurtured by the fact that many of the country's game parks are militarised places where Hippos filled with soldiers are almost as abundant as the beasts that the troop carriers are named after.

The Kruger National Park has a commando, the Kruger Park Military Unit, with its headquarters located near the Skukuza tourist camp. Members of this unit patrol the reserve in search of fugitives from the war in Mozambique.

Many of the black members of the Kruger Commando are trained by instructors from the SADF's 111 Battalion near Amsterdam in the eastern Transvaal. The presence of professionally trained soldiers in the park clearly acts as a major deterrent to syndicates of big-time elephant and rhino poachers who operate out of Mozambique. But it also leads to widespread suspicion in the minds of rural people.

A controversy that erupted last year is a good example of the misunderstandings that can arise. A group of youths in Gazankulu, who responded to adverts on Radio Tsonga calling on young men to join the Kruger Commando, thought they were going to be trained as game rangers. Instead they found themselves at the 111 Battalion camp and, believing they were being trained as a "third force" fighters for clandestine missions against the African National Congress, went AWOL and told reporters about their suspicions.

The SADF responded with vehement denials and an invitation for journalists to visit the training camp. The strength of the denial and the army's willingness to open its camp to outside scrutiny suggest there were no sinister happenings at this camp. But even if it is true that the recruits were confused about the purpose of the training, their reaction illustrates how wary rural people are about paramilitary activities in game reserves.

In the Maputaland district of northern Natal there is a widespread evidence of military activity in game reserves near Mozambique's border. THE WEEKLY MAIL has established that the department which administers these reserves, the kwaZulu Bureau for Natural Resources (KBNR), has a "secret services" division whose job it is to spy on ivory and rhino horn smugglers—as well as local political activists. Many of the officers who run this unit are highly trained soldiers who fought in Rhodesia's elite counter-insurgency brigades.

Earlier this year THE WEEKLY MAIL conducted an investigation that found members of the kwaZulu Police had been trained by SADF intelligence officers in the art of "fighting terrorists" and were then housed at a secret base near the town of Mkuze on property now administered by the KBNR.

The kwaZulu conservationists are fulfilling an important role as the game reserves in this area of Natal contain some rare species of game, birds and trees. In strict conservation terms many of the KBNR's reserves are great success stories. (See page 3.)

But military activity in and around the parks leads to widespread resentment and has helped to fuel a strong antagonism that exists between local residents and rangers from the KBNR.

kwaZulu officials were reluctant to comment on these details when questioned by THE WEEKLY MAIL. "It is not bureau policy to comment publicly on conservation, security or staff matters for obvious reasons," was the reply from KBNR director Nick Steele.

In Gazankulu, similar mistrust about the training of armed game scouts pervades the villages that border the Kruger National Park. In the village of Hluvukani one can see posters urging residents to stay away from work in protest against the alleged abduction and killing of a poacher who went hunting in the homeland's Manyeleti Game Reserve.

"The shooting rangers are being used to harass members of the ANC and other organisations opposed to the bantustan government," is the way civic leader Rodwell Mnisi explained the poacher's disappearance.

The SADF's armaments manufacturer, Armscor, also makes use of nature reserves to test bombs, rockets and other weapons that it produces.

Armscor's subsidiary Somchem, which tests propellants for ballistic missiles at the Kogelberg Reserve in the West Cape, is currently the focus of a supreme court action. Ratepayers from Rooi Els are demanding that Armscor's multi-million-rand plant be shut down because of the noise, pollution and contamination of water in the reserve caused by the explosions.

The De Hoop Reserve in the western Cape is also an Armscor missile testing site. That's where South Africa, in conjunction with Israel, developed and tested an intercontinental missile capable of carrying nuclear warheads. During the rocket testing, fishermen from Waenhuiskrans were prevented from sailing over the richest reefs in the area and this led to serious conflict with local SADF officials at the time.

And until recently parts of the St Lucia Reserve, which was only this year handed back to the Natal Parks Board, was also used by the army as a missile testing site.

There is another link between military activity and weaknesses in South Africa's conservation programmes, writes Professor Jacklyn Cock, of the University of the Witwatersrand.

She points out that in 1990/91 the Department of Defence received nearly 20 percent of the total budget.

The Department of Environmental Affairs received one third of one percent in the same period.

"One of the greatest threats to our environment is war and the mobilisation of resources for war," says Cock. "There are similarities between violence against people and violence against the environment."

Mining Threat

92WN0175G Johannesburg THE WEEKLY MAIL in English 15-21 Nov 91 p 5

[Article by Beathur Baker: "Mining Threat to Wetlands"]

[Text] In spite of strong opposition the future of Chapman's Peak in the Cape looks bleak as Serina, a subsidiary of Sanlam, seems set to start kaolin mining in the area as soon as final government approval is granted.

A proposed area of 27 ha on the slopes of Chapman's Peak near Noordhoek, adjacent to Chapman's Peak Drive, is to be cleared by Serina for this purpose. If open cast mining goes ahead, there is no doubt that this environmentally sensitive area will be damaged, according to the Save Chapman's Peak Action Group.

The local community, including medical practitioners and parents, expressed concern about the health risk posed by kaolin dust. But their concern has been rejected by Serina. Kaolin is a pure white clay and occurs as a fine powder made of tiny crystals. It is widely used for making higher grade pottery or for whitening paper.

No conclusive medical study on people living on or near kaolin mines has been done to date. However, inhabitants of Sun Valley—a residential area near Brakkekloof kaolin mine (which also belongs to Serina), have steadily complained of escalating asthmatic and bronchial problems.

Brakkekloof has been mined out—hence the decision by Serina to relocate and mine their next site three kilometres away on Chapman's Peak.

Wetlands, home to migratory birds and an integral part of the ecological chain, lie some 500 m downstream from the proposed mining site. Now the wetlands will be the recipient of the kaolin effluent as it flows down the De Goede Hoop River.

The Save the Chapman's Peak Action Group say in their report that: "Alternative sites have not been properly evaluated; rehabilitation will be very expensive and visual scarring and terracing will remain" and that "the total lifespan of the mine is close to 30 years".

They are also concerned about the extra water supplies required for the mining process and believe the total income from tourism in the area outweighs the amount earned from kaolin.

The group endorses their opposition with a petition carrying 55,000 signatures and support from major business and interest groups such as the South African Botanical Society, Wildlife Foundation, Cape Town Chamber of Commerce, Old Mutual, Pick 'n Pay and local municipalities.

They all believe that "the social, historic and economic characteristics of the valley are going to be irrevocably altered, to the detriment of the locals and non-residents".

A consultant for engineering company Steffen Robertson and Kirsten says documents were handed to the Department of Mineral and Energy Affairs at the end of September but that no decision has been made yet.

She says that if the department does give permission for Serina to go ahead with mining it will probably begin in two or three years' time.

Seven additional reports covering aspects concerning kaolin mining on the slopes of Chapman's Peak are also with the Department of Mineral Affairs. They focus on factors such as water and effluent treatment, rehabilitation and revegetation, geotechnical engineering, a mine planning study and a groundwater study.

Trade in Endangered Species Reaching 'Staggering' Levels

MB2812120291 Johannesburg SATURDAY STAR in English 28 Dec 91 p 5

[Mandy Jean Woods report: "Illegal Ivory Trade Tip of Iceberg"]

[Text] Trade in endangered species in South Africa is reaching staggering proportions.

It now goes way beyond just ivory and rhino horns, and includes rare plants, live reptiles and birds.

Southern African Nature Foundation (SANF) campaigns officer Kim MacDonald told SATURDAY STAR: "South Africa is now internationally recognised as a major laundering point for illegal trade in endangerd species because of its excellent transport systems."

The most notorious illegal trade in endangered species is in ivory and rhino horn. Before the international ban on ivory came into effect last year, nearly all of the world's African elephant ivory (84 percent) came from eastern and southern Africa. About 90 percent of the world's regulated trade in leopard skins and most of Africa's supply of crocodile skins came from the region.

But trade in other endangered species has increased markedly in recent years. South Africa is the world's second-largest importer of exotic birds—legal and illegal—like rare cockatoos and parrots from Indonesia and protected Peruvian green-winged Macaws.

South African trade in parrots alone reached almost 1500 [number as given] birds. At least 10 percent of these die during transportation as they are stuffed into oil drums, plastic bags, stockings, cigarette cartons, boxes, suitcases or whatever is available to smugglers.

Some birds are even mutilated by smugglers—they pull out their wings to disguise certain markings—in order to make recognition by customs authorities difficult.

South Africa is Africa's leading source of exotic plants for export. Interestingly, the country has a bigger trade in exotic plant than in wildlife.

The estimated value of worldwide wildlife trade is $5 billion (about R[rand]13,8 billion), with about a third of that representing illegal trade. It is not uncommon for 80 percent of animals to die during transportation and, if they do survive, they have often suffered stress, dehydration, and crushing SANF chief executive John Hanks says.

Environment Director Qu Geping on State Environment, Development Policy

OW0412224591 Beijing XINHUA Domestic Service in Chinese 0933 GMT 4 Dec 91

[By reporter Zhu Youdi (2612 1635 2769)]

[Text] The State Environmental Protection Bureau, the State Council Information Office, and the All-China Federation of Journalists jointly held a press conference for domestic and foreign reporters today. Qu Geping, director of the State Environmental Protection Bureau, answered reporters' questions on China's environnment and development.

Qu Geping said that the Chinese Government has made protecting the environment a basic state policy, upheld the principle of striving for a coordinated development between the economy and environment, and adopted a series of measures aimed at controlling environmental pollution and preventing ecological damage. To improve the environment, the state has increased the investment amount in protecting the environment from 17 billion yuan during the Sixth Five-Year Plan to 47 billion yuan during the Seventh Five-Year Plan. The investment in the prevention of environmental pollution is expected to increase to 80 billion yuan during the Eighth Five-Year Plan. This has put China in the lead among developing nations in the effort to protect the environment. China registered phenomenal economic growth and population increase in tandem during the last decade, but it has also greatly and effectively prevented further deterioration in ecology, made partial improvements in the environment, ensured sustained social and economic development, and enabled a steady and qualitative rise in people's living standards. Qu Geping, however, pointed out that the environmental situation in China at present is still grim and that China is still faced with many problems. For example, some 1.5 million square km [sq km] of land in the nation suffer from soil erosion; China's forest coverage rate is only 12.98 percent; and a vast stretch of land in the nation is threatened by encroaching desertification. Qu Geping pointed out that compared with many developed countries, China still lags far behind them in the areas of dealing with atmospheric pollution and city beautification.

When replying to a foreign reporter's question on the Three Gorge Project and on evaluating environmental protection, Qu Geping said that people have shown great concern over the development of the Three Gorges. He said experts have been asked to evaluate the environmental report. The Three Gorge project will have both favorable and unfavorable impacts on the environment. If the threat of floods to the middle and lower reaches of the Changjiang can be effectively prevented, then hydropower will be the cleanest energy because it reduces pollution to the atmosphere and environment caused by coal burning; it will help improve the environment. But the Three Gorges project will possibly affect some fish species in the Changjiang. Another problem is that improper development at the upper reaches of the Chanjiang would exacerbate soil erosion and bring forth the problem of siltation. China is rather cautious about this project. He said China would make a comprehensive check on all facts, solicit different opinions, carry out tests to reduce errors, and effectively solve the problem between environment and development in the Three Gorges area.

When replying a question on the development of Shanghai's Pudong and on preventing water pollution, Qu Geping said that the Shanghai municipal government had adopted two measures in recent years to resolve the problem of water pollution in Shanghai. The first measure was moving the water source to the upper reaches of the Huangpujiang where the water is still not polluted; the project was completed. The second measure is treating the Suzhouhe, the seriously polluted river that flows through the urban area of Shanghai. Investment in these two projects has exceeded 2 billion yuan. Before Pudong was developed, an evaluation of the development of Pudong to the environment was carried out. Shanghai is striving to build a new Pudong that is both economically developed and environmentally beautiful. If all proceeds according to the present plan, the environment of Shanghai will be continually improved.

When touching on environmental pollution in Beijing Municipality, Qu Geping said that according to monitored data, people in Beijing enjoy good air quality in spring, summer, and autumn. Beijing has greatly improved its water quality, urban environment, and stepped up greening efforts in recent years. Beijing gets rid of such problems as smog and uncollected garbage which have greatly troubled some major cities in the world. Beijing's atmospheric pollution in winter is mainly caused by burning coal. Therefore, the city is stepping up efforts to supply central heating to its citizens. Beijing spent 5 billion yuan in pollution prevention during the Seventh Five-Year Plan. It will continue to invest 13 billion yuan over the next nine years to improve the environment. A loan application of $150 million with the World Bank to deal with water and atmospheric pollution in Beijing has been approved. The World Bank loan and domestic funds for this project total 2 billion yuan.

Official Indicates Three Gorges Dam Project To Go Ahead

HK0412100091 Hong Kong AFP in English 0927 GMT 4 Dec 91

[Text] Beijing, Dec 4 (AFP)—A Chinese official Wednesday acknowledged strong opposition to a controversial project to build one of the world's largest dams, but his remarks pointed to approval following years of debate.

State Environmental Protection Bureau director Qu Geping told reporters that a decision on the Yangtze river Three Gorges dam project would be made public early next year after a "final feasibility study."

"Many environmental protection experts... were firmly opposed" to the dam because they believed "feasibility studies had not been adequately conducted and that great disasters could result from the project," Qu said.

The official said a 65-member committee had been formed to conduct the final study on the environmental impact of the dam. It would be completed within two to three months, ahead of a March meeting of China's parliament.

"We will ratify the report only when we can get 100 percent guarantees from the relevant construction units that proper measures will taken" to protect the environment, Qu said.

Nevertheless, his statements indicated that the majority of experts solicited by the government favored the construction of the 11 billion dollar hydroelectric dam, as have recent remarks by Chinese leaders.

He said the dam would make a "tremendous contribution to environmental protection in terms of electricity production" and controling floods, adding that the government had worked hard to "minimize" any mistakes.

Qu dismissed as "tiny" the possibility of an earthquake affecting the dam and said that despite difficulties, millions of subsistance farmers above and below the dam site could be relocated and allocated new jobs.

Trial resettlement has already started, he said.

Qu said "it seems that a lot of people are in favor of building a high dam," which he said was "more defensive in terms of electricity, flood control and irrigation." He cited the height of 185 meters (610 feet), which would make the dam one of the tallest in the world.

The drawbacks he said were the submerging of scenic landscape, the possible extinction of rare river fish and greater silting. The Three Gorges area is located where China's longest river squeezes through tall canyons in Sichuan and Hubei provinces.

The speaker of China's parliament, Wan Li, said in August that work on the hydroelectric dam should be launched as soon as possible, citing severe flooding on the Yangtze this year that left hundreds dead.

Pollution From Township Industrial Enterprises Increasing

HK1312001591 Beijing ZHONGGUO XINWEN SHE in English 1447 GMT 12 Dec 91

[Text] Beijing, December 12 (CNS)—With the development of township industrial enterprises in China, the discharge of "three types of waste", namely waste gas, waste water and waste residues, have grown increasingly serious while some regions have suffered partial environmental pollution on a considerably serious scale.

This was the finding of a survey just completed on pollution sources from rural industries throughout the country.

It is likely that the total output value of township industries in the country will exceed RMB 1,100 billion this year, accounting for a quarter of the gross social output value, one-third of the total industrial output value and three-fifths of the gross rural social output value, the Deputy Director of the Rural Enterprises Department under the Ministry of Agriculture, Mr. Ping Xin, said.

In some townships where rural industries have become well- developed, Mr. Ping said, the density of enterprises was too great with an irrational layout and pollutants were in no way dealt with naturally. The comprehensive utilization rate of resources was low in the process of exploration and smelting in regions where mineral resources were abundant, while the discharge volume of pollutants was big. Old-fashioned production technology and equipment employed by some rural enterprises resulted in great consumption of materials and energy which in turn caused environmental pollution. As township enterprises covered a wide scope both in terms of numbers and in area and were integrated with agricultural cultivation, there was little room for the proper disposal of industrial waste water, waste gas and waste residues, thus posing direct hazards to the agricultural environment.

The survey shows that though the proportion of release of the "three wastes" from rural industries among the total discharge volume of such wastes across the country basically remained at a level similar to that in 1984, the absolute release volume of such wastes saw a sizable rise including a gain of 200 million tonnes in waste water, an increase of 550 billion standard cubic metres in waste gas and a growth of 65 million tonnes in residues. In some places over-burdened with pollution, there was little alleviation of environmental pollution mainly due to lack of effective administration and handling technology, while pollution problems existing in some occupations were more prominent.

Experts have appealed for strict restrictions on the development of enterprises which consume vast amounts of energy and cause serious pollution, while at the same time the authorities should strongly promote anti-pollution technology applicable to rural industries and set a deadline for pollution-ridden occupations and regions to solve this problem. Major entities responsible for serious pollution should also be properly dealt with.

'Immediate' Control of Farmland Pollution Urged

HK1512030591 Beijing CHINA DAILY in English 14 Dec 91 p 3

[Report: "Call To Reduce Farm Pollution"]

[Text] The improper use of pesticides, fertilizer and plastic sheeting has caused pollution to China's

farmland, prompting experts to call for immediate efforts to prevent further pollution, China Environment News reported.

Each year in the past 10 years, the paper said, pesticides were used on about 153 million hectares of farmland to prevent damage caused by insects and rodents and the diseases they spread.

About 6 percent of the total grain output, 10 percent of the cotton output, and 20 percent of total vegetable output were saved each year because of the use of pesticides.

Although pesticides played an important role in increasing output, a considerable portion of them spread into the natural environment causing pollution.

An investigation carried out by the Ministry of Agriculture in 1990 disclosed that about 6 million hectares of farmland throughout the country were being polluted by pesticides.

At present, only 30 percent of fertilizer used on farmland is being applied effectively. The remaining 70 percent is going into the atmosphere, soil, rivers and lakes.

Throughout the country, 1.6 million hectares of farmland were polluted by bad quality fertilizer, the paper said.

The using of plastic sheeting is also affecting the soil. According to statistics, 20 to 30 percent of plastic sheeting used for production was left in the soil.

For every hectare of farmland, there are 75 kilograms of plastic sheeting left in the fields.

Experts predict that by the year 2020, pollution caused by pesticides, fertilizer and plastic sheeting will still exist; however, the situation will be somewhat eased if certain measures are taken.

To solve the problems, experts suggest that more methods which use the natural enemies of pests rather than chemical pesticides should be adopted to prevent damages caused by pests. Production of good quality fertilizer should also be encouraged.

And new technologies should be adopted to produce tougher plastic sheeting which farmers will be able to re-use rather than leave in the soil as is the current practice.

REGIONAL AFFAIRS

China Blamed for Increased Carbon Dioxide Over Korean Peninsula

SK1712021091 Seoul THE KOREA TIMES in English 17 Dec 91 p 3

[Text] The presence of carbon dioxide in the atmosphere over the Korean peninsula is higher than normal and increasing steadily, mainly due to the gas blowing in from mainland China.

The finding was revealed in a paper on the presence of carbon dioxide on the peninsula by Prof. Chong Yong-sung, director of the Environmental Science Research of the Korea National University of Education in Chong-won, Chungchongpuk-to.

According to Prof. Chong, the annual average of 361 ppm (parts per million) of carbon dioxide here is in excess of the 353.5 ppm measured by the National Ocean and Atmosphere administration in the United States.

The measurement is comparatively higher than those taken by the Ryori Observatory in Japan where the readings ranged from 358.64 and 365.32 ppm, he noted.

The trend is concerning since carbon dioxide is believed to be the main cause of the greenhouse effect, a phenomenon denoting global warming.

The paper, based on a joint research program by the institute and American and Chinese environmental authorities, showed conclusive evidence of the environmental influence for the first time.

Another paper involving environmental influence from China was presented by Chong at a recent regional conference under the tital of "On the Transport (from China) and Deposition of Yellow Sand."

Explaining the climatic effect, Prof. Chong said the population in mainland China doubled over the past 40 years and the production of coal expanded by 20-fold to some 1 billion tons per year.

Other industrial activities which result in the emission of carbon gases and other air pollutants, including oil refining which has surpassed 100 million tons per year, is constantly increasing, he elaborated.

Prof. Chong said, "The direction of the winds and other atmospheric movements make it inevitable for the carbon gases in mainland China to be blown over the Korean peninsula."

The Chinese influence can easily be seen from the observation that the presence of carbon dioxide over the west coast, where winds from mainland China initially land, is the highest, he emphasized.

The level of carbon dioxide generally reaches its peak in the March-April period then plunges to a low Between July and August due to the blossoming of flowers and the budding of trees.

The paper calculated that there will be an average increase of 1.25 ppm per year and carbon dioxide over the Korean peninsula is expected to surpass the 560 ppm in the year 2060.

Report Recommends Japan Help PRC Reduce Pollution

OW1812110291 Tokyo KYODO in English 1016 GMT 18 Dec 91

[Text] Tokyo, 18 Dec (KYODO)—The Institute of Energy Economics on Wednesday released a report recommending that Japan assist China in converting to high-technology, low-pollution energy sources in building the country's industries.

The research group report said Japan should set up a cooperative framework to provide China with financial aid, technical expertise, and information exchange on ways to reduce greenhouse gases, acid rain, and toxic gases in building an industrial infrastructure.

Seventy-six percent of China's energy needs are met by coal, the group said. Burning coal, however, generates a toxic gas, sulfur dioxide.

China's energy-intensive industries produce about six times the soot of Japan's industries and about four times sulfur dioxide, the report said.

Additionally, large concentrations of hydrogen ions, which are known to cause acid rain, have formed in the atmosphere over China and have already begun affecting Japan, it said.

INDONESIA

President Suharto on Role of Tropical Forests in Curbing Global Warming

BK1812112891 Jakarta ANTARA in English 1018 GMT 18 Dec 91

[Text] Jakarta, Dec 18 (OANA-ANTARA) - President Suharto has said that the life-style of the advanced states contributes to the increasing trend of global warming.

Some of the heat of the globe is caused by the life-style of the advanced industrial countries, the president said in his speech at the opening of great apes conference at the state palace here on Wednesday.

The head of state who was accompanied by Forestry Minister Hasyrul Harahap and Tourism, Post, and Telecommunications Minister Susilo Sudarman said that in order to overcome the ever increasing global warming,

tropical forests which constitute essential elements that determine the global climate and environment should be preserved.

Tropical forests also hold a substantial reserve of carbon, which can raise the world's temperature if it were used indiscriminately, the president added.

If countries which have tropical forests succeed to manage and preserve their forests, they can give share to the improvement of a balanced environment and global climate, he said.

On the contrary, however, if they fail to manage them well, they will consequently raise the temperature of the globe, the head of state told the conference which was attended by experts at home and those from abroad.

According to the president, because Indonesia is fully aware of the importance of tropical forests, it supports the efforts to preserve the natural resource.

Referring to the conference, President Suharto appealed to the international community to preserve the great apes of the world as well as other species of primate either by providing assistance or by developing the science and technology related to the preservation of the species and their habitat.

Previously, the head of state received appreciation in the form of a cup from the International Orangutan Foundation for his efforts of encouraging the preservation of natural resources, including the fauna.

JAPAN

Environment Agency Proposes Toxic Substance Legislation

OW0312123791 Tokyo KYODO in English 1117 GMT 03 Dec 91

[Text] Tokyo, Dec 3 (KYODO)—The Environment Agency plans to propose new legislation which would bring Japan into line with other nations to prevent the transnational movement of toxic substances, agency sources said Tuesday.

The draft legislation, expected to go to the next regular session of the Diet, closely adheres to provisions in the 1989 Basel convention on the control of transboundary movements of hazardous wastes and their disposal.

The convention is a global agreement under the U.N. Environment Program (UNEP) governing the export of pollutants from advanced industrial nations to developing nations which have no processing facilities.

The main thrust of the draft legislation is that hazardous substances should be disposed of domestically.

It establishes 47 categories of hazardous substances in accord with the convention and proposes bans on export of such substances to countries which have not signed the convention and their import from such countries.

The draft legislation allows the export of certain substances with the permission of the importing country only if they can be used as recyclable resources or where it is not possible to dispose of them within Japan.

Restricted substances would be designated via government ordinance.

Supplementary Budget To Aid Turtle Shell Craftsmen

OW0612044191 Tokyo KYODO in English 0406 GMT 6 Dec 91

[Text] Tokyo, Dec 6 (KYODO)—The government's supplementary budget for the current fiscal year includes subsidies for tortoiseshell goods makers who will lose jobs when Japan bans imports of endangered hawksbill sea turtles in 1993, the Ministry of International Trade and Industry (MITI) said Friday.

The MITI-related supplementary budget totaled 53.2 billion yen for fiscal 1991 ending March 31, 1992, almost half of last year's nearly 100 billion yen, a ministry official said.

Of the sum, 7.7 billion yen will be used to finance low-interest loans, subsidies, and other relief measures for turtle shell craftsmen.

Japan, under stiff U.S. pressure, pledged earlier this year to impose a ban on imports of the hawskbill turtle, whose trade is prohibited by an international treaty to protect endangered species.

The decision is expected to inflict damage on some 1,400 turtoiseshell craftsmen in Japan who are producing such goods as eyeglass frames, combs, and pendants from hawskbill shells.

The 1991 supplementary budget, totaling 266 billion yen, also involves 17.6 billion yen to finance the ministry's measure to protect the textile industry from possible damage from the just- announced scrapping of the intra-industry cartel.

The ministry announced it would abolish in four years its decades-old curb on textiles-related capital spending in line with Japan's pledge in Structural Impediments Initiative (SII) trade talks with the United States to boost enforcement of the Antimonopoly Law.

Also related to the ministry was 23.5 billion yen of transfers to the trade insurance special account used to fulfill an international accord on debt relief for Poland and Egypt.

SOUTH KOREA

Government To Start Negotiations To Join Montreal Protocol

SK0912035691 Seoul YONHAP in English 0238 GMT 9 Dec 91

[Text] Seoul, Dec 9 (YONHAP)—Fear of trade sanctions has driven South Korea to join an international effort to restrict the use of chlorofluorocarbons (CFCs), which contribute to depletion of the earth's ozone layer, by early next year, a government source said monday.

The government will start negotiations on joining the Montreal protocol in mid-December as signatories to the protocol recently submitted to the United Nations Environment Plan (UNEP) lists of items that could not be shipped to their nations and items for tariffication, the source said.

The UNEP paper will be reivewed by protocol member nations by early next year and six months from the completion of reviewing, member nations are expected to begin trade sanctions. To escape trade restrictions, Korea should join the protocol by March.

Korea depends on imports for almost the total supply of freon gas, the uses for which range from a blowing agent to a cooling agent. The local CFC market is valued at 4 trillion won a year.

Protocol memberships are classified into general status, developing country status and socialist economy status.

If Korea joined the protocol in developing nation status, it will be required to cut the use of freon almost in half from the current 0.66 kilograms per capita in the 1990 benchmark to 0.3 kilograms. The cutback would result in a shutdown of two-thirds of the nation's 1,400 companies using freon.

The government hopes to be treated as a socialist economy, allowing per capita consumption of freon of 0.5 kilograms.

The government announced in mid-November it [words indistinct] billion won to commercialize four substitutes for CFCs by the end of 1995 in cooperation with private enterprises.

MALAYSIA

Government To Launch Campaign Against Anti-Hardwood Lobby

BK1312053091 Kuala Lumpur BERNAMA in English 0451 GMT 13 Dec 91

[Text] Kuala Lumpur, Dec 13 (OANA-BERNAMA)—The Malaysian Government will mount a new conter-offensive to roll back the propaganda gains of the anti-tropical hardwood lobby. The campaign's main objective is to present a clear picture of Malaysia's forestry policy to consumers.

Primary Industries Minister Dr. Lim Keng Yaik said Friday that Malaysia would give the activists a run for their money like the way we fought the anti-palm oil and tropical oils campaign.

Dr. Lim said the government had the financial resources to fight this battle. He has directed the Malaysian Timber Industry Development Council and the Malaysian Timber Industry Board to map out the strategies and hire [as received] in the campaign.

"We have to tell our side of the story to the consumers and show our strong points vis-a-vis our forest management techniques," he said.

"So far, I think there is only a one-way traffic in information and this is why the public in Britain is bombarded by prejudiced views about tropical timber. We have not done enough to explain to the consumers. We are not what they (activists) have portrayed us to be," he added.

Mahathir on Conditions for Attendance at UNCED

BK3012081691 Kuala Lumpur Voice of Malaysia in English 0600 GMT 30 Dec 91

[Text] Malaysia has reiterated that it will only attend the Earth Summit on environment in Brazil next year if the views from developing countries are heard and the deliberations benefit them. Prime Minister Datuk Sri Dr. Mahathir said the world community must look at the issue protecting the environment positively. He was speaking to reporters in Kuala Lumpur today.

NEW ZEALAND

Justice Minister Will Not Seek Extradition of Rainbow Warrior Saboteur

BK1712114591 Melbourne Radio Australia in English 0800 GMT 17 Dec 91

[From the "International Report" Program]

[Text] New Zealand's Justice Minister Doug Graham today said his country will not seek the extradition from Switzerland of alleged Rainbow Warrior saboteur, Gerald Andries. Mr. Graham said in his opinion France was entitled to rely on declarations by two New Zealand prime ministers that the affair was at an end following earlier arbitrations. Andries, a combat diver with the French secret service, was arrested attempting to enter Switzerland last month without a passport. International warrants seeking his arrest on murder and other charges were still in place. New Zealand police confirmed a wish to extradite Andries and yesterday began a court hearing to assess the evidence against him. Our Wellington correspondent Brendan Burns is on the line now to

discuss the decision not to extradite Andries. He is speaking with Helene Chung.

[Begin recording] [Burns] The decision was left to the justice minister, Doug Graham, who has used his right to decide against extraditing Gerald Andries and the reason is that two New Zealand prime ministers—both former Labor Prime Minister Geoffrey Palmer in 1990 and lately the serving prime minister, Jim Bolger—in April of this year had said that the affair was over and Jim Bolger made that statement in April during a visit to New Zealand of the former French prime minister, Michel Rocard. And during a state luncheon Jim Bolger said that the affair was closed and that he looked forward to the improvement of French-New Zealand relations.

[Chung] Well, I understand that. Is there a prima facie case against Andries? So you are saying that the decision is political, not legal.

[Burns] It is based on the fact that under international law, Justice Minister Doug Graham believes that New Zealand would not be able to sustain a case if France brought the case at the international court because there were statements which led France to believe that the affair was at a close. He is not doubting that the police could successfully bring a case againt Andries on charges on manslaughter and other charges relating to the importation of explosive devices used in the bombimg of the Rainbow Warrior in 1985. He is not doubting that, but he is questioning whether we did send signals to France which suggested that the affair was at a close.

[Chung] Well, Jim Bolger is trying to improve relations with France. Is there some fear within the New Zealand Government that there would be reprisals against New Zealand—trade reprisals for example, if it did go ahead with the extradition?

[Burns] Justice Minister Graham said that he took that into account in making his decision but it was not a decisive factor. He did report that New Zealand Ministry of External Relations staff had advised him that if the extradition were to proceed, New Zealand would risk trade reprisals with France—New Zealand has a trade worth $300 million [currency not further specified] a year with France and its territories, and that was something which Mr. Graham said he took on board but that was not the decisive factor. The factor which convinced him that extradition was not appropriate was that New Zealand had stated on two occasions at prime ministerial level that the Rainbow Warrior affair was over. [Words indistinct] which flowed on from the release of the two agents caught and convicted for the bombing, who went to French Polynesia to an atoll there and later were repatriated to France. France paid a compensation for the release of those two agents. [end recording]

THAILAND

Japan To Provide Aid for River Water Conservation

BK0612042991 Bangkok Radio Thailand Network in English 0000 GMT 6 Dec 91

[Text] The Government of Japan is to provide grant aid to the Department of Public Works to enable it to effectively monitor the conditions of the lower part of the Chao Phraya River.

Director General of the Department of Public Works Niyom Niyamanuson says that in line with the government's policy to fight against worsening water pollution in the Chao Phraya River, the department has asked for grant aid from the Japanese Government and the Japanese Government agreed to provide at least 50 million baht for the project at the beginning.

The assistance will be used for conducting survey which will last 21 months starting next March.

The department is mapping out the framework for the project. Mr. Niyom adds pointing out that provinces targeted for the project are Chainat, Sing Buri, Ang Thong, Lop Buri, Nonthaburi, Ayutthaya, and Pathum Thani.

VIETNAM

Agreements on Environment Signed With Sweden

BK0312130091 Hanoi Voice of Vietnam Network in Vietnamese 1200 GMT 30 Nov 91

[Text] An agreement on environmental protection particularly for the Dong Nai and Tan Mai Joint Paper Enterprises was signed on 19 November.

Earlier, an agreement on environmental protection particularly for the Vinh Phu Joint Paper Enterprise was signed in Hanoi on 14 November. Speaking at the signing ceremony, Swedish Ambassador Mats Aberg stressed the Swedish Government's deep concern over the issue of environment.

UNDP Hosts Forum on Reforestation

BK0312075191 Hanoi VNA in English 0625 GMT 3 Dec 91

[Text] Hanoi (VNA) Dec 3—"Almost two million hectares of plantations have been established, and a total of some 5.7 billion scattered trees were planted in gardens and along roads and dykes in Vietnam in the period from 1961 to 1990," it is reported at a forum to discuss reforestation issues in the country held here Monday by UNDP [United Nations Development Program].

These figures, although impressive, are not enough to meet Vietnam's needs for fuelwood, construction wood and other non-wood forest products in the future, and if

Vietnam's unique tropical forest resources are to be preserved for future generations. Vietnam plans to put five million hectares of plantations up to the year 2000.

In the meeting some 50 sectoral experts from national institutions responsible for policy and planning, such as the Ministry of Forestry and the State Planning Committee, met along with bilateral agencies, multilateral and non-governmental organizations to share views and experience, and addressed key issues affecting the development of plantations and agroforestry in Vietnam.

The forum was designed to be the beginning of a consultation process to strengthen cooperation among the various participants and identify opportunities for cooperation.

So far UNDP and FAO [Food and Agriculture Organization] have funded U.S.$20 million to Vietnam to implement 20 technical transfer and capacity strengthening projects for the forestry sector, and WFP [World Food Program] funded U.S.$65 million to plant 237,000 hectares of plantations. Besides, SIDA [Swedish International Development Authority], AIDAB [Australian International Development Assistance Bureau] and other international organizations also provided substantial assistance to reforestation in Vietnam.

REGIONAL AFFAIRS

Romanian-Bulgarian Ecological Seminar Views Prospects for Giurgiu-Ruse Zone

AU0312202591 Bucharest ROMPRES in English 1916 GMT 3 Dec 91

[Text] Bucharest, 3 Dec (ROMPRES)—The joint Romanian- Bulgarian report on the present and prospects of the Giurgiu-Ruse zone from an ecologic point of view focused the debates of the seminar on ecology that started in Ruse on Tuesday, December 3, in the presence of the environment ministers of the two countries, Marcian Bleahu and Valentin Vasiliev respectively. The seminar will continue on Wednesday, December 4, in Giurgiu.

Attending the proceedings are Romanian and Bulgarian experts, representatives of the United Nations Organization for the environment, officials of the two cities on the banks of the Danube.

As the joint report of the experts of the two countries stresses the seminar is meant to draft an integrated environment monitoring system for the Giurgiu-Ruse zone. Addresses by participants highlighted that in conditions of economic and social difficulties in the two countries undergoing a complex transition process the environmental factors monitoring activity should be approached in a unitary manner.

In their turn, UN Ecological Department experts assessed that such problems, existing in numerous parts of the world with a developed industry, can be solved only through an open, sincere cooperation of the two sides the European Community being ready to support the efforts towards improving environment in the respective area.

Romania, Bulgaria Sign Ecological Convention

AU1012214791 Bucharest ROMPRES in English 1956 GMT 10 Dec 91

[Text] Bucharest, 10 Dec (ROMPRE)—"The purpose of my journey to Sofia" said Romanian Minister of Environment Marcian Bleahu, "was the signing of cooperation convention on environmental protection with my Bulgarian counterpart Minister Vasiliev."

As far as the Giurgiu-Ruse area is concerned, the convention aims at institutionalizing a long-term cooperation so as to avoid unpleasant situations in future. For the [word indistinct] the convention stipulates a close cooperation in environment surveillance by concerted measurement routines through joint methods and devices, mutual conveyance of readings and joint decision-making for remedial measures, irrespective of location of the pollution source.

The convention makes provision for scientific cooperation, in various sectors connected to environment protection such as nuclear developments are.

At the same time a protocol was signed in Sofia for the instatement of an intergovernmental joint commission for environment protection.

"We have also agreed on the text of two letters, one to the Council of Europe and the other to the United Nations, which through their PHARE and respectively UNEP programs, had promised their help for a monitoring system to be mounted on either bank of the Danube" added the Romanian environment minister.

CZECHOSLOVAKIA

Minister Defends Withholding of Environment Information

AU04121616 LIDOVE NOVINY in Czech 30 Nov 91 p 3

[Text] This information appeared in the "Events and Commentaries" television program on Wednesday [27 November]. Slovak editors complained that information on ecology is classified and that Josef Vavrousek, chairman of the Federal Committee for Ecology, had not kept his promise to supply appropriate offices with a commentary on the list.

"I assumed that the list would be interpreted according to the logic of a normal democratic state, that is, according to the principle that everything that is not prohibited is permitted," Minister Vavrousek said on this subject yesterday. "According to the list, 99.5 percent of all information concerning ecology is no secret. Only such information that could cause mass hysteria and panic is on the list. It is a sort of insurance that enables us to temporarily withhold information that could cause serious alarm. It is not something to help us conceal information." Another item on the list applies to the defense of the state. We are not going to classify the boiler room in the Pardubice barracks, about which everyone has known for a hundred years. On the list there are documents evaluating the ecological consequences of development concepts and programs, and investment projects designated for the defense and security of the state. The last item on the list is documents making up part of international treaties, or analyses of technology bought in other countries, which are also classified, if the other country so wishes. Minister Vavrousek said that he underestimated the importance of providing the commentary. He considers the explanation given on television as distorting. Because of this, and because he wants to keep his promise, yesterday he sent a detailed explanation of the list to all appropriate offices, including both Ministries of Environment.

The law on the environment should contain a passage dealing with the right of people to information. As early as June the Federal Ministry of Environment issued a report on the environmental situation and handed it

over to the Federal Assembly. This report will be available to the press within two weeks. Within the framework of the State Ecological Program, the Federal Ministry of environment is working on a large Ecological and Heath Care Atlas which describes the situation in ecology and health care. It will be published soon and will be available to the general public. "The attempt to interpret the list as intentional withholding of information on ecology—except specific, narrowly defined areas—is an absolute and intentional lie," Minister Vavrousek said.

Havel Defines Ecological Challenges

92CH0198Z Bratislava KULTURNY ZIVOT in Slovak 3 Dec 91 p 1

[Message to the meeting of the Prague ECO '92 Public Forum by Vaclav Havel, president of Czechoslovakia: "Once Again: Where From and Where To?"]

[Text] It seems that in the historical spiral of the history of mankind once again the time has come when we as members of the human race should think hard about our place and our role in nature. Perhaps we should consider what exactly we are, from where do we come, and where are we going. In what direction are our dreams, our intentions, our deeds turned? Where actually is our civilization going?

I am afraid that today it is no longer sufficient for us to comprehend the simple-mindedness, arrogance and vacuous feelings of a hegemonic person. Likewise, it is no longer enough for us to accept with resignation our insignificance when facing the magnificence of the universe, the history of our planet and the complexity of the nature around us. Anthropocentrism and biocentrism are but two of several extreme standpoints in our approach to nature and to ourselves. They confirm the validity of the principle of action and reaction. If we accept the premise that the relation of human civilization and earthly nature is a partnership relation, we shall not be content with the black-and-white prism of superiority and inferiority anymore.

Homo sapiens—the thinking man was, is and should be one of the active participants in the endlessly convoluted relations and correlations of nature. The desire to know the essence of life is germane to mankind, and the will to be responsible stewards of the fruits of natural processes should be balanced by inner humility before the perfection, beauty and vulnerability of the harmony in nature.

Who knows whether our hesitation will not find encouragement in the almost 800-year-old message of the first Italian poet and founder of the Franciscan order, St. Francis of Assisi, who in his hymn in praise of nature and life, in his confession of his love of God and man—in his song to the Sun—addressed the Earth, water, and the Moon as his sisters, who called the wind, the sun and all creatures on this earth his brothers, and who in his humility before the birth, life and death paid a tribute to nature and to his spiritual lord and king.

It is up to every individual to let the voice of his conscience speak up, to find his place among human beings, and to feel his kinship with the nature. The most prominent personalities in human history as well as the ancestors of each one of us had experienced such feelings. There is no doubt that even our generation will not be able to resolve to satisfaction and with finality the conflict of man's alienation from nature, the conflict that may be traced back to the day when our ancestors descended from the trees or left their caves. However, never before in human history have we come so close to the edge of an abyss where nature lives but where civilization dies. With full awareness of our imperfect knowledge, with the highest degree of caution in our decision-making, and with utmost humility before the eternal order of natural motion we must focus all our potential on averting our own fall into perdition. We would not prevent that fall by not taking another step—that would only delay the fall. We may prevent the fall only by turning away from the precipice.

At the particular point on the spiral of development where we find ourselves at this very moment, not the barbaric rape of the very essence of nature, not the frivolous dissipation of the gifts we had recklessly appropriated for ourselves, not even dialectic rejection of all further progress of mankind nor a return to the trees or caves will assure that we shall regain the garden of Eden. We find ourselves in a spot where we were placed by the vicissitudes of our fate, by the effect of natural laws as well as by our own accomplishments and mistakes, and if we intend to survive, we have no other option but to forge ahead.

Among all attempts at restoring peace among men as well as between man and nature, and among all efforts to correlate social needs, economic demands and the ecological potential, the most effective and the most necessary strategy for our time seems to me the strategy of a steady development, of a continuous, sustainable progress—progress that ensures the living and well-being of the people on this whole planet, progress that enables our contemporaries to live a meaningful life, and progress that provides a space for a search for, and achievement of, intrinsic forms of life for those who will come after us.

In our countries, in the former totalitarian zone of Central and East Europe above all, a strategy of support for every innate self-renewing force of nature, for every life-giving, self-regulating and self-purifying process inherent in nature, and for every kind of well-planned, responsible stewardship of matters that the nature cannot restore in the lifetime of generations, that is a strategy capable of helping us find the right direction for our complex and tedious economic reforms. If people show consideration toward our contemporaries and toward those who will come after us, that will guide our steps on the rough trail of social changes. That, too, is a strategy for a continuous sustainable development.

Our nature as we inherited it from the recent rulers has in many places reached the brink of endurance. And it is a tragic absurdity of our time that while we for many years had to struggle against the insensitive, megalomaniac and arbitrary treatment of nature, we may become its grave-diggers if we become reckless for an instant. Individuals, even those whom we with good intentions and in the best conscience have elected to the most responsible economic and political posts, cannot constantly and intently observe whether all aspects of our development are in balance. However, a free society and its democratic mechanisms are always empowered to correct the outcome in an expeditious and efficient way and moreover, to mitigate the risks of one-sided, poorly formulated ideas, plans and decisions. The most significant role in promoting and developing such "self-purifying" and "self-regulating" processes in society are played by the representatives of nongovernmental organizations and various public associations.

Nature is indivisible, and increasingly emphasizes the fact that our human community also is indivisible. Ecological problems in one part of the world should be reflected in the condition of human souls at the other end of the world as well. Ecological consciousness of individuals and groups should arouse ecological responsibility of whole nations.

POLAND

Safety Measures Against Radiation Leaks Seen To Be 'Worse Than Chernobyl'

LD0712094191 Warsaw PAP in English 2143 GMT 6 Dec 91

[Text] Warsaw, Dec 6—The present Polish safety measures against the danger of radioactive leaks are even worse than was the case at the time of Chernobyl, according to the authors of a report commissioned by the State Atomic Agency (PAA).

Entitled "Report into the Consequences of the Catastrophe at Chernobyl," it shows that in the past 5 years most of the recommendations of the government commission which had been created in 1986 after the disaster were not implemented.

The lack of a decision-making centre has led the PAA president and the chief inspector for protecting the environment to propose an interministerial agreement for setting up a centralised early warning system which would co-operate with the EC systems.

Expenditures for Environmental Protection Sharply Increased

LD1112044491 Warsaw PAP in English 1214 GMT 10 Dec 91

[Text] Warsaw, Dec 10—Ten trillion zloties (around 1 billion dollars) is being spent on protection of the environment this year.

This amount is over one percent of national income and three to four times greater than that spent in previous years, and is comparable only to the expenditure of developed countries like Holland or Germany, according to the minister for the protection of the environment, natural resources and forestry.

The minister, Maciej Nowicki, reckons that 1991 is a turning point in terms of investment into environment protection, the effects of which will be visible in the next few years, such as a reduction in sulphur dioxide emission and a clean up of the lakes and rivers.

This year alone an attempt to import two million tons of various kinds of imported waste had been frustrated and 70 million tons were sent back to Germany. An economic police force was due to start operations at the beginning of 1992, said Nowicki.

Only six percent of the money for environment protection comes from the treasury and six percent comes from nonreturnable credits from abroad. The biggest sources are the provincial ecological funds and a special national fund made up of money taken from fines paid for polluting the environment. Enterprises and local government provide the rest of the cash.

WHO, Netherlands To Implement Ecological Program for Poland

LD1212040991 Warsaw PAP in English 2203 GMT 11 Dec 91

[Text] Warsaw, Dec 11—The government of the Netherlands and the World Health Organization have earmarked one million dollars for the implementation of a four-year ecological programme for Poland signed in Warsaw on Wednesday.

Under the programme foreign specialists are to monitor the environmental pollution in Poland and its impact on Poles' health as well as a training abroad is to be provided for Polish experts.

Health Deputy Minister Zbigniew Halat said a significant part of the programme is to be carried out in the south-western region of Silesia, the most polluted part of Poland.

At present the WHO is negotiating further assistance to the project with the European Communities.

REGIONAL AFFAIRS

Brazil, Uruguay Agree on Trade, Border Zone Pollution Control

PY1912142091 Madrid EFE in Spanish 1605 GMT 18 Dec 91

[Text] Brasilia, 18 Dec (EFE)—Brazilian President Fernando Collor de Mello and his Uruguayan counterpart Luis A. Lacalle today, 18 December, agreed to expand bilateral commercial trade.

The two presidents were accompanied by their economic and foreign ministers when they discussed for one hour economic matters and the undertakings in border zones that were set up a long time ago.

The meeting was held at Alvorada Palace, the official residence of the Brazilian president, at the request of Lacalle when Collor was forced to cancel, because of domestic problems, the official visit he was to have made to Uruguay on 15 December.

Uruguayan Foreign Minister Hector Gros Espiell said that Collor accepted a Uruguayan proposal to expand the 1975 Protocol Office for Trade Expansion (PEC) through which almost two thirds of the overall exports between the two countries are channeled.

"We want to increase Uruguayan exports by at least 20 or 30 percent within the PEC," Gros Espiell said.

Of the $400 million that Uruguay exported to Brazil in 1990, $380 million were achieved under the rules of this agreement that was signed in 1975.

Brazil, main trade partner of Uruguay, has sold goods worth $480 million, the foreign minister said.

Gros Espiell said that the proposal to "strengthen" the PEC was fully accepted by Brazil.

"Brazil has fully agreed with what was proposed by Uruguay at the meeting," he said.

The PEC will be in effect until 1995 when Argentina, Brazil, Paraguay, and Uruguay will eliminate all commercial barriers and establish the Common Market of the South (Mercosur).

Gros said that both Lacalle and Collor also agreed to implement the projected construction of irrigation dams on the Yaguaron River and the Merim Lake which divide the two countries.

Moreover, they also agreed to stop and punish pollution in border zones, and decided to study the issuance of agreements that will be submitted to the UN Conference on Environment and Development (Rio 92) that will be held in June 1992.

Gros said that Uruguay and Brazil do not want that conference "to be a mere expression of words and good intentions," and that for this reason they will defend the idea of establishing and punishing ecological crimes.

ARGENTINA

New Environment Undersecretary Named

PY0212233691 Buenos Aires BUENOS AIRES HERALD in English 2 Dec 91 p 7

[Text] (NA-DYN)—Deputy Hector Delmau (Justicialist-Misiones) yesterday accepted newly appointed Environment Secretary Maria Julia Alsogaray's offer to become environment undersecretary.

On announcing the news, Dalmau told the press his main priority will be "the problem of water pollution."

During an interview with Radio Continental, Dalmau criticized the construction of huge hydroelectric dams, such as the one planned in Parana Medio, "because there are cheaper alternatives that also produce less social and environmental damage."

He disclosed that "in other countries it was discovered that these huge dams caused serious illness among the population."

The legislator, who currently presides over the Natural Resources and Environment Committee in the Lower House, believes that "the country is currently lacking a clear political commitment to approve environmental laws in Congress, like one to control the introduction, transport and disposal of hazardous waste."

Dalmau also demanded that the government make "a quick decision on a decree to ban the import of human excrement from the First World," which he described as "a shameful business conducted by several private companies."

New Law Bans Import of Toxic Waste

PY1812150291 Buenos Aires TELAM in Spanish 1227 GMT 18 Dec 91

[Excerpt] Buenos Aires, 18 Dec (TELAM)—The Senate has approved the law that prohibits, under the penalty of up to 25 years in prison, the manipulation and import of dangerous toxic wastes. These are defined as those that could "cause direct or indirect danger to life, and those that could contaminate the soil, water, atmosphere, or the environment in general."

During a special session, the Senate also approved the Federal Fisheries Law and a motion submitted by Oraldo Britos of the Justicialist Party and Luis Brasesco of the Radical Civic Union, which implements collective labor bargaining for public service employees.

The bill on toxic wastes, which must now be promulgated by the executive branch, was approved after it had been evaluated twice by the Senate. The Chamber of

Deputies had previously introduced changes into the original bill that had been approved by the Senate 2 months ago.

The law bans "the import, introduction, transport, disposal, storing, and any other act pertaining to dangerous waste from any foreign country into the national territory and the air and maritime space under Argentine jurisdiction."

It also establishes that he who violates this law "will be punished in accordance with the sentences established in Article 200 of the Penal Code," adding that "if the incident is accompanied by the death of a human being, the sentence will be between 10 and 20 years in reclusion or in prison." [passage omitted]

BRAZIL

1991 Burnings Survey Shows 'Lower Than Expected' Incidence of Fires

92WN0164A Sao Paulo O ESTADO DE SAO PAULO in Portuguese 11 Nov 91 p 14

[Article by Liana John]

[Text] In this year's burning season, 447,180 individual fires were recorded between July and September. This figure equals the number of fires observed in 1987 and 1988—when the problem began to attract attention—and exceeds the number that occurred in 1989 and 1990. The smoke invaded highways, airports, and cities; reduced visibility; and caused respiratory problems among the population. The fertility of the soil was impaired, and timber was wasted.

The survey of the burnings in 1991 that was conducted by the National Institute of Space Research (INPE) and the Environmental Monitoring Center of the Brazilian Agriculture and Livestock Research Enterprise (NMA-Embrapa) did, however, reveal two pieces of good news. First, the majority of the fires reported were related to agricultural areas rather than to any recent instances of deforestation. Second, according to AGENCIA ESTADO, the survey surprised the experts in that the incidence of the fires was substantially lower than expected in the region.

Scrublands

The records for this year were set by the Center-West region and a part of the North region—the polygon formed by the borders of the states of Tocantins, Para, Maranhao, and (on the south) Mato Grosso. It is a region of transition forests and scrublands that is partially occupied by cattle raisers, grain growers, and small farmers.

The transition forests do not have the height or the density of the Amazon forests, and the scrublands consist of grasses and sparse trees. In the polygon where the burnings occurred, the scant native vegetation that remains is already substantially degraded.

Few Fires

The incidence of burnings in the Amazon forests was lower than expected. In the month of June, for example, very few fires were reported in the six Amazonia states (Acre, Amazonas, Amapa, Rondonia, Roraima, and Para).

During the entire month 144 individual fires were reported in the total area of 3.578 billion square km in these states—the same number that was reported in a small area of 18,000 square km in southern Maranhao. The incidence of burnings in Amazonia this year represented 2.5 percent of the total of 5,687 fires in all of Brazil.

In June the late rains inhibited the burnings, especially in Amazonia, where the vegetation remained damp during almost the entire month. In the months of July, August, and September the incidence of fires in the region increased. Even so, in September—the peak month for the burnings—Amazonia accounted for only 18 percent of the nationwide total of burnings. Most of these burnings were concentrated in the most heavily populated border areas of the Amazon region. The burnings in the six states of Amazonia represented 10.84 percent of the total number of burnings in the nation in July; 17.04 percent in August; and 17.81 percent in September.

The maps showed that the burnings were concentrated this year in the scrubland regions. The areas most affected by fire are located in the states of Tocantins and Mato Grosso, southern Para, western Maranhao, and Rondonia, where burning is practiced primarily to combat noxious weeds and agricultural pests or to renew pasture lands parched by the lack of rainfall.

Cleaning Up the Area

In Rondonia State the burnings are repeated every year to clean up the areas of subsistence agriculture. The farmers cut down the forest and leave the tree trunks on the ground to dry. The crops are planted between the felled trunks, because the farmers have neither the money nor the equipment to remove the timber. During the winter—when the rainfall diminishes—they set fire to the dry trunks to get rid of the timber and in this way utilize the planted area more completely.

The satellite pictures of the region show the direct relationship between the main roads and the burnings: the "fire trails" on the maps correspond precisely to the pattern of Highway BR-364 and the secondary roads that intersect them.

Fire in Grassland Emits Less Carbon Dioxide

In the opinion of the researcher Evaristo Eduardo de Miranda of NMA-Embrapa, "the fact that the burnings are agricultural in character does not lessen the concern

felt over the disorganized occupation of Brazilian territory and the loss of biodiversity." He insists, however, that this trend "is reducing Brazil's share of the responsibility for the greenhouse effect."

INPE Director Gylvan Meira Filho explains that agricultural burning emits less carbon dioxide than the burning practiced in recently felled forests.

In cultivated fields, pasture lands, and the canefields of Sao Paulo and Pernambuco, what is burned is the residues of cultivated crops and pasture grasses that will grow again. The quantity of carbon emitted by the burning of these plants is virtually nil.

This is not true when felled forests are burned, as is the custom in Amazonia. When fire destroys ancient trees, the smoke carries into the atmosphere the carbon that has been accumulating for many years in their trunks. More carbon is emitted than can be fixed.

Environment Secretary Says Government Lacks Environmental Policy

92WN0164B Rio de Janeiro O GLOBO in Portuguese 12 Nov 91 p 5

[Text] Secretary of Environment Jose Lutzenberger declared yesterday that the Federal Government has no environmental policy to put into effect in the nation.

"No environmental policy exists in Brazil. I have been attempting to create one ever since I became secretary and have not yet succeeded in doing so," Lutzenberger acknowledged during the opening ceremony of the International Seminar on Management and Technologies for Waste Treatment (REMAI) that is being sponsored by the Municipality of Sao Paulo and various state and federal entities.

The secretary said bureaucracy is primarily to blame for the lack of an environmental policy in Brazil.

"When I entered the government," Lutzenberger said, "I asked that an inventory be made of all the legislation available in the nation. Every time I made this request, the response was that there was no data to be had."

The secretary also criticized the lack of commitment on the part of government employees. He said the employees of state enteprises are not exerting themselves to take concrete action to combat the degradation of the environment.

"In private companies," Lutzenberger said, "when something breaks down, the employees usually hasten to fix it. When this happens in a state enterprise, the employees stop work and take a coffee break."

The mayors of various cities of Latin America who are attending the seminar will today sign a document proposing a series of joint actions to solve the problem of urban waste. One of the proposals calls for the implementation of programs to encourage the development of products that will generate a smaller quantity of waste.

Rocket Launched To Gauge Ozone Layer Infrared Radiation

PY1212194291 Madrid EFE in Spanish 1539 GMT 10 Dec 91

[Text] Sao Luis (Brazil), 10 Dec (EFE)—On 9 December the Brazilian Aeronautics Ministry launched a space rocket to measure the intensity of the infrared radiation on the ozone layer and synchronize all the Brazilian aeronautic tracking equipment: radar, computers, and antennae.

Official sources have explained on 10 December that the "Sonda-2" type rocket was launched at 1740 local time (2040 GMT) on 9 December from the Alcantara launch pad located in Maranhao State, in the northern region of Brazil.

After 22 seconds of self-propelled flight, the rocket reached a maximum speed of 1,554 km/second and began to descend and finally fell into the Atlantic Ocean 92.4 km from the launch pad.

With the launching of a new rocket, the Aeronautics Ministry concluded the "Beautiful Waters" operation developed by the Alcantara launch pad within the framework of the Brazilian space program begun in 1965.

The main goal of the Brazilian space projects is to design a satellite-launching vehicle that will operate at the Alcantara base beginning in November 1992.

According to launch center Director Colonel (Anciltion Cavalcanti), yesterday's operation was a success because all the Brazilian aeronautic tracking equipment could be synchronized.

Col. (Cavalcanti) said that the San Luis and Alcantara radars tracked the rocket's entire trajectory.

The "Sonda-2" rocket measurement of the radiation on the ozone layer (between 45 and 90 km above the earth) will be used in scientific studies.

Chemical Dumps Reportedly Affecting 12,000 People

PY1712132291 Sao Paulo FOLHA DE SAO PAULO in Portuguese 14 Dec 91 Section 4 p 1

[By Carlos A. de Souza in the Porto Alegre bureau]

[Excerpt] The federal government wants to evacuate about 12,000 people from Baixada Santista because they run the risk of contamination from clandestine chemical waste dumps.

Sebastiao Pinheiro, 44, special adviser to the Special Secretariat for the Environment (SEMA), on 12 December told FOLHA DE SAO PAULO in Porto

Alegre (Rio Grande do Sul) that pentachlorophenol, hexachlorobenzene, and tetrachlorobutadiene are being dumped in "inappropriate and secret places," in Baixada Santista. He added that they are "highly toxic substances which cause cancer and genetic mutations."

The board of the Rhodia Company has admitted the existence of 11 toxic substance dumps in Baixada Santista, all of them in known locations (four in Itanhaem, four in Sao Vicente, and three in Cubatao). [passage omitted]

UNCED Seen as Positive for Brazil, Amazon Development

PY2812005691 Brasilia Voz do Brasil Network in Portuguese 2100 GMT 27 Dec 91

[Text] Foreign Minister Francisco Rezek has stated that Brazil's program for development of the Amazon region will be one of the principal subjects of discussion at the Rio de Janeiro conference in June 1992.

According to the foreign minister, the Rio-92 international conference on the environment to be held in June will have two positive points: First, it will acquaint other countries with Brazil's situation, which will contribute to eliminating Brazil's negative image abroad, and second, the conference will give importance to Brazil's long-term program for development of the Amazon region.

The program, which will be financed by the G-7, the group made up of the seven wealthiest countries in the world, seeks to develop the region without damaging the environment.

[Begin Rezek recording] Brazil's pilot program, which the G-7 will finance, is an early model, which the 1992 Rio conference will favor as a model program. This is a program that we would like to build in the near future, honoring our responsibilities as a country that has an ecological patrimony that no one else in the world has today. [end recording]

Minister Rezek said that Brazil needs international cooperation to develop environmental projects that view the Amazon region as the largest forest reserve in the world.

NICARAGUA

Irena Forest Management Plan Detailed

92WN0192A Managua LA PRENSA in Spanish 25 Nov 91 p 26

[Article by Abelardo Sanchez]

[Text] Ocotal—In order to find out on the ground the way in which Irena [Institute of Natural Resources] operates in managing the forests, a LA PRENSA correspondent travelled to the mountainous area of Tapacales, 22 km north of Ocotal in the Dipilto region, on 22 November.

Reynaldo Cruz Almanza, the departmental representative of Irena who has worked in the Dipilto region for eight years, was in the Tapacales area.

Ronald Ubeda Rizo, responsible for carrying out the "Management Plan" in the forests, was interviewed in Tapacales. He stated that since January 1991 Irena has been engaged in providing instructions to the lumbermen of the region on maintaining a sustained balance in timber cutting.

He said that the lumbermen can only obtain a permit from Irena for cutting wood by coming under the "Management Plan," in which the amount of timber to be cut in certain areas from trees 40 centimeters in diameter at chest level is specified. The plan states the protective measures to be taken in these areas to prevent fires.

This plan will last for five years and is divided into two periods for taking out the wood pertaining to each period. The "Management Plan" is reviewed by Irena, which orders the supervisor for the area to check into whether what the plan states is correct and whether it is feasible to operate in the area.

When it is concluded that everything is in order and that cutting timber will not affect sources of water or cause the erosion of the land, the permit is issued to allow timber cutting to proceed.

At the Segovian Lumber Company a total of 450 hours of cutting has been scheduled for the area of Tapacales, Ojo de Agua, etc. These areas have almost no mature wood. As a result work is done on forests under development, where commercial thinning of trees is carried out to stimulate the growth of the dominant trees or future forests. Posts for electric power lines and also for fences are obtained from this commercial thinning process. The posts are processed in Ocotal.

The waste wood left over is also used to prepare dowels for use in crayfish traps. In other words, the maximum use is made of what was wasted in the forests in the past.

It should be noted that within the operational region there are areas which cannot be touched because they are intended for the protection of the forest against erosion. This is due to the fact that the slopes of land are very steep. Therefore, gullies are formed in the ground, and plant material flows into the rivers, resulting in the formation of large banks of sand.

Under the "Management Plan" the lumberman does not destroy the forest but rather contributes to its protection for the future.

What is having the greatest effect at present is migratory agriculture because of a lack of control by Irena, due to the fact that this organization does not have forestry technicians in the areas considered critical, where the peasants indiscriminately fell logs to work the land by sowing basic food grains.

Another Technician Speaks

Justo Pastor Flores Talavera is another Irena forestry technician interviewed by LA PRENSA. He is charged with supervising the work of the Segovian Lumber company. He stated that under his operations plan the effort being made adheres strictly to the "Management Plan" authorized by the regional office of Irena.

This plan consists of cutting very mature trees, commercial thinning, and waste timber. As the technical aspects require, this involves cutting down trees by joint agreement with the "chief of the hill" assigned by the company. In this case it is Samuel Hall Vega, who is charged with carrying out the directions of Irena. These directions consist of treating the forest properly.

Finally, when we contacted Reynaldo Cruz Almanza, the previously mentioned official of Irena, regarding the serious problem of forest fires, Cruz stated that the "Management Plan" covers the establishment of anti fire patrols, that is, to prevent fires.

He pointed out that this action is very important for the protection of the forests and that, in that sense, it has been aimed at lumbermen through the preparation of signs carrying slogans referring to the protection and conservation of forested areas.

He said that this effort must be supplemented with the work of forest guards and volunteer brigades which are being reactivated. He pointed out that the communications media play a very important role by raising the level of awareness among the farmers to be especially careful to avoid fires.

LA PRENSA informed the Irena leader that in the rural area of Macuelizo woodcutters are cutting down even young trees, since wood cutting is carried out without any control. However, the official kept silent, preferring to reserve comment, probably to make it on another occasion.

It was stressed that in the Macuelizo region many areas have been cut clean and that the wood is taken away from those places by truckloads for clearly commercial purposes. This affects the natural resources and the environment very noticeably. No one is doing anything to resolve this very serious ecological problem.

ST. LUCIA

Prime Minister Seeks Balance Between Development, Conservation

FL1312164891 Bridgetown CANA in English 1144 GMT 13 Dec 91

[Text] Castries, St. Lucia, Dec 13, (CANA)—St. Lucia's Prime Minister John Compton says local environmentalists are seeking to retard the growth of the island's tourism industry.

"In the development of our tourism, we must strike that delicate balance between development and conservation," he said in a statement aired over state-owned Radio St.Lucia.

"....If we are to look at conservation only, and not be concerned with the environment, we will perhaps find some unique mosquito in St. Lucia which we must preserve," he said. Compton said that if earlier administrations under his leadership had to contend with or listen to environmentalists, the island's north coast tourism area would not have materialised.

"None of these hotels would be built, because our new-found environmentalists would have found some exotic sand fly to protect and the swamp opposite the town of Gros Islet would not have been dredged," he said. "Gros Islet, instead of being a host to our visitors on Friday nights, would have been a ghost town with only the smell of cow dung to ward off the mosquitoes that take control after dark."

He referred to the local environmentalists who complained that tourism was being developed here at the expense of the environment, as "recent converts to environmentalism and the green philosophy." Compton's remarks were the latest in a string of attacks on environmentalists by his government since 1988, when local conservationists began a sustained campaign against a hotel development project between the island's majestic twin peaks, the Pitons, east of here.

Deputy Prime Minister George Mallet earlier this year labelled a group of environmentalists that included world renowned poet and Nobel Prize nominee Derek Walcott, as "johnnies come lately" after their opposition to the Pitons project.

Compton said that his administration was getting a raw deal from local environmentalists, who failed to acknowledge that it had started or assisted several environmental groups, including the St. Lucia National Trust and the archaeological and historical society. Compton said his administration had "a proud record" when dealing with forestry protection and water resources.

VENEZUELA

Government Said To Ignore Pesticide Problem

92WN0158A Caracas EL DIARIO DE CARACAS in Spanish 16 Nov 91 p 8

[by Gabriela Zavati]

[Text] A great many Venezuelan peasants are surviving afflicted by the misuse of pesticides. Many are not even aware of it, and could hardly be so in the absence of any research or information on the subject. In the midst of this serious situation comes a ministerial resolution on the importation of agrochemicals that, in principle, many found encouraging, because it would permit the importation of only the best of these products, that is,

the least toxic. But this regulation is already a month behind schedule. No one knows why, although there is a tendency to believe that a devious maneuver is afoot to gain time for the Ministries of Development, and Agriculture and Livestock, to make changes motivated by economic interests. The idea, it seems, is one alone: to permit free importation without any toxicological controls whatsoever.

The environmental and public health sectors of course have not kept silent. Meetings, symposia, and even letters of every description explaining the enormity that the unrestricted importation of agrochemicals entails have reached the ministers of health, environment, and agriculture, and even the president of the republic. So that there would be no room for doubt, the letters were even published in the national press. Nevertheless, according to the director of Bioma [expansion not given], Aldemaro Romero, not one of them has received a reply.

Others, such as national conservation prize winner Gerardo Yepez Tamayo, have come to regard the government's goal as a "lethal economic plan", based on the large number of afflicted persons in the country despite a modest degree of pesticide control. Deficient, but at least control. What would happen if free importation occurred?

To illustrate the seriousness of the situation, Yepez cited the example of the free trade agreement between the United States and Canada. Both countries can export to one another any legal product except pesticides, fertilizers, and agrochemicals in general, whose entry into the United States must be supervised, analyzed, and approved by the U.S. environmental agency.

Since the development of the industry, comments Aldemaro Romero, about 80,000 synthetic compounds have been invented in the world, and the effect on health and the environment is unknown for 80 percent of these chemical substances. Nevertheless, based on theoretical studies, it is assumed that 50 percent of them are harmful to health and the environment. Practically nothing.

DDT Prohibited But Used Sportingly

DDT, explains the director of Bioma, is by definition the insecticide most harmful to the environment, which is why it was eventually banned in all countries of the world. But it is also very economical, which has contributed to its increased use in the Venezuelan Andes, where it is smuggled in from Colombia.

This pesticide is highly residual and has the effect of softening the shells of birds' eggs. The young birds hatch prematurely and die as a result. But the most serious aspect is its effect on human beings, which is essentially the same as that produced by the rest of these synthetic products. When imbibed through water or air, the residue is deposited in the fatty tissues where it can remain for years, causing slow poisoning and sometimes abnormal cellular growth. The reason is simple, the human body is unable to expel the residue.

The story of the effects of pesticides certainly does not end there. Detailed reports have shown that in the area of Lake Maracaibo the deposit of organochlorate substances, typical pesticides to which cancerogenous effects have been attributed, is extremely high. A similar situation exists in Lake Valencia where there is a great quantity of contaminated water destined for the irrigation of farm land and pastures.

But in Lake Maracaibo insecticides have also had peculiar effects.

Romero referred to the phenomenon of "eutrophication", that occurs in residual waters or when excessive fertilizers are dumped into these waters. There then begins the immeasurable development of all kinds of bacteria and microorganisms that rapidly consume oxygen. As a result, fish and other water creatures are deprived of this oxygen. The fish die and the ecological balance is disrupted, thus creating a serious ecological problem.

Obviously, the situation is not being adressed at present, Romero pointed out, despite specific data showing that this is the ecological reality that exists in those parts of the country.

Environmental Reality: A Secret

Something curious is happening on the subject of the nation's environment. There are no statistics, nor reports, nor anything of the like. Even more obvious is the lack of studies on the status of conservation. Neither are there statistics that describe the effects of pesticide abuse on the environment. Why? Unfortunately, replies Romero, the practice of environmental secrecy still exists in this country. Environmental impact studies are kept out of the public view.

The situation would be logical if national sovereignty or something similar was involved, but Romero has another explanation: "the corporative policy of the Ministry of Environment has always been to convince the public that there are no environmental problems in this country, and if there are none, why talk about them". Environmental awareness takes place when the people are informed and begin to be concerned by what is happening to their means of survival. That is when they also begin to worry about the lead in their blood and about carbon monoxide.

As a curious example and to corroborate his thesis, Romero referred to the latest statistics published by the MARNR [expansion not given] about the degree of contamination in Caracas. The figures are from 1988. Since then not a single page on the subject has appeared.

The seriousness of the situation, apart from the discontinuity in publication or dissemination, is made clear by the results of this latest study, conducted almost four

years ago. On that occasion it was shown that 98 percent of the vehicles in Caracas discharge exhaust fumes in excess of the tolerable limits for human health. While this occurs, national and municipal laws on ecology exist but are unenforced.

"The great bureaucracy that shuffles papers and the administrative layer of the MARNR is another obvious example of the government's belief that there are no environmental problems", Romero says. It is paradoxical that about 11,000 persons are employed at ministerial headquarters, while Canaima, a national park of more than 3 million hectares, is looked after by only four people.

It follows that the national environmental vocation only appears on Arbor Day and during Conservation Week, when it seems that the the conservationist leadership rends its garments, plants saplings left and right, and engages in a contest to proclaim national parks everywhere, when there exist neither resources nor the ability to take care of them. We need to get away from all the rhetoric and develop a long term program, but the problem is that there are no votes to be gained and therefore it is not done.

Unprotected Peasants

Since agrochemicals first began to be used in this country, no one can recall when there has been any education as to the use of pesticides and fertilizers. This is especially urgent in a peasant community in which no census has ever been conducted.

Venezuelan peasants are not at all like the French who, when it comes to handling agrochemicals, wear all the appropriate clothing. It is precisely from there, from France, whence come great quantities of pesticides whose descriptions disclaim any toxic effect, but without making clear for whom. Obviously, for the French themselves who are knowlegable on the subject and who use all the necessary safeguards. But it is not that way in Venezuela, where the Creole peasant takes no protection at all. He uses neither masks, nor gloves, nor any other kind of safeguard.

A lot of money is spent in this country in universities and study centers, the director of Bioma continues, and paradoxically they are given no opportunity to develop the specifications of agrochemicals used in the country, not to mention determining the effects of these substances on our society and our environment.

Health Protection Measure

When and if a regulation without provision for toxicological controls is published in the Official Gazette, the health community would bring the case before the Solicitor General of the Republic, not only for the negative effects it engenders for the Venezuelan people, but also for the abuse of executive power toward the commission that drafted the original resolution which did contain standards.

Adelina Gonzalez, public health inspector and codrafter of the new General Regulation on Plaguicides, described as inexplicable the silence of the Ministry of Health, in view of the activities of those interests that want to usurp a function that pertains primarily to the S.A.S. [expansion not given]. The Ministry of Health keeps a guilty silence while it tries to pass this responsibility to the Ministry of Agriculture and Livestock, especially when control of these agrochemicals in developed countries is regulated by an interdisciplinary committee of environment, health, and agriculture, and is never the responsibility of a single body.

REGIONAL AFFAIRS

Kuwait Oil Well Fires Increase Toxic Gas Levels in Gulf Region

92WN0118Z Tehran JOMHURI-YE ESLAMI in Persian 30 Oct 91 p 14

[Text] Poisonous gasses rising from the burning wells of Kuwait have raised air toxicity in the Persian Gulf region to the level of the world's large cities.

The IRNA reports yesterday from Tokyo that Taher Hoseyn, a "professor at King Fahd University" in Saudia Arabia, announced the above while addressing participants at an international conference on acid rain in East Asia. He said: Extensive research must be done to get accurate estimates of the damages to the people in this area caused by the burning wells in Kuwait.

Continuing, he added: Kuwait's burning wells burn about 2.5 million barrels of oil daily and they pour 200,000 tons of sulphuric oxide into the air.

He noted that air samples have been taken in various parts of the Middle East and it has been observed that in addition to the sulphuric oxide, the quantity of toxic gases such as arsenic and cadmium in those areas is comparable to that of the world's important cities.

Researchers from Japan, South Korea, China, the Soviet Union, and Saudi Arabia participated in the one-day international conference on acid rain in East Asia, held yesterday in the city of Kit Kyosho, Japan.

Syrian Ambassador to Riyadh Views Regional Political, Water Issues

London AL-SHARQ AL-AWSAT in Arabic 19 Oct 91 p 5

[Interview with Syrian Ambassador to Saudi Arabia 'Umar al-Sayyid by Yamani al-Zaybaq in Riyadh; date not given]

[Text] The question of security arrangements submitted by Israel within the framework of the peace conference talks suggests that the Middle East region might be a candidate for new developments if Arab-Israeli relations are normalized. In view of the key role the Syrian Arab Republic would play with regard to the proposed arrangements, AL-SHARQ AL-AWSAT has met with Syrian Ambassador in Riyadh 'Umar al-Sayyid and had the following interview with him concerning current issues in the region:

[Correspondent] How can the Arab countries and the Gulf countries translate their war and victory in the Gulf into a formula for the future?

[Al-Sayyid] Our views have been contained in the Damascus Declaration. This declaration is an open program for everybody to cooperate in the various security, economic, and political fields.

[Correspondent] Are the military meetings between the chiefs of staff of the six Gulf countries and the arrangements resulting from them considered to be complementary to the Damascus Declaration, or are they security arrangements independent of it?

[Al-Sayyid] The Damascus Declaration does not abolish security treaties and arrangements agreed upon between the GCC states, nor does it constitute a substitute for them, but we can say that they will go along with the Damascus Declaration when the subject of implementation comes up in the future.

[Correspondent] What are the common bases between the Damascus Declaration and the Arab League Joint Defense Agreement, which has been in existence for 40 years?

[Al-Sayyid] The Declaration clearly refers to adherence to the Joint Defense Agreement and to the Arab League Charter. It said that the countries who signed the Declaration will seek to lay down a comprehensive protocol that would organize mutual obligations between the Arab states, so that it will be a practical program to ensure the safety and security of the Arab countries, and a model for the achievement of a comprehensive Arab security and defense system. Article Two of the Joint Arab Defense Treaty provides that "the contracting countries shall consider any armed aggression against one or more countries or against their forces as an aggression against them all and shall give aid to the country or countries against which the attack is being committed and shall immediately, individually or collectively, take all the measures to repel the aggression and restore security and peace." The security protocol referred to in the Declaration will be based on the treaty. The declaration refers, in particular, to the fact that any GCC state has the right to seek help from the Syrian and Egyptian forces if it so wishes.

[Correspondent] The al-Ta'if Agreement provides for the Lebanese legitimate government to carry out its tasks. What are the opportunities that need to be exploited?

[Al-Sayyid] The al-Ta'if Agreement has been implemented almost completely. In Lebanon now, there is stability and a legitimate authority exercising its powers freely and independently. There is a radical change in Lebanon for the first time since the beginning of the civil war. With regard to the social and economic situation, things are proceeding normally. There is an international fund to rebuild Lebanon that has been approved by the Arab summit. It needs further support and financing. The implementation of this project has been delayed by the Gulf war and developments in Eastern Europe and the Soviet Union. This has led to the rich countries reconsidering the policy of distributing financing and investments.

[Correspondent] When Turkey announced on 13 September 1990 that it will reduce waters reaching Syria and Iraq, did it violate the 1973 Helsinki Agreement?

[Al-Sayyid] The question of water in the Middle East is a grave concern, and there will be conflicts involving it in the future. Turkey has built many dams and water projects on the Euphrates that have actually reduced the amount of the water flow. There is an agreement in principle with Syria that the amount of water should not be less than certain quantities. After the irrigation projects in Syria have been completed, the water has become irregular and insufficient.

With regard to the peace pipeline, Turkey wants to draw water from the two rivers [the Tigris and the Euphrates], in order to export it to the Gulf and Israel in return for oil. There is no doubt that Israel will be the primary beneficiary from this project. But the Gulf countries do not welcome this project, since most of them have built high-tech desalination plants in a way that has become more economical than the cost of water from the peace pipeline. This is on one hand. On the other, I wonder who would make his life and economy dependent upon a water source over which he has no control and which is subject to political consideration.

Syria is seeking a united Arab stand with regard to the question of water. At the next Istanbul conference, it will be seeking effective Arab participation in order to defend Arab water interests and foil the Israeli plans. Several delegates have been dispatched to the Arab countries in order to explain this matter. There is an outstanding invitation to hold an Arab conference on water.

Role of Water Resources in Middle East Conflicts Examined

92WN0161A Tehran JOMHURI-YE ESLAMI in Persian 10 Nov 91 p 15

[Text] The shortage of water has become an insoluble crisis for most Middle Eastern countries, especially the Zionist regime.

The importance of this issue becomes clear when we realize that procuring more water resources is given priority by the Zionist regime, and since the establishment of the Zionist government on Palestinian soil, this regime has consistently tried to gain access to the water resources of the Arab countries.

This issue is so important that the distribution of water among the countries of the region, including occupied Palestine, has become one of the main issues of the day.

In this connection, the United States is trying to hold a conference, called the "International Conference on Water Resources," the goal of which is to procure the water needed by the Zionist regime within the framework of official international agreements.

In the so-called conference between the Arabs and Israel, the issue of water is one of the paragraphs to be discussed, especially since in raising such an issue the Zionist regime intends to make an intense effort to legitimize this regime's use of the water resources of Arab countries.

At the same time, the Zionist regime has prepared various plans in order to get access to the water resources of Lebanon and its other neighbors, both through the occupation of portions of these countries and through bilateral and even multilateral agreements with other Arab countries.

Informed sources believe that now that the international situation has placed the Arabs in a weaker position than the Zionist regime, this regime will deem the time right to raise the issue of water, not only in the peace conference but in any other conference, as well.

Considering the importance of the water issue, and in the light of the expectations of Israel to use the water resources of the countries bordering Palestine, some Arab circles are concerned that the decade of the 1990's will be one of water crisis, most likely ending in the start of bloody wars for domination over water resources.

In the same connection, economic experts project that in the future the issue of water procurement will be more important than that of oil, because at the present the Arab countries are facing a shortage of water at a level of 44 percent. The reason is the Zionist regime's taking over of a large part of the water resources of the Arab countries. This regime also is trying to take away the remaining water resources from the Arab countries in the future.

Reports that have been prepared in this area indicate that the theft of water by the regime occupying Qods began long ago, and that the theft of water from the rivers of Lebanon has increased to 1.3 million cubic meters annually. Based on this report, the Zionist regime not only wants Palestine, but also has its eyes on lands in Lebanon, Syria and Jordan in which several rivers flow, and thus far has been successful in this area. At the present time, with the taking over of the Litani, al-(Wazani) and Hasbani Rivers in Lebanon, it has deprived Gaza and the West Bank of 1.3 billion cubic meters of water annually.

At the same time, in the opinion of experts, with the increase in the flood of Jewish migration to occupied Palestine, Israel will need more water resources in the future.

At the present time, the Zionist regime requires 2,100 million cubic meters of water annually, of which only 1,650 million cubic meters is provided, and it must resort to other sources to make up the shortage. Based on this estimate, from the year 2000, the water needs of the regime occupying Qods will reach 4 billion cubic meters annually.

Considering this vital need for water, the Zionist regime has no other alternative but to resort to force to eliminate its water needs, resorting to such weapons as the

1967 war, as a result of which it was able to gain access to 650 million cubic meters of water on the West Bank, and the occupation of Southern Lebanon, resulting in an additional 800 million cubic meters of water.

Also, after the 1967 war, by occupying the Golan Heights, Israel was able to gain control of a large part of the Yarmuk River in that area and not only prevented the building of the dam which was supposed to be built on that river, but also changed the river course towards (Tabaria) Lake in occupied Palestine to pour more water, 1 million cubic meters, into the lake.

This regime is now making an effort to also surround the water resources in southern Egypt. For this purpose the Zionist regime is trying to build several dams on the River Nile in Ethiopia.

The Ethiopian heights provide 85 percent of the Nile water. Considering the importance of water for the Zionist regime, even if we optimistically consider the Madrid conference a proper framework for resolving the chapter of conflict in the Middle East on the basis of the premise of peace for land, it is simpleminded to think that the Zionist regime will give up the natural water and land resources of the Arab countries.

Political experts believe that even if, out of necessity, Israel gives concessions for peace with the Arabs, this will not mean that the Zionist regime has given up its old ideology of establishing the great state of Israel.

According to the IRNA report from Beirut, these experts believe that Israel is trying, through economic activities and making use of the natural resources of Arab countries, including their water resources, to penetrate Arab society and in this way prepare the grounds for attaining the dream of the great state of Israel.

EGYPT

Minister Announces National Antipollution Plan

92WN0128F Cairo AL-JUMHURIYAH in Arabic 29 Oct 91 p 6

[Report by Faraj 'Abd-al-'Aziz: "Arab Strategy To Protect Environment from Pollution"]

[Text] Engineer Muhammad 'Abd-al-Wahhab, the minister of industry, announced that it has been decided to create a plan to counter environmental pollution in Egypt at a cost of 2 billion Egyptian pounds. He stressed that the ministry has decided to ban the construction of any new factory that might produce environmental pollution, and that the ministry will use the most modern technology in new factories to prevent pollution.

In a speech on 28 October 1991, before the Conference on Environmental Pollution in the Arab World, he stated that the UN has decided to establish a regional office in Cairo to serve the Arab, Asian, and African nations in this regard.

At the conclusion of its sessions, the conference recommended devising a comprehensive Arab strategy to protect the environment from pollution, and called on the Arab League to establish a specialized agency for environmental protection in the Arab nation.

The conference called on the UN to intervene with Israel to end nuclear armament, which exposes the region to the dangers of radiation.

Conference Chairman Eng. Hamid al-Qadah stated that the Federation of Arab Engineers, which organized the conference, will call on Arab and foreign nations to enact rigorous international laws to protect against environmental pollution.

Dr. Muhammad Qashwah, the conference's general reporter, stated that the federation had called for the avoidance of damages resulting from chemical industries, in order to protect the atmosphere and water sources from pollution, and for guidance in the use of insecticides and chemical fertilizers on agricultural land.

Dr. Eng. Muhammad 'Ali Bashar, secretary general of the Engineers Union, stated that the union would form a special committee to follow up on implementation of the conference's recommendations, and that it would also continue to cooperate with Arab and foreign engineering societies in order to play an active role vis-a-vis protecting the health of mankind from pollution stemming from gasses.

Water Pollution Control Center Established in Suez

92WN0128E Cairo AL-JUMHURIYAH in Arabic 28 Oct 91 p 6

[Article by Faruq 'Abd-al-'Aziz and 'Ali Mansi: "Al-Banbi Opens Water Pollution Control Center in Suez"]

[Text] On 27 October 1991, Dr. Hamdi al-Banbi, minister of oil and mineral resources, and Governor Muhammad Samih al-Sa'id, governor of Suez, opened the Water Pollution Control Center within the Oil Authority of the al-Nasr Oil Company in Suez.

The minister announced that the center is one of three other centers in Alexandria, Ra's Gharib, and al-Ghardaqah, costing some 9 million Egyptian pounds.

He said that the center was equipped with every modern device to counter water pollution—in record time—from the coasts of the Gulf of Suez to Abu-Rudays.

The minister and the governor also opened a unit in the al-Nasr Oil Company to treat industrial waste, which will contribute to eliminating pollution and treating industrial waste in the Suez area.

The minister turned over to the governor the deeds of ownership for the second stage housing units of the company's housing development, consisting of one apartment building containing 20 new units, which cost

500,000 pounds. He also laid the cornerstone of the third stage, consisting of four new units. The total number of units will be 15 apartments.

Official Warns of Increasing Waste Product Pollution of Nile

92WN0128B Cairo AL-AHRAM AL-MASA'I in Arabic 26 Oct 91 p 1

[Article: "Official Source Warns 9.7 Billion Cubic Meters of Waste Products in Nile by 2000; 100 Million Egyptian Pounds Lost Annually Because of Pollution"]

[Text] By the year 2000, the volume of liquid waste products dumped into the Nile, its tributaries, and agricultural drainage ditches, will total 9.7 billion cubic meters, with necessary treatment costs amounting to 422 million Egyptian pounds.

An official source in the Ministry of Public Works and Water Resources made that statement, and added that Egypt was losing at least 100 million pounds a year in treating the Nile waters for pollution, in addition to the loss stemming from the death of fish resources.

This source pointed out that most of the waste products dumped into the Nile were concentrated in 10 principal centers, including the Aswan area. These include a group of sugar plants in Kawm Umbu [Kom Ombo]; Idfu; Dishna; Qus; the Nile Oil and Soap Company; the al-Nasr Dehydrated Onion Company in Sawhaj; and the Hulwan area, comprising 44 factories, most of them producing iron and steel. In addition, there are the waste products from the Fertilizer Company plant and the chemical industries on the al-Dumyat [Damietta] branch, and in the area of Shubra al-Khaymah, which dump their untreated waste into the main channel of the Nile.

Nile Pollution Sources Detailed

92WN0128D Cairo AL-AHRAM AL-MASA'I in Arabic 26 Oct 91 p 5

[Report by 'Abd-al-Mun'im Abu-Shamiyah: "River Appeals for Help Against Deadly Pollution"]

[Text] Despite the many continuous warnings and numerous administrative decisions, Egypt's Nile artery and source of life is still calling for help, demanding protection from the many different kinds of pollution to which it has been, and still is being, exposed. The Nile needs protection from polluted waste products concealed in the pretended ignorance of industrial sources. It needs protection, therefore, from the dumping of their toxic wastes into the river, from the public's insistence on building housing complexes on both banks, and going into the river to wash their dishes and clothes using materials containing lethal potash. The Nile needs protection from their heedlessness, when they force animals and cattle to wash in the river, carrying out their needs in its waters, which are already inundated with sewage wastes from their homes, revealing the peak of uncivilized behavioral decadence, despite their awareness of the dangers of what they do, which is a direct crime against the rights of the innocent. The size of the problem is also revealed in the competition of farmers in the governorates of Kafr al-Shaykh and al-Gharbiyah with regard to irrigating their farms with the waters of drainage ditches that teem with waste products from area factories, as well as the competition of vehicles of sewer-cleaning contractors, transporting vast amounts of sewage from homes that are not tied into sewer networks in the cities of Tanta, al-Mahallah al-Kubra, and Samannud, and from houses in villages that are far from the Nile area, to dump their loads into the Nile and the ditches. These contractors reap enormous profits from this, at the expense of public health and the innocent, who collapse daily because of kidney failure and liver disease. The assault on the Nile has not been content with even this degree of pollution. Stone-crushing contractors have begun to establish stone-crushing plants on the banks of the Nile, which have become covered with lime dust.

This still has not been enough. On the contrary, it includes the establishment of hundreds of potteries in the heart of residential congestion in cities and villages of the western Sammanud District, to produce clay jars for honey, water pots, pitchers, and small green pottery ovens. From these potteries emanate toxic clouds of black smoke from the burning of the fuel oil used in the kilns, whose smoke must be seen by those officials who have not yet responded to the cries for help by those living in their midst. These residents are beset by the perils of pollution on the land and in the air. They have begun to suffer from allergies, asthma, nasal infections, and laryngitis, and are threatened with eye diseases.

Sewage Pits

In many towns of the delta's governorates, the pollution problem is embodied by the phenomenon of establishing pits in the center of residential congestion, which daily receive hundreds of vehicles of sewage contractors from homes that have not been tied into the sewer networks. These pits are not connected with the networks, so that waste products can flow through the sewage networks. A hell of repulsive odors emanates from them, and they are surrounded by swarms of flies and mosquitoes carrying poisons from the sewage to the innocent in the residential areas around them, so that the hospitals of Tanta, al-Mahallah al-Kubra, and al-Mansurah are filled with those suffering from malaria and typhoid fever, in addition to amoebic dysentery.

Pig Farms

Even garbage collectors achieve their aspirations by establishing pens to breed pigs, which earn large profits for them, and which live on the garbage that is collected. The collectors choose to build their pens in the midst of the most fertile arable lands. These pens teem with thousands of pigs, causing many diseases that are rapidly

transmitted by every breeze to every corner of the surrounding areas. Furthermore, they also cause damage to the crops that rid the gardens of salt in Egypt, leaving behind only brittle twigs, which cannot be restored by the screams and cries for help of residents in surrounding areas. Health agencies warn against and object to the dangers of these pens that hold these pigs without regulations or hygiene, and to which the eyes of officials are closed for reasons known to us and, clearly, known to them as well.

National Conference Recommends Antipollution Measures for Lake al-Manzilah

92WN0128A Cairo AL-AHRAM AL-DUWALI in Arabic 30 Oct 91 p 5

[Article by Dallal [al-'Atawi]: "Recommendation To Require Industries To Treat Waste Products Before Dumping in Lake al-Manzilah, Develop Fish Resources"]

[Text] Port Said—At the conclusion of business on 29 October 1991, the National Conference on the Environment of Lake al-Manzilah [Buhayrat al-Manzilah] recommended that industrial establishments and companies be required to treat their waste products before dumping them into the drainage ditches that flow into Lake al-Manzilah, in order to prevent pollution of its waters, support projects pertaining to construction or development of sewage pumping stations in the east Delta area and Cairo, and grant them priority. A plan, submitted by the Suez Canal University was approved to require universal acceptance of an executive plan to improve the environment in the lake and develop its fish resources.The conference, chaired by Major General Sami Khudayr, the governor of Port Said, requested coordinated efforts to administer the lake technically, and to safeguard the lake's water level through maintaining its water resources, so that its surface area does not diminish, its salinity increase, and its pollutants become concentrated. Dr. Ahmad Duwaydar, deputy chief of the Suez Canal Authority, articulated the need to form a supreme executive committee, headed by Dr. 'Atif 'Ubayd, the minister of cabinet affairs and administrative development, to follow up implementation of these recommendations, in coordination with the Agency for Environmental Affairs. He said that the American AID organization [U.S. Agency for International Development] has decided to participate in developing Lake al-Manzilah.

Deterioration of Lake al-Manzilah Described

92WN0128C Cairo AL-AHRAM AL-DUWALI in Arabic 7 Nov 91 p 3

[Article by Dallal [al-'Atawi]: "Poisoned Lake!"]

[Text] Our problems no longer require description; we have become perfectly aware of our problems, because of the efforts of various people and scientific centers to define them. Now we must begin to think about solving these problems.

We have found out that our lakes are polluted. Among these lakes, Lake al-Manzilah [Buhayrat al-Manzilah] is a major source of rice and fish, but it has deteriorated badly. Therefore, the governor of Port Said, in cooperation with governorate agencies, convened a conference under the auspices of the minister of environmental affairs, Dr. 'Atif 'Ubayd, to discuss a plan to improve the lake within the confines of governorate resources. However, rapid and decisive legislation must be issued to prevent the loss of fishing in the lake, whose fish have become polluted and the fisheries closed, in order to safeguard the lives of citizens. Fishermen have begun to wear gas masks to protect themselves. At the same time that they are catching polluted fish, another urgent matter awaits solution. That is the restoration of coordination among the agencies supervising fishing resources, so that these agencies do not become isolated islands in the community.

Like most of Egypt's lakes, Lake al-Manzilah suffers from environmental deterioration, which has repercussions on fish resources as well as on social and economic conditions.

Lake al-Manzilah is the largest of Egypt's northern lakes in surface area, as well as in economic and social importance, in view of its large fishery resources. The lake's waters are mostly shallow and mostly not more than one-half meter deep. The water is marked by differing degrees of salinity. One of the most important factors that govern the quality of water is the amount and quality of water that flows into the lake from surrounding areas, especially from southern and southwestern areas.

With the economic and social development that Egypt has experienced during the past four decades and the ensuing growth of housing construction, increases in cultivated land, and expansion of industrial activities in the area surrounding Lake al-Manzilah and the areas that affect it, in addition to the control over the Nile waters following the construction of the High Dam, Lake al-Manzilah—in all its environmental elements—has begun to suffer from the effects of this development. Dr. Fikri Ibrahim Khalaf, director of the Office of Environmental Affairs in the Port Said Governorate, says that these effects include:

- a decrease in quantity of the Nile water that used to flow directly or via drainage ditches into the lake
- a huge increase in quantity of sewerage flowing directly or via drainage ditches into the lake
- pollution of drainage ditch water by insecticides and chemical fertilizers, which then flow into the lake
- exploitation of fish resources by unfair methods
- a large increase in numbers of enclosures around the islands, which has resulted in limiting water movement inside the lake

These effects have collectively led to deterioration of Lake al- Manzilah's environmental quality, inasmuch as the natural, life-giving, and chemical properties of the lake's water and deposits have been altered to a level that has begun to negatively affect the quantity and quality of its fish stocks. Naturally, this situation affects the fishing community but, in general, goes beyond to affect the citizens of the governorates surrounding the lake.

This causes some citizens to refrain from eating fish from Lake al-Manzilah, which compounds the problem. The pollution of Lake al-Manzilah and its fish population has become one of the most important local, political topics in the east Delta area.

Dr. Fikri Khallaf, director of environmental affairs for Port Said, added that whatever the nature of the fish pollutants and their extent, there is one fact that all agree upon. That is the deterioration of Lake al-Manzilah's environmental quality and the need to take actions that will ensure an end to this deterioration.

Perhaps the most important cause of the continuation of Lake al-Manzilah's declining environmental quality is the absence of active coordination among agencies concerned with this lake, such as the General Fisheries Resource Board, the Public Drinking Water and Sewerage Board, the Ministry of Irrigation, and the Maritime Police Administration, as well as the National Academy of Maritime Sciences, the National Research Center, and the governorates surrounding Lake al-Manzilah.

Another reason is that working organizations should concentrate on evaluation. Several studies and research projects, which have cost the government large investments, stop short of evaluation and of analyzing samples to learn what pollutants they contain, even though this matter is important. However, the most important matter is that these organizations proceed with their studies toward defining a comprehensive remedy.

INDIA

Viability of Nuclear Power Debated

Cost of Nuclear Energy

92WN0151A Madras INDIAN EXPRESS in English 1 Oct 91 p 10

[Article by G.S. Bhargava: "What Price Nuclear Energy"]

[Text] A beautiful Kannada song was used by the movement to resist nuclear reactors in the forest area of Kaiga. Its words were: "The face of truth is covered with a golden disc./Unveil it...so/That I who love truth may see it." At that time, over six years ago, unveiling the face of the truth was too much to expect from India's nuclear establishment which has behind it, besides the power of a state within the state, the hubris of technical expertise. But within a few months of the coming into office of the Narasimha Rao government, our cynicism seems to be ebbing and there is hope, if not expectation, that the efforts of such movements will not after all go in vain.

There are some straws in the wind. In the wake of the Chernobyl disaster and investigative reports of overexposure to radiation of the employees of the sick reactor at Rawatbhata (RAPS-1), Dr. Raja Ramanna reacted angrily. He questioned the knowledge of nuclear technology and even patriotism of those who had raised doubts about Rawatbhata. While the Chernobyl reactors are graphite cooled, the RAPS system uses heavy water as a coolant. But what happens when the heavy water leaks interminably or the river water used to cool the reactors' end shield, which has a repaired 'hairline leak,' is discharged back into the river? No answer.

Recently when a video magazine showed visuals of nearby villagers afflicted with paralysis and deformities at birth—cuts from a British Channel 4 TV feature—the Prime Minister reportedly persuaded the Secretary of the Atomic Energy Regulatory Board (AERBO), Dr. K.S. Parthhasarathy, to give the official version on the phenomena. He made the customary swipe at those who sow "the seeds of suspicion by deliberate propaganda" but had to admit that there was a safety issue "at that time." Dr. Ramanna's homily about developing countries like ours not being able to afford to spend "too much money on health and safety" and that we should "find out whether international standards are indeed that necessary" has, fortunately, not been repeated by Dr. P.K. Iyengar, the present AEC Chairman.

Newspapers which were reluctant to carry critical articles about nuclear reactor safety are now running features in their video magazines. In short, the matter is in focus and will not go away just because it is inconvenient to some technocrats.

Still, one should not be so unrealistic as to expect safety consciousness to prevail over official indifference—Indian lives are cheaper than nuclear power—and public inertia. The Bhopal experience is an index. The disaster there marked the inauguration of Rajiv Gandhi's prime ministership and he was sensitive in those days to issues like accountability and public welfare. But it was not until five years later under the V.P. Singh government that regular monthly payments were provided for the survivors and the basis of computation of compensation was reopened. This came after a long tussle between the supporters of the victims and the authorities.

But what may clinch the issue of viability of nuclear power in our country is the economics of it. Here also there are hopeful signs. First, the annual report of the Department of Atomic Energy (DAE) for 1990-91 has formally and officially scaled down the target for nuclear power generation from the magic figure of 10,000 MWe by 2000 AD to the less impractical level of 6,050 MWe. It was coy about admitting its revised target burying the statement in the chapter on the Nuclear Fuel Complex as

part of the description of plans for augmentation of ziracalloy and fuel production. That was immaterial, in a sense, because even if it had been flashed on the cover of the report it would not have interested most Members of Parliament, unless there was a whiff of scandal about it. But what had been chanted as a 'mantra', for years has gone out of vogue. The government will have to take note of it, as it already seems to be. The Finance Minister cannot afford to let millions of rupees be squandered as hidden subsidy on nuclear power. In the name of hitting the target of 10,000 MWe by 2000 AD corners have been cut with abandon. Now it may not be possible.

Let us look at the method of costing nuclear power and its result. The report of the Comptroller and Auditor-General (CAG) for 1985-86, dealing particularly with the first Kalpakkam reactor (MAPS-1), pointed out that DAE played down capital costs and showed a high rate of return. For instance, the cost of heavy water for a Candu-type reactor would be Rs250 crore initially at the rate of Rs one crore for a tonne of heavy water because 250 tonnes are needed for the start-up operations. But that is not shown in the books. The strategy is to claim that the power plants are leasing the heavy water from its owner, the DAE, and the lease charges are just 8 per cent. Thus, the cost of heavy water works out to Rs 42 lakh per tonne instead of Rs one crore. And the taxpayer pays for the hidden subsidy of Rs 58 lakh for every tonne of heavy water used.

The CAG report concluded, at the rate of tariff for nuclear power from MAPS-1, which was 0.39 paise per unit (kilowatt-hour), the rate of return on the capital was only 3.5 per cent and not 12 per cent that is expected of power projects. Of course, there was the other subterfuge of leaving out the interest during construction from the computation of cost on several specious pleas and under-rating the cost of waste disposal.

The net result apparently is that the recently-published "directional paper" for the Eighth Five-Year Plan has made it clear that there will be a shift "more and more to hydro and coal-based power generation."

This is not to advocate abandonment of the nuclear technology altogether. That could be throwing away the baby of a potentially beneficial technology with the bath water of the hubris of the DAE mandarins. The case is being made for this technology to be pursued openly and with accountability to the public.

For instance, when the CAG report remarked that non-availability of the required quantities of heavy water had led to a delay of more than a year in the commissioning of MAPS-1 reactor "resulting in heavy revenue loss and avoidable extra expenditure on the systems already established," the DAE replied that importing heavy water from established suppliers would have subjected the reactors to IAEA safeguards. It had never been said that the most important objective of the nuclear power industry would be production of safeguards-free plutonium. Dr. Homi Bhabha no doubt stressed the importance of plutonium as a byproduct but it was not implied—even in those halcyon days—that IAEA safeguards should be circumvented.

Where then did the heavy water come from? U.S. experts like Leonard S. Spector said it was purchased from China at the black market rate of Rs6,000 per kilogramme. No MP has ever cared to ask how the input had been obtained and at what price. Nor did the government care to tell the people. So much for freedom of information.

Poor Safety Record

92WN0151A Madras INDIAN EXPRESS in English 29 Oct 91 p 8

[Editorial: "Nuclear Folly"]

[Text] The statement of the Chairman of the Atomic Energy Commission, Dr. P.K. Iyengar, about the safety of the Narora Atomic Power Station (NAPS) is typical of the nuclear establishment. Dr. Iyengar says that so safe is the NAPS that in case of an earthquake people should take shelter in the nuclear power station. The fact that an earthquake 200 kms away has not damaged the Narora plant is nothing to rejoice. Because of a political decision taken during the Emergency, Narora was chosen as a site for a nuclear power station. It is situated on what geologists call the Bulandshahar fault. Earthquakes occur along geological faults or discontinuities and Bulandshahar has been the epicentre of a massive earthquake earlier. What matters, therefore, is whether NAPS can survive an earthquake in its immediate vicinity and not one which takes place a few hundred kilometres away. The project director of NAPS claims that it can. Let us hope that he is right.

But more than earthquakes and the methodology used in selecting sites for nuclear plants, there are other reasons why the proliferation of nuclear power plants should be stopped. These relate to plant safety and waste management. The safety record of Indian nuclear power plants has not been very good. Dr. Iyengar can deny a causal link between the leakage of radioactive materials from the Rajasthan Atomic Power Station and birth deformities in the neighbouring villages. But is there conclusive evidence that no tritium or coolant heavy water has leaked from this plant? How is it that Tarapore is considered to be one of the most polluted nuclear power plants internationally? As for waste disposal, there is no technology available for it anywhere. Except for eternally policing the radioactive waste there is no other option. Plutonium-239, a radioactive waste product of Indian nuclear plants, has a half-life of 24,500 years; its radioactivity gets reduced only by half in this period. And a group of radio-nuclides called actinides, also products of fission, have even longer half-lives and, therefore, remain active for a even longer period. No one can give a guarantee that these dangerous waste products will be

effectively policed for thousands of years. Therefore, it makes more sense to stop the folly of nuclear power plants' proliferation rather than indulge in fanciful public relations exercises.

Study Shows Northeast Forest Cover Shrinking

92WN0152 Madras INDIAN EXPRESS in English 22 Oct 91 p 7

[Text] (PTI) Agartala, Oct 21—Forest cover is drastically shrinking in the seven north eastern states, which once remained the last vestige of hope as far as forest area is concerned, recent studies have shown.

According to the perspective plan paper for the north eastern states, the forest area, which constituted 55.02 per cent of the Total geographical area in 1970-73, had shrunk drastically to 42.28 per cent within a decade.

The study also indicated a massive increase of 67.95 percent in the area under open or degraded forest, implying growing commercial exploitation of these vital natural resources.

"Forest has been treated as mines and the total outlook is depleting this naturally available resource-base rather than adding value to that base," the paper submitted in the last North Eastern Council meeting at Imphal said.

Despite having more forest cover than the all-India average, the demand in the North Eastern region on the wood-based industries is surpassing the natural supply potential, the study said.

Citing examples, the plan paper said the plywood mills in Assam required 3.28 lakh cubic metres of plywood, while forests in the state could supply a maximum of 56,000 cubic metres without jeopardising their existence.

Similarly, Nagaland produces wood to the extent of only 6,000 cubic metres against a demand which exceeds the production by 80,000 cubic metres per annum, a forest survey of India study said.

Similar reports have come from other north eastern states. "The staggering gap between demand and supply is leading to continued depletion of the forest in the north eastern region and this demand-supply gap has posed a big challenge to forest managers and planners," the paper said.

Besides the wood-based industries, jhum (slash and burn) cultivation had also resulted in large-scale deforestation, despite variance from state to state. The area under jhum cultivation had increased from 28.6 per cent total geographical area to 29.65 per cent between 1972-75 and 1980-82.

Besides causing environmental destability, such large-scale deforestation had resulted in the immediate problem of flash floods in the plains and soil erosion in the hills, the plan paper said.

In Assam alone, where forest cover is the worst-affected, the flood damage has increased from Rs. 40.22 crore in 1984-85 to a staggering Rs. 386.59 crore in 1987-88, it said.

The impact of the soil erosion could be gauged from the fact that the loss of soil in land under jhum was a massive 40 tonnes per hectare in the hills, the study said. Soil erosion on account of deforestation in the plains had been estimated at five tonnes per hectare.

Both soil erosion and floods were interlinked with silting of river beds due to soil erosion in the hills, it added.

The plan paper suggested taking up a three-pronged strategy to check the massive deforestation, involving an improvement in the quality of open forests, checking further deforestation and maintaining existing forests properly.

To help ease the pressure on land, a part of the open forests could be transferred for agricultural purposes and the remaining forest cover put under afforestation schemes, it said.

Major economic species like tea and rubber could be planted to rehabilitate the jhumias and other poor tribals, the paper suggested and added that the local people should be allowed to raise the plants and made beneficiaries of the scheme.

IRAN

Lack of Plan To Clean Rivers Emptying into Caspian Sea Scored

92WN0118Y Tehran ABRAR in Persian 30 Oct 91 p 9

[Text] IRNA—While the government is allocating millions of dollars in foreign exchange to procure petrochemicals and make the most of the Caspian Sea reserves, unfortunately no plan has yet been presented to clean the polluted rivers emptying into this sea.

Every year millions of litres of waste water from factories, thousands of kilograms of poisonous pesticides and chemical fertilizers, as well as 80 percent of the urban waters converted to sewage, are poured into the Caspian Sea, and so far none of the slogans about the need to alleviate the pollution in this sea has been realized.

There are 72 kinds of fish in the waters of the Caspian Sea, some of which, such as the sturgeon family, the elephant fish and the uzun barun, have great economic value.

According to the assessment of the nation's maritime organizations, the depth of the northern Caspian sea is 20 meters.

Based on statistical studies of the Soviet Union's fisheries, in an unequal competition it claims more than 70 percent of the fishing of various kinds of fish in the Caspian Sea.

In addition to this, according to an economic program designed by this country, every year they kill countless numbers of white-bellied seals, which are considered the only kind of mammal in the Caspian Sea. Seal hides are used by cosmetic and drug manufacturers, and seal hides are also used to make leather clothing.

In the past, the stocks of bony and cartilaginous fish in the Caspian Sea were quite high, so that in the years 1317 [21 March 1938 - 20 March 1939], 1318 [21 March 1939 - 20 March 1940] and 1319 [21 March 1940 - 20 March 1941] alone, 5,000 tons of fish were taken annually from the Caspian Sea.

In the years since the stocks have gradually decreased with the destruction of natural spawning grounds in the river beds on the one hand and uncontrolled fishing on the other, so that in the decade of the 1350s [1970s] the amount of whitefish caught gradually declined to 1,000 tons.

Currently the most important unnatural factor threatening food resources for future generations in this sea is the entry of various industrial waste waters through the rivers emptying into the Caspian Sea from both the Iranian and Soviet sides, and especially the flow of polluting hydrocarbons into the waters of the northern Caspian Sea from the Soviet side.

According to the nation's fishery officials, expansion of the fisheries catch by 1,000 tons per year using 40 fishing launches is one of the crucial elements of the fishing industry's part of the Five-Year Plan for the fisheries of the northern provinces.

Despite the expenditure of millions of dollars in foreign exchange on fisheries and the planned purchase of tens of fishing vessels, so far no planning of any kind has been done to clean up the polluted rivers emptying into the Caspian Sea.

The destruction of forests and pastures and ignoring polluted rivers and finally the irresponsible extensive use of sand and gravel by factories that procure sand and gravel on the banks and beds of the rivers, especially in the province of Mazandaran, are also seen as indications of noncoordination and the creation of conditions for the destruction of natural resources in the Caspian Sea.

Unfortunately, more than 70 large and small rivers on the Iranian coast of the Caspian Sea, which are 5 percent of all the rivers emptying into the Caspian Sea, have become severely polluted through the conversion of 80 percent of the urban water supply to sewage, the dumping of millions of litres of factory waste water, as well as thousands of kilograms of pesticides and chemical fertilizers used in the pastures of the nation's northern provinces.

The pollution and bitterness of the waters of these rivers, especially in the Province of Mazandaran, is so high that countless numbers of whitefish are lost as they travel to their natural spawning grounds, and the eggs of some of the fish which do succeed in spawning do not have a chance to hatch, and in this way they gradually go out of the Caspian Sea cycle.

UN To Help With Reforestation Project

92WN0184Y Tehran ABRAR in Persian 13 Nov 91 p 9

[Text] With the cooperation of the United Nations Development Program (UNDP), for the first time the Forest Seed Production Center's project will be implemented over an area of 300 hectares this year in the Teshbandan-e Amol area. Likewise, with the creation of industrial paper complexes in the provinces of Kordestan and Bakhteran, extensive land in these areas will be cultivated with pine trees, and in this way the country's wood production will also be increased.

These comments were made by Engineer Mohammad 'Ali Fatukian, deputy director for forestry affairs for the National Forests and Pastures Organization, in an interview with an economic sector reporter from the IRNA.

He said: In the implementation of the government's policies, more than 120,000 hectares of forest in the northern part of the country have been transferred to the private sector through auctions and public notices in the framework of forestry projects.

Eng. Fatukian explained: By the end of this year [20 March 1992] about 350,000 hectares of the country's northern forests will have been transferred to private-sector wood industry owners and forest cooperatives in the framework of forestry projects. According to him, in this way a total of 1.5 million hectares of northern forests will be covered by active forestry projects.

Eng. Fatukian said that this year the nation's wood production has increased to 2.3 million cubic meters, up from 1.8 million last year. He noted: By the end of the year 1373 [20 March 1995], 1.9 million hectares of land in the northern part of the country will be covered by forestry projects, and wood production will be up to 4 million cubic meters per year.

He said: All of these projects will be transferred for implementation to private-sector industrialists and cooperatives.

Eng. Fatukian said that last year 90 million saplings were produced, including wood product and multipurpose trees.

He explained: In view of the increase in forestry projects and the expansion of the program in the next five-year plan, the number of saplings produced will go up to 500 million per year, more than 80 percent of which will be produced by the private sector through the transfer to them of projects for implementation.

Yasuj Sugar Cane Factory Continues To Pollute Besharakeh River

92WN0184Z Tehran ABRAR in Persian 24 Nov 91 p 9

[Text] After more than six years of effort to prevent pollution caused by sewage from the Yasuj Sugar Cane Factory, nothing has yet been done about this problem.

In announcing this, an expert from the Kohgiluyeh va Boyer Ahmad Conservation and Environment Office told the IRNA:

As of 15 Aban [7 October] this year, the Yasuj Public Prosecutor's Office gave this factory three months to present and carry out a program for cleaning up its sewage. Otherwise, under the Conservation and Environment Law, the sugarcane factory will also be closed.

He added: Along with the sewage from the Yasuj Sugar Cane Factory, unfortunately human sewage from this factory is also dumped into the Besharakeh River, polluting it with no consideration for environmental issues and without regard for the rights of those living along the river.

He added: The water from the Besharakeh River is used for drinking water and cultivation by the rural people along its banks. Dumping human sewage into the river will probably cause the spread of typhoid fever, diarrhea, dysentery, and other contagious diseases.

He noted that inattention by this factory's officials to this environmental problem has brought agricultural losses for the rural areas along this river.

In this interview, environmental protection experts from Kohgiluyeh and Boyer Ahmad added that measurements and tests done early in the month of Mehr [23 September - 22 October] last year on the sewage from this factory, which merely converts raw sugar to white sugar, every hour 167 cubic meters of sewage were dumped into the Besharakeh River from this factory, and the level of microbe pollution was 1,100 [kiloforms?] per 100 milliliters of sewage.

He said the reason for this high rate of microbe pollution is the mixture of human and industrial sewage.

In conclusion, he noted that when the sugar cube factory went back into operation this month using sugar beets instead of sugarcane, the pollution level in the river went up.

JORDAN

Study on Crop Damage Cites Pollution, Whitefly Damage Assessment

92WN0168A Amman JORDAN TIMES in English 4 Nov 91 p 3

[Article by Shirin Halasa: "Study Confirms Polluted Water Damaged Crops"]

[Text] Amman—The Jordan Valley Authority released the findings of a team of British experts who were dispatched to the Kingdom following the ecological disaster that destroyed thousands of dunums in the Jordan Valley earlier this year.

The damage, estimated by farmers whose crops were destroyed to be around 60 million JD [Jordanian Dinar], was caused by polluted water from the King Talal Dam.

Initial tests conducted by the University of Jordan's Water Research and Study Centre indicated that the land irrigated by water from King Talal Dam contained a boron toxicity level of 10 to 22 ppm (parts per million), while the adjacent non irrigated land had a boron toxicity level of 2.3-3 ppm.

The amount of boron needed in the soil for optimal growth ranges between 0.01 and 4 mg. per litre, centre officials had said. Yet, earlier tests carried out by the centre found boron levels ranging from 6 to 14 mg. per litre.

According to recent findings of the British team, which was dispatched to the Kingdom at the behest of the Jordanian Government, the failure of the tomato crop in the irrigated area of the Jordan Valley in 1990-1991 was a direct result of "a severe outbreak of tomato yellow leaf curl virus (TYLCV) resulting largely from the warm dry winter allowing its whitefly vector (carrier) to thrive," according to the report.

The report also indicated that the poor construction and hygiene of the nurseries, the intensive cultivation of tomato and other vegetable crops as well as the pesticide resistance in the whitefly were all contributory factors to the failure of the tomato crop in the Ghor.

"Poor quality of irrigation water, particularly from the King Talal Dam, may also be diminishing crop yields but was not the primary cause of the crop failure," the report found.

The report contained a number of recommendations including assessments of neighbouring countries' pesticide control practices, searching for resistant cultivare, improving the construction of nurseries, using physical barriers to protect crops and to use alternatives to insecticides.

Whitefly Primary Cause of Crop Failure

92WN0168B Amman JORDAN TIMES in English 9 Nov 91 p 3

[Article by Nidal M. Ibrahim: "Virus Spread by Whitefly Responsible for Crop Damage, Report Concludes"]

[Text] Amman—The primary cause of the failure of the 1990-91 tomato crop in the Jordan Valley region was the outbreak of a virus that was carried by the whitefly, a government report has found.

A British team of experts hired by the government of Jordan to determine the cause of the crop failure determined that the outbreak of Tomato Yellow Leaf Curl Virus (TYLCV) damaged and incapacitated the crops in the Jordan Valley region.

The report directly contradicts the claim of farmers in the area that the crop failure had been caused by the use of polluted water from the King Talal Dam.

"Although the irrigation water comes from a catchment receiving industrial waste, the mission was given no pathological evidence to support speculation that heavy metal toxicity had damaged the crops," the report stated.

However, the team of British experts suggested that the full effects of the continued use of water from the King Talal Dam should be further studied. Specifically, they said in the report, the marketability of crops known to come from the area may be diminished.

Dr. 'Abd-al-'Aziz Wishah, secretary general of the Jordan Valley Authority, said the government would commission more studies to determine what, if any, were the effects of continued use of irrigation water from the King Talal Dam.

Dr. Walid 'Abu-Gharbiyya, dean at the Faculty of Agriculture at the University of Jordan, said that the appearance of TYLCV was directly linked to the introduction of the whitefly in Jordan about 20 years ago. "This disease usually occurs on the tomato whenever the fly is there," he said. "If the whitefly is not there, the disease doesn't occur.

"The whitefly itself is new to Jordan," he continued. "We didn't have the disease or the whitefly but with the introduction of the whitefly, the disease began to occur."

The disease causes mottling and curling of the leaves, he said, resulting in the plant becoming smaller in size and incapable of producing normal fruits. The disease itself, he added, is eliminated when temperatures cool and the plant may recover to once again become viable.

But the continued presence of the whitefly, especially during the extended summers of the last four or five years, allows the disease to flourish again.

"The fly tries to feed upon the tomato," he said. "If it feeds on an infected tomato plant...it acquires the virus. So when it flies to another virus-free plant, it feeds upon it and while feeding transmits the virus."

Insecticide-spraying campaigns being conducted by the Ministry of Agriculture are trying to eradicate the fly without much success, Dr. 'Abu-Gharbiyya said.

In another finding, the British team found that the high salinity in water used to irrigate the crops may decrease the yield of sensitive crops such as banana by as much as 25 per cent.

"The salinity causes the plant to become weaker, smaller in size and, in extreme conditions, it becomes dwarfed and small," Dr. 'Abu-Gharbiyya said.

Dr. Wishah said the JVA is addressing the problem by mixing fresh water from the Yarmouk River to water from the King Talal Dam, lowering the overall salt content.

Dr. Wishah stressed that the high salt content of the water from the King Talal Dam was not the cause of the failure of the tomato crop. "Tomato is a tolerant crop for salinity," he told the JORDAN TIMES.

In another finding, the report found that the conditions which brought about the expansion of the whitefly and the resultant crop failure—drought, warm winters and unusual rainfall patterns—may recur, possibly again endangering crops.

Minister Calls on Factories To Recycle Water

92WN0167A Amman JORDAN TIMES in English 12 Nov 91 p 3

[Text] Al-Zarqa' (J.T.)—Minister of Water and Irrigation Samir Kawar Monday called on factory owners in the al-Zarqa' Governorate to recycle water at their firms and to introduce proper measures to protect the environment.

Such steps are essential to rationalise the use of water so that clean and potable water can be available in more quantities to the public, the minister said during a visit to the governorate where he inspected water projects and met with officials to learn about the water situation.

The government is seeking to carry out projects that benefit the largest number of citizens and is trying to make available sufficient funds for them, said the minister at a meeting with al-Zarqa' Governor Muhammad Shubaki and other officials.

The minister reviewed with local officials the general environmental situation in al-Zarqa', environmental problems resulting from the concentration of a large number of factories along the al-Zarqa' River and the effects of these problems on various crops and trees.

Discussions centered on the Khirbat al-Samra' waste water treatment plant and the negative effects of the water leaking onto agricultural lands. The minister said that when a new plant, which is now under construction, has been completed and becomes operations, local farmers would be allowed to use the recycled treated water to irrigate fruit trees in the area around the plant.

The minister urged factory owners to keep their treatment units operating all the time so that only treated water is used. He said a proper location should be found for dumping the solid waste material.

He also announced that the ministry was creating a special department, the Information and Education

Department, to offer guidance services to the public about ways of consuming saving water.

The governor complained of environmental problems plaguing the al-Zarqa' region, including the presence of factories that had been set up at random and without proper organisation. The result has been that the area now has environmental problems.

Later Mr. Kawar inaugurated al-Rawdah water purification plant, which pumps 30 cubic metres of water daily. The plant director said that the plant, which cost JD 100,000 was built by a private company.

The plant is the first of its type in the al-Zarqa' region and its operation is supervised by the ministries of health, water and irrigation and industry and trade.

UNITED ARAB EMIRATES

Progress on Construction of Four New Dams Reported

92AE0091Z al-Shariqah AL-KHALIJ in Arabic 14 Sep 91 p 3

[Report by Muhammad Amin]

[Text] The progress towards completion of the four new dams now being built by the Ministry of Agriculture and Fisheries—the Wadi Zikt dam, the Wadi al-Quz dam, the Wadi Hadhf dam, and the Wadi al-Tawiyayn dam—is 35-85 percent, varying from dam to dam. It is hoped that construction on all the dams will be completed by the end of this year.

This was announced by Deputy Minister Hamad Salman. He added that, speaking of dams, the Ministry had dug several of them to hold water from the wadis [valleys], [previously] annually wasted into the sea, to feed the groundwater and raise the water tables. These include the dams at Wadi Ham, Wadi al-Bih, Wadi Julfa, Wadi Idhn, and Wadi al-Ghayl, which can hold 15 million cubic meters of water, an amount that may be multiplied by repeated floods in one season of the year.

He said that the Ministry had produced and completed designs for four other dams, besides the four near completion, with the aim of building them soon. The Ministry is sure that the construction of the dams is an effective means of developing groundwater, thus occupying the highest degree of social and national development in this land, because of long-range goals of building up water resources, treating polluted water, and protecting the properties and dimensions of seawater from the dividing line of fresh water.

He added that, turning to the four new dams being built now, total storage capacity is 24 million cubic meters: 3 million cubic meters (660 million gallons) for the Wadi Zikt dam, 4 million cubic meters (880 million gallons) for the Wadi al-Quz dam, 3 million cubic meters (660 million gallons) for the Wadi Hadhf dam, and 14 million cubic meters (3,080 million gallons) for the Wadi al-Tawiyayn dam.

He said that the cost of planning and building the Wadi Zikt dam was 28.641 million Emirian dirhams. The site of the dam was selected for maximum economic feasibility and for protection from the annual destruction of property and closure of roads [caused by floods]. They can serve areas as large as 23 hectares.

He added that the cost of building the Wadi al-Quz dam was 31.641 million dirhams. Its best economic advantage is its 2.8 percent interest rate on the cost. This dam could serve existing farms, equalling approximately 6 hectares, in addition to about 23 hectares of new land.

The cost of the Wadi al-Hadhf dam was 25.228 million dirhams. It has a greater significance, because the region of Muzayri'/Masfut is closed off and encircled by a series of of steep mountains down which water flows quickly, without any chance to feed into the groundwater reserve. Thus, this region suffers from a water shortage. In addition, the high-density agriculture creates a great deficit in groundwater reserves.

The cost of the Wadi al-Tawiyayn dam was 34.875 million dirhams, with dam water likely to benefit about 134 hectares of agricultural land.

New Dams

As for the four other dams to be built in the future, the agricultural area whose groundwater reserves can be supplied by the Wadi [Sufni]/Wadi 'Ashwani dam is estimated at 99 hectares, including the very densely agricultural al-Dhayd region.

One dam, at Wadi al-Naqab, can serve areas up to 78 hectares, most of which are in Ra's al-Khaymah and suffer from brackish water and decreasing levels as a result of the high agricultural density, especially in the al-Diqdaqah, al-[Nakhil], and 'Uyyun Khatt regions.

Another of the dams, the Wadi al-Wuryyah dam, can serve areas of about 50 hectares of agricultural land by feeding groundwater reserves and protecting villages, farms, and streets that the valley immerses in every flood, causing problems for the citizens. The fourth dam is the Wadi Kub dam.

Hamad Salman confirmed that the construction of the dams would, in general, provide a large quantity of water and help to partially reduce the current groundwater shortage. It would also provide water for agricultural, residential, and industrial uses; improve water quality; safeguard groundwater levels; delay the advance of saline water; and protect public and public property from damage caused by flooding.

He said that the Ministry was constantly searching for alternative sources for current productive levels—which

are being run down at the expense of reserves—though great efforts to discover deep levels in the first phase of water surveying.

He added that the Ministry was making contacts and cooperating with all water-related agencies in the government, with the aim of coordinating efforts to provide alternative sources, such as seawater purification for residential use, treating sewage water for city "greenification" and sometimes agricultural uses, to ease the burden on groundwater.

Deputy Minister of the Ministry of Agriculture and Fisheries Hamad Salman explained the importance of these dams by saying that the United Arab Emirates was considered a country with a dry and hot climate. The highest temperatures can reach 48[]C, with average annual rainfall of 102 mm, maximum humidity of 98 percent, and evaporation from 3.16-4.45 mm.

He added that in the last ten years, the country had witnessed a steady flourishing in the agricultural and social fields, leading to an increase in water consumption demand for agricultural, residential, and industrial needs. Annual consumption had reached approximately a billion cubic meters, 800 million of which came from groundwater; the rest was from reclaimed seawater.

He said that continued annual consumption of 800 million cubic meters of groundwater reserves would lead to a sharp drop in water levels in all regions of the country, at a time when groundwater reserves were being replenished at an annual rate of 100 million cubic meters. This illustrates the resulting large deficit in the water budget.

He explained that the decrease in water levels had led to a decline in water quality in many regions, to seawater permeation in other areas, and to salinization of soil in some areas.

He said that the Ministry had recognized the severe challenge facing agricultural development in the country, and had used all its means to meet the challenge, to develop alternative water sources, and to get the maximum benefit from every drop of water that falls on the country. This would be by way of implementing projects such as dam construction, carrying out land surveys of water sources, developing streams and brooks, using modern irrigation methods, and educating consumers.

He indicated that Ministry of Agriculture and Fisheries had begun to plan projects and actions to develop and maintain sources. The studies made of surface water and dams come to fuition with proposals for building dams in the large wadis. These studies, pertaining to fifteen wadis in the north of the country, mentioned that there was a large quantity of water emptying into the sea. About 103 million cubic meters annually are lost as they flow into the sea or into unusable areas, where the water quickly evaporates.

Moderate Rainfall

The deputy minister of agriculture added that records from the al-Shariqah station showed that average rainfall was 102.8 mm over 40 years, with a maximum of 256 mm in 1956-1957, and a minimum of .3 mm in 1961-1962. In addition, several plains and mountain regions were monitored by stations built by the Ministry of Agriculture and Fisheries. The results were analyzed and programmed, and showed that rainfall averages were 154 mm in mountainous regions and 188 mm in the plains. When records for all parts of the country are averaged, it may be said that the overall average is approximately 102 mm.

He said that a number of periods of rainfall in the mountain region fluctuated between 5-7 rainy spells, with 3-5 rainy spells in the plains, and less than 3 in the desert and coastal regions. The U.A.E. has a four-year rain cycle; there is one rainy year and three dry, or nearly dry, ones every four years.

He added, "Thus we see that the greatest rainfall is in mountainous areas, and lessens in the plains areas and on the coasts. The problem of that quantitative reduction in rainfall is that the mountains become flood-producing areas, which contributes significantly to replenishing groundwater through underground hydrological action. Rain that falls directly on the plains does not add to groundwater. All it does is irrigate surface crops and soil, and remains only briefly before evaporating, due to wind and heat."

He said that it was a mistake to depend on increased rainfall on any plain to lead to an increase in groundwater reserves. This was because of the disparity between the drainage system, geological and topographical conditions, and the declivities in the regions mentioned. According to these factors, we find that the rainfall in mountainous regions is most effective at feeding groundwater, while rainwater does not reach the plains, due to other reasons and factors, such as the lithological structure of the strata, the depth of those strata, wind speed, and temperatures. All these factors contribute to the failure of the water to reach the groundwater. It evaporates faster than it can be absorbed into the ground.

As for surface water, represented in the great floods that slice through mountainous regions to the plains and then the sea, it makes no real contribution to replenishing groundwater.

It is worth mentioning that the rate of rainwater flowing through wadis varies between 3 and 8 percent [not further elaborated], depending on the nature of the mountain rocks, the declivities, and slopes, as well as the declivity of the wadi. In mountains whose rock is made of limestone—as in areas of Ra's al-Khaymah—the rate of flow to stoppage is less than that in mountains of igneous or variable rock, as in the mountains of al-Shariqah or Masfut. In the former regions, the rate of rainwater loss is very high; the water disappears into clefts and crevices. For example, in one wadi monitored

for water flow in Ra's al-Khaymah, in one year 1.3 million cubic meters of water passed through the wadi at a time when approximately 70 million cubic meters of rain fell on the total area of the wadi. He said that this showed that replenishment of the groundwater was poor, and did not compensate for the depletion, which was several times greater. The wadis' contribution would not count unless the Ministry of Agriculture and Fisheries continued to build more dams to hold the water and force them to replenish. There was a large loss of water in the mountainous areas, so the Ministry was trying to study it and find appropriate solutions to halt the severe depletion through channelling the water and using modern irrigation to limit water drainage.

MOSCOW NEWS Examines USSR Environmental Crisis

Map of 'Ecological Distress'

92WN0142A Moscow MOSCOW NEWS in English No 44, 3-10 Nov 91 p 11

[Article: "Our Time Is Up...Our Home Is Unclear and Unhealthy. Solutions Must Be Found"]

[Text] **The reader has in front of him the chart of the most acute ecological situations in this country drawn up by scientists at the Institute of Geography of the Soviet Academy of Sciences. On the Soviet Union's territory they have identified about 300 areas of regions whose environment is now unfavourable for human population. These territories occupy 3.7 million sq km or 16 percent of the country's total area. Including the reindeer pastures ruined in the tundra, however, this figure rises to 20 percent.**

The chart published here does not show the administrative boundaries dividing the former Union Republics which are now sovereign states. These boundaries do not exist for the long "tongues" of ecological distress stretching over thousands of kilometres. Foul deeds were committed in collaboration, fulfilling without a murmur the directives issued by timeservers who were seeking "parities", "priorities" and the fulfilment of plans at all costs—everything to ensure their personal rule.

A fifth of the Union's population (c. 40 percent in terms of city dwellers alone) lives in ecologically unfavourable conditions.

Scientists have identified acute situations as seen against the general backdrop of ecologically distressed areas. There are 17 of them on the chart. In regions of large-scale industry, people inhale its discharges and exhausts, and drink water poisoned by it. A real threat has been created to the health of the multimillion population of such megametropolises as Moscow and St. Petersburg; the inhabitants of the Donbas and Kuzbas (coal fields); and the industrial centres of the Urals, Azerbaijan and the Krivoi Rog area.

Yet tragedy has come not to industrial zones alone. The loud campaign to save Lake Baikal has subsided, but the lake is still being destroyed in the production of the paper on which the literature on saving it is written. The flow of toxic wastes into Lake Baikal annually exceeds 100 million cu m.

A territory exceeding 10,000 sq km has been radioactively contaminated as a result of the accident at the Chernobyl Atomic Power Station. Located on it are 640 inhabited localities with a population over 230,000.

Now we shall have to climb out of the ecological pit. Shall we do it separately, one by one? Or can we find a means of doing this all together as well? And what can we pin our hopes on in the long run? The mobilization of efforts at all levels of power? New legislation? Changes in the economy and technology? Ousting the tainted manner of thinking from our mentality?

Today we give the floor in this complex discussion to professional ecologists who are also representatives from power structures, i.e., those who in line with their duties must assist the country in extricating itself from the ecological crisis.

Vorontsov Decries 'Ecological Sovereignty'

92WN0142B Moscow MOSCOW NEWS in English No 44, 3-10 Nov 91 p 11

[Article: "May I Have the Floor? In a Single Ecological Space Nikolai Vorontsov, Minister of Nature Conservation and Environmental Protection of the USSR"]

[Text] The concept of a single economic space within the boundaries of the former Union has been coined today. But there is even more reason to discuss a single ecological space. The majority of boundaries of ecological zones does not coincide with administrative frontiers, everything overlaps. Therefore I am greatly concerned about the present-day separatist trends. Not as a Union minister caring for the preservation of his official position, but as a specialist well familiar with the problem from the "inside".

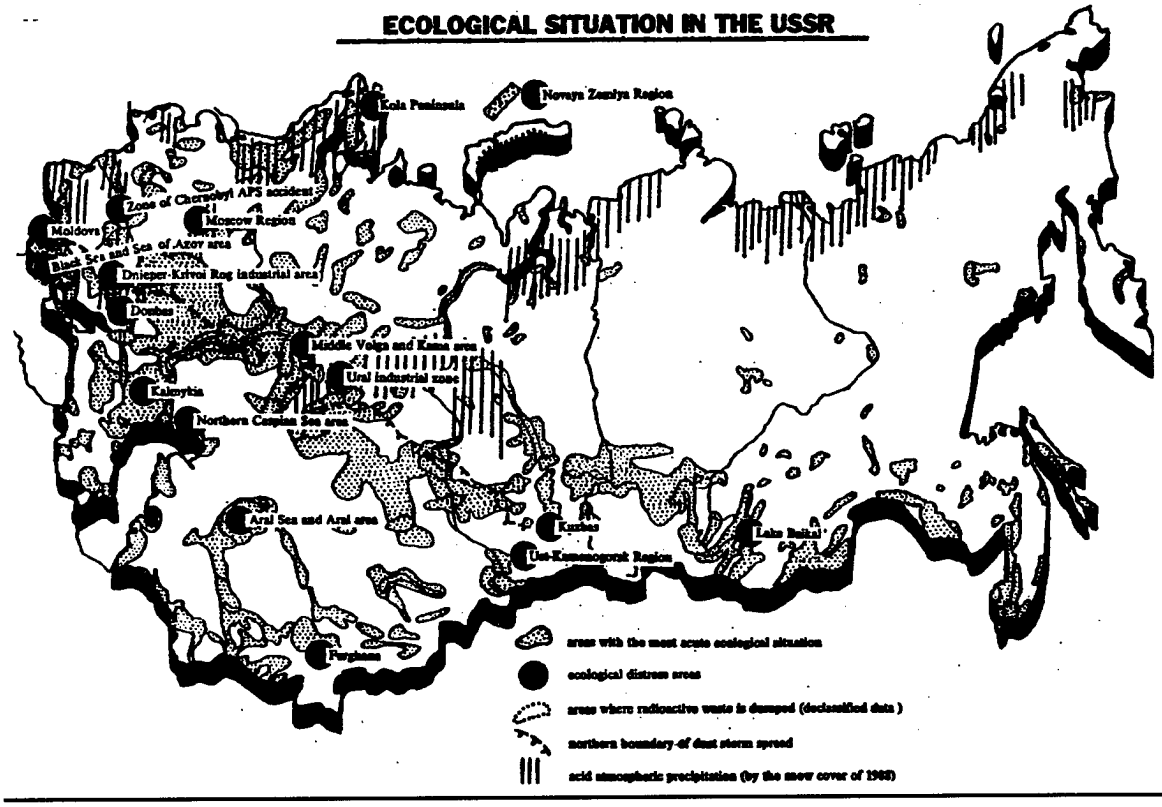
It may not seem to be a paradox, but the economic and social consequences of national egotism in the sphere of ecology may jeopardize sovereignty. To avoid this, some "arbitration court" as represented by an interrepublican body is absolutely crucial. On the same level some common standards, as yet undeveloped, are also vital.

I am convinced: "ecological sovereignty" can and **must** be waived. Otherwise we shall be in even deeper trouble. Needless to say, on-site control or inspection by experts—all this must be controlled by the Republics. But the Centre must retain a single methodology for ecological maintenance. Many problems can generally be solved only at the world community level.

Let's not beat around the bush. It would be naive to think that once the Republics were headed by progressive presidents, the republican administrations would also consist exclusively of progressive officials. For this reason alone it is unfeasible to destroy the Union system of environmental protection departments which it took us great pains to set up a mere three years ago. It will doubtlessly have its part to play in working out and implementing the principles of the utilization of nature with regard to the established traditions.

Incidentally, there is definite connection between ecological calamities and the outbreak of ethnical conflicts. Ferghana and Sumgait are the most cogent points in this case. The conditions of congestion and constant pollution, besides everything else, generate aggressiveness.

I want to cite just one example to demonstrate what the trend to pull apart all the Union structures for various Republics can lead to. Today the country knows no



plague, but ten percent of its territory may be described as pestilential nidi. The anti-epidemic service has worked with dedication. When, for instance, an epidemic broke out in Kyzyl-Kum in 1968, antiplague units were urgently dispatched there from Tuva, the Trans-Baikal area and Astrakhan. Four years later an alarming situation took shape in Tuva, and everything was concentrated there. And, indeed, how is it at all possible to eliminate the single epidemiological service?

Today, the Republics (including the Baltics) have no experience in the questions of the market economy. Yet mechanisms for the economic regulation of natural resources exploitation, an ecological market and environmental technologies must be created. Life will necessitate doing this together, on the basis of interrepublican and international programmes. There are plenty of examples to prove the point: take the problem of preserving the population of sturgeon in the Caspian Sea. It concentrates 90 percent of their world population. But sturgeon must not be caught at sea, because if they are the herd will disappear at a very rapid pace. This can only be done in rivers during the spawning period. But not all the Republics located on the shores of the Caspian have rivers flowing into it. And Russia and Kazakhstan must share part of their Volga and Ural catch with Azerbaijan and Turkmenia only in exchange for the latter's not catching sturgeon at sea. And the latter can take part in building fish factories and in fish-breeding activities. It would also be advisable to involve Iran in this comprehensive programme.

Studying the consequences of the Chernobyl accident is important for more than just our country. But this work has been organized in a most wretched way. For example, no one actually deals with analyzing the genetic consequences of the disaster. Whatever newspapers publish from time to time, various photographs of calves with six legs, are not genetic deflections, but violations of individual development. **Pravda** recently wrote with delight that the number of genetic diseases in the Chernobyl zone did not increase in 1987 in comparison with 1986. But that is nothing to rejoice over. Most mutations that arise are of recessive nature, and all specialists know this well enough. They surface only after a generation and it's very difficult to take stock of them. Nobody deals with this, the problem is simply being profaned.

Drawing on the world community for support, we could create an excellent international institute for studying this problem. But the solution to the problem has been twisted in the whirlwind of apparat games.

USSR Deputies Present Environmental Priorities

92WN0142C Moscow MOSCOW NEWS in English No 44, 3-10 Nov 91 p 11

[Article: "Express Interview"]

[Text] **What's Your Greatest Headache?**

This question posed by MN was answered by USSR people's deputies: Alexei Yablokov, adviser to the President of Russia, and Vitaly Chelyshev, editor of the all-Union environmental newspaper SPASENIYE [Salvation].

[A. Yablokov] Two important measures must be effected—the introduction of fines for pollution and taxes for the use of natural resources. Spoiling nature must become economically disadvantageous, as happens in the West. It is the latter circumstance that has enabled developed nations to extricate themselves from the ecological crisis.

A few words about the North. The specific situation in this region results from the majority of its population being time-contract workers who do not care about the state of this land. Veritable monsters have grown up on it—the Norilsk complex, the Severonikel complex on the Kola Peninsula. Now diamonds have been discovered in the Arkhangelsk Region... It must be saved before it is too late. If the development of this deposit starts the "Yakut way", the cost of extracted diamonds will be nothing in comparison with the environmental damage.

Our ice epic has upset the ecological system of the White Sea. Powerful icebreakers pass across areas where seals use to herd, moreover precisely during the season when the animals gather on the ice for the whelping period. Thousands of seals die. This is even economically unprofitable, to say nothing of the complete immorality of such actions.

The situation of the Neryungri coal field discovered in Yakutia is tragic. Borrowing huge credits from the Japanese, the Soviet region started supplying them with Yakut coal. Japan thrived on this coal, providing us with different kinds of machinery in exchange. Now this machinery has been worn out, and we are giving coal for spare parts.

Today the Neryungri deposit is a crater hundreds of metres in depth and several kilometres in diameter. It will be depleted in ten to fifteen years. We shall be left with a heap of Japanese scrap metal and mutilated soil.

Eighteen months ago Mikhail Gorbachev and George Bush suggested that a summit conference be held on environmental problems which should become a turning point in the history of keeping the planet intact. It is expected that agreements will be signed on the preservation of forests, climate, etc. Our country is in a position at this conference to come forward jointly with the United States in a "Strategic Ecological Initiative".

[V. Chelyshev] Armand Hammer used to bring us dirty technologies.

I see danger in the opportunities of the Republics, in conditions of economic independence, to conclude deals with foreign firms which may look very profitable at first glance, but which are environmentally impermissible in actual fact. There have been examples of this in our past as well. For 70 years we have taken pride in "fruitful" cooperation with Armand Hammer, who commenced the joint efforts with Lenin's blessing. Yet specialists know all too well what dirty technologies he dragged into our country. Today, it is true, our affairs are being handled by the Council of Ministers of the European Communities which recently passed a decision on banning environmental dumping and the export of dirty technologies into the Soviet Union. We must implement the safety concept, developed by Academician Yuri Ryzhov's group, an integral part of which is environmental safety.

Entry in the market implies encouraging ecological entrepreneurship. I drafted such a bill and adopted it as part of the Law on Entrepreneurship in the USSR. Let me cite just one example testifying to the immense opportunities of environmental business. I have never had warm feelings for the KGB, but I tenderly loved one of its subunits. The Committee's military-medical service had people who were developing sorbents—at a time when the Ministry of Public Health still banned this. Today they work outside the KGB framework and have set up an international centre known as Sorbtsia. The success of their products on the international market may be envied even by the luckiest entrepreneur.

RSFSR Environment Counselor Yablokov Interviewed

92WN0162A Moscow KULTURA in Russian No 12, 30 Nov 91 p 3

[RSFSR Environment Counselor A. Yablokov interviewed by Eduard Lunev: "When Timber Is Cut, Lives Will Fly"]

[Text] **The office of RSFSR State Counselor for Ecology and Health A. Yablokov is not high up, on the second floor of the White House, thereby confirming, as it were, the fact that its occupant is charged with purely earthly matters. Two maps showing the ecological situation—one of the wall, the other on the floor for some reason—further reinforce that impression.**

Both are dominated by violet shading representing areas in critical condition and a multitude of other special markers that are intelligible only to specialists. During our conversation, Aleksey Vladimirovich deciphered them. And it became clear that a map is not such a silent document after all. For the informed people who understand them, most of the markings are distress signals.

[Yablokov] We really are wreaking the devil knows what with the environment. The ecological situation in our country is—this isn't my expression—a challenge to all civilized society. If we compare the planet with a communal apartment, we occupy the dirtiest room. All the apartment's other tenants are surveying this filth with vexation and righteous indignation and demanding that it be cleaned up.

[Lunev] What can be done, Aleksey Vladimirovich? After all, the environment is not an aquarium in which you can change the water in a few minutes.

[Yablokov] And that's where the difficulty lies. We will hardly be able to improve the ecological situation in the next four to five years. At best we will be able to stabilize the environmental situation we have at present. But even this task is extraordinarily difficult, considering that our country has quite a few ecological disaster areas from which people are moving away—and hence labor resources that could help the environment. Our country now has, in addition to other types of refugees, ecological refugees from Nizhniy Tagil, Kirishi, Angarsk. People are fleeing those areas because they want to protect their health and the health of their children. In ecological disaster areas, life expectancy is declining, and markedly so. Life expectancy is an objective index of the country's ecological condition. People in our country live seven to eight years less than in the developed Western countries. And in some areas, life expectancy barely reaches 55 to 60 years. People aren't even living to retirement age.

[Lunev] Can you identify those regions?

[Yablokov] I've already named some of them. I could add to them Kemerovo Oblast and Prokopyevsk. And this applies to not only industrial areas. The fact that areas with intensive agriculture are becoming hazardous to life is incomprehensible. We have managed things in such a way that today the very earth that feeds us is taking revenge for the barbaric way we have treated it. Take Krasnodar Kray, where enormous quantities of pesticides have been used. Rice farming has been developed in such a way there that it has not only disrupted the normal land-use balance; the human gene pool has been damaged through the consumption of food products obtained from poisoned fields. It think it's time to make a serious effort to eliminate ecological hazards. There is now an understanding of this at the level of the Russian government and on the part of Boris Nikolayevich Yeltsin.

A Russian presidential order is being drafted that will require the Council of Ministers to draw up a special set of measures for ecological disaster areas. What kind of measures? The carrot and the stick, as they say in the West. We need to have some kind of economic incentives that will enable people to stay and work in these areas. So that industrial enterprises, provided they show serious concern for protecting the environment, can receive tax abatements, and so that foreign capital and modern technology can be brought into these areas.

[Lunev] Could you give a scale of ecological hazards?

[Yablokov] Maybe. I would rank radioactive contamination first. We don't know very much about this. And a lot of radioactive contamination has occurred not only in the past two or three years. Things were very bad before Chernobyl as well, but we didn't know anything about it. In essence, Chernobyl first attracted serious attention to the problem of radioactive contamination.

Common sense dictates that there should be full openness and full information with respect to radioactive contamination. In effect, only recently has the public learned of radioactive contamination in the areas of Chelyabinsk, Krasnoyarsk, Tomsk, the area surrounding the Semipalatinsk test range, the Northern test range, and everywhere that nuclear explosions for so-called peaceful purposes have been carried out in this country.

[Lunev] Could you explain in passing just what is meant by nuclear explosions for peaceful purposes?

[Yablokov] I was interested in that too. After all, I've never had any connection with those things, and I wanted to see just what they are. And so this year, three months ago, I was in Yakutia and visited five sites where, 12 to 15 years ago, these kinds of "peaceful" nuclear explosions were conducted. In the country as a whole, more than 120 such explosions have been carried out. And not just at Semipalatinsk. Such explosions have also been carried out in the European part of the country, such as Perm Oblast and the area of Astrakhan. We are in the dark about a lot of things. Just recently we learned that a nuclear explosion in Chita Oblast, in the Baykal area, had been declassified. Jut why are these explosions carried out?

Our wise scientists wanted to adapt the atom to something useful and came up with seismic prospecting. A powerful nuclear explosion makes it possible, via the reflected waves in the earth's core, to determine the state of deep-lying rock and to locate new areas of commercial minerals. I don't think the method proved so magical as to allow them to peer inside the earth as with a telescope. No, it didn't have that kind of results.

A second area in which nuclear explosions were used involved the creation of underground cavities into which various substances could be pumped, such as toxic wastes, for example. In any case, that was the idea. As far as I know, it was never carried out in its pure form. Several dozen explosions were carried out for the purpose of creating excess underground pressure, in order to squeeze out oil in petroleum-producing areas. But that idea didn't work either. Finally, the most primitive application: a powerful explosion designed to create some sort of dam. Incidentally, plans called for using nuclear explosions to divert the northern rivers.

[Lunev] How was that going to be done?

[Yablokov] I stood at one such site in Yakutia. A reservoir was to be built there. And to move the millions of tons of earth, the simplest method was chosen—a nuclear explosion. They went ahead with the plan, but luckily nothing came of it. That was the first explosion designed to blast away ground in a permafrost zone. But the ground only bulged and then settled. The powerful blasting away of ground that had been planned did not materialize. I know that there were a couple explosions of this kind in the European part of the country. Needless to say, the environment was not better off as a result.

I would rank second on the ecological hazard scale the ecological disaster zones that are spreading out around industrial centers and around areas of intensive agriculture. The harvests themselves are becoming dangerous. Against the backdrop of the overall shortages of the food we grow and poorly store, it turns out that (these data are for 1989 and 1990) up to 30 percent of all food products contain pesticides or mineral fertilizer residues in levels that present health hazards. This sounds a little fantastic, but two years ago 70 percent of all dietary butter was essentially toxic. At least as regards the specimens that were taken. Up to 40 percent of the products at children's milk kitchens (!) in 1990 contained pesticides in levels dangerous to human health. Can you imagine! As a result, the number of cancers is increasing by two percent a year, and the number of congenital genetic defects is on the rise.

And food is only half the problem! Water has become dangerous. Seventy-five percent of all surface water in Russia is polluted. You can't drink water from the Volga or the Moscow River. In addition, it turns out that 30 percent of all subsurface water is dangerously polluted. And it's impossible to purify the latter. But there's another problem where water is concerned: rising ground water levels. As a result of absurd engineering policies that were followed when they built an enormous number of power stations on lowland rivers, the Volga has virtually ceased to be a river—it's become a chain of reservoirs. And the Volga isn't the only such river.

Rising ground water levels are now becoming an ecological hazard that few people recognize. Take Moscow. Ground water levels in Moscow are rising on such a scale that roughly 20 years from now, half of its territory will have excessive ground water levels. This means that buildings will collapse and that normal construction will become impossible. Expert calculations indicate that 20 years from now, it will be necessary to invest up to 10 billion rubles a year solely in efforts to save Moscow from destruction. Why is this happening? No less than one-fourth of all the water supplied to Moscow, on account of bad and rusted pipes, is leaking out and remaining under ground. This situation fraught with dangerous consequences.

[Lunev] Let's hope, Aleksey Vladimirovich, that Moscow will not become another Venice. The outlook is no doubt far bleaker with respect to the Chernobyl tragedy, which no longer knows any boundaries, it seems. The damage it has done to the economy was initially estimated at 9 billion rubles. Today, it seems, that figure is laughable. Can it really be that we have become hostages to Chernobyl, it is really true that the cost of measures to deal with its effects will have to be built into the republics' budgets for a long time to come?

[Yablokov] It's actually strange for me to hear such a question from you. The effects of that contamination will be felt for centuries to come. It must be understood that Chernobyl is for centuries. It's possible, of course, to resettle the people, but those areas have been lost to economic use for centuries on end. But Chernobyl is only part of the problem. The Americans have calculated that they need $200 billion to clean up the areas around their plutonium plants. We have estimated that cleaning up the areas outside Chelyabinsk will take 35 to 45 billion rubles in old prices, and experts estimate that rehabilitating areas of radioactive contamination in Russia will cost a total of 300 billion rubles over the next 20 years.

[Lunev] What can we do in order to leave this land to our descendants with thriving forests, with feather-grass steppes swaying in the wind, with splashing fish in the rivers and lakes?

[Yablokov] Many of our technologies are such that are children will find them nauseating. We have become accustomed to thinking that nuclear power produces an ecologicallyally pure fuel. Yes, it does, but provided that power stations function normally. But what do we do with these power stations after they have exhausted their service lives of 40 years? It turns out that the cost of liquidation equals the cost of construction. It is thought in our country that if an installation pays for itself in 10 to 15 years, it can be built. But a nuclear power station is not just an installation. In factories, you can take out the old machinery, reequip the plant, and start using it again. But this isn't possible with nuclear power stations; their refuse has to be buried somehow for centuries. Incidentally, there is a direct analogy between nuclear power and pesticides. Pesticides are exactly the same sort of long-term bomb. The chemists say, we have new pesticides, they break down in two to three years, in six months, in one month. But what about the millions of tons of DDT that were poured out and that will remain in our land and poison our health and the health of our children for decades to come? Who gave any thought to that when they poured that DDT onto the ground? Nobody. In Moldavia, they've cleaned up old fields and planted them to corn; but the corn can't be eaten, because the DDT that was used 30 years ago takes 70 years to break down. That same is true of the Aral Sea. No one would have thought that the millions of tons of salts from the Aral's dried-out bottom that the wind is spreading all the way to the Atlantic and Indian Oceans would also include pesticides that were applied to the cotton fields.

[Lunev] It turns that every step we have taken represents an implacable war on nature. Given this situation, what can be said about our overall culture?

[Yablokov] We've already talked about what we represent in the communal planetary home. But even today, as we democratize our social system and adopt supposedly civilized laws, we have not progressed very far from Bolshevism. Take, for example, the law on local self-administration. It confers unwarranted rights to nature use. The danger posed by municipalization of the forests and mineral resources is enormous! We cannot use forests and mineral resources solely in the interests of a local Soviet. We can't do this, for the forests and mineral resources must be used in the interests of the state as a whole. And this is what other countries do. It turns out

that socialization of nature is more developed today in the capitalist countries than in our country. In France, for example, the owner of a forest cannot cut down a tree on his land without the consent of local government bodies.

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Or another example. In the United States, France, and Italy, every citizen has a right to the shore. But go to the Crimea or other resort areas—in our country, the entire shoreline is divided up into separate parts. This one belongs to some agency, this one to a ministry, this one to a plant, and so on. Here's the "property of the whole people" that was dinned into our ears for a full 70 years for you! The villa of former U.S. President Nixon is not far from the coast. And in order to get to the water, he walks along a public shoreline. Moreover, not even a military base can occupy a strip of shoreline, which belongs to everybody. Now that's a level of nature-use culture as a part of overall culture.

[Lunev] And a final question, an ecological-political one, so to speak. Today the country is disintegrating. How will this affect ecology?

[Yablokov] Revolutionary changes take no pity on people, or on nature all the more so. And today too, during this transitional period, natural resources are going to suffer, needless to say. Living nature is not unaffected by social cataclysms, as it is a part of social philosophy. And when that philosophy is rethought, views of nature change as well. God grant that this time, nature will be viewed not from materialistic positions, but from the standpoint of common sense, the basis of which is simple human life.

Switzerland Ready To Give Russia Aid For Ecological Problems

OW1712234691 Moscow INTERFAX in English 1500 GMT 17 Dec 91

[Following item transmitted via KYODO]

[Text] The Swiss government is ready to give Russia 800 mln [million] francs in ecological aid, said Victor Danilov-Danilyan, Russia's ecology and environment minister, at a news conference in Moscow Tuesday. According to him, other countries are also ready to help, "but they set one condition—they give money only for case-specific programs."

The minister described the local governments' attitude toward their natural resources as an outrage. "Ignoring the president or other bodies and using rhetoric about sovereignty as a smoke shield, they are squandering their resources and don't allocate money for their reproduction," Mr. Danilov-Danilyan said.

Irkutsk Deputy Seeks Data on Alleged Biological Weapons Lab

92WN0174A Moscow IZVESTIYA in Russian 6 Dec 91 Union Edition p 7

[Article by V. Sbitnev, IZVESTIYA staff correspondent: "Siberian Ulcer Being Sought in Siberia"]

[Text] Mention in IZVESTIYA (No 279) of the fact that a secret bacteriological weapons development laboratory had been relocated to a site near Irkutsk has alarmed Siberians.

Immediately after publication of a correspondent's report entitled: "I Know How the Siberian Ulcer Got to Sverdlovsk" Yu. Shevelev, a people's deputy in the Irkutsk city and oblast soviets, asked the oblast Federal Security Administration (FSA) Administration to clarify the matter.

A few days later he received an exhaustive reply which stated that "no information regarding the relocation of the laboratory to the vicinity of Irkutsk or its location anywhere within the territory of the oblast has been uncovered." True, the reply contained the caveats that, firstly, the FSA did not have the information which was of interest to the oblast population at its disposal and, secondly, Yu. Shevelev was advised "for the sake of clarity regarding this important matter" to send a deputy's inquiry to the USSR and RSFSR ministries of defense, as well as to the Russian Government.

Those disclaimers prompted the city's leaders to have serious doubts about the sincerity of the reply. At its latest session the Irkutsk Gorispolkom [city soviet executive committee] created a commission specially authorized to verify the report printed in our newspaper. The commission members include both deputies and representatives of the ispolkom. Professor M. Savchenkov, deputy chairman of the East Siberian Division of the Academy of Medical Sciences (Siberian Branch), was asked to head up the investigation. The authorities assume the medical personnel will have better luck than the intelligence officers did.

No Evidence of Secret Bacteriological Laboratory Found Near Irkutsk

LD0812154391 Moscow TASS in English 1139 GMT 8 Dec 91

[By TASS correspondent Vladimir Khodiy]

[Text] Irkutsk December 8 (TASS)—"There is no information which would directly or indirectly indicate that the secret military laboratory, through the fault of which an outbreak of anthrax occurred in 1979, is now located near Irkutsk," Mikhail Savchenkov, deputy chairman of the East Siberian branch of the Academy of Medical Sciences, told TASS.

He is heading a commission specially set up by the local administration to check a report that appeared in the

press at the end of November that the laboratory had been relocated from Sverdlovsk to the Transbaykal area.

"A check-up carried out through military and civilian channels confirmed that there has been no research team for the development of bacteriological weapons in the area in the past and present," the commission head said.

However, this does not rule out the necessity of making an official inquiry at the Defence Ministry and the Government of Russia into the further destiny of the super-secret laboratory.

Lower Volga Worst Region for Pollution-Induced Congenital Defects

PM1012142191 Moscow ROSSIYSKAYA GAZETA in Russian 6 Dec 91 First Edition p1

[Unattributed report under the "News" rubric: "Mutants in Lower Volga Region"]

[Text] A sorry record has been achieved in the Lower Volga region. According to statistics from the All-Union Scientific Research Institute for Nature Conservancy, this region has the highest incidence of children born with congenital defects in the entire country.

Over the past 50 years industrial sewage, pesticides washed from fields, and radioactive waste carried by tributaries into the Volga have accumulated in lower reservoirs and in the Volga delta. Most of these substances were mutagens for people.

Severnaya Electric Power Station Future Air Pollution Threat for Moscow

PM1112160591 Moscow Central Television First Program Network in Russian 1500 GMT 7 Dec 91

[From the "Ecological Chronicle" program: Report by unidentified correspondent; figures in brackets denote broadcast time in GMT in hours, minutes, and seconds]

[Text] [150601] [Correspondent] The ill-renowned Severnaya TETs [heat and electric power station] represents a major future source of air pollution in Moscow. According to the Moscow Soviet Ecology Commission's information, the Severnaya TETs represents an environmental time bomb. The noxious discharges cover a radius of 25km, and it is not only the northern parts of Moscow that are affected but also the center, the Sadovoye Koltso [inner beltway], and the Kremlin. For almost two years now the area's inhabitants have continued their struggle for clean air. In that period discussions behind the scenes have developed into overt protest rallies, demanding that construction of the Severnaya TETs be suspended. The conclusions drawn by the Moscow Soviet Ecology Commission and the townspeople's vigorous actions have had some effect: Construction has been officially mothballed. But "Mosenergo" has confronted Muscovites with a choice: Either the TETs is built or apartments are cold in the winter. That is, either die gradually by breathing in toxic air and subject your children to the same fate, or freeze in the winter without heat in your own apartment.

[N.A. Kirpicheva, member of Moscow Soviet commission, identified by caption] There is no attempt being made to introduce the alternative sources of heat and electricity that could be obtained this year or next year. Power-generation workers and "Mosenergo" are insisting on this Severnaya TETs. They see this as the only means of obtainng heat and electricity. I want to appeal to residents to be aware that the freezing temperatures in our apartments has nothing to do with the construction of this installation. It is only to be commissioned in 1993-1995.

[Correspondent] The question remains open. The townspeople's fight for life, regrettably, continues in the direct sense of the word. [150735]

Geothermal Sea Beneath Yaroslavl To Be Exploited

PM1912145691 Moscow IZVESTIYA in Russian 17 Dec 91 Union Edition p 8

[Correspondent M. Ovcharov report: "Underground Sea Will Warm the Countryside"]

[Text] The construction of a unique geothermal station has begun beneath Yaroslavl.

A remarkable event has just taken place on the territory of the central farmstead at the "Gorshikha" suburban kolkhoz: Drillers from the "Nedra" state science and production association have drilled the first few meters of a well which will reach the desired target at a depth of 2 km—a warm salt sea.

Water from this remarkable, vast reservoir created by nature itself will be brought up to the surface of the earth to serve man: Even in the most bitterly cold weather it will warm the Russian countryside.

To be frank, when you walk through the snow-sprinkled, frosty streets of Yaroslavl, it is hard to believe that beneath your feet, deep in the bowels of the earth, there is a vast sea with an area of 600,000 square kilometers, extending over the territory of several oblasts—Yaroslavl, Ivanovo, Kostroma, Vladimir, Moscow, Vologda, and others. And the main thing is that the reserves of warm water, at a temperature of 60 degrees, in this sea are inexhaustible.

In fact, geologists have known about this for a long time, and many people had had the idea of using this free "stove" before now. But technically it was a very difficult task.

True, there have been attempts in our country to make use of highly mineralized geothermal waters. This was done simply: They brought the warm water up to the surface, used it to heat hothouses, for instance, and then poured it away somewhere. The consequences were

grave: rapid and irreversible salination of the fields. But the Yaroslavl geologists, learning from foreign experience, have chosen an entirely different path. They decided to drill two wells down to the 2-km mark, so that they can pump water up one of them and pump it back down the other after it has given people its heat. This question arose at a time when surveying had already begun around Yaroslavl for the construction of a nuclear power station.

The city is not well off for energy sources, all types of fuel have to be brought from a long way away, and there is less of it all the time; in this situation an economical nuclear power station looked like the only way. But after Chernobyl the people of Yaroslavl solidly opposed this. And so then for the first time Boris Khakhayev, general director of the "Nedra" science and production enterprise, said publicly:

"Yaroslavl has alternative energy sources. There is a warm sea beneath us."

Experts say that this is the remnants of the ancient oceans that washed this area many millions of years ago. The underground sea, safely locked in sandstone, is valuable not only for its warm water, which is a major asset in itself, but also for its high mineral content. A liter of water contains some 300 grams of various useful elements. After relatively simple processing of the deposits, it is possible to obtain from them such valuable products as edible salt, magnesia, calcium chloride, and calcium bromide.

Let me stress that the geothermal station to be built near Yaroslavl will be ecologically clean in the highest degree. Moreover, the underground strata opened up by the wells could be used for the temporary burial of industrial waste, which could be pumped deep into the ground in liquid form for the time being, until we learn to extract useful substances from them.

Greenpeace Renews Charges of USSR Nuclear Waste Dumping

92WN0174B Moscow PRAVDA in Russian 7 Dec 91 p 4

[Article by A. Lyutyy, PRAVDA staff correspondent reporting from London: "The Arctic Ocean—A Nuclear Dumping Ground"]

[Text] **London was recently the scene of the 14th consultative meeting of the parties to the International Convention on Prevention of Oceanic Pollution. Unfortunately, it did not begin on a happy note for the Soviet delegation.**

The convention, still known as the London Convention, was enacted in 1975. We are among its 65 signatories. One of the document's passages forbids the discharge of radioactive wastes into the sea from ships, aircraft or other means of conveyance.

Unfortunately, judging by information from the world-famous environmental protection group Greenpeace as well as several of our own environmental movement activists, the USSR was secretly violating the convention, at least right up until 1986... At issue are nuclear waste dump sites at the bottom of the Arctic Ocean.

This practice began at least as far back as 1964, according to USSR people's deputy A. Zolotkov, who made a special trip to London at the invitation of Greenpeace. While on the staff of the Atomflot Association, which operates nuclear-powered icebreakers, he had an opportunity to make a thorough study of the problem and see documents which remain classified to this day.

For example, the deputy is convinced that civilian vessels belonging to Murmansk Shipping Lines regularly dumped radioactive wastes in the Kara Sea for over 20 years. The sea near the island of Novaya Zemlya is especially polluted; for a long time it was one of the areas used for underground nuclear testing.

Zolotkov brought along a map showing that the toxic fuel was dumped in relatively shallow water and could present an ecological hazard even today. He explained the technology of the pollution in a special report.

Here is a typical excerpt from that document: "The radioactive wastes dumped in the vicinity of the Novaya Zemlya archipelago consist of containers, metal structures and other equipment from nuclear power plants. The documents on these operations which I saw were very interesting from the standpoint of how the wastes were disposed of. The very term 'container,' for example, assumes a hermetically sealed structure which should prevent even momentary contact of its contents with the environment. But it turned out that the containers remained afloat. This problem was solved very simply: two openings were cut and water poured into them, thus ensuring that the containers would sink."

"In 1984," the report continues, "in a certain gulf a container was found which was emitting a radiation level of 160 roentgens per hour. It was successfully sunk after additional work was done on it."

If Zolotkov is to be believed, then in the 1960's several malfunctioning reactor units from the nuclear-powered icebreaker "Lenin" were dumped off the eastern coast of Novaya Zemlya. Both Greenpeace and the people's deputy possess other facts indicating what could be termed a serious violation of ecological law and complete disregard for the convention statutes. Yet that convention bears the signatures of our representatives, and all these years they have been claiming that no dumping has taken place.

But could Zolotkov be distorting the facts? Let us suppose he is. Then why have there not yet been any official denials, even though this is not the first time he has made this claim? Nor have there been any other explanations, incidentally.

At a press conference held at Greenpeace headquarters journalists naturally wanted to know whether the dangerous practice of disposing of radioactive wastes in this manner continues at the present time. The people's deputy is virtually completely certain that it has stopped insofar as civilian ships are concerned. With regard to military vessels he is less certain.

How can we help Greenpeace? In reply to this question of mine, the Soviet visitor commented that the international environmental organization could use its authority in support of the Union's ecological movement. And that movement is working, firstly, to learn the whole truth about nuclear wastes in Arctic waters and, secondly, to put a stop to this practice and ensure full compliance with the London Convention. In Zolotkov's opinion the whole world has a stake in that because this is a problem that extends beyond Soviet borders.

Greenpeace representatives in turn told me that during the current consultative meeting of London Convention signatories they intend to appeal to our official delegation with a request that it either confirm or deny the people's deputy's statement. Furthermore, they will attempt to win guarantees of compliance with the convention from Moscow.

As for monitoring of the level of radioactivity at the dump sites and a possible cleanup of them, Greenpeace feels that all the signatory countries should render the USSR collective assistance in view of the serious of the environmental problems that are heaped upon us.

Resolution Bans Unloading of Nuclear Fuel in Murmansk

LD2712161291 Moscow Radio Rossii Network in Russian 1100 GMT 25 Dec 91

[Report by correspondent Yuriy Arkhipov]

[Text] A resolution suspending work on the removal of nuclear fuel from the reactors of vessels that have been decommissioned has been signed in Murmansk by Yegeniy Komarov, head of the administration. Our correspondent Yuriy Arkhipov reports:

[Arkhipov] The resolution that has been signed resulted from a week-long fight by a group of deputies of the Murmansk oblast soviet, the public, and the Green Party, to put a stop to dangerous work in part of the town to use scrap from atomic submarines and unload nuclear fuel from the reactors. For several days, Murmansk residents have been staging protests at the entrance to the naval repair base where this work was to have begun. To be honest, they had no hopes that the voice of the people would be heard high up, and so the stand adopted in resolving this issue by the head of the administration evokes respect for him.

These instructions come as the first major victory for the ecologists over the military department. The command of the Red Banner Northern Fleet and the administration of the Murmansk shipping line will be obliged to present proposals for additional measures which will ensure nuclear safety when atomic submarines and ships with nuclear power plants are decommissioned. All work on the unloading of nuclear fuel will be suspended on the territory of Murmansk oblast from 5 January 1992. These enterprises and the standing commission of soviets of people's deputies will very soon have to elaborate and introduce safe technology for the conduct of this work.

The oblast Nature Conservation Committee and the terrorial bodies of the Republican Committee for Nuclear and Radiation Safety have been given the job of monitoring the implementation of the resolution. The resolution, dated 24 December, has been sent to the Command of the Red Banner Northern Fleet, but it is known from unofficial sources that the military still reckon to start unloading fuel from the reactor of an atomic submarine standing at the quayside. May I remind you that the yards are situated in a Murmansk housing district, and although this operation has already been done more than 300 times, it is considered to be potentially dangerous.

No Evidence Found of Chelyabinsk Radiation Leak

92WN0156A Moscow SOVETSKAYA ROSSIYA in Russian 27 Nov 91 p 4

[Report by L. Leonov, SOVETSKAYA ROSSIYA correspondent, Chelyabinsk: "In the Smoke of the Cock-and-Bull Story"]

[Text] **Our correspondent on the traces of a newspaper 'sensation'.**

And so, our press has given birth to a new sensation: the Mayak Chemical Combine, the cradle of the Soviet atom bomb in Chelyabinsk Oblast, secretly released something radioactive in the atmosphere. This was precisely according to the 1957 scenario, when as a result of the overheating of one of the banks with radioactive waste some radioactive substances were released in the atmosphere. This accident was described by the people as the "Aurora Borealis in the Urals." The sensation published in IZVESTIYA in its 16 November issue was precisely given the same name: "Mayak Started Glowing Again."

With a great deal of interest both at Mayak and in the city the nuclear power industry personnel of the Chelyabinsk-65 studied this type of blood-freezing information. For even high school students know that if, as A. Illesh writes, "the population of the Novogornyy settlement, located eight kilometers south of Mayak saw on 4 October in the area of the industrial space a fire and a pillar of smoke shaped as a mushroom, it is hardly likely that such witnesses of an atomic mushroom would have remained among the living."

A government cable reached Mayak: "In accordance with the IZVESTIYA publication of 16 November of this year, entitled "Mayak Has Lighted Up Again," please submit available information on this presumed release of radioactive substances in the atmosphere and the emergency situation related to it." It was signed by V. Menshikov, deputy chairman of the Committee on Problems of Ecology and Rational Utilization of Natural Resources of the RSFSR Supreme Soviet.

What type of emergency situation? Generally speaking, what had taken place?

I visited Mayak and here is what I was able to establish.

First (let us follow the IZVESTIYA article). There were no fires, not to mention nuclear mushrooms. The report issued by the chief of the fire safety department reported that "in the shift of 4-5 October 1991 no firemen reported a fire-accident situation in the various Mayak industrial association, in the city or at the construction site."

Second. It is true that N. Mironova, oblast soviet deputy, submitted a query on this case to the Mayak Industrial Association. The answer, signed by the association's chief engineer, quoted by IZVESTIYA, included a rather original postscript: "Possibly, on that specific date the military may have been testing their searchlight systems...."

We were unable to find the question submitted by N. Mironova. We were told that it was asked by telephone. Yet, something else may be found in the answer of Mayak's chief engineer: "The reason for the lighting may have been a testing of searchlights by the Army unit."

Therefore, witnesses from Novogornyy say smoke (i.e., this must have occurred during the day, for at night no smoke is visible), while N. Mironova was interested in the light (i.e., something which occurred at night, for it would be useless to test a searchlight during daylight time). Had A. Illesh made use not of the gossip based on a "bad telephone connection" (compare the quote published in IZVESTIYA and the actual answer of Mayak's chief engineer) he may have realized that what one can see during the day is not something visible at night.

Third. The radiation meter at the city of Kasli. "Instead of the habitual 20 microroentgen per hour, the indicator lit up initially showing figures reaching as high as 90 and, subsequently, 140! The device was then turned off."

Once again we have a case of a "bad telephone connection." Actually, here is what happened. Mayak is applying a widespread open policy of informing the surrounding population about the radiological situation, for which reason it purchased three radiometric panels. Last autumn one of them was installed in Kasli. However, because of structural defects and frequent interruptions of electric power in the city, on dozens of occasions the radiation meter turned itself off and, after turning itself on, registered random figures. Representatives of the manufacturing plant were sent to the city to repair their machine.

Fourth. In a private talk a Mayak official acknowledged that "yes, recently a tank containing radioactive waste took fire...."

It is at this point that the bad telephone connection resulted in playing a more serious trick. The IZVESTIYA writer should have known that containers with radioactive waste are never referred to as tanks at Mayak and are usually known as "cans." As to the "burning" tank, it is indeed true that there is a tank at work at Mayak or, to be more accurate, there is an "engineering machine for clearing of obstacles" based on a T-72-model tank. This machine to which an eight-meter long arm is attached is used for unloading the concrete blocks used to fill up the radioactive Karachay Lake. Here an accidental fire extinguishing system was activated. An investigation is being conducted on this case.

Finally, fifth. IZVESTIYA reported that someone asked the local hydrometeorological center for isobaric charts for the beginning of October, which had been allegedly destroyed by hooligans. No one knows why it was necessary to turn to the hydrometeorological center, when it was possible to telephone R. Kantorovich, the chief of the comprehensive aerial survey expedition which was established on the basis of Decision No 755-r of the RSFSR Council of Ministers, dated 12 July 1991 (Moscow telephone 209-72-22). In September and October this expedition was engaged in making a planned gamma-aero survey of the radioactive background in the Mayak area. It is equipped with supersensitive instruments and enjoys an independent status. R. Kantorovich's answer was categorical: There were absolutely no changes in the radioactive background as recorded by the expedition.

During the time of such "secret release," brigades from the Central Television, and KOMSOMOLSKAYA PRAVDA were at work at Mayak and a Soviet-American seminar attended by specialists was taking place. In a word, the number of people equipped with dosimeters was such that such an IZVESTIYA secret could not have remained secret to anyone.

That is what makes the Mayak people indignant at the publication of false information which created panic in the area (but, naturally, not at Mayak, where the people know that all of this is a stupid and harmful rubbish). In the telegram addressed to all interested individuals in Moscow and Chelyabinsk Oblast, the enterprise's management demands an investigation in order to identify the source of this false information, and that a retraction be published. Mayak is seriously contemplating to sue IZVESTIYA, which has repeatedly published fabrications about the nuclear workers in the Urals and refused to publish retractions.

The explanation, perhaps, may be quite simple.

IZVESTIYA publishes a telephone number and a request for money to be sent to independent experts from the socioecological alliance, who had caused this all-Union panic. We rang up and there was no answer. No one has ever heard of this socioecological alliance. All that we were able to determine is that the telephone line led to Russia's "White House." It is apparently there that all the traces lead to. It is possible that someone is doing everything he can to destabilize the situation in our already thoroughly worn-out Republic.

Speculations about Mayak or, to put it more simply, lies are already becoming intolerable. Last summer the population of this nuclear city was angered by the fabrications of A. Penyagin, USSR people's deputy representing Chelyabinsk Oblast. He stated to the press that as a result of the lengthy effect of radiation the people may become mentally deranged, for which reason, he claims, one-third of the personnel of one of the Mayak plants committed suicide and that 6,500 signatures were collected in the nuclear city in a protest addressed to A. Denisov, chairman of the USSR Supreme Soviet Ethics Commission. No answers whatsoever followed and the aggrieved people had to console themselves with the thought that before being elected USSR people's deputy, A.N. Penyagin had lived for decades in Chelyabinsk, where the radiation background is higher than in the city of the atom workers by a factor of 1.5-2. That fact may have indeed affected that individual....

Information Sought on More Recent Irkutsk Nuclear Tests

PM0312124591 Moscow Central Television First Program Network in Russian 2134 GMT 1 Dec 91

[From the "Television News Service" newscast: Report over video from Irkutsk]

[Text] Irkutsk authorities are demanding exhaustive information from the Ministry of Atomic Power Engineering and Industry on nuclear tests carried out on the territory of the oblast. According to the POSTFACTUM agency, citing Irkutsk specialists, nuclear explosions were carried out there in the late seventies and early eighties. There is information that such tests have been in progress since the late fifties.

Russian Government Sets Up Nuclear Monitoring Process

PM1012152591 Moscow ROSSIYSKAYA GAZETA in Russian 4 Dec 91 First Edition p 7

[Report by O. Plakhotnikova: "In Sight of the 'Peaceful Atom'"]

[Text] By the end of this year procedures are due to be have been elaborated for transporting, collecting, and burying radioactive substances and sources of ionizing radiation on Russian territory. A directive to this effect has been received from the RSFSR [Russian Soviet Federated Socialist Republic] Council of Ministers by the State Committee for the Supervision of Safe Working Practices in the Atomic Power Industry, the State Committee for Public Health and Epidemiological Oversight, the State Committee for the Elimination of the Consequences of the Chernobyl Disaster, and the RSFSR Ministry of the Use of Nature and Environmental Protection.

Within the next few months a concept for radiation protection and economic activity on the polluted territories will appear. Work will begin on a State Register of radioactive waste burial sites. In the long term there are plans to set up an RSFSR State Program for handling radioactive waste and spent nuclear materials.

Additional testing for radioactive pollution (and not just that caused by Chernobyl) is needed in cities, industrial centers, major vacation resorts, and rural localities. Then decontamination will begin.

Over the next year a register will be compiled of citizens suffering from radiation exposure following accidents at nuclear facilities and as a result of work utilizing these dangerous substances. The Russian Ministry of Health and Social Support has been entrusted with monitoring their state of health and sanitation measures.

Russia, Ukraine Sign AES Safety Accords With FRG

92WN0166A Moscow IZVESTIYA in Russian 4 Dec 91 Union Edition p 6

[Ye. Bovkun report: "A Bomb Producing Electricity"]

[Text] Bonn—The FRG's cooperation with the Soviet Union in the field of nuclear-reactor safety continues at republic level. Klaus Toepfer, federal minister for environment, recently signed the corresponding agreement with representatives of Russia and the Ukraine in Munich. The Germans are prepared to render urgent assistance in view of the "disturbing situation" which has come about, according to Toepfer, at Soviet nuclear electric power stations [AES].

The minister employed sparing words. The situation is in fact simply catastrophic. In the opinion of a group of experts who recently presented the Bundestag with the "Report on the Safety of Nuclear Power Stations and Environmental Aspects of Power Supply in the States of Central and East Europe," all the AES built by Soviet specialists could be called "bombs temporarily producing electricity."

"Your economic planners," an author of the 50-page document told me, "believed that they were building their facilities for ages, but their safety is diminishing with every passing year in view of faulty operation."

The German specialists have involuntarily studied the history of the ailment of our nuclear power engineering—at reactors given to the GDR, primarily in Greifswald and Stendal. The economy of the new, eastern

lands of the FRG cannot cope without nuclear energy, but dependable Western-model reactors will operate there.

But what is to be done with ours? Were FRG legislation to be in effect on the territory of the Union, all the reactors would have been shut down long ago as posing great danger for the public and the environment. Purely theoretically, Bonn believes, this could be the case with us also. Were the coal, oil, and gas used for the generation of power as efficiently as in the West, losses upon a transition to nonnuclear power engineering could be avoided. This in theory, but in practice this is utopia.

The situation is being made worse by certain departures from the standards in construction and operation and also shortcomings in the organization of the labor process at the AES and in the qualifications and motivation of the personnel. A. Birkhofer, an expert in reactor safety, saw this for himself during a visit to Ukraine. He discovered the total absence of any engineering program for the staged shutdown of Chernobyl-type reactors whatever. That they need to be shut down is understood by everyone. But no one could tell him where, for example, those managing the AES intend to obtain steam, which is needed in a quantity of up to 50 tons an hour for the lengthy period of this procedure.

How might Germany help us? By way of the use of Western technology to make our reactors somewhat safer. For a certain time, of course. A radical reorganization would require expenditure such as the budget of even so wealthy a country as the FRG could not sustain. The modernization of just one unit would cost no fewer than DM200 million, it has already been computed here. Billions would be required all in all....

The delayed-action nuclear mines are continuing to count down the years, days and hours. They can only be rendered harmless with the assistance of the entire world community. But this does not mean that we should stand idly by in expectation of assistance from overseas. The most dangerous thing now is the dependency virus, which is already beginning to affect some leaders of the new economic structures.

Ukraine Issues Decree on Decommissioning Chernobyl AES

'Urgent Measures' on Decommissioning

92WN0149A Kiev PRAVDA UKRAINY in Russian 12 Nov 91 p 2

[Decree of the Ukrainian Supreme Soviet: "Urgent Measures as a Result of the Decommissioning of the Chernobyl AES"]

[Text] The state of affairs at the Chernobyl AES [nuclear electric power station] attests to the fact that, for a prolonged period of time, that power station has remained an object of increased danger. The accident at the turbogenerator of the second energy unit at the Chernobyl AES and the fire that it caused, which occurred on 11 October 1991, were the cause of the sharp increase in the social and psychological tension among the population and confirmed the exceptional danger that the station represents. This requires the reconsideration of the tentatively established deadlines for shutting down all the energy units and also requires the taking of emergency measures.

But the simultaneous shutting down of all the energy units at the Chernobyl AES on the eve of the winter increases the risk of the possible arising of unpredicted consequences linked primarily with maintaining the nuclear safety of the reactors.

The government has failed to execute that part of the Decree of the Ukrainian SSR Supreme Soviet, dated 1 August 1990, that pertains to the decommissioning of the Chernobyl AES, and that has complicated the situation even more.

The Ukrainian Supreme Soviet decrees:

1. Cognizance is to be taken of the information of the governmental commission concerning the causes of the fire that occurred on 11 October 1991 at the second energy unit of the Chernobyl AES.

2. The Ukrainian Cabinet of Ministers is to be instructed:

- to shut down the second energy unit of the Chernobyl AES and to begin immediately to decommission it;
- to stop the operation of the first and third energy units of the Chernobyl AES within the shortest periods of time that are possible in accordance with the specifications, no later than 1993, with the subsequent decommissioning of the units with the observance of conditions guaranteeing the nuclear safety of the reactors;
- effective 15 November 1991, to open up the financing of the entire technological series of operations linked with the shutting down and decommissioning of the units of the Chernobyl AES;
- to develop, prior to 1 December 1991, with a consideration of the recommendations made by the board of directors of the Chernobyl AES, and to implement measures assuring the social protection of the collective at the Chernobyl AES, stipulating at such time the preservation of the optimal number of specialists to guarantee the necessary level of nuclear and radiation safety at all stages of decommissioning of the energy units;
- to submit, by 15 November, for consideration by the Ukrainian Supreme Soviet the concept for a fuel and energy program for the Ukraine and recommendations for the accelerated activation and supplying of fuel for the energy capacities that will replace the Chernobyl AES;
- to submit, by 15 November, to the Ukrainian Supreme Soviet recommendations for creating a state agency that will be given the responsibility of resolving the entire series of questions linked with

regulating the nuclear and radiation safety and the scientific-research support for the development of nuclear and radiation technological schemes in the interests of the national economy of the Ukraine.

3. The text of the Appeal of the Ukrainian Supreme Soviet to the United Nations and the Governments of the World Countries for the Rendering of Assistance in Resolving the Chernobyl Problem (appended) is to be approved.

4. Monitoring of the execution of this decree is to be made the responsibility of the Ukrainian Supreme Soviet's Commission on Questions of the Chernobyl Disaster, Commission on Questions of Developing Base Branches of the National Economy, and Commission on Questions of the Ecology and the Efficient Use of Natural Resources.

L. Kravchuk, chairman of the Ukrainian Supreme Soviet.

Kiev, 29 October 1991.

Appeal for International Assistance

92WN0149B Kiev PRAVDA UKRAINY in Russian 12 Nov 91 p 2

[Appeal: "Appeal of the Ukrainian Supreme Soviet to the Governments of the World Countries for the Rendering of Assistance in Resolving the Chernobyl Problem"]

[Text] The 1986 Chernobyl disaster was the largest technological disaster in the history of mankind, which demonstrated to the entire world the fatal line that it had approached as a consequence of the unprecedented buildup of nuclear capacities as conditioned by the military-industrial complex.

During the past five years there have been large political changes in the world, which have resulted in active nuclear disarmament, trust, and the striving for fruitful cooperation.

Understanding this and recognizing that the Chernobyl AES [nuclear electric power station] is continuing to cause a global threat for the entire world, the Ukrainian Parliament has resolved to decommission that station by 1995.

However, a fire in October 1991 that caused a sharply negative reaction among world public opinion has put on the agenda the question of the immediate shutdown of the Chernobyl AES.

The Independent Ukraine and its parliament understand their responsibility to the world public. At the same time, the extraordinary complexity of the scientific-technical problems, the complete lack of world experience in decommissioning of AES's and the burying of the used fuel, as well as the existence of economic difficulties, make it impossible for the Ukraine to resolve this problem independently and force the Ukraine to appeal to the United Nations and the governments of the world for the rendering of assistance.

On behalf of the people of the Ukraine, on behalf of all those who suffered from the accident, and proceeding from concern for global safety, the Supreme Soviet of the Independent Ukraine asks the United Nations to act as the initiator of the creation of a scientific-technical program for decommissioning the station and of a special fund for the purposeful, comprehensive resolution of this problem.

The implementation of the Chernobyl Program by the advanced world companies on a competitive basis would make it possible for the first time to resolve the complicated scientific-technical tasks of decommissioning the Chernobyl AES and rendering harmless the sarcophagus as the most dangerous nuclear object, and would also become a firm foundation for multilateral cooperation at a modern scientific-technical level and help mankind to acquire unique experience.

The Ukrainian Supreme Soviet hopes that all the world countries, and primarily the nuclear ones, will support this humanitarian initiative.

Ecological Impact of Ukrainian Economic Development

92WN0141A Kiev EKONOMIKA SOVETSKOY UKRAINY in Russian No 9, Sep 91

[Article by Doctor of Economic Sciences V. Tregobchuk, corresponding member of the Ukrainian Academy of Agricultural Sciences: "Important Current Environmental Problems of Economic Development"]

[Text] At the present time the environmental problems of economic development have emerged as among the most acute and urgent problems. The quantitative and qualitative buildup of the volumes of the interchange of energy and matter between society and the natural environment, and the drawing of an ever-increasing amount of natural resources into economic circulation have created an entirely new situation whereby, on the one hand, nature is experiencing immense loads and being polluted by harmful wastes, as the result of which its reproductive and restorative functions and capabilities are being undermined. On the other hand, the natural environment that is being degraded and losing its qualitative characteristics under the impact of pollutants is affecting not only people's health and the productivity of social labor, but also the growth rates and efficiency of the economy. In such an environment a substantial deterioration of the conditions of reproduction is occurring along all parameters, despite the measures being taken to increase society's economic potential.

Consequently, it is impossible to further ignore environmental demands and factors, since a situation of ecological crisis has now arisen in many regions. People need both material and technical resources and foodstuffs

(moreover, environmentally clean ones), and favorable natural conditions of life, pure water resources, air, and so forth. Of course, first place remains with the economy and economic development, as it did before, but in determining the areas of the accomplishment of both national-economic and socioeconomic tasks, priority should be given to ecology.

All this indicates that today we need a fundamentally new state environmental policy that clearly defines a strategy and tactics for improving relations among society, production and the environment, and for optimally combining environmental and economic criteria for the development of productive forces and the functioning of territorial-branch and interbranch complexes in all spheres of the economy. The goal of present-day environmental policy should be to ensure, on the basis of the technical and technological, structural, socioeconomic and organizational restructuring of social production, and taking environmental factors into account, the most favorable natural conditions for life from the standpoint of the interests of human health, the efficient and rational utilization and reproduction of natural resources, and the restoration of environmental health in regions with high levels of industrial and agroindustrial development, and as a consequence, the further improvement in production efficiency and in the people's well-being.

Ukraine's Economy in the 'Mirror of Ecology'

The republic presently belongs to those regions where the condition of the natural environment as a whole can be characterized as unfavorable and alarming, and in many oblasts—as critical. Whereas throughout the country as a whole, according to the figures of the former USSR State Committee for the Environment, about 300 major environmental-disaster zones have developed covering approximately 3.7 million square kilometers, which constitutes 16 percent of total union territory, and about 20 percent of the population lives in extremely strained ecological situations, not counting the population in areas that have been subjected to radioactive contamination as a result of the accident at the Chernobyl Nuclear Power Station, in Ukraine, according to our calculations, these relative figures are several times as high: in terms of area, the figure is from 3-3.5 times as high, and in terms of population, it is three times as high. Radioactively contaminated territory in the republic totals 4 million hectares, or nearly seven percent of its total area.

A high level of industrial development and intensive agricultural production account for the fact that Ukraine has probably the highest combined level of anthropogenic and technogenic loads on the environment throughout practically its entire territory not just among the union republics, but also among the European states. Here land, water, timber and mineral raw-material resources have been put into economic circulation to a maximum degree. The republic occupies 2.7 percent of the USSR's total area, but about 20 percent of the country's industrial and agroindustrial potential is concentrated, and approximately one-fifth of the all-union social product is produced on its territory. Moreover, this includes branches of industry and agriculture that have an exceptionally negative impact on the environment, particularly on land and water resources and the atmosphere, destroying and polluting them. On the whole, according to our calculations, the aggregate loads of all production facilities and the population on Ukraine's human environment and natural resources are 15 times as high as the average for the USSR as a whole.

It should be noted in this connection that in the late 1980s the republic produced about 55-57 million tons of steel and 40 million tons of rolled ferrous metals annually, while France and the FRG produced 56-60 million tons of steel and 45 million tons of rolled ferrous metals, between them. Ukraine produced 7 million tons of pipe, while Great Britain, Italy and France combined produced 6.8 million tons. Ukraine mined 110-112 million tons of iron ore annually, while the United States mined less than 50 million tons, and France mined no more than 15 million tons. Coal extraction in the republic totaled approximately 200 million tons, which was only one-third less than Great Britain, France and the FRG combined.

Moreover, one must keep in mind that our ferrous metallurgy uses obsolete technologies that are energy-intensive and environmentally hazardous. Whereas the West European countries and Japan use an average of 5 million kilocalories of all types of energy per ton of steel produced, Ukraine uses 8-8.5 million tons, or 60 percent more. The conception of electric power in arc furnaces is 21 percent higher, and it is 38 percent higher in the production of ferrous alloys. Consequently, the excessive use of energy at ferrous-metallurgy enterprises is immense. For the country as a whole it totals 442 trillion kilocalories a year, which is equivalent to 13 percent of total fuel use at central thermal power stations in the USSR. For comparison, let us say that this is nearly as much electric power as produced by all the country's nuclear power stations.[1]

I would like to emphasize just one more point. The data indicate that at least 30 percent of the extracted coal, without being burned and without producing any useful results, is lost in transport, loading, etc. and enters the environment in the form of coal dust, polluting the air, water and soil. However, even the burned coal goes for the most part to pollute the environment, since the republic's industry currently utilizes 40-42 percent of the heat obtained from burning fuel. The emissions of power-engineering facilities do exceptionally great harm to human health, lower the productivity of fields, and pollute agricultural products. They are the cause of so-called acid rain, which does tremendous damage to human beings, nature and the economy.

For example, in 1989 the volume of environmentally hazardous emissions by industrial and power-engineering facilities in Ukraine totaled 44 million tons,

or 0.9 tons per capita and 73 tons per square kilometer of territory. Only three-fourths of this amount was caught and decontaminated, which is to say that in any case there was 200 kilograms of toxic emissions from stationary sources of air pollution per inhabitant of the republic, and 18.2 tons per square kilometer. In subsequent years the situation has changed very in practical terms, since the construction of treatment facilities to trap and decontaminate these emissions has been carried out very slowly. The level of environmentally hazardous emissions in the republic at present is approximately double the analogous average union figure per capita of the population and approximately six times the analogous average union figure per square kilometer of land.[2]

As the calculations of environmental economists show, the emissions of dust and gas from a single large industrial enterprise belonging to the fuel and power, chemical or metallurgical complexes results, on the average, in the loss of from R2 million to R3.5 million worth of agricultural crops a year (valuing the products at present state procurement prices). Moreover, in this process food is polluted and the quality of agricultural raw material is reduced, which ultimately has a negative impact on human health and the economic effectiveness of the processing industry. This is especially characteristic of the farming regions of the Donets Basin and the Dnieper region, where there is an extremely high concentration of industrial and power-engineering facilities, which in most cases operate using anti-environmental equipment, technologies and methods of organizing production processes.

As for the structure of Ukraine's economic complex, from the standpoint of ecology it is unquestionably extremely irrational and, frankly speaking, environmentally hazardous and, hence, inhumane. This is due to the predominance in it of energy- and environment-intensive production facilities that are distinguished by high levels of environmental destruction and pollution. Not one of the union republics and not one of the European states presently has an economic structure that has such a large proportion of raw-material extractive branches and that operates so poorly for the satisfaction of human needs. The economically developed countries have long since shifted to fundamentally new structures of their economic complexes that are oriented toward the priority development of science-intensive branches and toward the introduction of resource-, materials- and nature-conserving technologies, etc.

Thus, as we see, Ukraine is characterized by a kind of "environmental expansion," that is, an uncontrolled, scientifically unsubstantiated increase in loads on the environment, and an irrational and unwise use of inexpensive natural resources. As a consequence of the extensive type of economic development, the ever-larger quantitative increase in the material and technical potential of social production, the intensified use of chemicals and land-reclamation methods in agriculture, etc., this "environmental expansion" is resulting not only in the pollution and degradation of the environment and exhaustion of its resources, but also in the fact that it is necessary to expend ever-increasing amounts of energy and resources drawn from the environment in order to maintain the achieved level of well-being, conserve and reproduce natural resources, and stabilize the environmental situation. And this, once again, increases the pressure of society on the environment; it is one more spiral in rising environmental outlays.

Evidently, many environmental and economic "woes" of the development of productive forces in Ukraine stem not from a deficit but from an abundance of natural resources. That is what from the very outset predetermined the extensive strategy for developing its economy, especially the raw-materials extractive branches, whereas in Japan, for example, the scarcity of natural resources fostered an intensive strategy of economic development oriented toward the production of competitive and low energy-, materials-, and environment-intensive, but high science-intensive, output.

With respect to existing conditions in the republic, the environmental problems of economic development and the questions of the technical, technological and structural restructuring of social production and of the fundamental improvement of the utilization and conservation of all natural resources are of priority importance. The resolution of them is presently being complicated not even so much by the level of development and scale of economic potential, as by the fact that for a long time the buildup of this potential was carried out on a technically obsolete level, without consideration for environmental factors and criteria, and in the absence of strict environmental standards and restrictions. Therefore, the ecological effectiveness of Ukraine's economic complex is extremely low, as it is for our entire economic system, which until recent years ignored questions of assessing the environmental hazards of social production.

Indisputably, the growth rates of both the ecological and the economic effectiveness of social production at the present stage are determined to a critical extent by the way in which the physical facilities and equipment used in production are improved, how rapidly and on what scale equipment and technology are updated to bring them into conformity with environmental requirements, and how much money society and individual producers of goods allocate for environmental-protection measures. The latter also determines the accomplishment of many social objectives and the provision of ecological pure food and human habitat.

In this connection, one can in no way agree with the currently widespread view that increasing the outlays for environmental protection limits the possibilities for the further development of production and society's social sphere. A slowdown in the pace of economic development may occur precisely in the opposite case—if insufficient attention is given to the rational utilization, conservation and reproduction of natural resources and

the preservation of the environment in an clean state. Economic practice provides many examples confirming this conclusion. Only on the basis of thorough scientific studies and objective forecasts can society successfully cope with the incredibly complex and acute environmental problems that reflect the present stage and existing nature of interaction among human beings, production and nature under the real natural and socioeconomic conditions of human activity.

The branch structure of economic management, which continues to function, with its inherent tendency for each branch to strive to expand its production and spend money where it is easiest to do so and where the use of new equipment and new technology is not required, is a fundamental obstacle to the solution of high-priority environmental problems. It is hardly possible to get by here without independence and market relations, without free entrepreneurship and competition. It is precisely the absence of these mechanisms that has resulted in the country's having such a firm lock on first place in the world in the production of oil, gas, iron ore and many other minerals, cement, steel, mineral fertilizers, and obsolete tractors, grain combines and metal-cutting machine tools. All this does little to help solve social problems and improve people's well-being; on the other hand, it places a heavy burden on the environment and human beings.

In order to achieve a growth in production on the basis of a more efficient utilization of the existing resources potential and an accelerated changeover to new progressive and environmentally safe types of equipment and technology, it is necessary to abandon the stereotypes of the past at all levels of economic management. The ecological restructuring of production will not occur of its own accord, along with the accumulation of national wealth and reduction in the per-unit consumption of resources, as was previously believed. This undertaking requires energetic and decisive measures aimed at comprehensively placing industrial and agroindustrial production on a sound environmental footing.

The same can be said regarding the structural restructuring of the republic's economy, which to a certain extent can also be regarded as a factor in improving the ecological health of the environment. Preliminary calculations indicate that it is possible to save 100-120 million tons of standard fuel annually through the accelerated development of electronics, precision machine building and other science-intensive industries. And this means no less than a reduction in anthropogenic and technogenic loads on the environment, and a reduction in harmful discharges and emissions into the atmosphere and bodies of water, even given a substantial increase in the production of industrial output. In all likelihood, we can and should, in the name of restoring the health of the natural environment, abandon many types of economic activity that are not without their economic risks.

Ecology and Agricultural Production

An analysis of the causes that have resulted in a drastic deterioration of the environmental situation in Ukraine indicates that the degradation and pollution of the environment, and the reduction or even loss of its quality and reproductive capacity are now being caused not only by the mining branches, industry, power engineering and transportation, but also by agricultural production and the agroindustrial complex as a whole. For a long time agriculture was counted (and quite rightly) among the environmentally harmless spheres of human activity. But in the past few decades the situation here has changed fundamentally, and the agrarian sector is now comparable, perhaps, to the most environmentally hazardous industrial production processes.

The environmental situation in the republic has become extremely exacerbated in connection with broad-scale, insufficiently substantiated measures related to the concentration and specialization, intensification, industrialization, and chemicalization of agricultural production and practice of irrigated farming. Carried out so far without consideration for environmental requirements, these measures not only have not resulted in a substantial increase in the effectiveness of agriculture or solution of the food problem, but have been the cause of many negative environmental consequences. To those consequences that have already been partially mentioned, one can add the increasing chemical contamination of food and pollution of land and water resources, the drastic decline in the stability and self-regulating capacity of agricultural ecosystems, the reduction in the humus content in soil, and the intensification of the processes of salinization and acidification of agricultural lands.

Therefore, it is necessary first of all to purposefully put farming and animal husbandry—branches that are exerting an ever-growing impact on the environment over very large areas—on a sound environmental footing. In this connection it is legitimate to ask: what is the "contribution" of Ukraine's agroindustrial complex to the deterioration of the environmental situation and to the pollution of its environment? Various researchers cite various figures, but in all instances they are large. According to our calculations, the republic's agroindustrial complex negatively affects and pollutes nearly 70 percent of its land resources and approximately 45-48 percent of its bodies of water. Its "contribution" to overall air pollution fluctuates from 35 percent to 40 percent.

Special mention should be made of the chemicalization of agricultural production, which has become a major source of environmental pollution. In the mid-1970s the USSR assumed first place in the world in the production and use of mineral fertilizers in agriculture, and in the mid-1980s it took over first place in the use of chemical pesticides and herbicides. The chemicalization of agriculture took place at a fast pace in Ukraine, too: in 1961-1989 deliveries of mineral fertilizers to kolkhozes and sovkhozes rose from 482,000 tons to 4.8 million tons

(as converted to 100 percent nutrients), and their use per hectare of arable land increased from 14.6 to 147.7 kilograms, or by a factor of 10.1, while the per hectare use of specifically nitrogen fertilizers increased from 3.6 to 58.2 kg, or by a factor of 16.2. The production of chemical herbicides and pesticides in the republic over the same period increased from 4,600 tons to 60,200 tons, or by a factor of 13.1, with herbicide production increasing from 50 tons to 5,400 tons, or by a factor of 108.

The accelerated chemicalization of agricultural production was previously regarded by many departments and executives, and still is, as a principal factor capable of rapidly solving the food problem with small expenditures, and of raising the productivity of land and the quality of food products and agricultural raw material. But, like many other measures, including land improvement through irrigation, it was carried out without the proper organizational and technological preparation, in a situation marked by low farming standards, the absence of a clear system of monitoring and agrochemical services, and the lack of an efficient and effective economic mechanism; and naturally the expectations were not borne out. While achieving the broad-scale chemicalization of agriculture, we nonetheless did not solve the food problem. And there were plenty of unanticipated consequences.

The comprehensive chemicalization of agriculture dealt the most palpable blow to the republic's surface and underground water sources. Practically all bodies of water exhibit heightened contents of nitrates, pesticides and herbicides, and many open bodies of water have experienced eutrophication, that is, blue-green algae are developing intensively in them. Medical scientists and biologists have demonstrated that the consumption of water with a high nitrogen content results in a grave illness—methemoglobinemia, which attacks the nervous system and the brain, especially in children and adolescents. Moreover, in many water basins, including the Dnieper, the water contains pesticides, herbicides and other toxic chemicals, which, accumulating in zooplankton and the organisms of fish, subsequently enter the human organism along with water and food.

As B. Chernyakov has rightly noted, a chemical "war" is already being waged not just in the United States but also in our country. The expansion of chemicalization has immeasurably exacerbated the ecological situation, especially where intensive farming based on mineral fertilizers, pesticides and herbicides is practiced. The negative consequences for other purposes of the uncontrolled and scientifically unsubstantiated production and use of mineral fertilizers and chemical herbicides and pesticides in agriculture are so great and diverse that it is practically impossible to fully assess them at present without reliable statistical data and a uniform set of methods and appropriate technical monitoring and measuring devices.[3]

In the United States, for example, the study of the problem of the environmental impact of the intensive chemicalization of agricultural production carried out over extensive areas with the use of high doses of mineral fertilizers and other chemical substances, and the disclosure of the real picture of its negative consequences have become possible thanks to efficiently organized and objective government monitoring of the condition of the environment, the quality and contamination level of food and drinking water, and public health in every community. The experience with the chemicalization of agriculture in the United States attests to yet another point. When that country recognized how acute this problem was, steps were immediately taken to substantially improve farming standards; an effectively functioning agrochemical service was established; and new techniques for the local application of mineral fertilizers, herbicides and pesticides, a set of machines and equipment for the safe application of chemical agents, and means and methods of preventing the chemical pollution of the environment and contamination of food products were all developed.

In every state an effective system of transmitting knowledge from scientific institutions to farmers and businessmen has been established. And chemicalization is strictly regulated by independent, nondepartmental monitoring agencies at both the federal and state level that determine the content of chemical agents in food and in the environment. The country has a set of laws protecting the environment and the consumer against the excessive and unreasonable use of chemical agents in agriculture, publications about the negative consequences of chemicalization are open to the public, and so forth. Without a doubt, the experience that has been amassed in the United States in the area of the rational chemicalization of the agroindustrial complex merits the closest study and the application of everything that is positive to our land.

The practice of agricultural production in most of Ukraine's rayons indicates that, given the existing huge volumes and scale of the use of chemical agents and the extremely low standards of chemicalization in particular and farming in general, it would be better and more useful for us to drastically restrict the use of chemical agents in agriculture than to use them unintelligently and without control. Today it is becoming obvious that any further increase in amounts of the deliveries of mineral fertilizers and chemical herbicides and pesticides to kolkhozes, sovkhozes and other agricultural enterprises and farms, which for all practical purposes bear no responsibility to society for their environmentally intelligent use, is not only senseless but dangerous. Although in recent years an active search has been conducted for chemical herbicides and pesticides with specifically directed, selective effects, and also for those that will rapidly and completely break down in the environment into neutral and harmless components and substances.

As for mineral fertilizers, here steps are supposedly being taken to produce fertilizer without harmful additives,

with a programmed release of nutrients, etc., that is, fertilizers with a low environmental impact. Unfortunately, substantial progress has yet to be made in this undertaking. About two decades ago a technology was developed for producing penoselitra—a fertilizer that replaces granulated superphosphate and is environmentally clean, since the nutrients it contains are fully utilized by plants and not washed out of the soil. However, the production of penoselitra has not yet been set up.

Nonetheless, from the standpoint of ecology (and of economics, too, considering the steadily growing outlays for the production of agricultural chemicals), even with the use of relatively environmentally safe chemical agents in agriculture, it is necessary, in our view, to eventually shift to biological and biotechnological methods of plant protection. This is because all the toxic chemicals that are used, in addition to polluting the environment, also cause great damage by way of disturbing the ecological equilibrium in it, in agricultural ecosystems, which inevitably results in their alteration for the worse. Moreover, under conditions of the intensive chemicalization of farming, toxin-resistant strains and forms of pathogenic organisms, pests and weeds have developed, and their resistance to pesticides and herbicides is growing.

Finally, and these are the most dangerous consequences of the use of chemical agents in agriculture, they are accumulating in food products. at present we lack reliable data on the chemical contamination of food in the republic, since such information remains closed, and monitoring is carried out on an occasional basis. But the information that we do have indicates that, for example, during the past five-year period residues of pesticides and herbicides in food products, particularly in fruits and vegetables, started to be encountered in samples taken for analysis with a frequency 2.3 to 2.5 times as great as during the preceding five-year period. The percentage of ground water samples containing pesticides and herbicides rose from 34 percent in 1985-1986 to 87-90 percent in 1989-1990. Only 10 percent of the milk produced is fit for preparing infant food products in terms of its content of harmful substances.[4]

It is now commonly acknowledged that the pollution of the environment and contamination of food and drinking water, especially by chemical substances, including those used in the agroindustrial complex, are among the most significant factors negatively impacting people's health and life expectancy and increasing the danger of various genetic disturbances. Medical scientists link 75 percent of all diseases with the intensive contamination of food products and pollution of the environment, especially of water and air. From the figures cited above one can readily conclude what an urgent, complex and multidimensional task the problem is of improving the chemicalization of agriculture and shifting it to environmentally safe techniques.

At the first stage of placing farming on an environmentally sound footing, we should substantially limit and reduce to a minimum the use of readily soluble mineral fertilizers, especially nitrogen fertilizers, and universally carry out a changeover first to integrated and then to biological and agrotechnical systems of combating diseases, pests and weeds, and to stimulating the biological activeness of the soil through the broad-scale use of organic fertilizers of animal and plant origin. In an environmentally clean system of farming, elements released as the result of the mineralization of organic substances will become the main, and often even the sole, source of plant nutrients. Such a system of farming is becoming increasingly widespread in the West European and North American countries. The United States already had more than 20,000 farms in 1985 and 30,000 farms in 1987 where the use not only of pesticides and herbicides, but even of mineral fertilizers, was completely excluded.[5]

At the present stage of society's socioeconomic development, the environmental problems of land use have become incredibly aggravated. The present condition of Ukraine's state lands, which have a cadastral assessment that is 2.5 times as high as the average union assessment, arouses concern and alarm.

According to the figures of research institutions, in 1961-1990 the area of eroded arable land increased substantially and reached 13 million hectares, i.e., more than one-third of the republic's total arable land. The area of arable land with acid soil is increasing: it now totals nearly 9 million hectares, or 26.5 percent of all arable land. Excessively wet, swampy, saline and salinized areas of arable land are also expanding and already total more than 5.5 million hectares (17 percent of all arable land). The figures cited allow us to draw a discouraging conclusion: Ukraine's land resources—our black earth, Ukraine's most important national resources—are undergoing a deterioration in quality and in ecological condition.

Moreover, an absolute reduction in agricultural lands has been occurring in connection with the increased demand on land resources on the part of nonagricultural land users. Large areas of land are being withdrawn for industrial, power-engineering, housing, municipal-service and road construction, opencut mines and mine workings, spoilbanks and treatment installations, and the creation of recreational facilities, parks, reserves, etc. Over the period since 1960, the area of agricultural lands in the republic has been reduced by nearly 1.5 million hectares, or, on a per capita basis, from 1.01 hectares in 1960 to 0.81 hectares in 1990, or by 20 percent. And that is in a situation in which Ukraine now occupies 11th place in the country in its amount of agricultural land per capita and is 60 percent below the average union figure in this regard.

The reduction in the republic of the area of agricultural lands that place relatively low loads on the environment (hay meadows, pastures and perennial plantings) is

unwarranted from an environmental standpoint. In 1961-1990 the area of hay meadows and pastures was reduced by 12 percent, and the area of perennial plantings—by 40 percent, and their areas as a percentage of all agricultural lands declined by 1.3 percent and 0.9 percent, respectively. Moreover, Ukraine's extremely low level of forestation, which from 1966 through 1988 increased by only 1.2 percent—from 13.1 percent in 1965 to 14.3 percent in 1988—is not contributing to preserving and improving the environment, either. Measures are being carried out very slowly to create a rational agricultural landscape in all farming regions through the creation of new field-protective and water-conservation forest plantings, the construction of reservoirs and anti-erosion installations, the formation of an environmentally stable structure of lands, etc., and what is most important—the proper contouring of agricultural territories. In the interests of improving the condition of the environment and reducing the load placed on it by the agricultural complex, it seems to us that it would be a good idea to remove some 4-5 million hectares of the most degraded arable land from intensive agricultural use by the year 2000. That would also prove warranted from an economic standpoint, since production on such lands is generally relatively inefficient and even unprofitable.

In general, there is a great deal of work to be done in this regard. As A. V. Yablokov, corresponding member of the USSR Academy of Sciences, notes, "...in order to maintain the environment of a large region in a working condition that is capable, on the one hand, of maintaining climatic parameters, and on the other, of supporting the production of food and the leisure of the population, it is necessary for about 30 percent of the area to remain in a condition close to natural. Of the remaining 70 percent, half should be set aside for the production of food. And whereas the areas of agricultural lands can vary substantially among different regions, any reduction in the area set aside for "wild" nature inevitably results in environmental disasters."[6]

The Environment and Market Relations

Despite all the difficulties of an economic, technological and social nature, it is necessary to immediately begin addressing acute environmental problems if we want to live in a normal environment, eat good-quality foods, drink pure water and breathe unpolluted air. Since it was impossible, under the conditions of the planned, administrative-command economy, to stop the mounting of ecological contradictions and improve the state of affairs with respect to environmental protection, there remains a hope for market relations. It is they that, to a significant extent, have provided not only for the attainment of a high level of well-being and social development, but also for the surmounting of the environmental crisis, which is evidenced by the experience of the countries of Western Europe and North America and certain Asian states.

In connection with the introduction of certain elements of a market economy and the possible broad-scale changeover to it in the future, a number of theoretical question arise.

First of all, will market relations contribute to an effective and rapid solution of environmental problems? In our view, no; at least during the transitional and initial stages, there will hardly be any improvement in environmental protection. On the contrary, a further deterioration of the environmental situation in the republic is possible. In those same industrially developed countries, i.e., where the acute environmental crisis was first encountered in the 1960s, it was precisely government structures and centralized government subsidies that played a decisive role in surmounting that crisis within a relatively short period—in a decade to decade and a half.

For example, in the United States the national environmental programs that have been actively implemented since the 1970s are based on a rather extensive involvement of the government through administrative law and financing. That is what made it possible over the 1970-1985 period to reduce atmospheric emissions of sulfur dioxide by 26 percent, of carbon dioxide by 32 percent, of volatile organic compounds by 22 percent, and of solid particles by nearly 60 percent. In many states water quality in rivers and lakes has improved, and their bacteriological pollution and concentrations of lead, cadmium and the other most dangerous chemical elements have declined. A total of more than $500 billion in the financial resources of government, private companies and consumers was spent for the implementation of environmental-protection programs in the 1970s, which the American literature calls the "environmental decade." According to the calculations of the American scholar A. [Freeman], the value of benefits just from the 20-percent reduction in air pollution in 1970-1978 totaled nearly $18 billion, including benefits valued at $14 billion from the reduction in the mortality and disease rate.[7]

The government sector of the economy and administrative agencies in the aforementioned countries were able, using special levers of direct influence on entrepreneurs and the executives of large monopolies and concerns, to bring about a reallocation of money and profits in favor of the implementation of environmental-protection measures. Granted, even here the state, despite the exceptional importance and urgency of solving environmental problems, did not risk damaging the mechanisms of market relations. If state and government structures attempt to do more than is dictated by the interests of the market economy, no matter what lofty and noble goals they are guided by, in the final analysis a deformation of market self-regulating processes may occur. And as a result—a drop in the rates of growth in production efficiency, the development of disproportions, etc. And in the future that will negatively impact the solution of socioeconomic, technological and, consequently, environmental problems.

Second, if one asks the question point-blank, as it were, as to whether it is possible to shift society's environmental-protection activities and environmental concerns in general to purely market mechanisms, then based on the experience of foreign countries and the realities of our life, the answer must be: no, not completely, in no case. At the same time, the intensification of market and economic regulators of the rational utilization of natural resources and protection of the environment, with the help of the introduction of appropriate, scientifically substantiated environmental charges and a system of taxation and tax breaks, will, in combination with the implementation of state environmental-protection programs, unquestionably result in positive changes in the business of improving the condition of the environment and rationalizing the utilization, conservation and reproduction of its resources in all branches and spheres of the economy. Therefore, considering the specific features of the present stage of development, it is necessary to organically combine market and planned-economy mechanisms for regulating and improving nature utilization and environmental protection.

Under the conditions of the transition to a market economy, an economic mechanism for the implementation of environmental-protection measures in the broad sense of the word should include a system of charges for the use of natural resources and pollution of the environment (or the worsening of its qualitative characteristics), and of taxing producers who utilize and pollute natural resources and the environment. Such measures are, in particular: charges for the right to use natural resources; payment for the reproduction and conservation of natural resources (if the measures to do so are carried out by the state or by specialized enterprises and organizations operating on a cost-accounting basis); compensatory charges for the withdrawal of natural resources from their designated uses or the worsening of their quality due to the activities of a given enterprises or organization; charges for discharges and emissions of pollutants into the environment (and also for their placement or burial); an additional tax on the profits of enterprises and farms and individual producers of goods that produce output using environmentally hazardous or environmentally polluting equipment and technologies, that is, a so-called environmental tax; a system of tax breaks with regard to the tax on the profits of enterprises and farms in cases in which they use their own money to carry out environmental-protection measures.

Finally, it would be a good idea to increase the role and significance of fines and other economic sanctions for violation of the rules, standards and requirements of rational nature use, and for exceeding the limits of the allowable use of natural resources and allowable emissions (discharges) of pollutants into the environment (especially into the air and bodies of water). To this end, appropriate legislative acts and normative documents should be drawn up and adopted that would make it possible to transfer nature use and environmental protection to a fundamentally new economic mechanism. Its basic goal consists in shifting the center of gravity in the solution of environmental problems from state and administrative structures directly to enterprises, organizations and individual producers. But in order for them to be able to successfully solve environmental problems, they need to be granted complete independence, which will unleash the initiative of labor collectives and entrepreneurs.

Under the new conditions of economic operation that are developing during the transition to market relations, the role and importance of environmental-protection legislation, and the need to increase the role of law-enforcement and environmental-protection agencies in identifying the causes of so-called environmental crimes and employing effective measures to prevent them are increasing sharply. In this connection the republic's public at large is placing great hopes in the Law on Environmental Protection that was adopted this 25 June by the Ukrainian Supreme Soviet,[8] which is supposed to be followed by the adoption of a package of government decisions aimed at its unconditional execution.

In conclusion, let us formulate several general conclusions and proposals. In conceptual terms, they come down to the following: (1) the basis for the solution of socioeconomic problems, the efficient operation of the republic's economic complex, and the improvement of its environment is the optimal, rational combination of the environmentally safe intensification of social production with the economically effective intensification of nature use on the basis of accelerating the pace of scientific and technological progress in all areas and at all levels; (2) the goal of intensification, in addition to increasing the production and improving the quality of output, should also be the utmost economizing of social labor and resources and the achievement of environmental protection on the basis of the comprehensive placement of social production on a sound environmental footing.

In addition, considering Ukraine's favorable soil and climatic conditions for agriculture, in our opinion it is necessary in the future to reorient the republic's economy in the direction of a more complete utilization of its natural agricultural potential, as well as of its recreational and health-resort resources, and of the maximum preservation of the nature-protective and climate-regulating functions of the Carpathians and the Crimea by limiting and strictly regulating the construction of new industrial facilities, particularly those that are environmentally hazardous (nuclear power engineering and chemical and metallurgical production), and by rationalizing the structure of the agroindustrial complex and its land, including planted and other areas. The development of the republic's industrial potential should be closely linked to solution of the food problem and the accomplishment of environmental and social objectives. And structurally its industry should be restructured toward an environmentally protective and science-intensive and intellectually intensive course of development.

The basic areas of the practical solution of the environmental problems of intensifying agroindustrial production in the near future should be considered the following: (1) the formation of a biosphere-compatible material and technical base of the agroindustrial complex through its modernization and the introduction of qualitatively new types of equipment and low-waste and waste-free technologies, and the broad use of environmentally clean and soil-protective systems of farming and rational methods of conducting animal husbandry; (2) the development and implementation of measures to enhance the role of the natural and biological potential of agriculture on the basis of improving the utilization of replaceable resources, the selection of highly productive and environmentally stable varieties of plants and breeds of animals, and the gradual shift to adaptive systems of farming and methods of intensifying agricultural production; and (3) the introduction into practice of an economic mechanism of nature use that provides for the rational utilization, conservation and reproduction of natural resources, nature conservation, and the maintenance of the ecological purity of food and agricultural raw material. All this will make it possible to substantially increase the level of ecological security of the life of the people of an independent, democratic state of Ukraine.

Footnotes

1. V. Spandaryan, "Delovaya Yaponiya" [Business Japan], Moscow, Mysl, 1991, pp 31-32.

2. Calculated on the basis of figures in: "Narodnoye khozyaystvo Ukrainskoy SSR v 1989 g. Statisticheskiy yezhegodnik" [The Ukrainian SSR's Economy in 1989: A Statistical Yearbook], Kiev, Tekhnika, 1990, pp 26, 219, 228-229; "Narodnoye khozyaystvo SSSR v 1989 g. Statisticheskiy yezhegodnik" [The USSR's Economy in 1989: A Statistical Yearbook], Moscow, Financy i statistika, 1990, pp 17, 240, 251.

3. B. A. Chernyakov, "The Chemical War Is Already Being Fought," SShA—EKONOMIKA, POLITIKA, IDEOLOGIYA, No 6, 1989, p 51.

4. KOMSOMOLSKAYA PRAVDA, 16 March 1991.

5. "Ekologicheskaya alternativa" [The Environmental Alternative] (Under the general editorship of M. Ya. Lemeshev), Moscow, Progress, 1990, p 500.

6. See CHELOVEK I PRIRODA, No 1, 1988, p 76.

7. "Perspectives on Environmental Impact Assessment," Aberdeen, 1984, pp 346-347; "Statistical Abstract of the United States," 1988, p 192.

8. RADYANSKA UKRAINA, 25 July 1991.

Semipalatinsk, Aral Zones May Get International Ecology Laboratories

PM0912093991 Moscow Central Television First Program Network in Russian 1045 GMT 1 Dec 91

[From the "Ecological Chronicle" program, anchored by Andrey Karpov, identified by caption]

[Excerpts] [Karpov] Today we want to report on an attempt, an international attempt on this occasion, to carry out an aerial ecological survey of three trouble spots—the Semipalatinsk nuclear test site, the Aral Sea, and the Tajik Aluminum Plant.

It is being undertaken by ESKOS [Ecological Station for Monitoring the Environment]. ESKOS is the Soviet subsidiary of the World Laboratory international organization. It is being undertaken with a specific aim—submitting statistical, photographic, and video material to a competent international commission to prove the need for the establishment of scientific research laboratories at precisely these trouble spots. Such laboratories have been established and are operating in virtually all countries. Today the Central Asian region is being given the chance to avail itself of world community assistance, especially since the cost of setting up the laboratories is borne entirely by the World Laboratory organization.

[passage omitted]

[female narator] This expanse of scorched earth which stretches up to the horizon is the Semipalatinsk nuclear test site. When you get a bird's-eye view of it, you shudder. This is what the whole earth could have looked like. [video shows nuclear explosion]

Fortunately, it is only 18,000 square kilometers, all of 18,000 square kilometers. A total of 350 underground explosions were carried out at the test site. Until recently it was a closed facility. Now it is the first of five major nuclear tests sites in the world accessible to scientists from all over the world. Arriving at ground zero, research workers see before them a ravaged and disfigured landscape which, the military claim, is nonetheless safe from the radiation hazard viewpoint. The explosions were carried out in shafts, surrounded by granite rock, at a depth of 600 meters. Radiation levels on the surface present no hazard to people's health—also according to military assurances. Nevertheless, scientists have been advised not to stay at ground zero for too long... It appears there is still residue from the surface explosions which were carried out at the very beginning of the nuclear tests at the Semipalatinsk test site. There are the terrible traces of americium, a decay product of plutonium, which is short-lived but much more toxic.

[video shows a sign reading "Access to crater prohibited," a barbed-wire enclosure, and a soldier holding a geiger counter]

[L.L. Nefedov, test site sector chief, identified by caption] There must still be traces of the first surface explosions. Many years have passed. They were studied

at the time, of course. At present they are very difficult to track down since radioactivity has seeped into the earth as a result of natural phenomena, precipitation, and suchlike... After all, a lot of time has passed. In order to identify these, expensive and protracted studies are needed.

[female narrator] And although the test site is strictly monitored, and this includes hay-making, the spread of radiation beyond the confines of the test site is inevitable—as a result of hay secretly smuggled out, for example...

The Russian President's decree on a one-year moratorium on nuclear tests has provided mankind with a unique chance to study the whole complex of problems surrounding the test site.

[G.M. Barenboym, ESKOS director, identified by caption] Naturally, the fate of this test site, including its ecological present, past, and future, as well as social aspects of the test site's closure, and the possibility of making use of this major technical installation and its scientific potential for scientific purposes are of major interest not just for the Kazakh republic on whose territory the site is located, not just for the country as a whole, but also for the entire world community. The World Laboratory, an international nongovernmental organization whose founding fathers included the world's leading nuclear physicists, wants to take part in this work. It is planning to study the possibility of setting up an international monitoring center here to provide objective information. This does not mean that the specialists who are working here are not doing a good job. However, in view of the political passions which have been stirred up and the prevailing mistrust of governmental sources of information, an international independent expert study of the test site, and the certification of land to be returned into use appears to be of major importance.

[female narrator] Somewhere here are the laboratories in which monkeys were taught both simple and more complex techniques right up to the point where they became reflexes. Subsequently they were subjected to high doses of radiation and observed.

Can we afford not to revive this test site? There are all kinds of imprints here. Imprints of tragedies, and imprints of brilliant ideas—Sakharov's and Kurchatov's ideas, metamorphosed and turned into a nuclear nightmare.

Some things will be discarded as being barbaric and not needed by mankind, but some things must be preserved. Therefore the World Laboratory has offered Kazakhstan to add an international dimension to the proposal for setting up a scientific center here. In this way cadres and science will be preserved. And as for the evil that occurred, we will preserve only the precise knowledge about this evil which is a matter of vital importance to mankind. [105332]

The Aral Sea—or rather what remains of it, what remains of the sea and of the people whom it used to feed. This is the former fishing village of Bugun, now located in the middle of a desert, surrounded by skeletons of ships and by rice fields stretching from one end of the horizon to another. This village has no future. None of these children wants to stay here. They want to get away as far as possible from the poverty and hunger...

[passage omitted]

This is one of the crossings on the border between Uzbekistan and Tajikistan. Not far from here the Tajik Aluminum Plant is located—the ecological bogey of the area. Admittedly, according to the plant's director, the plant is a most progressive enterprise, especially as regards ecological issues. The task is to keep pace with world standards. The plant's annual expenditure in hard currency for gas scrubbing and minimizing discharges exceeds $14 million. Everything seems above board, but 60 percent of the children living in the Uzbek Saryassiyskiy Rayon adjoining the Aluminum Plant show signs of fluorosis, an abnormal condition of the teeth caused by a poisonous enzyme. The cause is the Tajik Aluminum Plant's fluor discharges.

[passage omitted]

It appears that Saryassiyskiy Rayon inhabitants can also absorb the whole gamut of noxious discharges indirectly, via food products which are not exactly abundant in any case. Milk, for instance. It this case it is the children who suffer most, the children who most need this food which has become scarce.

[passage omitted]

[I. Sunatov, rayon soviet chairman, identified by caption earlier in the program] It is necessary to stop these toxic discharges. Once that is done, we will not require any assistance, any support from the aluminum plant.

[Barenboym] Aluminum plants exist all over the world. Aluminum is the metal of this century and the next. What is needed is progress in both directions—the plant must become absolutely clean in ecological terms, taking account of all the specific local conditions. However, it is impossible to present the plant as the enemy and blame it for all the troubles. If there is progress from both sides toward a general improvement of conditions, toward mutual respect, toward sensible, real ecology, then, in my opinion, life will be what it should be: There will be both industry and healthy, prosperous people.

[female narrator] And if anyone at the headquarters of the World Laboratory had any doubts about the expediency of spending colossal sums of money on the construction of scientific centers here, these doubts should have been dispelled by what they have seen and heard. There is more than enough work here. And not just scientific work. The laboratories, if they are built, will have to act as arbitrators in ecological conflicts.

Kazakh, Uzbek Trade Protocol Includes Ecological Cooperation

LD1512122591 Alma-Ata Kazakh Radio Network in Kazakh 1050 GMT 9 Dec 91

[Text] A 1992 agreement on trade and economic cooperation between the Republic of Uzbekistan and Kazakhstan was signed in Tashkent on 7 December. It was decided to set up and expand direct economic ties, mutual supplies of raw materials, and consumer goods in accordance with 1990 levels. One of the interesting articles in the agreement is that Kazakhstan and Uzbekistan agree on rendering mutual assistance in case of natural disasters. Joint conservation projects will be organized, including improving the sanitary ecological conditions of the Aral region. The agreement was signed by Uzbek Vice President Mirsaidov and Kazakh Prime Minister Tereshchenko. Uzbek President Karimov met Tereshchenko on the same day.

Nazarbayev Cited on Ust-Kamenogorsk Pollution

PM1712135491 Moscow Central Television Vostok Program and Orbita Networks in Russian 1630 GMT 13 Dec 91

[From the "TV Inform" newscast: Report by A. Laptev, identified by caption]

[Text] [Announcer] A city without a future is what foreign ecologists call Ust-Kamenogorsk after the latest attack—a beryllium attack this time—at the heart of the ore-mining Altay by the metallurgical giant. A comprehensive examination of the inhabitants of Ust-Kamenogorsk over the course of many months by specialists from the center showed that this definition is not so far from the truth.

[Laptev] Indeed, forgive me, but how could the results be any different when smoking plant chimneys are the main feature of the cityscape and the sweet-sour smell hanging in the air, the headaches, the recent underground tremors from nuclear explosions have long been seen by the inhabitants of the city on Irtysh as something inevitable, as a punishment from god. Now the Semipalatinsk testing range is closed and the adjacent oblasts have received compensation in the form of a number of benefits. Apart from East Kazakhstan. Probably a punishment for the obstinate nature of its inhabitants who even before perestroyka struggled against the all-powerful ministries for the limitation of their predatory activity and for their own survival and the assignment to the oblast of the status of an ecological disaster zone. This is the only place on earth where on a relatively small territory there are concentrated about 1 billion tons of toxic waste from nonferrous metallurgy. I questioned Kazakhstan People's President Nursultan Nazarbayev during his visit to Ust-Kamenogorsk. [Addressing Nazarbayev] It is a year since you were last here. We, well the people in general, have been asking all kinds of questions regarding our plight.

[Nazarbayev] Work began to have special resolutions of the Union government issued. A resolution emerged. It registered all establishments, money was earmarked, and so forth. But we are not in the Union now. I think that the Kazakhstan Government should start to improve the ecology of those enterprises which produce lead, zinc, and other nonferrous metals.

REGIONAL AFFAIRS

EC Environment Council Policy Decisions Reported

Stratgey on CO_2 Emissions Limit

92WS0082R Brussels EUROPE in English 3 Oct 91 pp 7-8

[Article: "(EU) Environment Council: The Council States That the Commission's Communication Relating to the Strategy To Stabilise CO_2 Emissions Is the Cornerstone of the EC's Policy on Climate Change—Working Party Set Up"]

[Text] Luxembourg, 02/10/1991 (AGENCE EUROPE)—At the conclusion of Tuesday's Environment Council, its President-in-Office, Dutch Environment Minister J.G.M. Alders, confirmed (see yesterday's EUROPE, page 9) the favourable reception all the delegations gave to the Commission's Communication setting out a Community strategy to limit CO_2 emissions (EUROPE of 26 September, page 7). The three elements of the Communication must now be analyzed in detail: 1) non-tax measures, 2) national programmes, and 3) taxation aspects, notably the fact that the tax proposed by the Commission would involve an average 50 percent increase in energy prices, particularly in the price of fossil fuel. For this reason the Council has decided to set up a working party that is expected to report its conclusions at the joint Energy/Environment Council on 10 and 11 December which would close the procedural work. The Minister expressed the hope that this Council would invite the Commission to submit specific and formal proposals. The working party should notably analyze the Commission's Communication in relation to the individual situation in each Member State, particularly from the standpoint of burden sharing. In conclusion, the Council President said that everyone has known since the Luxembourg meeting of October 1990 (when the EC made a commitment to stabilise CO_2 emissions in 2000 at the 1990 level; while agreeing to this principle at the Community level, the United Kingdom opted for the deadline of 2005, Ed.) that the EC would be under pressure to attain this goal. The EC position is essential in the context of the preparation (currently deadlocked) of the UN Environment and Development Conference which will be held in Rio de Janeiro in June 1992.

Commissioner Carlo Ripa di Meana stated that the Commission's Communication had experienced an "overwhelming success I had not dared hope for." Several delegations voiced their enthusiasm (Italy, Belgium, Spain, France and Germany, which had already expressed their view on its content), others such as the United Kingdom expressed "good will." The Commissioner stated that the specific and formal proposals that will follow could be ready next spring, prior to the UN conference in Rio de Janeiro. This will depend, however, "on the Council's requests along these lines." Lastly, Carlo Ripa di Meana said the working party would concentrate on the energy and environment aspects while a sub-group would evaluate the tax implications.

The following is the text of the Council statement:

"The Council welcomes the Communication from the Commission setting out a strategy to stabilise CO_2 emissions in the Community in general at 1990 levels by the year 2000. The Council recognizes the great importance of the Communication as a cornerstone for the establishment of a climate change policy in the Community.

The Council attaches great importance to reaching a firm position at the combined Energy/Environment Council meeting on 10 December 1991 on the instruments needed to implement the Community's commitment to reach stabilisation of CO_2 emissions by the year 2000.

The Council agreed that intensive preparation work should be undertaken on the basis of the Commission's Communication, taking into account all the various interests involved."

Overview of Session Results

92WS0082R Brussels EUROPE in English 3 Oct 91 pp 7, 8

[Article: "Environment Council: Agreements on "NORSPA" and the Rationalisation of Work, Progress on Natural Habitats and "Life"—Several Decisions Expected in December"]

[Text] Luxembourg, 02/10/1991 (AGENCE EUROPE)—At the conclusion of the Environment Council on Tuesday evening, President-in-Office Dutch Minister Mr. J.G.M. Alders announced that finally, after three years of work, the Council could take a decision in December on the directive concerning natural habitats. Indeed, after lengthy work in restricted session, an agreement was reached on the financing of this directive. Two views were in opposition: Spain deemed Community financing necessary whereas Germany took the view that the cost of the directive should be borne nationally.

Taking into account the fact that the EC as a whole has as great an interest as the Member States in creating protected zones, a compromise was found, the Council President said, adding that responsibility for the programmes implemented in the framework of the directive remained national but that on an exceptional basis Community co-financing was possible in certain cases. "A good written formula now remains to be found," said the Dutch Minister, who thinks this should be possible in December. The President also mentioned the favourable reception the Council gave the Commission's proposal concerning the reduction of CO_2 emissions (see above) and said the Council had also favourably welcomed the Commission's Communication entitled "A Common Platform. Guidelines for the Community for UNCED

1992." The latter is in preparation for the UN Conference on the Environment and Development to be held in Brazil next June. The Communication will be examined in depth with a view to framing a Community position likely to contribute optimally to the success of the conference. Two working parties will meet this week, one on technology transfer and the second on financial means.

The following is an overview of the results of the Council sitting.

1) NORSPA—environmental protection in the Community's northern coastal regions. The Council expressed its agreement with the regulation introducing this action, which will be allocated 16.5 million European currency units [ECU] for 1991-1992. EUROPE will return with details at a later date.

2) Standardization of reports concerning the implementation of certain environment directives. The Council voiced its agreement on the directive; formal adoption will take place at an upcoming Council. The goal of the directive is to facilitate the task of the Member States and the Commission by allowing them to better monitor and evaluate the implementation of such directives, notably by harmonizing the presentation, content and frequency of reports in the light of acquired experience. The agreement provides to this effect the preparation of implementation reports for the directives concerned based on uniform questionnaires presented by the Commission to the Member States six months before the start of the period covered by the report. The agreement also enjoins the Member States to forward the reports to the Commission within nine months following the end of the three-year period covered. The system is based on a three-year rotation, each year being devoted to a specific subject, air, water and waste.

3) Titanium dioxide industrial waste. See yesterday's EUROPE, page 10 and below.

4) Conservation of natural and semi-natural habitats and flora and fauna. Following a lengthy debate, notably of the financial aspects and the mechanisms for the designation of the zones to be protected, the Council, having noted substantial progress, assigned the Permanent Representatives the task of pursuing the examination of the directive with a view to reaching agreement at an upcoming Council.

5) LIFE—financial instrument for the environment. The Permanent Representatives have been asked to continue their work, taking into account Parliament's opinion as soon as it has been issued, so that the Council may reach agreement at the earliest opportunity, if possible before the end of the year.

6) Assessment and monitoring of the environmental risks of dangerous substances. Having reviewed the progress of work in this area, the Council intends to reach agreement in December.

7) Community system for awarding the ecological label. The Council hopes to reach agreement in December.

8) Exports and imports of certain chemicals. The Council hopes to reach agreement in December.

9) Control of the trans-border movements of dangerous waste—Basel Convention. The Council stressed the need to adopt legal instruments allowing Community application of the Convention as soon as possible. The Council is awaiting the Parliament's opinion on the proposal for a regulation which will ensure consistency between the extra- and intra-Community aspects of the control of the movements of waste and will return to this matter at its December session.

10) "Clean lorries." The Council adopted the directive concerning an additional reduction in the limit values of pollutants from diesel engines used in lorries and other utility vehicles. EUROPE will return with further details soon.

Agreement on NORSPA Program

92WS0082S Brussels EUROPE in English 4 Oct 91 p 12

[Article: "(EU) EC/Environment: The 'NORSPA' Programme Is Approved for Two Years With Possible Extension"]

[Text] Luxembourg, 03/10/1991 (AGENCE EUROPE)—As announced in yesterday's EUROPE, the Environment Council reached political agreement on the regulation concerning the NORSPA programme based on a compromise solution; the regulation will be formally adopted at an upcoming Council. The compromise reached provides for a two-year NORSPA programme with financing of ECU6.5 million for 1991 and ECU10 million for 1992, as had already been agreed. The revision clause, however, has been maintained: the Commission may therefore propose an extension of NORSPA, which would be given the same treatment as the MEDSPA programme, on which agreement was reached in the Council last December (see EUROPE of 28 December 1990, page 7). The MEDSPA programme was formally adopted in March for a five-year period. With this most recent decision, a parallelism will be maintained between NORSPA and MEDSPA, as the Council had agreed at its session last June.

EUROPE recalls that NORSPA concerns the northern regions of the EC, namely the estuaries and coastal waters of the Irish Sea, the North Sea, the Baltic, the northeastern part of the Atlantic located north of the river Tagus, as well as the Azores, Madeira and the Canary Islands (MEDSPA concerns the Mediterranean). The objectives sought in the NORSPA and MEDSPA programmes are to intensify efforts to protect the quality of the environment and to increase the efficacy of Community environmental, policy and actions in the regions concerned. Financial support could notably take the form of capital subsidies to encourage investments in

areas other than infrastructures or financial contributions for pilot or demonstration projects. The maximum Community contribution is set at 50% for public investments and 30% for private investments.

Diesel Engine Emission Reductions

92WS0082T Brussels EUROPE in English 4 Oct 91 p 12

[Article: "(EU) EC/Environment: Adoption of Further Reductions in Polluting Emissions"]

[Text] Luxembourg, 03/10/1991 (AGENCE EUROPE)—The Environment Council has adopted by tacit procedure the directive concerning a new reduction in the limit values on polluting emissions from diesel engines used in lorries and other utility vehicles, amending the 1987 directive. EUROPE recalls that a common position was reached on this directive at the May Council, following the political agreement reached at the session on 18th March last. Since the European Commission did not incorporate the amendments voted by the Parliament, the directive that was formally adopted is identical to the common position. It provides that the Member States must reduce the limit values of polluting gas emissions (carbon monoxide, hydrocarbon and nitrogen oxide) and, from now on, the limit values of particulate emissions from the vehicles in question. EUROPE recalls that this reduction will occur in two phases: 1st phase: 4.5 g/Kwh for CO; 1.1 g/Kwh for HC; 8 g/Kwh for NoX and 0.36 g/Kwh for particulates; 2nd phase: 4 g/Kwh for CO; 1.1 g/Kwh for HC; 7 g/Kwh for NoX and 0.15 g/Kwh for particulates. The dates of entry into force vary according to the type of vehicle for both phases, as follows: a) 1st phase for "new types of lorries" 1 July 1992, b) 2nd phase "new types" 1 October 1995, c) 1st phase "released into circulation" 1 October 1993 and d) 2nd phase "released into circulation" 1 October 1996.

The Commission has been requested to make proposals to the Council before the end of 1996, in the light of the progress made, for a downward revision of the limit values applicable beginning on 1 October 1999.

European Wind Energy Projects Assessed

92AN0017X Antwerp DE FINANCIEEL-EKONOMISCHE TIJD (Supplement 2) in Dutch 15 Oct 91 p 13

[Article by Guy Van den Broek: "Importance of Wind Energy Remains Limited, But Efficiency Can Be Improved—Clausen: Wind Energy Is Expensive Because Fossil Fuels Are Too Cheap"]

[Text] Ditmarschen—Electricity generated by wind energy can lead to fuel cost reductions within the framework of a national power supply scheme; it can, however, not lead to a reduction in overall capacity since its production is too unpredictable for that. In addition, in a country like Germany, wind energy can represent no more than 1.5 percent in the national fuel bill, even if all favorable locations are put to optimal use. In Germany, the cost of wind energy is about four times that of conventionally generated energy. Thus, wind energy farms can only be operated profitably through public investment subsidies.

These conclusions were arrived at by Dieter Clausen, manager of the "Westkueste" wind energy farm in the North-German state of Schleswig-Holstein, which is owned by Schleswag AG. However, in spite of the relatively high cost, Clausen remains an advocate of wind energy. Through experiments, he is trying to optimize the energy efficiency of wind farms.

In the formula used for calculating the potential capacity of wind turbine generators, the power generated is proportional to the cube of wind speed. In other words, the energy output strongly increases with wind speed. Only areas with persistent wind speeds of 4 up to 6 meters per second can be used. These areas are found almost exclusively along the coast, at high altitudes, and in mountainous areas. Entire regions in Europe are therefore not appropriate for wind energy development.

And yet, Clausen strongly believes in the future of wind energy. He argues that any form of alternative energy deserves maximum attention, because the present fuels, such as coal, oil, and natural gas, will be completely exhausted within the next few hundred years if the present Western consumption patterns are maintained.

Research

Since the Middle Ages, windmills have been turning on the European continent and the Chinese had windmills even before our era. Anyone who believes that this simple technique cannot be further improved given the present state of technology, is mistaken. In the Schleswig-Holstein wind farm, new experiments are being conducted every day.

These experiments are related to the size of the aerogenerators; the length of the rotor; the use of one-, two-, or three-bladed rotors; power transmission toward the generator; aerogenerator height; environmental aspects; and, in particular, the layout of the aerogenerator farm in order to achieve maximum output.

The experiment with the Growian, a single aerogenerator with a capacity of 3.2 megawatts and a 100-meter-long rotor, was discontinued because the output fell short of expectations after a few years. According to Clausen, optimal output can only be obtained through a proper wind farm arrangement, using smaller as well as a few larger aerogenerators (1.3 megawatts).

It is incredibly difficult to examine the wind's exact behavior. One small irregularity in the landscape can result in wind changes causing a sharp decrease in an aerogenerator's efficiency, even if it is located at a reasonable distance from that irregularity. In Clausen's

opinion, few wind farms are operated in a professional way and under optimal technical conditions.

Another ongoing experiment focuses on wind power transmission to the generator, for instance, a system in which not only the rotor but the entire shaft rotates, thus ensuring a more direct transmission of energy. Wind energy efficiency is open to many, however small, improvements, but the main decisive factor remains speed, efficiency being proportional to the cube of speed.

Expensive Energy

In fact, only little is known so far about the economic aspects of wind farms in Europe. Denmark has the greatest proportion of wind energy. In the United States and more especially in California, wind farms are more common. However, a few constants always emerge. For instance, electricity generated by wind energy is always more expensive than electricity generated by fossil fuels.

However, energy experts agree that the present generation is extracting the world reserves of fossil fuels (coal, oil, and natural gas) much too cheaply, at the expense of future generations. A comparison of the present price of wind energy with that of fossil fuels therefore gives a distorted view of the situation.

Assuming an optimum operation of the wind farms, an average power price of 0.27 German marks [DM]or 5.5 Belgian francs per kilowatt-hour (kWh) can be obtained in Germany. Large coal power stations are still producing power at an average price of DM0.09 per kWh, which is about one-fourth the price of wind energy. Thus, only so-called "peak rates" can be charged for wind energy. Peak rates are charged when electricity requirements exceed specific quotas in a certain region so that additional capacity is required. This above-average consumption is more expensive and, at that price, wind energy becomes competitive. However, wind farms cannot really serve as a buffer capacity for peak consumption, because of the wind's unpredictable availability.

In addition, not all wind farms manage to reach this average price of DM0.27 per kWh. In regions with wind speeds of fewer than 4 meters per second, as well as in farms with insufficient capacity, the price can easily be many times higher than this. Another key aspect determining the cost price is the depreciation period of the aerogenerators, which is generally estimated at some 10 years.

An essential factor in the efficiency calculations of wind energy farms is the distance from the often remote wind farms to the grid. The cables needed to transfer the generated power to the grid are expensive and the transfer itself involves losses of efficiency. These costs should also be borne by the authorities if it is decided that wind is to supply a part of a country's power requirements.

Netherlands

The Netherlands has some of the most favorable spots in Europe for generating wind energy, and the government is taking full advantage of this situation. In 1985, a wind energy program was launched, aimed at reaching a wind power capacity of 1,000 megawatts, spread over different phases. It is one of the most ambitious programs in Europe.

During the first phase (1985-90), it was planned to build a capacity of 100 to 150 kilowatts. According to a spokesman of the Dutch Ministry of Economic Affairs, this objective was reached, even though 1 year behind schedule. Under this initial action program, private investors willing to install a wind farm could receive up to 40 percent in investment subsidies from the government.

Under the second action program, which will extend until 1995, the Dutch power distributors themselves are charged with building a total wind capacity of 250 megawatts. They are granted subsidies amounting to 20-25 percent of their investment cost. Every year, the Dutch Government appropriates 30 million guilders to finance this program.

At the end of 1995, the Netherlands will have a wind farm capacity of 400 megawatts. Once the program has been completed, wind energy will account for a little more than 1 percent of the total energy. According to the Ministry of Economic Affairs, all durable energy forms combined will provide approximately 5 percent of the total energy supply in the Netherlands by 2010. The wind farm operators write off their installations over a period of roughly 10 years.

Thanks to the investment subsidies granted by the Dutch Government, wind energy is capable of competing with conventional power stations. They can charge a rate which is comparable to that of the large-scale producers, i.e., about 0.15 guilders per kWh. A "stiff competition" is thus created between small and large-scale power producers, says an official of the Ministry of Economic Affairs.

The economic viability of wind energy in the Netherlands is to be attributed to the high wind speeds along the Dutch shores, which can reach up to 6 meters a second. In addition, the development of aerogenerator technology is already in an advanced stage, thus allowing considerable cost reductions. For private investors, the former 40-percent investment subsidy scheme remains applicable.

In Germany, wind energy is still in a more experimental stage; at the end of 1988, the country had only 188 wind farms with a total capacity of 11 megawatts and a production of 8.3 million kWh. Most of them are located in Schleswig-Holstein, because of its favorable location.

Early 1989, the German Federal Government launched a program for the construction of 100 aerogenerators with

a total capacity of 24.5 megawatts. At the end of 1989, the Federal Government decided to launch a 100-megawatt wind program. Under this program, operators of wind energy farms are granted a subsidy which corresponds to DM0.08 per kWh supplied.

However, the introduction of such a wind energy program in any country requires a strict separation between electricity production and distribution. As a matter of fact, this condition applies to all forms of alternative power generation. In countries like Germany and the Netherlands, this condition has already been met.

Such a separation makes it easier for the authorities to implement specific programs and to grant subsidies. It also makes it easier to determine the structure and basic cost of electricity and it enables the government to grant direct subsidies to wind farm operators, either in terms of investments, or in terms of electricity production per kWh.

Thus, there must be a clear-cut separation between electricity production and distribution costs. This situation is, for instance, impossible in Belgium, because there is only one production company which also controls 90 percent of distribution, as well as the price-fixing system, through mixed intermunicipal companies. With its limited shoreline, wind energy can only make a minor contribution in Belgium, but it is rather the structure of the electricity sector that constitutes a major obstacle.

EC Financed Solar Furnace Tested in Spain

92MI0066X Stuttgart LASER UND OPTOELEKTRONIK in German Oct 91 p 16

[text] A solar furnace for the maximum temperature range was inaugurated on 10 July in the grounds of the Almeria Solar Platform (PSA), the largest solar test center in Europe. The park is operated by the Spanish CIEMAT (Center for Energy, Environment and Technology Research) and the German Aerospace Research Institute (DLR). The project was financed out of European Community funds. The furnace consists of several parts: four 54-m^2 round, flat reflectors, the heliostats, track the position of the sun so that they constantly reflect the sunlight onto a parabolic reflector, the concentrator. These reflectors are driven by servo motors and controlled by microprocessors. The curved parabolic reflector, which comprises around 90 facets, concentrates the solar radiation on to a focus in the center of the solar furnace building, where it should then be possible to reach temperatures of around 3,000°C. The heat is produced "cleanly," i.e., without polluting residues or consumption of fossile energy sources. Material samples can be heated directly without the interference of crucible walls. For this reason, the solar furnace is of particular interest to material scientists.

EC Environment Commissioner Critical of Maastricht Summit Approach to Environment

AU1012111091 Paris AFP in English 1053 GMT 10 Dec 91

[Text] Paris, Dec 10 (AFP)—The Maastricht summit treaty approach to environmental protection is "fraud" and "trickery", European Community environment commissioner Carlo Ripa Di Meana said in an interview published here Tuesday.

"While Article 2 of the draft treaty makes the subject a priority for Europe, the same text creates all the conditions for doing nothing. It's an empty shell," the Italian commissioner told the daily LIBERATION.

Di Meana accused the Dutch, currently holding the roatating EC presidency, of yielding to Spanish pressure and going back on plans to move from unanimous decision-making to majority voting on a number of issues. Unanimous agreement will now remain for agriculture, housing, water, waste disposal, energy, town planning and soil management, all issues directly concerned with pollution problems, he said.

Di Meana warned that the seeds of a "two-speed Europe" were being sown as regards environmental protection, with only the countries of northern Europe responsive to public pressure for improvement.

The European commissioner also said that with a special United Nations conference on the environment scheduled to be held in Rio de Janeiro in June, the current EC summit in Maastricht, the Netherlands, "must express more than cold feet".

"We who preach on, sermonising about tropical forests, cannot go to Rio with nothing more than words on the greenhouse effect," he said.

FRANCE

Container Recycling Report Stirs Controversy

92WNO157B Paris LE FIGARO (LE FIG-ECO supplement) in French 19 Nov 91 p 6

[Article by Sophie Roquelle: "Beffa Report: The Communes' 'Yes But...'"]

[Text] Dissected by the local communities and interested industries, the Beffa Report [by Jean-Louis Beffa, president and chief executive officer [CEO] of Saint-Gobain], on container recycling, no longer enjoys unanimous approval.

Though unanimously hailed as a decisive step toward improved management of the environment, the Beffa Report on the collection and reprocessing of household containers is giving rise to criticisms in growing numbers.

The initial euphoria over having been able to develop in record time, on paper, a "more economical" and "as efficient" a system as the one put into operation a short time ago in Germany has died down, and industries and local communities now fear that they have allowed themselves to be maneuvered somewhat out on the limb. Be that as it may, they did, in fact, participate in the development of the system presented on 30 October and endorsed by Brice Lalonde, minister delegate of the environment.

The plan proposed by Saint-Gobain's CEO calls for a corporation named Eco-Emballage to be set up to take over from the interested communes—for a fee per ton—their presorted scrapped containers. The intent: to encourage the communes to develop the sorting of their garbage. Within Eco-Emballage discrete channels are to be set up for each material, with each channel responsible for turning to best economic advantage—by way of recycling or incineration—the collected and sorted material it handles. The company is to be funded by a uniform levy on packagers and importers of containers, amounting to 3 centimes per container.

The AMF [Association of French Mayors], introduced by Mr. Lalonde as one of the project's initiators, is now distancing itself from the plan proposed by Jean-Louis Beffa, and has written a letter to the minister delegate of the environment informing him of a number of "observations," and requesting to be closely associated with all proceedings relative to its implementation. The 3-centime levy "does not cover the real cost" of the project, says AMF president Michel Giraud. Moreover, the AMF is concerned that "the technical requirements of the materials to be reprocessed could necessitate further sortings of the sorted."

The communes, in effect, fear that the burden of responsibility for the system will, in essence, fall on their shoulders. Michel Elbel, president of SYCTOM [Paris and Suburbs Household Garbage Processing Syndicate] points out that, "In Germany, for a levy of 7 centimes per container, industries take care of everything, including the collection and sorting." "Collection costs," he adds, "are much higher than processing costs, above all in big cities." Another criticism being leveled by local communities and reiterated by Michel Giraud is that the proposed plan "is not conducive to lowering the tonnages of scrapped containers."

The Right Direction

The industrialists, for their part, reproach Jean-Louis Beffa with having slanted their recommendations to his company's advantage in the final version, which he drafted. "Our interests appear to have been ignored in his report," is the summary expressed by one of them. For example, he points out, his proposed division of the operation into discrete channels favors the materials that are easy to reprocess profitably, such as glass and cardboard (of which Saint-Gobain is the prime producer), at the expense of plastic, which is difficult to recycle. The industrialists would have preferred "a more multimaterials approach," says this industrialist, so as to avert in due time a "war of the channels."

GECOM, the association of plastic container producers, also acknowledges that the report is producing "some slight tremors" within the industry. "We feel that the Beffa Report does not sufficiently encourage selective collection at the household point in the system," says GECOM's president, Arnaud d'Aramon. The report actually advocates a first-phase "densification of existing collection systems"; that is: collection in bulk; systems of voluntary separation into discrete garbage pails, as is currently being done in the case of glass containers; or the system of collection via deposits on containers.

Tongues are wagging. But agreement is unanimous that "overall: The Beffa Report is a step in the right direction," and that under no circumstances whatever must the effort begun be slackened.

Amiens Drinking Water Polluted With Lead

92WN0157A Paris LE MONDE in French
24-25 Nov 91 p 8

[Text] On Friday 22 November, Mr. Gilles de Robien, mayor of Amiens, addressed a letter to the city's residents informing them that the level of lead content found in the city's water supply makes it legally not potable and recommending that water be allowed to run through the tap for "a few minutes before drinking it." The Departmental Laboratory of Water Bacteriology and Testing, which works for the Departmental Public Health and Social Services Directorate [DDASS], has discovered that the lead content in the city drinking water ranges as high as 520 micrograms per liter. The maximum legally permitted level in France is 50 micrograms per liter.

The alert to the presence of lead pollution in Amiens' drinking water was first sounded by a merchant residing in the city who complained of intestinal troubles, headaches, and vision disorders. These symptoms are frequently associated with lead poisoning. Last March he asked the Departmental Laboratory to take samples of the tap water in his home and analyze them. Analyses carried out since then show lead levels ranging between 140 and 530 micrograms per liter.

The Somme Department's DDASS maintains that, according to a CSHP [Higher Council for Public Hygiene] report, the lead level in Amiens' drinking water does not exceed 300 micrograms per liter.

At the National Assembly to be held next Wednesday the mayor of Amiens, who is also the UDF [French Democratic Union] deputy from the Department of Somme, plans to introduce an oral interpellation addressed to the administration, because, in his view, the problem of lead pollution in drinking water concerns all of France, wherever lead piping is still used in the water distribution system. Lead poisoning owing to lead piping abounds usually in regions where the water is naturally acidic and

therefore capable of attacking metals, as in the Vosges. In calcareous regions, a calcareous deposit builds up, lining the inside of the piping and preventing any contact whatever between metal and water. Lead plumbing is no longer used in drinking water distribution systems today. Its use has been replaced by that of copper or plastic (PVC).

GERMANY

Report on Environment Issues in Eastern Laender Reviewed

91MI0573X Wuerzburg UMWELTMAGAZIN in German Aug 91 p 88-89

[Second part, by U. Adler, R.U. Sprenger, and J. Wackerbauer, of Ifo Institute Survey; first paragraph is UMWELTMAGAZIN introduction. Part of this study was presented in the July 91 issue of UMWELTMAGAZIN. Below are extracts from Part 2. of the contribution by U. Adler, R.U. Sprenger and J. Wackerbauer.

[Text] On behalf of the Minister of the Environment, Planning, and Agriculture of the land of North-Rhine Westphalia, at the end of last year the Ifo Institute carried out a study of the environmental situation in the new laender, the investment that this situation necessitates, and possible ways in which North-Rhine Westphalian environmental protection industry could help solve these problems.

Waste Disposal

The situation regarding waste in the GDR was markedly different from that in the old Federal Republic. At 2.9 million tonnes per annum, household waste was lower in relation to overall population. This was the result of both the lower consumption level and the fact that a significant proportion of waste was utilized for heating.

Comparing specific values, the incidence of industrial waste up to 1990 was markedly higher than in the Federal Republic. The higher incidence of industrial waste was due to outmoded production processes with comparatively higher emission levels.

To offset this problem, and to counter the shortage of raw materials, secondary raw materials were intensively produced. These included not only common items of domestic waste (paper, glass, organic waste), but almost all industrial by-products as well. At 36 million tonnes per annum, 40 percent of industrial waste (91 million tonnes per annum, excluding building waste) was recycled, providing 10 percent of industrial raw materials. Although this is considered a modern strategy, the figures show that only secondary raw materials production reduced the GDR's specific waste incidence to the level of western industry. In the internationalization of the waste problem, industry in the new laender thus lags behind western industry.

Investment Requirement

In assessing the need for investment in waste management, the following assumptions were made:

- The waste management law, with its aims of "reduction, recycling, and avoidance," will take effect;
- The structure of waste incidence will change;
- In the long term, the incidence of waste in the new laender will adjust to the standard of the older laender in extent, composition, and structure, and stabilize at this level. Household refuse will rise to some 4 million tonnes per annum. Waste similar to household refuse will reach 4.3 million tonnes per annum;
- Industrial waste will tend to decrease, since modernization of production may be expected to bring a specific waste reduction;
- Incidence of special waste will remain unchanged.
- The secondary raw material industry will remain at its present level.

Taking these assumptions together and applying them to the individual segments of waste, the following waste incidence emerges:

Household refuse	8.3 million tonnes per annum
Industrial waste	60.0 million tonnes per annum
Building waste	15.0 million tonnes per annum
Special waste	1.3 million tonnes per annum

This structure was taken as a basis for an estimate of the investments required in the waste sector, using average specific investment values. A linear optimization model took account of the dumping, sorting, incineration, and degrading processes, the following three scenarios were computed:

- Dumping as the sole process: investment required: 14.4 billion German marks [DM];
- Average demand on recycling facilities: investment required: DM32 billion;
- Optimum demand on recycling facilities: investment required: DM37 billion.

Taking the various estimates for individual requirements or the overall estimates of the need for investment in ecology in the new laender together, the available information suggests an estimate ranging from a minimum of DM83 billion to 320 or even 500 billion. The estimates produced or adopted by the Ifo Institute amount to an investment requirement of some DM211 billion to the year 2000; this figure includes the improvement of drinking water supplies and noise abatement.

Anticipated Investment Requirements for Environmental Protection in the Former GDR to the Year 2000

Sector	Overall Requirement in DM billions		
	Published Estimates from		Ifo Estimates to
Keeping the air clean	5.0	35.0	22.5[a]
Drinking water supply	16.8	30.0	16.9
Sewage disposal	53.0	150.0	125.2
Waste disposal	3.0	34.3	34.3[b]
Reclamation of polluted sites	3.0	70.0	10.6
Noise abatement	2.0	2.0	2.0[a]
Totals			
Individual estimates covered	82.8	321.3	211.4
Overall estimates	83.0	500.0	

a): Adopted estimates—b): including operating costs

Source: Ifo Institute compilation and estimates

Major Demand Factors

In the final analysis, what gets things moving on the environmental engineering market is actual demand, not just the existance of a need. The first hints as to how a demand of this kind can be developed in the new laender were provided by a survey of eastern and western German environment technology suppliers, in which recent environmental protection legislation and its implementation were most frequently cited as the major factors determining demand.

The financial situation of the district corporations in the new laender and the state of the economy there were also considered important factors determining demand.

Suppliers from North-Rhine Westphalia are primarily interested in selling their products in eastern Germany, through subsidiaries, cooperation agreements, and joint ventures could gain increasing importance in the future. A previous survey of North-Rhine Westphalian suppliers of environmental protection goods and services revealed that firms working in this market react flexibly to new forms of demand.

Surveys of eastern and western German firms reveal a high degree of willingness to work together. Although such cooperation agreements currently tend to concentrate on mutual supplies, a trend towards increasing levels of joint production can also be seen.

Six Matters To Be Addressed

To foster cooperation and develop the environmental technology supply side, six factors need to be addressed:

- Size of companies: Major companies can be encouraged to move in by favorable peripheral conditions, an expanded infrastructure, and availability of industrial sites. Financial assistance, on the other hand, should be targeted at homegrown potential in the form of small and medium-sized enterprises; the approval procedures need to be simplified as far as possible in this correction.
- Qualifications of workforce: Support for industry overwhelmingly means support for capital investment. The labor market problems arising in the new laender however require an increased investment in human resources. One possible solution would be to grant subsidies to companies that invest in workforce training in the new laender.
- Financing problems faced by eastern German environmental technology suppliers: To some extent the extraordinary depreciation allowed for environmental protection purposes overlaps with financial assistance. Claiming for extraordinary depreciation thus disqualifies the claimant from capital investment grants. As environmental investment has a dual effect, favoring both the environment and economic revival, consideration should be given to allowing extraordinary depreciation on at least the remainder of the investment (i.e., net of the grant) when investment grants are awarded.
- Organizational and financial problems facing local councils: Financial support for the appointment of administrative personnel from the western laender would be desirable. Leeway in sewage disposal, waste disposal, and street cleaning charges must be fully utilized. An alternative would be to look into whether contracting work of this type out to private companies would bring greater relief for council budgets. The limits on council overspending should be fully utilized for environmental infrastructure investment. Furthermore, the financial balance must be further weighted in favor of the new laender.

Cooperation between experienced western German companies and local eastern German firms is essential to solve the problem of polluted sites and could be financed by setting up joint pilot and reference units, e.g., polluted site reclamation centers. If, as is

to be expected, insufficient funds are available for reclamation of polluted site fund will be needed.

- Technology transfer: Setting up innovation and technology centers is not merely a matter of providing the necessary technical and intangible infrastructure. Experienced companies from the west and entrepreneurs from the east must be brought together in an aggressive strategy of creating synergies in the environmental protection sector.

High Volume Desulfurization Process Developed

92WS0090X Paris INDUSTRIES ET TECHNIQUES in French 6 Sep 91 p 56

[Article by Valerie Borde: "Thermal Power Plants: Large-Scale Desulfurization"]

[Text] **Pollutant emissions from the Boxberg thermal power plant, in the former GDR, are 15 times higher than German standards will allow. Overhauling the plant will cost several billions.**

It could be less dreary. The Boxberg thermal power plant, a few kilometers from the Polish border, produces 20,000 tons of pollutant emissions every year, according to its own management's figures. The sulfur oxide content is 3 grams per cubic meter [g/m^3], although the permissible limit in Germany is 0.2 g/m^3. In short, this power plant produces almost more pollutants than electricity. Yet, it cannot be closed down right away: the Boxberg power plant produces one fifth of the former GDR's electricity.

200,000 m^3 of Water Diverted Every Day for Steam Production

VEAG [state-owned electric company], the company that now manages the power plant, asked the ABB group [Swedish General Electric Corporation-Brown Boveri] to design an emission-desulfurization unit. It will cost 3.5 billion francs [Fr]. The technology to be used is still in the development stage. Actually, although ABB specializes in facilities of this type, it never thought it might have to scrub so much sulfur oxide at one time!

The desulfurization technique is based on lime scrubbing. The gas flow is directed to a lime (calcium oxide) solution which reacts with sulfur to produce gypsum (calcium sulfate). The gypsum can then be used in the construction industry. Another advantage of this method is that it does not produce effluents that would have to be scrubbed in turn. ABB has already applied this concept in two West German lignite power stations operated by RWE [Rhine-Westphalian Electricity Works]. But pollution there was not as bad.

Why so much sulfur? For a simple reason. The Boxberg power plant, the construction of which started in 1968, burns 100,000 tonnes of lignite per day. The lignite comes from three nearby open-pit mines, which contain reserves estimated at 1.8 billion tonnes. Unfortunately, the lignite contains close to 10 percent of sulfur, whereas the coal used in the West contains less than 1 percent. To produce steam, 200,000 m^3 of water are diverted daily from two rivers, the Spree and the Schoeps, and heated by burning lignite. The lignite ashes are then separated in an electrostatic filter and sent to silos. But the efficiency of the electrostatic filter is estimated to be 97.6 percent. To bring the power plant up to German emission-control standards, this filter will have to be complemented by the desulfurization unit.

Only the two most recent units, producing 500 megawatts [MW] each, will be equipped. The other twelve 210-MW units will eventually be closed down. Work is expected to start at the end of 1992, and Boxberg should comply with German standards in July 1996. One last fact: 85 percent of the former GDR's electricity is produced in power plants of this type (compared with 20 percent in the West). And Boxberg is the most modern of them....

Environmental Research Center Planned

91MI0553X Bonn TECHNOLOGIE-NACHRICHTEN MANAGEMENT-INFORMATIONEN in German 12 Sep 91 pp 2-3

[Text] Concrete measures are now being taken for the foundation of the Environmental Research Center in Leipzig/Halle/Bitterfeld, which was proposed as early as the start of 1990. This will be the first major German research institute devoted exclusively to environmental research.

In consultation with the laender of Saxony and Saxony-Anhalt, the Federal Ministry of Research and Technology (BMFT) has appointed a high-ranking foundation committee, which has now begun work. Its brief is to determine the objectives and structure of the new research institute and to assist in the selection of personnel, especially for management positions. The Environmental Research Center is to be operational by 1 January 1992.

In determining the objectives of the Environmental Research Center, the foundation committee is able to draw on extensive groundwork and recommendations in three areas:

- A joint research project funded by the BMFT since October 1990 on "Ecological Concepts for the Heavily Polluted Region of Leipzig/Halle/Bitterfeld." Around 150 experts from former Academy of Sciences and Academy of Agriculture institutes, the Universities of Leipzig and Halle, industry, and land facilities are currently working on this project.
- The work of the scientific team that the BMFT set up in the spring and which in June 1991 presented a draft plan for the proposed new Environmental Research Center.
- The July 1991 recommendations of the Science Council regarding the formation of an environmental research center in the form of a major research institute, contained in the interim report on environmental research in the new laender.

The new Environmental Research Center will engage in ecological research into how to deal with severe environmental pollution and its effects on human beings and ecosystems.

For the near future, the principal objective will be to arrive at a scientific basis for reclamation programs and related scientific work.

Longer-term tasks concern the understanding of ecological regeneration processes, comparison of the long-term effects of different types of high level pollution, and attempts to transfer the findings to the countries of eastern Europe in particular. Specifically, the Environmental Research Center will, as the joint research project is doing now, concern itself primarily with the following practical aspects:

- Plans for the reclamation of highly polluted industrial ground in the chemical industry belt, recommendations for redevelopenmt, and future use;
- Plans for the use of, and recommendations for action on the redevelopment of mining areas;
- The development of methods for making urban planning in towns and conurbations ecologically sound;
- Ecologically sound plans for agricultural land use, i.e., a return to appropriate agricultural production on black earth;
- Ecologically compatible use of water;
- Concepts for natural ecosystems.

In addition, a study will be made of whether the Environmental Research Center can also carry out scienfific groundwork on product- and production-integrated environmental protection by drawing up ecological balance sheets. It is not intended that the center should develop its own environmental technologies. In this respect, industry in particular is urged to advance the state of the art in cooperation with technical universities.

However, it does seem sensible to include tropospheric research so as to be able to investigate environmental stresses and their effects on the interrelationship between air, soil, and water and how they can be avoided. However, it seems that the present problems of high air pollution will be solved more quickly and are thus of a different order from soil and water pollution. In the long term, the Environmental Research Center will concentrate on polluted soils and how to restore them.

The Environmental Research Center will employ 400 people, about 140 (35 percent) of them scientists. It will only be able to carry out its task, and this is one of the important points in the whole idea behind this major research institute, if it operates in conjunction with universitites and other research establishments. It is intended that contractual arrangements will be entered into with Leipzig and Halle unviersities from the outset.

In Halle-Merseburg there will be potential in the following fields: agronomy, biological sciences, production engineering, geosciences, environmental law, and environmental ethics. Leipzig currently has expertise in urban ecology and analytical chemistry.

Being a major research establishment, the Environmental Research Center will recieve 90 percent of its funding from the BMFT and 10 percent from the two laender of Saxony and Saxony-Anhalt. A contractual agreement to this effect is being prepared. The requirement for 1992 is put at 50 to 60 million German marks.

Polluted Site Assessment Data Base Developed

91MI0559X Bonn TECHNOLOGIE-NACHRICHTEN MANAGEMENT-INFORMATIONEN in German 12 Sep 91 pp 14-15

[Text] All those involved in addressing the problem of long-standing polluted sites, whether in administration, surveying, or reclamation, can now obtain data base support in their work. The TUBA (Toxicological Environment Assessment of Polluted Sites) information system has been developed for this purpose by the Health and Environment Research Company and Nowak Data Systems (both based in Frankfurt). It is of particular interest to engineering firms, civil engineering companies, and authorities or firms that have complex problems with polluted sites in their areas. TUBA is now also marketed by RauCon Bioinformatik & Consulating GmbH (Dielheim near Heidelberg).

TUBA is a multiuser system with an integrated substance data bank that combines expert knowledge on medicine, chemistry, geology, and engineering science to assess polluted sites.

It carries out an initial assessment of suspicious areas, taking account of chemical, toxicological, and also dispersion-related geological and hydrological aspects. It also offers basic information on the nature of polluted sites or dumps in a "catalogue of types of damage." The initial assessment serves to determine priorities. It uses a questionnaire-like user surface to compile data in a form that reflects the structure of the suspicious area register.

The program runs on various operating systems. It can be used in single user mode (with DOS or OS/2 on 80286 and 80386), in local markets (e.g., NOVELL or DECNET), and on multiuser computer systems (with UNIX, for example on Altos, Apple, AT&T, Bull Compaq, Data General, DEC, Hewlett-Packard, IBM, Motorola, NCR, Nixdorf, Siemens, Sun, Unisys, and 80386- and 80486—processor PC's) without substantial differences in user surface.

Further details can be obtained from RauCon GmbH, 6912 Dielheim, Tel: 06222/73562, Fax: 74884.

Aircraft Turbine Combustion Chamber Cuts Emissions

91MI0557X Bonn TECHNOLOGIE-NACHRICHTEN MANAGEMENT-INFORMATIONEN in German 12 Sep 91 pp 9-10

[Text] For economic and environmental compatibility reasons, aircraft engines are being designed for maximum compactness and lightness and good overall efficiency. Both these requirements make for engines with optimized consumption. One of the research projects funded by the BMFT [Federal Ministry of Research and Technology] therefore set out to develope a short, compact reverse combustion chamber for a 1,000-KW class demonstration engine. Its point of departure was the reverse annular combustion developed under the BMFT-funded project entitled: "New combustion chamber technologies designed to use future alternative fuels." By shortening the flame tube by about 25 percent to a length-to-height ratio of 1.63, the engine weight can be reduced by approximately 2 kg; depending on engine weight; this corresponds to 1-2 percent overall weight. In spite of the extremely short combustion chamber, it was possible to maintain the high degree of combustion efficiency. This results in extremely low emission values for CO, unburned hydrocarbons, and smoke and economic consumption of the fuel used.

The working capacity of the combustion chamber was demonstrated under realistic operating conditions up to an internal pressure of 13 bar. Its ignition capacity was successfully tested at simulated altitudes of up to 4,000 m at temperatures of down to -50°C. The possibility of a reduction in NO_x emissions was investigated using several test sequences. Lean combustion reduced the NO_x level by approximately 14 percent.

The project was part of the BMFT's civil aviation technology component program. It represents the concluding phase of a three- part development program. The final phase was carried out from the beginning of 1987 to the end of 1990 with an expenditure of approximately 5.8 million German marks [DM], 50 percent financed by the BMFT.

The technological development of aircraft gas turbine combustion chambers shows a clear trend towards short-design combustion chambers. The length-to-height ratio of combustion chambers has decreased in the last 20 years from its initial three or four to approximately two. The aim in the future will be to reduce it even further. This will require new combustion chamber technologies and improved design methods, without which future engine projects cannot be carried out competitively.

The success of the component development program represents an important step towards aircraft engine system capability in Germany. The combustion chamber has in the meantime passed its acceptance tests during engine flight testing. These positive findings also from the basis for the comprehensive work focusing on combustion chambers planned with BMFT funding on "Pollutants Arising From Aviation."

Further details can be obtained from H. Viebcke at the BMFT Aviation Research Project Support Service at the Industrial Plant Operating Corporation, Einsteinstr. 20, 9012 Ottobrunn, Tel. 089/6088-3966.

Soil-Borne Microorganisms Combat Chlorophenol Pollution

92P60013X Frankfurt/Main FRANKFURTER ZEITUNG/BLICK DURCH DIE WIRTSCHAFT in German 26 Sep 91 p 8

[Text] In the soil, chlorophenols can be broken down by microorganisms. This is the conclusion reached in a study, by the Fresenius Institute, Taunusstein, which was organized within the context of a project of the Federal Minister for Research and Technology. Difficult to break down, chlorophenols are toxic compounds used as herbicides. Both as abandoned polluted areas in intensively farmed soils and as toxic constituents of sewage sludge, chlorophenols pose an environmental problem. The goal of Hans Herrmann Rump and Bernd Scholz, the scientists in charge at the Fresenius Institute, was to address statements relative to the behaviour of chlorophenols in regions of biologically active soils, above the water table. The question as to the ability of soils to purify themselves was one particular issue that stood at the forefront. This is significant if one is to ascertain to what extent chlorophenols from old sediment (sewage sludge, for instance) can lead to ground water contamination.

Here, there are many factors to be considered. These include chlorophenol concentration; the biological, physical and chemical processes taking place in the sediment; the location of the pollution layer; and, the nature of the covering layer. The actual purification capacity of the microorganisms is also dependent upon several factors. These include, among others, temperature and the supply of oxygen and nutrients. Furthermore, depending upon the soil type, chlorophenols are bound with varying degrees of rigidity to objects in the soil. In the study, all these factors had to be taken into account.

The decomposition of chlorophenols was experimentally investigated, among other things, in soil columns and in a ground water model. The detection of products of decomposition and a pollutant balance, ascertained through further study of the soil, served as indicators of the breakdown of the chlorophenols that were added. Products of chlorophenol decomposition could be detected in the soil columns into which various kinds of soil were introduced. Moreover, in collaboration with the Institute for Urban Civil Engineering of the Technical University of Braunschweig, the breakdown of the pollutants was investigated in a simulated refuse dump with an abandoned polluted zone containing chlorophenols. To do this, the scientists mixed chlorophenols with

a mixture of crushed refuse and compost and applied a layer, in sealed airtight containers, to a bed of refuse. It was shown that, under these conditions, the chlorophenols added as well as products of their decomposition vanished, for the most part, within 250 days. Allegedly, the agents responsible for this were microorganisms which, when hermetically sealed, break down the pollutants by means of reductive dehalogenation.

BASF To Increase R&D in Recyclable Materials

92MI0031X Duesseldorf HANDELSBLATT in German 22 Oct 91 p 29

[Text] BASF [Baden Anilin and Soda Factory] Ag of Ludwigshafen has come out in favor of additional funding for basic research on renewable raw materials. "Renewable raw materials are a valuable complement to fossil resources," stated BASF board member Dr. Hans-Juergen Quadbeck- Seeger in the course of a meeting with representatives of the German agriculture ministries. He expressed his concern about the prospect of a cut in the Federal Ministry's funding for renewable raw materials.

According to a 1985 survey by the Chemical Industry Federation, (VCI), some 1.8 million tonnes of renewable raw materials are used by the German chemical industry every year, i.e., around 10 percent of the sector's total consumption of raw materials.

The use of rapeseed oil and methyl ester derived from rapeseed as fuels and the extraction of special fatty acids from coriander are two of the priority areas of the chemical industry's developemnt work. BASF is using linseed oil to produce printing ink in a pilot project.

The company believes that many application for renewable raw materials are not viable in terms of current market prices and are therefore dependent on public funding. Nevertheless, like the representatives of the laender, it takes a positive view of the long-term prospects offered by these processes.

Government Spending on Energy Research Reviewed

91MI0555X Bonn TECHNOLOGIE-NACHRICHTEN MANAGEMENT-INFORMATIONEN in German 12 Sep 91 pp 4-6

[Text] Federal Government expenditure in support of energy research and energy technology amounted to some 1.6 billion German marks [DM] in 1990 (provisional figure) and around DM1.8 billion are allocated for that purpose in the 1991 budget. How these amounts are broken down can be seen from the tables below.

Table 1 shows Federal (or Federal Ministry of Research and Technology [BMFT]) expenditure on the promotion of energy research and energy technology, broken down according to the various objectives funded, and particular attention is drawn to the resources allocated to "renewable sources of energy and rational energy use." About 85 percent of the funds for nuclear power research, including both institutional and project funding, is accounted for by state responsibilities, some of them covered by contract or treaty, for research into reactor safety, R&D work on radioactive waste disposal and treatment in accordance with statutory obligations, the disposal of old nuclear dumps, and maintaining competence in the fields of licensing and radiation protection. Only the remaning 15 percent is earmarked for the development of new, optimized, and safer reactor designs. The marked increase in expenditure for the promotion of "nuclear power research (including reactor safety)" is largely explained by the inclusion of the new Federal Office for Radiation Protection, which was set up in Salzgitter in 1989.

Only the BMFT's project funding can be further divided according to types of energy. These figures are shown in Table 2. This table also shows the resources given by the BMFT to fund institutions working on various programs, as it is impossible to subdivide them or the funds from other ministries.

Table 1. Federal Expenditure in Support of Energy Research and Energy Technology, in DM millions

	1990 Actual			1991 Projected		
Funding program	BMFT	Other ministries[1]	Total	BMFT	Other ministries[2]	Total
E1 Coal and other fossil fuels	151.2	0.6	151.8	146.0	0.6	146.6
E2 Renewable energy sources and rational energy consumption	277.1	0.0	277.1	351.8	0.0	351.8
E3 Nuclear power research (including reactor safety)	678.8	278.5	957.3	572.4	487.3	1,059.7
E4 Nuclear fusion research	198.3	0.0	198.3	206.4	0.0	206.4
E Energy research and energy technology	1,305.4	279.1	1,584.5	1,276.6	487.9	1,764.5

1) Provisional

2) Government draft

Table 2. BMFT Expenditure in Support of Energy Research and Energy Technology According to BMFT R&D Classification Activities, in DM millions

1991 Federal R&D Classification Activity	1990	Projected 1991
E111 Prospecting, extraction, and processing of coal	31.5	23.0
E112 Prospecting, extraction, and processing of other fossil fuels	22.8	9.5
E113 Coal-fired furnace and power station technology	58.8	75.0
E114 Coal hydrogenation	10.1	9.5
E115 Coal gasification	12.4	13.0
E119 Other work on fossil fuels, including work affecting other sectors	5.8	6.0
E1. Totals without major research establishments	141.5	136.0
E1. Major research establishments	9.7	10.0
Totals for funding program E1	151.2	146.0
E211 Photovoltaic	91.9	107.0
E212 Wind energy - project funding	18.1	27.0
E213 Wind energy - indirect specific funding	3.8	7.0
E214 Systems of use for southern climates	34.1	38.0
E215 Biological generation, storage, and use of energy	8.5	20.0
E216 Geothermal and other renewable energy activities	14.3	23.0
E221 Electricity and remote heating	10.3	11.0
E222 Energy-saving industrial processes	12.2	14.0
E231 Energy storage	11.2	16.0
E232 Hydrogen	18.1	24.0
E241 Rational energy consumption and use of solar energy	22.1	31.0
E2. Totals without major research establishments	244.5	318.0
E2. Major research establishments	32.6	33.8
Totals for funding program E2	277.1	351.8
E311 Breeder reactors (FBR's)—compact sodium-cooled nuclear reactor plant (KNK II)	—	—
E312 Breeder reactors (FBR)—SNR 300 incl. associated research and development	39.9	38.0
E313 Breeder reactors (FBR)—Further development	26.2	11.0
E314 Breeder reactors (FBR)—Fuel cycle	1.0	—
E321 High-temperature reactors (HTR)—THTR 300	—	—
E322 High-temperature reactors (HTR)—Further development	19.2	17.0
E330 Other reactor development	0.3	0.5
E341 Nuclear fuel supply (other than uranium enrichment)	2.4	2.0
E342 Uranium enrichment	0.6	0.5
E351 Reprocessing and recycling of nuclear fuels: monitoring of fissile material	16.3	8.0
E352 Treatment and conditioning of radioactive waste	6.6	12.4
E361 Permanent disposal of radioactive waste	39.6	30.2
E369 Other work on disposal, including work affecting other sectors	1.0	1.9
E381 Research into reactor safety—light water reactors	37.5	45.0
E382 Research into reactor safety—advanced reactors	15.4	5.0
E383 Research into reactor safety—other work, including work affecting other sectors	80.4	90.3
E390 Risk sharing in nuclear power	60.0	10.0
E3. Totals without major research establishments	374.3	316.8
E3. Major research establishments	304.6	255.6
Totals funding program E3	678.8	572.4

Table 2. BMFT Expenditure in Support of Energy Research and Energy Technology According to BMFT R&D Classification Activities, in DM millions (Continued)

1991 Federal R&D Classification Activity	1990	Projected 1991
Funding program E4. Nuclear fusion research	198.3	206.4
Major research establishments		
Total E, without major research establishments	760.3	770.8
Total E, major research establishments	545.1	505.9
Grand total	1,305.4	1,276.7

Federal Minister Riesenhuber on Renewable Energy Research

92P60017X Berlin ING DIGEST in German Oct 91 p 14

[Article by Dietrich Goerke]

[Text] **Nowadays we are not so concerned with the limited energy resources as we were in the 1970s. But it is becoming more and more urgent to replace fossil fuels to stop the greenhouse effect and environmental pollution. What can Germany expect from renewable energy sources? ING DIGEST correspondent Dietrich Goerke questioned Federal Minister of Research Dr. Heinz Riesenhuber. Here are his views.**

- Renewable energies today have a share of 2.5 percent of the total energy needs; it seems possible to raise this share up to 10 percent. It is a matter on the one hand of the energy supply, on the other hand it concerns the development of techniques so that our industry can master them, optimize them, and offer them to other countries.
- The greatest potential lies in photovoltaics, which is the direct conversion of sunlight into electricity. Here too is the greatest need for development. An almost ideal technology is feasible: a machine with few moving parts, thus hardly subject to breakdowns. But the costs are still too high today at about 2 German marks [DM] per kilowatt-hour, although costs have greatly a dropped in the last 10 years.
- To lower costs means mainly to increase the degree of efficiency. We are already attaining 22.3 percent efficiency for gallium arsenide cells, and about 20.5 percent for silicon, which is the top European laboratory figure. To further increase these figures, we are trying all suggested types of technology and of cells: thin layer or tandem cells, microcrystalized or monocrystalline, or amorphous. Demonstration projects such as those in Kobert-Gondorf or on Pellworm and Fehmarn are significant in this regard. The latter project also furnishes the example of a photovoltaic-wind-biogas installation to supply a purification plant which is to be built near Ribnitz-Damgarten.
- The tiniest applications, such as in pocket calculators or toys, are niches to open up a large market. The larger the size of serial production, the greater the effect is produced. Moreover, the "Solist" solar boat, supported by BMFT, was recently launched. Solar cells supply the silent and environmentally compatible engine. Still this year, 2,250 roofs are to be equipped with solar cells. Each of new laender will get a supply of 150 installations.
- The world market for photovoltaic cells is probably about 30 to 35 MW at this time. That is still not much, but if we can achieve application niches, then the construction of larger installations will become attractive to companies. The BMFT is spending about DM100 million per year in photovoltaic development.
- There are many techniques in geothermal energy. The old laender are mainly investigating the hot dry rock technology, together with the United States. Rocks are broken up by explosives down to 5,000 to 6,000 meters in depth. Water is pumped in the rock, and returns at a temperature of about 180° Celsius and can produce energy in classic generators. But the procedure turns out to be complicated. At present we are organizing a European project, for which sites are being examined in Cornwall/England, Soultz-sous-Forets/France, and Urach/Germany.
- We have spent DM3 million on a study to be done mainly by Geothermie Neubrandenburg GmbH to determine the size of the potential in this area. In the GDR, the strategy was different: small installations (5.7 and 10 MW), temperatures of 90° Celsius, which is enough for heating and water for industrial use. If someone turns up to run these installations, we are ready to help with the financing.
- One can do a lot with wind energy with modern technology. With a budget of DM30 million, we are basically testing all types: with one, two, three and five vanes, with new materials, with the most modern aerodynamics. this technology is being tested in wind parks, sometimes in connection with biogas and photovoltaics. In projects in Ireland or in developing countries we combine them with diesel engines, for example. If there is no wind, there is still energy available, but otherwise one saves diesel fuel.
- The German 100 MW program has already reached 250 MW. Here the BMFT is subsidizing with considerable amounts, and with 10 percentage points more

in the new laender than in the old laender. In addition, the feeder compensation for electricity from renewable sources was introduced in 1990. I see good chances that one will reach relatively quickly economic feasibility comparable to electricity from coal. Favorable installations on windy locations are already delivering electricity at 20 pfennig per kilowatt hour. However, the wind must blow, and therefore the number of suitable sites in Germany is limited.

- On the longer term, hydrogen will play an important role in the energy economy. With the DM20 million which we are spending on it in 1991, we lead the world. We are supporting in particular the electrolysis of water, particularly the high temperature electrolysis of steam. We are also attaining very high yields, knowing that this is a long term strategy with which we will use a combination of procedures to emerge from the market niches into the big markets.
- Among crops as raw material for energy, rapeseed oil is the best candidate. Together with mineral oil, one can attain a cheap process in co-refining. There is quite a variety of projects in our ministry on crops as raw materials.
- With their significantly higher efficiency as compared with thermal combustion, fuel cells can transform hydrogen, natural gas and coal gas electrochemically into electricity. This could achieve a considerable reduction in CO_2 in 10 to 15 years. New materials, such as ceramics, open up areas where fuel cells, once almost given up for lost, can be used economically. The high temperature type—the oxide ceramic and the fused carbonate fuel cells—has the most interesting potential.
- Energy storage equipment also has a great future. We have been promoting for 10 years the development of the sodium/sulphur battery. It is already being tested in electric autos and will come into operation in the next few years. The range of battery-powered urban autos is already between 150 and 180 kilometers. The nickel-cadmium battery is also included in our strategy; it offers the chance to attain higher power densities and ranges.
- All the projects should be seen in the context of the ambitious goal of the federal government to reduce CO_2 emissions by 25 to 30 percent by the year 2005.

NETHERLANDS

National Environmental Policy Plan Criticized

92AN0020X Rijswijk BIONIEUWS in Dutch 27 Sep 91 p 1

[Article by Fridus Valkema: "'Caring for the Future II' Program Alarming; Goals of National Environment Scheme Not Achieved"]

[Text] Driving a car will have to become much more expensive if we want to achieve the goals established by the National Environmental Scheme (NMP). If nothing is done, traffic will stay at its current energy consumption level for the next 20 years, whereas the NMP stipulates that it should be down by 20 percent in 2010. The CO_2 emission objective also requires additional measures, and some other NMP objectives will not be achieved, either. This was revealed by the—as yet—secret draft of the Caring for the Future II program.

Here are some excerpts:

- The construction of manure processing factories is progressing very slowly. In 1991, the capacity will probably be 3 million tonnes, while there is a need for 5.5 million tonnes. If the excess manure cannot be processed, livestock number will have to be further reduced;
- Soil contamination by nitrogen must be reduced by 85 percent, whereas only a 30 percent reduction is achieved with the present measures;
- The stock-breeding industry's energy consumption will double as a result of environmental measures such as manure processing;
- As a result of environmental measures, 30 percent of the intensive stock-breeding farms will get into trouble. In the cattle-raising industry, this percentage will range from 10 percent to 20 percent;
- The NOx emission of trucks is well above the objectives and it will have to be reduced by 70 percent. The same is true for the emission of volatile organic compounds;
- Industry will further have to reduce discharges of specific substances such as heavy metals, fine dust, and polyaromatic hydrocarbons;
- Without additional measures, industry's energy consumption will increase after 2000;
- Industry will have to do more about the cleaning up of polluted industrial sites which are in use (total cost 11 billion guilders) and against the spreading of this pollution;
- Cleaning technology and end-of-pipe solutions are insufficient. Process-integrated measures such as cleaner processes, other raw materials and additives, other products, and more internal reuse of waste products are urgently required.

  The results of a policy aimed at prevention and reuse can only be seen in the long run. For the time being, waste will therefore have to be incinerated or dumped. The total waste incineration capacity will increase from 3 to 11.5 million tonnes by 2010, including 9 million tonnes for domestic and similar waste. In order to incinerate this waste, 15 (public) incineration installations will be required with an average capacity of 600,000 tonnes.
- By 1994, most landfills will be full.

NORWAY

Nine Radioactivity Measuring Stations Deployed

92WN0138A Oslo AFTENPOSTEN in Norwegian 18 Nov 91 p 4

[Article by Erik Veigard: "Radioactivity Monitored in the North"]

[Text] **The Norwegian Institute for Atmospheric Research has set up nine new radioactivity monitors in the north. The area is well covered, but the rest of the country has too few measuring stations, according to the institute's head of research.**

Tromso—During the autumn, the Norwegian Institute for Atmospheric Research (NIAR) set up nine new stations for measuring radioactivity in Troms and Finnmark. With the three that were set up before, North Norway has 12 stations in all. This covers the region satisfactorily, and NIAR will be able to issue an early warning about radioactivity carried by the air currents.

The new network will be officially opened later this month.

Inexpensive and Good

The nine new monitors did not cost more than one million kroner in all. The low price is due to, among other things, cooperation between food inspectors in five North Norway cities.

The inspectors use the monitors for checking radioactivity in foodstuffs. When the monitors are not in use, they are switched over to checking for radioactivity in the air.The monitors are connected to modems, so that NIAR can call up the stations and get a readout of the measurements at any time. Today a computer is doing this every six hours. Soon the frequency will be increased to every three hours. The nine new monitors are so-called spectrometers, which tell which radioactive isotopes are carried by the air currents.

This is helpful in identifying the source of radiation. The rest of the monitors are ion chambers, which can only register the level of radiation.If radiation is detected in the period between the automatic readouts, several of the measuring stations are themselves able to call up NIAR, where the alarm will be sounded. Outside of working hours, a beeper setup will make sure that the proper people always get the message.

False Alarm

The alarm will be sounded at a relatively low amount of radiation. "Background radiation naturally varies from 60 to 120 nanosieverts per hour. If the level is exceeded by 50 nanosieverts, the alarm goes off. This gives us a number of false alarms due to natural radiation, but it is best this way," said Thor Christian Berg, head of research at NIAR. With the new network, the institute considers the monitoring of radioactivity in North Norway satisfactory.

North Norway Exposed

Along with the eleven monitors in the north, one has been set out in Ny-Alesund on Svalbard and seven in the rest of the country. "The reason why North Norway has priority is, of course, the great nuclear activity on the Kola peninsula, and the risk of accidents on nuclear-powered ships along the coast of Finnmark and in the Barents Sea. This doesn't mean that the rest of the country is unimportant. As the catastrophe at Chernobyl showed, there is no way to tell where the next accident will happen," Berg said.

Too Few in the South

For this reason, NIAR wants more monitors in South and Middle Norway. The ones that are currently set out are spread too far apart. Radioactivity in air currents can slip undiscovered through such a sparse net of monitors, the research head pointed out. Berg said that in some other countries the density of measuring stations is considerably higher. Finland, which also lies near the nuclear activity on Kola, has gone to much greater lengths than Norway, and there are 1,800 measuring stations in Germany.

SWEDEN

Environment Minister Johansson Sets Out Strategy

PM2712153091 Stockholm DAGENS NYHETER in Swedish 23 Dec 91 p A10

[Report on interview with Swedish Environment Minister Olof Johansson by Erika Bjerstrom and Lars-Ingmar Karlsson; place, date not given]

[Text] After three months as environment minister, Olof Johansson has done his thinking. And in an interview with DAGENS NYHETER he set out his strategy.

He wants to be as powerful as Finance Minister Wibble and he is threatening to ban the washing powder, Via, and other environmentally damaging products . The environment minister also revealed that in the current negotiations on next year's budget he has succeeded in protecting the nature conservancy budget from cuts.

He received us in his bare office at the Environment Ministry. [Former Environment Minister] Birgitta Dahl's woven wall hangings and her pot plants are gone. Olof Johansson does not think that the post of environment minister is a dream job. It was his party's group in the Riksdag which wanted him to take it, he said.

But now that he has gotten used to his new role and handed over his role as group leader in the Riksdag, his ideas are beginning to take shape.

His ear lobes grew red when he told us how the Environment Ministry will have as much power as the Finance Ministry. He accused the Finance Ministry of living in a bygone age, where all wear and tear on nature costs nothing and is invisible in the country's accounting.

Olof Johansson's model is the British system. There the environment minister's words carry as much weight as those of the finance minister. If they do not agree, it is the prime minister who has the deciding vote.

"The Finance Ministry has failed to understand that we have entered a new era. But when we point to means of control the Finance Ministry is only able to say no, without having its own solutions to the environmental crisis. That is something that I cannot accept. We are the experts. The finance and environment ministries are on an equal footing, we are in a special category where both of us have to think in terms of the whole picture.

"I was hesitant about the establishment of an Environment Ministry, precisely because it could easily become a branch ministry under the control of the Finance Ministry like any other department. Environmental policy must function across ministry boundaries.

"Today everyone who advocates short-term economic policies can shape them by ignoring the environment and creating instead an environmental debt. Since there is no national accounting for this, there is no one calculating this environmental debt.

"A revolution is needed here: Just imagine if we were to measure it in kronor, or ecus [European currency units] if you like. Then we could get somewhere. Things will only get more expensive if we wait."

[DAGENS NYHETER] But with your proposal are you not making Finance Minister Wibble's already strained finances worse?

[Johansson] But if this is a burden, then it is a real burden. It is the real world which must matter, not the model which does not square with the real world. The Finance Ministry must pay more attention to the real world.

[DAGENS NYHETER] Are you not working in terms of several different real worlds?

[Johansson] Yes, perhaps. But they should be the same. We cannot get away from the controversies we have between the finance and environment ministries, if we do not treat these two ministries as equals. Nor can you get away from them using that (the British) model, but they do at least get reasonable treatment.

[DAGENS NYHETER] Today you have no power to make demands of other ministries. What does Prime Minister Bildt say about your demands?

[Johansson] So far at least he has not had the time to listen to them. But this government is a government of change and this change must also embrace the environment and the way in which these issues are dealt with. This was part of the government declaration.

[DAGENS NYHETER] What is there to show that Olof Johansson is environment minister and not Birgitta Dahl?

[Johansson] The problem for her and for the Social Democrats has been that they have seen the environment more as a special issue and not as a universal issue.

I want primarily to change the system and not get involved in fiddling with details like she did. Bringing about the integration of environmental controls with the aid of environmental levies is much better than going in afterwards and dealing with the problems using so called environmental rehabilitation programs.

The center of gravity must be to put effort and money into preventative and system-changing measures. Then you can be much more drastic when it comes to taking steps to deal with what remains.

[DAGENS NYHETER] It is a slow process for industry to replace certain substances with less environmentally dangerous substances, if such substances exist, in line with the legislation on the principle of substitution. Should you not take tougher action so that industry really complies with this legislation?

[Johansson] I have a plan for that, inspired by the California model. I want a statement from the chemical inspection board on what substances must disappear first.

Then you can tell manufacturers that if voluntary agreements on the replacement of certain substances are not reached within a certain time, something will happen. The present legislation hass too few teeth.

[DAGENS NYHETER] What has the EC to say about that?

[Johansson] If we want to set our sights higher than those of the EC, we have to have the courage to do so. After all, we could have an influence on them.

[DAGENS NYHETER] What happens if Via, for example, does not bother to replace environmentally damaging substances in its washing powder with less harmful detergents? Should they be given a ban or a fine?

[Johansson] A ban. You have to set a time limit, and if the company cannot manage to meet it, then the axe must fall.

[DAGENS NYHETER] The Center Party wants to reduce speed limits from 90 to 80 kilometers per hour. Are you prepared to reduce speed limits to protect the environment?

[Johansson] I do not intend to be bloody-minded with people simply to achieve these goals. If it is possible to achieve the target for emissions in some other way, the

speed limit is no more of an environmental reason than anything else. It is better to readjust priorities rather than take up the fight against the people who drive cars.

[DAGENS NYHETER] What do you mean by that?

[Johansson] In the motoring field you have very well organized special interest groups against you, so that there is a risk that they will oppose all the work to protect the environment. This has happened before and it is something I do not intend to allow.

The Riksdag has set out certain goals, and if the methods we have used do not work, we have to use a different method. If the Riksdag says that we should increase the speed limit on the 600 miles of freeways that are affected, the Riksdag must meet the environmental targets through other legislation.

[DAGENS NYHETER] Could some of the wage earners' funds be used for increased spending on nature conservancy?

[Johansson] In the budget negotiations I have saved measures to protect the countryside from spending cuts. However, at the present time there can be no question of any increases. The wage earners' funds could be used for research into the question of biological variety.

[DAGENS NYHETER] State labeling of environmentally sound products using the swan symbol seems to be having difficulties in making any progress. The work so far has been characterized by hesitancy and conflict. On the other hand, the Nature Conservancy Association's labeling of environmentally sound products with the words "Good environmental choice" is widespread. Would it not be as well to give the association the task of being responsible for environmental labeling?

[Johansson] If the multiparty board for environmental labeling does not manage to fulfill its role, it will be the Nature Conservancy Association or someone else who will take over in this field. Consumers need help and companies should have thought of this. They have had a chance. If they do not come up to scratch, they will regret their actions.

[DAGENS NYHETER] Industry gets very irritated when its products are labeled as dangerous to the environment.

[Johansson] Companies should assume that the consumer is always right, at least from their point of view.

I do not understand the attitude which the Association of Soap and Cosmetics Manufacturers demonstrates toward its customers. It should be involved in environmental labeling in a positive way to give the consumer a chance to choose.

[DAGENS NYHETER] Birgitta Dahl has said that most of the work of cleaning up industry is done. Now what is important is consumers and our life style. Do you agree?

[Johansson] I certainly do not get that impression when I see the files that land on my desk. If you take as your point of departure clean production and recycling, there is still much left to do. Naturally this takes time, but things are far from complete. As long as chlorine is being discharged into the Baltic Sea, there remains much work to be done.

There are a host of mistakes from the past to repair. That is our major problem in the environmental field.

The environmental destruction caused by the military is a good example. No one has bothered about the effect it has had on the environment. I am ready to appoint a commission to look into this in connection with the next defense bill, if the military does not do so itself. It should be able to afford this within the financial framework it has.

[DAGENS NYHETER] Why are environmental criminals punished so seldom and so leniently?

[Johansson] For me the most important thing is not to lock up people who are responsible for environmental pollution. The punishment should instead be fines, very large fines. They are the only thing which bites.

[DAGENS NYHETER] Is there not a shortcoming in the law in that we have to find an individual who is responsible in order to be able to impose a sentence, despite the fact that it can be proved that a company is guilty?

[Johansson] Yes, it is not unreasonable that a company could be fined.

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