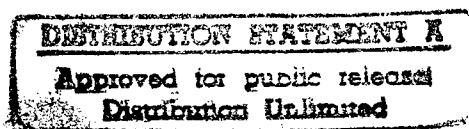




**FOREIGN
BROADCAST
INFORMATION
SERVICE**

JPRS Report

Environmental Issues



DTIC QUALITY INSPECTED

19971229 044

Environmental Issues

JPRS-TEN-93-008

CONTENTS

31 March 1993

INTERNATIONAL

- Eurasian States To Establish Environment 'Hotline' [*NEZAVISIMAYA GAZETA 4 Mar*] 1

AFRICA

MADAGASCAR

- Suspected Poachers Killed, Wounded in Ampijoroa Forest [*Antananarivo Radio 20 Mar*] 2

NAMIBIA

- Report Says Rainfall Pattern Indicates Possible Drought
[*Namibian Broadcasting Corporation Network*] 2

EAST ASIA

JAPAN

- Kosugi To Lead Environmental Legislators Group [*KYODO 23 Mar*] 3
Tokyo Proposes Study on Increasing Whale Population [*KYODO 23 Mar*] 4
Proposal To Allow Onboard Monitoring by Antiwhaling Groups Considered [*KYODO 24 Mar*] .. 4

SINGAPORE

- First Oil Spill Supply Base Established [*THE STRAITS TIMES 20 Mar*] 5

VIETNAM

- Deputy Premier Tran Duc Luong: Praise, Suggestions for Tuyen Quang
[*Voice of Vietnam 21 Mar*] 5

EAST EUROPE

CZECH REPUBLIC

- Klaus Defends Temelin, Criticizes Austria [*Vienna DIE PRESSE 19 Mar*] 6

ROMANIA

- Senate Discusses Domestic Economic Issues, Russian Events [*ROMPRES 22 Mar*] 7

LATIN AMERICA

ARGENTINA

- Navy Chief Outlines Atlantic Environment Cooperation Strategy
[*NOTICIAS ARGENTINAS 23 Mar*] 8

BRAZIL

- German Physicist Fears Leaks at Angra Nuclear Plants [*O GLOBO 20 Mar*] 8
Environment Experts To Survey Territorial Sea Resources
[*O ESTADO DE SAO PAULO 22 Mar*] 9

DOMINICAN REPUBLIC

Nigua River Ceases To Flow [LISTIN DIARIO 10 Jan]	10
Contamination of 'Dying' Yaque River Detailed [LISTIN DIARIO 11 Jan]	10

PERU

South Pacific Commission Strengthens Protection of Ocean [EL PERUANO 6 Mar]	10
---	----

URUGUAY

Intendant Reports Acid Rain Pollution From Brazilian Factory [Madrid EFE 22 Mar]	11
--	----

NEAR EAST/SOUTH ASIA

ALGERIA

Environment Safety in Residential Areas Questioned [LE SOIR D'ALGERIE 7 Feb]	12
--	----

INDIA

Industrial Pollution Control Set Back [THE TIMES OF INDIA 7 Feb]	13
Need for Afforestation on Coastal Belt Stressed [THE TIMES OF INDIA 12 Feb]	14
Dangerously High Levels of Radon Found in Himachal Pradesh [INDIAN EXPRESS 16 Feb]	14
Kerala Decision To Grant Deeds to Forestland Encroachers Criticized [INDIAN EXPRESS 10 Mar]	15
Satellite Program Monitoring Natural Resources Assessed [INDIAN EXPRESS 18 Mar]	15
Forestry Project To Be Launched in Himachal Pradesh [Delhi Radio 23 Mar]	16

IRAQ

International Consortium Building Turkish Dam To Be Sued [AFP 20 Mar]	16
New Canal on Euphrates 'Depriving' Marshlands People [Voice of the People of Kurdistan 22 Mar]	17

MOROCCO

Measures To Preserve Water Supply Adopted [LA VIE ECONOMIQUE 5 Mar]	17
---	----

CENTRAL EURASIA

RUSSIA

Academician To Head New Commission on Nuclear Waste Disposal [ZELENYI MIR Dec]	18
Kurchatov Institute Shuts Down 'Hazardous' Reactor [MOSCOW NEWS No 51, 20-27 Dec]	18
Yablokov Investigates Radiation 'Anomaly' Near Beloyarsk AES [ROSSIYA No 9, 24 Feb-02 Mar]	18
Norilsk Metallurgical Combine Fined for Damaging Forests [IZVESTIYA 2 Mar]	20
Case for Nuclear Waste Imports Examined [LITERATURNAYA GAZETA No 9, 3 Mar]	22
State Committee Calls for Fishing Moratorium in Sea of Okhotsk [RABOCHAYA TRIBUNA 3 Mar]	24
St Petersburg Firm To Manufacture Water, Gas Meters [ROSSIYSKIYE VESTI 4 Mar]	24
Radiation Contamination Situation in Russia Inventoried [ROSSIYSKIYE VESTI 5 Mar]	24
St Petersburg Firm Plans World's First Ecological Monitoring Ship [KOMMERSANT-DAILY 9 Mar]	26
Radiation Victims Reportedly Receive Little Support [Moscow TV]	26
Proposal To Divide Environment Ministry Criticized [Moscow TV 16 Mar]	27
Cesium Containers Detained in Taganrog [Moscow TV 22 Mar]	27
Navy Main Staff Cited on Barents Sea Submarine Collision [IZVESTIYA 23 Mar]	27
Second Nuclear Waste Burial Ground Planned for Far East [IZVESTIYA 23 Mar]	28

WESTERN REGION

Ukraine: Academic on Conservation of Timber Resources [GOLOS UKRAINY 21 Jan]	28
Ukraine: Safety Violations at Rovno AES Alleged [GOLOS UKRAINY 24 Feb]	30
Ukraine: Environment Minister Calls for 'Sustainable Development' [GOLOS UKRAINY 4 Mar]	31
Ukraine: Bombers To Be Converted Into Ecological Patrols [DEMOKRATYCHNA UKRAYINA 18 Mar]	33
Ukraine: Nuclear Plant Director Concerned About Nuclear Waste [HOLOS UKRAYINY 19 Mar]	33
Ukraine: Defense Ministry Works To Eliminate Uzyn Aviation Fuel Pollution [DEMOKRATYCHNA UKRAYINA 23 Mar]	34
Ukraine: Conference Discusses Safety of Chernobyl Sarcophagus [Moscow TV]	34

CAUCASUS/CENTRAL ASIA

Armenia: Debate on Restart of Nuclear Station [Moscow TV 18 Mar]	35
Azerbaijan: Environment Emergency in Sumgait City [AZERTAC 23 Mar]	35
Georgia: Biologist Views Effects of War in Abkhazia [ZELENYI MIR No 4, Feb]	35

BALTIC STATES

Latvia: Companies Sell Russian Chemical Waste for Fuel [Moscow BALTFAX 19 Mar]	37
Latvia: Environmental Protection Accord To Be Signed With Germany [Moscow BALTFAX 23 Mar]	37

WEST EUROPE

GERMANY

Effects of Hoechst Chemical Leak Examined [DER SPIEGEL 8 Mar]	38
Industry Opposes EC Environment Performance Checks [DDP 22 Mar]	42
Waigel Allegedly Involved in 'Subsidy Fraud' [FRANKFURTER ALLGEMEINE 22 Mar]	42
Representatives Fail To Agree on Future Energy Policy [DIE WELT 22 Mar]	43

UNITED KINGDOM

Global Technology Conference: Major Announces Environmental Measures [PRESS ASSOCIATION 24 Mar]	43
--	----

**Eurasian States To Establish Environment
'Hotline'**

*93WN0316A Moscow NEZAVISIMAYA GAZETA
in Russian 4 Mar 93 p 6*

[Report by Yekaterina Khoreva "Ecologists' 'Hotline'"]

[Text] A meeting of ministers of the environment and natural resources of Albania, Armenia, Azerbaijan, Belarus, Bulgaria, the Czech Republic, Estonia, Georgia, Hungary, Kazakhstan, Latvia, Lithuania, Moldova, Poland, Romania, the Russian Federation, Slovakia, Tajikistan, Turkmenistan, Ukraine, and Uzbekistan was held last week at the White Oak Preserve (United States). It was organized by the American Center for Democracy and the Howard Gilman Foundation.

The heads of environmental agencies of the aforementioned countries agreed that among transborder problems in the Eurasian region requiring immediate solutions are Chernobyl and Semipalatinsk; the Aral Sea basin and Lake

Sevan; the Black Sea (especially the Danube and Dnieper river basins), the Baltic Sea, the Caspian Sea, and their basins.

In addition, they voiced the need to develop principles for determining responsibility for environmental damage resulting from transborder influences; to harmonize national systems of environmental monitoring on the basis of distributing the most reliable methodologies; to put together a list of the most environmentally effective technologies (including their characteristics and organizations or companies that own them), and develop and implement international projects involving the creation and installation of environmental high technology (including within the framework of defense enterprise conversion); and to develop system of control over compliance with existing international agreements on environmental protection.

The meeting participants agreed to set up a system of early warning, including a "green" telephone "hotline" in order to respond to ecological incidents with potential transborder consequences. They will collect and distribute information that will help avert illegal transborder transportation of toxic and other hazardous waste.

MADAGASCAR**Suspected Poachers Killed, Wounded in Ampijoroa Forest**

EA2103182593 Antananarivo Radio Madagascar Network in Malagasy 1600 GMT 20 Mar 93

[Text] One gendarme and two German nationals were shot dead in Ampijoroa Forest of Ankarafantsika on the night of 18 March as a result of a clash between security forces and four armed German men who deliberately forced their way into the nature reserve.

Reports say that the four men intended to capture specimens from among the various animals, part of the national heritage, contained in Ampijoroa Forest, which is situated in a national nature reserve. When the local authorities noticed that the four men had entered the forest, they tried to prevent them from doing so but to no avail. The four men entered the forest at 2300 hours on 18 March. The local people then called on Marovoay gendarmes to intervene and the Gendarmes managed to reach the forest on the same night.

The robbers welcomed them with gunshots resulting in one of the gendarmes being killed. The two sides started looking for each other. The gendarmes shot back in retaliation leaving two of the Germans dead and one wounded. The latter was taken to Mahajanga for medical treatment. The fourth one was forced to surrender after his escape

attempt did not lead him very far. Investigations are already under way into this sad event in Ampijoroa, Ankarafantsika.

This event shows that vigilance is needed in watching nature reserves. It is noteworthy that many big snakes [manditra] were brought back from Germany and returned to Andasibe Forest last year after the German branch of the (?World Wildlife Fund) learnt that there were some large, Malagasy snakes in Germany. The snakes are now back home in Andasibe Forest.

NAMIBIA**Report Says Rainfall Pattern Indicates Possible Drought**

MB2403075393 Windhoek Namibian Broadcasting Corporation Network in English 1900 GMT 23 Mar 93

[Text] Recent changes in the normal rainfall pattern may point toward the possibility of another drought in Namibia. This is one of the conclusions in the most recent report by the National Drought Task Force. The report says that the rainfall pattern for the last quarter of last year indicates that only the Caprivi received its normal rainfall, while areas in the western, central and southern parts did not receive any rain, including most of Ovambo.

According to the report the water crisis in most of the regions remained critical, except for the Caprivi and Okavango regions, where the situation is satisfactory. The report covers conditions for the period prior to the recent widespread rains.

JAPAN

Kosugi To Lead Environmental Legislators Group

OW2303055093 Tokyo KYODO in English 0209 GMT
23 Mar 93

[Text] Tokyo, March 23 (KYODO)—Takashi Kosugi, the newly appointed leader of an international group of lawmakers seeking to protect the environment through legislation, has a hard act to follow.

When Al Gore became United States vice president, he vacated the post of president of the international section of the Global Legislators Organization for a Balanced Environment (globe), a select group of legislators from the U.S., the European Community (EC), the Commonwealth of Independent States (CIS), and Japan.

The GLOBE Japan office announced March 17 that members had elected Kosugi, the head of the Japan branch, as Gore's successor.

Kosugi is a member of the ruling Liberal Democratic Party. He has served as deputy chief at the environment agency and chairman of the House of Representatives Environment Committee.

He will be the first Japanese leader of the four-year old organization.

He will be formally appointed at the Seventh GLOBE General Assembly in Tokyo this summer.

Globe began as an initiative by several Western European, U.S., and Japanese legislators in the autumn of 1988. Their intention was to establish a forum for legislators from countries that are major consumers of energy and resources to exchange information and ideas on how best to save the environment through legislative action.

In principle, each member country can have no more than 15 members. This keeps the branches better able to take part in the decision-making process.

Although the branches consist wholly of legislators, the membership is a mix of governing party and opposition party representatives. Branches are by definition nonpartisan nongovernment organizations.

In an interview with KYODO NEWS SERVICE following his appointment, the 57-year old Kosugi said GLOBE is beginning to make an impression where it counts.

On the international front, Kosugi cited Gore's high-profile participation as leader of a contingent of environmentally concerned U.S. legislators at the United Nations-sponsored earth summit in Rio de Janeiro in June last year.

He also cited a letter sent from GLOBE members in all countries to U.S. President George Bush urging his administration to sign an international protocol ruling out mining in Antarctica in 1990.

On the home front, Kosugi said input from GLOBE Japan members during framing of the basic environment bill now before the Diet saved the bill from being further watered down by competing ministries and agencies.

He said he is not happy that the law refers to the need for environmental impact statements without mentioning the extent of such statements and their enforceability.

"It needs to be more clear on the point about environmental assessments, but at least we managed to get the need for it mentioned," Kosugi said.

"The barriers put up by competing ministries and agencies are solid, especially the construction and transport ministries and the Ministry of International Trade and Industry (MITI)."

Kosugi said GLOBE general assemblies are a chance for members from each of the four branches to assess progress and swap ideas.

But the four branches don't always agree.

Kosugi predicted one of their main points of difference at the coming summer assembly in Tokyo will be over whaling.

Led by EC members, the majority of the branches want to create a sanctuary for minke whales in areas south of the 40th parallel, but GLOBE Japan members are united in their opposition to the idea.

The GLOBE Japan branch says minke whale numbers have recovered under the present moratorium on harvesting and a resumption of minke hunting is now justified.

Kosugi, who jogs to the Diet from his home in Meguro most days and boasts he washes his clothes with soap made from recycled cooking oil, cited air pollution from diesel trucks in major cities, a deterioration of the quality of drinking water, and the spread of golf courses as the major environmental problems for Japanese legislators.

If Kosugi had his way, he would legislate incentives to encourage the installation of solar tiles on all roofs, solar panels on freeways to fuel street lights, and promote new communications systems to eliminate the need for businessmen to shuttle to and from Tokyo on bullet trains.

He also would place restrictions on express delivery services which he blames for much of the diesel exhaust in the air in Tokyo.

"We have to move toward creating a consciousness of the environment among corporations," Kosugi said. "We might have to sacrifice convenience for the sake of the environment."

As a Dietman, he said that means legislating for change.

"We have to look anew at the existing form of politics," he said.

"And now is as good a time as any."

Tokyo Proposes Study on Increasing Whale Population

OW2303105893 Tokyo KYODO in English 0902 GMT 23 Mar 93

[Text] Tokyo, March 23 (KYODO)—Japan has proposed a multinational study be undertaken on how to boost populations of endangered whale species in the Antarctic seas to "appropriate levels," a Foreign Ministry spokesman said Tuesday [23 March].

Masamichi Hanabusa told foreign correspondents that the proposal by Japan, a major whaling nation, was recently made to the International Whaling Commission (IWC), which is to hold its 45th annual meeting in Kyoto from May 10 to 14.

Ministry officials said the proposed study would be non-lethal, in contrast to Japan's practice of "scientific" slaughtering of relatively abundant minke whales in the seas off Antarctica.

Hanabusa said Japan, the world's largest consumer of whalemeat, intends to have all IWC members in Kyoto discuss "the proper conservation of whale stocks" and "restoration of their populations to appropriate levels."

The spokesman indicated the proposed study would focus on blue whales, which are thought to number around only 700 despite a nearly 30-year ban on commercial exploitation.

Japan, he said, wants the study to identify "active measures for a steady restoration of the population."

He said the study should be undertaken by those IWC member countries "which are stressing the necessity for conservation of the marine ecosystem in the Antarctic Ocean."

Hanabusa rejected a French proposal to set up a whale sanctuary in the south Pacific, dismissing it as a "simplistic approach without any basis in scientific findings."

Japan reportedly caught some 330 minke whales during a five-month "research whaling" mission to the Antarctic that set out last November. Catches are forwarded for commercial sale in Japan, where about 2,500 tons of whalemeat was consumed in 1991.

The IWC imposed a moratorium on commercial catches in 1985 but Japan was allowed a three-year grace period and has since been permitted to carry out whaling for "scientific" purposes.

Japan and other whaling nations, such as Norway, are likely to come under heavy pressure at the Kyoto conference to give up all forms of whaling.

But a Foreign Ministry source urged that the issue be discussed in Kyoto "in a calm manner, without emotion."

He said Japan's "good faith proposal" for a multinational study of whales and their ocean environment is intended to help bridge the "emotion gap" between whaling and non-whaling nations.

"Many foreign press reports suggest Japan is only interested in the taking of whales but no, we are very concerned about the conservation of whales," he said.

Proposal To Allow Onboard Monitoring by Antiwhaling Groups Considered

OW2403092893 Tokyo KYODO in English 0855 GMT 24 Mar 93

[Text] Tokyo, March 24 (KYODO)—Japan is willing to allow antiwhaling groups to board its ships as observers when it resumes full-scale whaling in antarctic waters, Fisheries Agency officials told KYODO NEWS SERVICE Wednesday [24 March].

The proposal is subject to approval by a scientific committee of the International Whaling Commission (IWC). Japan will first consult with other whaling countries such as Norway, before formally presenting the proposal. The committee will meet from April 22 to May 3 in Kyoto ahead of the IWC's annual meeting.

The agency said the proposal is straightforward but IWC watchers were skeptical it would be approved at the IWC's 45th annual meeting, also to be held in Kyoto, from May 10 to 14. They noted that most IWC members oppose resumption of commercial whaling.

The Japanese plan would allow observers to board mother ships, which process catches at sea. Observers also would be allowed to monitor ground operations in cases where whales caught by smaller ships are processed on land.

The officials said the Japanese proposal is aimed at enhancing the transparency of monitoring such as having antiwhaling countries like the United States and New Zealand, and nonwhaling nations as observers.

Until 1987, Japan allowed whaling nations like the former Soviet Union to board its vessels as observers.

Qualifications for observer status will be decided at the IWC meeting, taking into account knowledge of whale resources and the management of whaling operations, the officials said.

Japan is considering who should bear the cost—all member nations or just the observer nations, they said.

Last year, the IWC's scientific committee estimated the population of minke whales in the antarctic at about 760,000 and decided that 200,000 can be hunted over the next 100 years.

At the IWC's last annual meeting, antiwhaling nations argued that commercial whaling should not resume unless various conditions such as effective systems to monitor whaling are met. Discussions are incomplete about a revised management procedure to work out specific catch limits.

SINGAPORE

First Oil Spill Supply Base Established

BK2003155893 Singapore THE STRAITS TIMES
in English 20 Mar 93 p 25

[By Evelyn Goh]

[Text] The first overseas Japanese supply base for oil spill response equipment has been set up in Singapore to handle any such pollution problem should it occur in the Straits of Malacca.

About 250 million yen (\$3.5 million) worth of equipment has been supplied by the Petroleum Association of Japan (PAJ) to act as a support stockpile for Southeast Asian countries in the event of a major oil spill.

The project is sponsored by the Japanese Ministry of International Trade and Industry (Miti).

The supply base is part of an international scheme agreed to in 1991 by Japan, the ASEAN countries and the International Maritime Organisation, a United Nations agency.

Under the agreement, Japan will provide equipment to combat oil spills in Southeast Asia.

In a recent interview with Japan's TV Asahi, Singapore Marine Department Director Teh Kong Leong said the region has enough equipment to combat an oil spill in the straits.

Singapore, for example, has at its disposal a national stockpile as well as equipment belonging to the Port of Singapore Authority (PSA) and five oil companies.

Esso, BP, Caltex, Mobil and Shell work with the PSA and associate members from Malaysia and Indonesia to tackle oil spills in the region.

At the opening of the equipment base yesterday, PAJ managing director Nobutaka Miyazoe said the stockpile is being established "in order to contribute towards minimising damage in case of oil pollution from major oil spills in the Straits of Malacca".

The equipment, installed on the premises of Nippon Express Singapore, consists of 1,000 m of inflatable booms, four oil skimmers and eight portable tanks.

In cleaning up a spill, booms are used to contain the oil slick. The oil is then removed by skimmers and transferred to portable tanks on board barges.

PAJ will lend the equipment free of charge to countries in the region if there is a major oil spill.

The project was brought forward—it was scheduled for December—because of a 25,000-tonne oil spill in January.

The spill, which was the second in the straits in four months, resulted from a tanker collision off northern Sumatra in January.

Japan has a vested interest in oil spill control in the region: 75 per cent of its crude oil supply comes off tankers from the Persian Gulf which use the Straits of Malacca.

Said Mr Miyazoe: "There are plans to install two more stockpile bases in the Straits of Malacca—one each in Malaysia and Indonesia."

In addition, the Japanese Transport Ministry has earmarked approximately one billion yen for a Japanese assistance programme that will deal with oil spills in the ASEAN region.

"PAJ's target is to be able to handle a 10,000-tonne oil spill in the straits once all the equipment is installed," said the project manager, Mr Yoshihiro Hashizume.

But he stressed that the Japanese stockpile will act as a supply for "secondary mobilisation, to support the initial responders in the event of a major spill".

VIETNAM

Deputy Premier Tran Duc Luong: Praise, Suggestions for Tuyen Quang

BK2303031493 Hanoi Voice of Vietnam Network
in Vietnamese 2300 GMT 21 Mar 93

[Text] In 20-21 March, Deputy Prime Minister Tran Duc Luong paid a working visit to the mountainous province of Tuyen Quang. Accompanying him were officials of the Ministries of Forestry and Heavy Industry.

On behalf of the government, he hailed the party committee, the government, and all the ethnic people of Tuyen Quang Province for their creative and efficient application of the party and state's guidelines and policy. The province has achieved fine results in granting loans to poor peasants to increase agriculture and forestry production. It should intensify its work to stop deforestation, especially in the upper riverine basin and in the protection of virgin forests. It needs to pay more attention to settled farming and settled life work and apply suitable policies to stabilize the life of the ethnic minority people in order to help them have closer bonds with the forest and enrich themselves from the raw materials provided by trees.

In planting of industrial trees and trees for raw material, the province should closely link its efforts to the consumer market and expand intensive farming of industrial trees within a closed circle to ensure the land is always covered with forests. In some necessary places, the province needs to consider planting trees on empty land to beautify the landscape.

In industry, the province should coordinate with responsible sectors to find measures for better management and exploitation of mineral resources and better protection of the environment. It should immediately stop the situation where mineral mines are not put under any management authority. And it should cooperate with related ministries to consider the establishment of joint venture enterprises to exploit gold and mineral resources in the area.

CZECH REPUBLIC

Klaus Defends Temelin, Criticizes Austria

AU1903143993 Vienna DIE PRESSE in German
19 Mar 93 p 14

["Exclusive" interview with Czech Prime Minister Vaclav Klaus by Karl-Peter Schwarz; place and date not given: "The Austrian Reaction Was Not Adequate"]

[Text] [Schwarz] *Mr. Prime Minister, the Austrian chancellor assumes that there is "still leeway" for the Czech Government to revise its decision on Temelin. There is also an expert report by the World Bank, which recommends the transformation into a gas-fired power station. Does the Czech Government intend to reconsider its standpoint?*

[Klaus] The Government of the Czech Republic decided in favor of completing the Temelin nuclear power plant after a very thorough and extensive analysis of the entire problem. This analysis was based on the assessment of the development of electricity consumption in our country in the medium and long term; on the investigation of the technical and safety aspects, which were carried out by Czech and renowned foreign institutions; and on expert reports on the financial dimensions of the entire project.

An expert report by the World Bank against the completion of the Temelin nuclear power station, as you say, does not exist at all. There is only one mention of the entire project in the World Bank aide memoire, which refers to financing ecological measures for the operation of the Czech coal-fired power stations. Thus, this is not an expert report on the problem of the Temelin power station, nor is it a study that analyzes any Czech nuclear power station from the viewpoint of safety or operability.

The World Bank has already reacted to the fact that a sentence from its aide memoire has been taken as a categorical rejection of the Temelin project. It has expressly denied such an interpretation.

All the above-mentioned documents, including the economic analysis of the project and the guarantee by Westinghouse that the Temelin nuclear power station will correspond to U.S. safety standards when permission for its operation is given, gives the Czech Government the right to decide in favor of completion.

[Schwarz] *Many Austrians get the impression that their reservations on safety are simply not being taken seriously. Seven years after the Chernobyl disaster, a nuclear power station is being built close to the Austrian border based on obsolete Soviet technology and is now supposed to be completed with Western technology. This has never been done before, and Western and Russian nuclear experts think that it is a risky experiment.*

[Klaus] The Czech Government is as concerned about the safety of the citizens of the Czech Republic and its neighboring countries as the Austrian Government and the ecological citizens' initiatives.

The Russian technology that is being used in the Temelin project has absolutely nothing to do with the technology used in the Chernobyl station. In Temelin, VVER 1000 pressure-water reactors are used, of which there are 18 in

operation all over the world; their design is similar to the reactors that are usually used in Western nuclear power stations.

Supplementing Russian nuclear technology with the safety system and the fuel supply of Westinghouse is certainly not an unproved experiment. The nuclear power station in Lovisa, Finland, is based on similar principles, and it works safely. As a result of the positive experiences with its operation, the Finnish Government has decided to build another such nuclear power station.

[Schwarz] *Is the Czech Government willing to give Austria access to all documents referring to the method of construction and the safety of the nuclear power station?*

[Klaus] The Czech Government proceeds from the premise of Austria's natural interest in protecting the safety of its citizens and is guided by the same interest. Therefore, it has given priority to the safety of the construction and the technology of the Temelin nuclear power station.

The condition for granting the permit for operation is the fulfillment of international safety standards, which correspond to Austrian and Czech safety requirements.

[Schwarz] *Austria's objections to nuclear energy are a question of principle, but they are also based on economic arguments. What will the completion of Temelin cost and what would the transformation into a gas-fired power station cost?*

[Klaus] The overall costs for the completion of the Temelin nuclear power station will amount to 43 billion Czech korunas.

The costs for the immediate cessation of the project would be as high as 45 to 53 billion korunas, because it would be necessary to repay the loans, to cover the losses of the suppliers, to write off the money already invested, and to pay no less than 2 billion korunas per year for dismantling it over the next four years.

The transformation of the nuclear power station into a gas-fired power station would require extremely high investments. The investment costs for the nuclear power station project amount to about \$430 per kilowatt, two-thirds of which have already been covered. The costs for the gas-heat cycle would amount to about \$520 per kilowatt.

In this respect, one also has to keep the strategic context regarding securing gas deliveries into consideration, which would further increase the dependence of the Czech Republic on eastern sources and all the resulting risks.

[Schwarz] *How is this to be financed? Do you need a World Bank loan?*

[Klaus] The Temelin project will be primarily financed with money from the Czech energy corporation as well as with domestic and foreign loans. Financing by the World Bank is not being considered.

[Schwarz] *In the controversy over Temelin harsh words have been used on both sides. You yourself called Austrian arguments "nonsense" and rejected "interference in domestic*

affairs." However, a potential reactor accident would affect not only the Czech people but also the Austrians.

[Klaus] The Austrian reaction to the decision on Temelin by the Czech Government, which is the government of a sovereign state and is trying to have as good relations as possible with Austria, was certainly not adequate and did not correspond to the declared intention to strive for goodneighborly relations.

This explains my outraged reaction to statements that talked about sanctions or about plans to make the World Bank take steps against the Czech Republic. Taking into consideration that the World Bank is not involved in any way in this project, I said that such statements are nonsense.

A potential accident in a nuclear reactor, just as in any other nuclear storage site, of which there are many in Europe and in particular in Austria's immediate neighborhood, would certainly threaten the citizens of the entire continent to a greater or lesser degree.

However, in my view, while the Czech Government has the right to trust the competence of its foreign partners to make decisions, it does not have the right to go as far as to threaten sanctions or retaliation by international institutions if similar cases happen with other European states.

Therefore, I would welcome it if the same principles of trust and mutual respect also obtained in Austria's relations with us.

ROMANIA

Senate Discusses Domestic Economic Issues, Russian Events

*AU2203195093 Bucharest ROMPRES in English
1914 GMT 22 Mar 93*

[Text] Bucharest (ROMPRES) 22/3/1993—The 27 senators that took the floor in the Monday, 22 March sitting of

the Senate addressed more than 40 questions and interpellations to ministers and other government officials.

Related to agriculture, the questions mostly referred to the late and defective enforcement of the land law, of crediting policies for purchase of machinery, fertilizers and seed; to the issue of the over 40,000 tonnes of Romanian wool kept idle by wool imports and never to this date capitalized on foreign markets; to the need for a clear status of farm specialists.

Drastic measures were demanded in the field of justice for the prevention and eradication of corruption, as well as the drafting of a law governing housing units appropriated by the state.

The dominant topics in labor and social welfare were the recalculation of pensions for peasants and the military as well as the establishment of sanitary facilities such as free or low price medication for retired rural laborers.

Cultural issues of top interest were the urgent need for a law to defend works of art belonging to the national heritage.

The foreign policy aspects touched on were related to Romania's position to the political events in the Russian Federation, certain regional agreements, and details of the recent talks the Romanian foreign minister had with his Hungarian counterpart.

Attending the sitting and available for answers were cabinet members Teodor Melescanu, foreign minister, Petre Ninosu, justice minister, Iulian Mincu, health minister, Mihai Golu, culture minister, Valer Dorneanu, minister for liaison with parliament, secretaries of state from the ministries of industries, agriculture, food, and the department of religious denominations.

ARGENTINA**Navy Chief Outlines Atlantic Environment Cooperation Strategy**

*PY2303234893 Buenos Aires NOTICIAS
ARGENTINAS in Spanish 0058 GMT 23 Mar 93*

[Text] Buenos Aires, 22 Mar (NA)—Navy Chief Admiral Jose Ferrer said today that military power "is gradually being aimed more at imposing or preserving peace and less at making war." He identifies "the undeniable responsibility of military force in international cooperation."

Ferrer indicates that "order and stability in this sphere will depend on the degree of international aid, and the possibility of exploiting the seas will basically depend on the technological know-how of the participants."

These concepts are contained in a document entitled: "The Argentine Strategic Policy for the Atlantic" [El Atlantico en el Pensamiento Estrategico Argentino] which is published by the Argentine Council for International Relations (CARI).

Ferrer says: "The classic earth-sea [tierra-mar] perspective leads also to an inversed perspective, that of sea-earth. This does not simply involve turning the map over, it involves another level of understanding and another perspective of the forces that are to be applied."

He adds: "The occupation and modern use of the sea leads us to a new political order with a new and special interaction among the participants and the factors of its complex scenario."

He continues: "Concerned over the uncertainty of the complex nature of new conflicts, some preconceived future situations can only be accepted as probable," among which he cites the International Convention on the Rights of the Sea "which represents a forum of growing importance."

Ferrer predicts that the law on the use and exploitation of the sea "will feature a strong humanitarian content," adding that there will be a new order based on open international cooperation. "[no opening quotation mark as received]

He predicts "the extremely tough probability of a lambasting by future generations for those societies that are unable to guarantee their protagonism," because "a maritime era has begun in which everything that concerns the seas and oceans magnifies their impact."

The Navy commander stresses the need to "explain the difference between a land border and a maritime border," because "a maritime border is a more elaborate intellectual concept which requires a three-dimensional perception of several all-embracing plans."

In his document, Ferrer says that "the most developed nations understand that it is not enough to cling to territorial seas and exclusive economic zones, it is essential to research and cooperate in all areas." He says that this does not mean "a mere expansionist movement, it means complete mutual cooperation."

He states: "In these economic zones there is a national responsibility, undeniable to the international community,

like the emerging international capacity to meddle in the exploitation of superfluous living resources which are considered necessary for the good of the community."

He adds that cooperation is "extremely valuable" and that order and stability in these zones "depend on the degree of international aid while the ability to exploit depends on the technological capacity of the protagonists."

Within this framework, he urges everyone to agree on "maritime research and assistance, the protection of human life at sea, and oceanographic information." He stresses the need to expand national interest "toward projection, where states decide to become protagonists in the defense of world values."

Ferrer predicts that military power "will increasingly seek to impose and maintain peace and not make war," and for this reason "military strategy will become less coercive, with deterrence and preventive foreign policy becoming the new decisive factors."

He says: "The idea of representing the role of the Armed Forces in a triangle is gaining consensus at a world level: military action, diplomatic action, and that which represents the concept of a permanent guarantee in the overall security of the seas."

Finally, Admiral Ferrer lists the new functions of the Navy, among which he cites that of "exercising responsibilities and of ensuring respect for the liberties established in the international law for each area, guaranteeing protection for national ocean resources, and guaranteeing protection for the ecosystem."

Ferrer highlights "the protection of life and the development of human involvement in the seas, frank protagonism with a sense of international cooperation, the promotion of scientific research, and the exercise of a national multinational projection."

BRAZIL**German Physicist Fears Leaks at Angra Nuclear Plants**

*PY2303200893 Rio de Janeiro O GLOBO in Portuguese
20 Mar 93 p 19*

[Report by Graca Magalhaes-Ruether, O GLOBO's correspondent in Bonn]

[Text] Brazil's Angra-1 nuclear plant, which is already in operation, and Angra-2, which is still under construction, were built with materials that could crack and provoke a radioactive leak. The conclusion was made by nuclear physicist Thomas Panten of the Ecology Group of Germany in Hannover. Panten has just completed a study that will be published next week by Greenpeace, the ecological organization.

The problems affecting Angra-1, which was built by the U.S. firm Westinghouse, rests with the nickel-based material known as Inconel-600, which is used for the internal coating of the reactor and in parts of the primary cooling system tubing. Only two German plants—Obrigheim and Muhlheim—have used this type of material. The Muhlheim

plant, which was built by the ABB (Brown Boveri) firm, was shut down after being in operation for only 13 months.

Panten said: Several plants were built in France with this material. There, too, people thought that nothing would happen until radioactive leaks began in some plants.

Panten said that the French have already begun to replace Inconel-600 with Inconel-690, which is also based on nickel but which is more resistant. To replace this material in one reactor alone would cost millions of dollars.

Panten added: Angra-2 could also have problems when it goes into operation because the austenitic steel, the material used by the firm KWU (Kraftwerk Union)-Siemens in its cooling system, is not very safe.

The reactor of the Brunsbittel plant, in northern Germany, was shut down in February following the discovery of more than 100 fissures in austenitic steel surfaces. Panten believes that had it not been shut down, Brunsbittel could have gone down in history as a second Chernobyl. The fissures were spotted in November, but only after the matter was disclosed by the press did the Hamburg Power Company (HEW) decide to shut down the plant for repairs.

KWU, a subsidiary of Siemens, built the Brunsbittel plant. KWU discovered that the fissures had been there since the reactor went into operation. KWU did not believe that the fissures posed any great danger, but the Hannover Ecology Group considers them to be very dangerous.

Panten said: If there were fissures from the beginning it means that the material is totally unsafe.

German Environment Minister Klaus Toepfer also considered the case to be alarming.

The material, which should be able to resist an earthquake and should never rust, consists of austenitic steel (which is sold in Germany under the name of Nirosta). It is advertised as being very resistant in light of its chrome, nickel, and titanium content. KWU used the material in various parts of the plant, where a record number of fissures occurred: 140.

Panten added: I cannot state that problems will occur at Angra-1 because of the Inconel-600 or at Angra-2 because of the austenitic steel. The two nuclear plants do pose a constant threat of an accident near such a heavily populated city as Rio de Janeiro.

Environment Experts To Survey Territorial Sea Resources

PY2503020093 Sao Paulo O ESTADO DE SAO PAULO in Portuguese 22 Mar 93 p 9

[Article by Elza Pires]

[Text] Brasilia—Environment Ministry experts today will begin to conduct a full survey of our natural resources within the 200 mile Brazilian territorial sea, the Exclusive Economic Zone (ZEE). The research will be conducted using the Riobaldo vessel from the port of Tamandare in Recife.

For three months, six experts from the Northeastern Fishing Research and Extension Center [Centro de Pesquisa e Extensao Pesqueira do Nordeste] (Cepene), linked to the Brazilian Institute for Environmental Affairs and Renewable Natural Resources (Ibama), will inventory all the natural resources that may or may not be exploited within the 200 mile area.

Brazil is one of the 60 signatory countries of the 1982 UN Sea Rights Convention that establishes the creation of Exclusive Economic Zones. Pursuant to the UN rules and regulations, however, our country will only be able to ratify the 1982 convention after conducting detailed research of our territorial sea.

First Step

Environment Minister Eduardo Coutinho Jorge said: "Beginning the ZEE research represents the first step in realising the convention's proposals." He and Deputy Roberto Freire (PPS/PE) [People's Socialist Party/Pernambuco State], the government leader in the Chamber of Deputies, will participate today in the departure ceremony for the Riobaldo.

During its expedition, the vessel will traverse the entire coast between Recife and Fortaleza at a distance of 360 miles offshore. According to Article No. 60 of the convention, its main task will be to determine which species may be caught and which species must be protected because they are endangered species.

The Riobaldo vessel expedition is part of the Pelagic Resources Research Project [Projeto de Pesquisa de Recursos Pelagicos] that is being implemented in the ZEE. The coast between Ceara and Pernambuco States was divided into three areas and oceanographic and fishing stations. The Riobaldo vessel will traverse the entire region.

Five Countries Missing

The agreement on sea rights will become effective only after all the countries ratify it. Fifty-five countries had already ratified it by June 1992 when Rio-92 was held. About 10 years after signing the agreement, Brazil remains among those countries that still must comply with the task of researching the territorial sea's resources.

The team of experts aboard the Riobaldo will map the fishing species that are commercially exploited and will specifically study the species that are hit to a larger extent by commercial fishing activities. The expedition begins today. The expedition's program includes five research projects and 23 research subprojects. The project will cost 16 billion cruzeiros.

During its mission, the vessel will dock twice at the ports of Natal and Fortaleza to refuel and give the ship's crew a chance to rest.

DOMINICAN REPUBLIC**Nigua River Ceases To Flow**

93WN0288A Santo Domingo LISTIN DIARIO
in Spanish 10 Jan 93 p 5

[Article by Guillermo Tejada: "Deputy Says Nigua River Has Almost Run Dry"]

[Text] Deputy Nelly Perez Duverge has warned of environmental damage in the city of San Cristobal, saying that the Nigua River has practically run dry.

The deputy said that the indiscriminate extraction of materials from the Nigua River bed has caused that major waterway to dry up.

She predicted that in a matter of only a few years, San Cristobal will have no rivers at all because irrational human activities will have destroyed them.

In further statements, the deputy from the PLD [Dominican Liberation Party], who is also a physician, warned of a major outbreak of typhoid fever, noting that drinking water is the principal problem of all of San Cristobal Province.

She said the government has begun to build rural aqueducts, but added that the work never seems to get finished: "Nor do we know what has happened to the funds allocated by the Central Government!"

The PLD deputy said that even now, an entire group of businesses in San Cristobal continue to dump their waste on the shores of the Nigua.

"In addition, the San Cristobal City Council dumps the garbage it collects into the river," Dr. Perez Duverge said, recognizing that the director of forests has made efforts to remedy the situation.

Contamination of 'Dying' Yaque River Detailed

93WN0288B Santo Domingo LISTIN DIARIO
in Spanish 11 Jan 93 p 3

[Text] The president of the Ecological Society of Santiago and a professor from Madre y Maestra Pontifical Catholic University have warned that the North Yaque River is drying up due to deforestation and pollution from the dumping of industrial waste and sewage by the city of Santiago.

Domingo Rodriguez and Domenica Bramo say the main polluters of the river are tanneries, enterprises in the free zones, distilleries, and sewage from more than half of the districts and developments of Santiago.

They warn that the situation is affecting the water supply of Santiago, Navarrete, Jaibon, Laguna Salada, Villa Vasquez, Montecristi, and other communities in the Northwestern Line.

They claim that pollution of the North Yaque River has reached such an extreme that residents of Montecristi can no longer use its water even to wash clothes, so foul is the odor.

They also point out that the sewage system serves only about half of the districts and developments of the city of Santiago and dumps its waste into the river either directly or via streams and ravines.

They say that developments on the banks of the river, including Reparto Peralta and Bella Vista, have neither sewage systems nor drainage and dump their waste into rain sewers (designed to catch rain water and prevent flooding), which means that it ends up in the river.

Interviewed on the program "Concertando," which is produced for Telesistema Dominicano by Leonardo Matos Berrido, Rodriguez and Bramo said it is the tanneries that dump the most dangerous pollutants into the river.

They noted that Santiago's five tanneries have increased their production in recent years due to foreign demand for furs and related products.

The ecologists specified that the tanneries dump sodium sulfate, brine, hydrogen sulfide, and tanning waste containing chromium—all known carcinogens—into the river.

Both noted that it is painfully common to observe thousands of dead fish killed by toxic substances carried by the waters of the North Yaque River.

They also observed that people frequently dump waste oil from plants into the river because they have no other choice, thus causing extensive harm to live organisms contained therein.

PERU**South Pacific Commission Strengthens Protection of Ocean**

PY1903224593 Lima EL PERUANO in Spanish
6 Mar 93 p A4

[Text] Agreements to promote ocean research, guarantee the preservation of the sea environment, and propitiate progressive development of the right to territorial seas are the main agreements adopted during the meeting of the South Pacific Permanent Commission [CPPS] in Lima.

Thus, the foreign ministers of Colombia, Noemi Sanin de Rubio; Chile, Enrique Silva Cimma; Ecuador, Diego Paredes Pena; and Peru, Oscar de la Puente Raygada, agreed to support and strengthen the South Pacific Permanent Commission in order to enable the organization to become in charge of watching over the correct use of the sea and its resources.

The declaration signed by the foreign ministers ratifies the rights of the states to guarantee the protection of species in the coastal ecosystems and those that are found beyond 200 miles.

Moreover, CPPS member countries feel they cannot remain impassive against unrestricted fishing activities by foreign fleets on the high seas, and that special measures must be adopted in the future for this reason to protect threatened species.

Furthermore, in order to protect the sea environment from toxic substances, the ministers agreed to support the

commission's initiatives within the context of the plan of action outlined for that purpose.

They finally established that the next meeting of this Latin American organization, created 40 years ago, will be held in Colombia on a date to be established by organization members.

URUGUAY

Intendant Reports Acid Rain Pollution From Brazilian Factory

*PY2303213093 Madrid EFE in Spanish
0930 GMT 22 Mar 93*

[Text] Montevideo, 22 Mar (EFE)—Rodolfo Nin Novoa, the intendant of Cerro Largo, today stated in Montevideo that pollution is increasing in northeastern Uruguay as a result of the acid rain produced by a Brazilian factory.

During a regular meeting of intendants and national authorities, Nin Novoa told Manuel Romy, the minister

of housing, land improvement and environment, that over the past few months the factory has increased its pollution along the Brazilian border.

Through its diplomatic channels, Uruguay has asked Brazilian authorities to solve the problems caused by the factory, which is a short distance from the border between the two countries.

"The Cerro Largo intendent's office report is not positive at all," Nin Novoa said.

Brazilian authorities promised Uruguayan officials that filters will be used to reduce the acid rain produced by the factory, but because of the high cost it will be necessary to confirm whether the factory is actually polluting the environment.

Nin Novoa said that the district, 380 km northeast of Montevideo, is receiving increasing quantities of acid rain from Candiota, near the Bage district in Rio Grande do Sul.

ALGERIA

Environment Safety in Residential Areas Questioned

93WN0292A Algiers *LE SOIR D'ALGERIE* in French
7 Feb 93 p 3

[Article by Slimane Bensayah: "Danger Under Our Feet"]

[Text] Residents of Algiers are increasingly perplexed at the growing number of factories and warehouses to be found in cellars and crawlspaces of buildings in the capital city. Many citizens believe the authorities must be shirking their responsibilities, for otherwise how could they tolerate the warehousing of chemicals and other inflammable products in densely populated zones?

Many point the finger of blame at the OPGI [expansion not given], the APCs [People's Communal Assemblies], the wilaya, or Civil Protection, because they say it is unthinkable to let people "toy with the safety of citizens whose only crime is to have timebombs under their feet."

Officials at the wilaya of Algiers housing agency told us the allocation of cellars and other areas of buildings is not in their bailiwick. "Administration of these spaces is up to the OPGI, which allocates on the basis of applications submitted by prospective occupants. Of course, 25 percent of the space in newly built residential areas is allocated for commercial use, but this is granted to create jobs for young people, after studying the case file presented by the cooperative to the employment delegate. Our agency's involvement is limited to delivering space allocation certificates, on instructions from the employment delegate.

"We have no right to inspect activities conducted on those premises, this being under the purview of Civil Protection and the public health authorities, who are supposed to ensure compliance with safety standards."

Our investigation took us next to the downtown Algiers APC, where we were directed to the economic activities bureau.

An official in that unit informed us its mission is limited to delivering confirmations or certificates of registration on the basis of documents received.

"For confirmations of registration, we require the citizen to submit a handwritten request and documentation verifying the ownership status of the property, since the certificate of registration is inscribed in the commerce registry. But at no point do we get involved in allocation of space. Assessment of the harmful effects that might be occasioned by any activity conducted in a residential area is up to the public health authorities.

"The latter can conduct an administrative inquiry or send a team to investigate the premises to decide whether safety and sanitary standards are being respected."

These authorities told us that a formal investigation would be required to determine whether safety standards are being observed.

"Many citizens have asked to be allowed to use space for artisanal work, and they have turned these areas into veritable factories as soon as they got their license to operate. We alert the agencies concerned whenever an anomaly is brought to our attention, and it is up to them to take the necessary measures."

Civil Protection, for its part, generally limits itself to prescribing safety standards. It is also supposed to issue certificates of compliance after considering the facts (if regulations are being followed).

"We know that many cellars and spaces located in residential areas harbor activities that endanger the public, but what do you want us to do? We don't have the authority to take any action against them—or against the owner of the property." The OPGI officials we contacted to learn more about the allocation process denied they have ever allocated common areas, as defined by Decree 83/666 of 12 November 1931 (establishing regulations relative to co-ownership and management of collective buildings) and Articles 747 and 748 of the Civil Code that define common areas.

"Cellars (underfloor spaces), stairwells, verandas, laundry rooms, and caretaker's lodges are allocated indivisibly to the residents. We defy anyone to prove that our agency has allocated any such areas. Many spaces were occupied originally with the consent of residents, who subsequently decided to complain.

"For instance, there was a case where citizens had permitted a merchant to conduct his business in part of the cellar of their building, but began to complain when they saw he was taking up all the space. Are we in a position to act in such cases?

"Our actions must be transparent, and on the basis of current legislation we do not allocate common areas to citizens for their private and exclusive use.

"Several areas were allocated by APCs, without consulting either us or the residents. If activities conducted there become a nuisance or create the threat of pollution, we're not responsible." It is difficult not to notice here how widely responsibility is scattered. Who allocates what, and to whom?

Reports abound in the capital of gasoline pumps, manufacturing or transformation plants, and storage areas for chemical products being set up underneath buildings.

The OPGI is not concerned, nor is the wilaya. Ditto the APCs. Civil Protection gets involved only in the event of disaster, and while you feverishly try to establish who is responsible, more factories are springing up under your feet.

A bit of order in the allocation process wouldn't harm anyone; to the contrary, it would prevent many tragedies.

INDIA

Industrial Pollution Control Set Back

93WN0309A Bombay *THE TIMES OF INDIA*
in English 7 Feb 93 p 20

[Article by Manoj Mitta: "Kamal Nath's Reprieve for Polluting Units"]

[Text] New Delhi, February 6. The environment ministry has caused a series of setbacks to the regime meant to control industrial pollution. As a result, hundreds of highly polluting industries operate today with a legitimacy they did not have a little over a year ago.

The process began with the relaxation of the deadline of December 31, 1991, set for the industries to meet the prescribed environmental standards. The defaulters were due to be served with closure notices under a provision enacted by the Rajiv Gandhi government.

But the environment minister, Mr. Kamal Nath, announced that all those polluting units which had "shown proof of intent by taking concrete steps to meet the standards" would be given a reprieve of one or two years depending on their age. The two year grace period was meant for older industries. Curiously, there was also an effort to give the longer of the two extensions to as many industries as possible.

When Mr. Kamal Nath first gave an indication of the relaxation policy in November 1991, he said that the deadline should be extended by two years for the industries set up prior to 1975. But when he announced the decision on December 16, 1991, the cutoff year became 1980. Then when he issued a notification in February 1992, the cutoff year was changed to 1981, giving the concession to an ever greater number of industries at every stage.

None of the pollution control boards compelled the industries to show any proof of intent, the stated prerequisite for the extension. Neither did the ministry take any follow up action. As a result, all the industries were allowed to take advantage of the extension irrespective of whether they had taken any steps to meet the standards.

The one-year extension for the industries commissioned after 1981 expired on December 31, 1992. The ministry held a conference on January 25, 1993 to review the progress of its action plan. What emerged from the conference was a three-page report on the "status of actions against 26 wilful defaulters as on January 15, 1993."

The report shows that out of even those 26 industries, the administration closed down only three, while in the case of a fourth the closure order was stayed by the high court.

All these four instances are from Jammu and Kashmir, which is among the least polluted states in the country. The status of the remaining 22 defaulters varies from "case being processed for closure" to "legal action against the industry approved by the board and in the process of being initiated."

Worse, none of the 26 industries identified in the report belong to the two most polluting categories, steel plants and thermal power stations.

Eight categories of polluting industries got another reprieve from a "revision of standards." Barely two months prior to the deadline of December 31, 1992, the standards were revised "in the light of representations received... from various groups of industries."

The government announced that the standards prescribed for the pharmaceutical and pesticides industries were under review and therefore "no action may be initiated till the standards are finalised".

In the case of four metallurgical industries, iron and steel, copper smelters, zinc smelters and aluminium, the ministry decided that the time frame would be "extended" further where modernisation had been undertaken.

As regards the category of pulp and paper industries, the Biochemical Oxygen Demand (BOD) was relaxed from 30 mg/litre to 50 mg/litre. The permissible level of the BOD was raised even more sharply for distilleries.

In the run-up to the latest deadline, Mr. Kamal Nath also took a policy decision that is on the face of it violative of the water and air acts. The decision is regarding the legal stipulation for the industries to obtain the consent to establish and periodically the consent to operate.

Both these requirements were specially introduced through statutory amendments made by the Rajiv Gandhi government around 1988. But the policy change made in October 1992 has to a great extent restored the pre 1988 situation in which there was no provision for the consent to establish and the industries had to obtain the consent to operate only once.

Under the new dispensation, all the industries are required to obtain the consent to operate only once. They do not need to renew the consent to operate, except when they expand. This decision has ended the periodic monitoring that took place every time an industry had approached a board for renewal of the consent to operate. Now with the consent to operate being given only once, the onus is on the boards themselves to seek out the offenders.

As for the consent to establish, Mr. Kamal Nath has decreed that it should be obtained only by industries belonging to the 17 categories targetted for a special drive launched in January 1991.

But as per the ministry's own figures, those 17 categories cover merely 1,694 large and medium scale industries. This is barely half the total number of polluting industries in the large and medium sectors.

More significantly, there are a lot of heavy polluters outside those 17 categories as well. Some such industries which have been exempted by the government from the statutory consent to establish are lead smelters, asbestos, caustic soda, textiles, nitric acid, calcium carbide, organic chemicals, soaps and detergents, natural rubber and processing, carbon black and foundries.

Need for Afforestation on Coastal Belt Stressed

93WN0308A Bombay *THE TIMES OF INDIA*
in English 12 Feb 93 p 4

[Article by P.K. Surendran: "Extensive Afforestation Imperative"]

[Text] Nagpur, February 11. Extensive afforestation is imperative along the entire coastal belt of India, particularly the eastern coast, to fortify it against the rain-induced soil erosion and also the possible ocean assault following the increasing Greenhouse effect.

The continued heavy loss of top soil coupled with the estimated deforestation of two million hectares of land every year poses a threat to India's agriculture and its ability to feed the swelling millions by the turn of the century.

This grim warning has been served by the National Bureau of Soil Survey and Land Use, based at Nagpur, which, with the help of state agriculture agencies of all states and Union territories and meteorological stations, has recently concluded the gigantic task of making the first national map of agro-ecological status and degraded land in the country.

The bureau has released the agro-ecological map and soil status of ten states while the same of another ten is ready.

The map of Uttar Pradesh and Andhra Pradesh would be completed by next year, said its director Dr. J. Sehgal.

Dr. Sehgal was of the view that the country ought to bring at least 25 million hectares of degraded land under cultivation on a war footing if it wanted to avoid a famine by the turn of the century.

The five-year-old survey, said to be the first scientific and most exhaustive attempt on soil mapping in the country, brings to fore several interesting but disturbing facts on the country's agro-ecological conditions.

The country, for instance, has only 9.7 percent of its total geographical area of 329 million hectares under dense forests. It has been losing at least two million hectares of forest cover every year leaving the land degraded and the eco-system disturbed. The afforestation attempts have not matched the loss of forests.

The extent of damage caused by human greed to the soil and ecology is clear from the fact that nearly 200 million hectares of land, forming 60 percent of the total geographical area, has become degraded.

Of this, 47 percent is human-induced water erosion resulting from wanton destruction of vegetation. The worst-affected states by water erosion of soil are Gujarat, Maharashtra, Madhya Pradesh and some parts of south-central regions.

Wind erosion representing five percent or 15 million hectares is most acute in Rajasthan and parts of Haryana, Gujarat and Punjab.

Similarly, chemical deterioration, mainly due to unjudicious use of pesticides and chemical fertilisers, forms about 4.5 percent. Coastal areas of the north-east belt are the most affected, the problem is also acute in Assam.

Physical deterioration of soil caused by flood and water-logging owing to human intervention in the natural drainage system affects five percent. Uttar Pradesh, Bengal and coastal areas are adversely affected. Land not fit for agriculture (snow-clad mountains and rocky terrain) forms only 5.1 percent.

The inescapable conclusion, therefore, is that a large part of arable land could be reinvigorated with proper measures to stop soil erosion and treatment of soil, opines Dr. S.R. Naga Bhushana, principal scientists of the bureau.

"Deforestation followed by intensive and unscientific cropping and grazing results in accelerated erosion of soil and the consequent loss of nutrients from the eco-system. When these nutrients are washed away into rivers and sea, the water become polluted endangering aquatic life," says the survey.

India's present population of over 860 million is expected to touch 1,000 million by the turn of the century and might touch 1,500 million by 2025.

The per capita availability of land will stand reduced to 0.14 hectare, one of the lowest in the world, scientists warn. Since overgrazing is one of the causes of soil degradation, the country must also pragmatically reconsider sentimental aversion to cattle slaughter. India already has nearly 20 percent of the world's cattle population though per animal yield is woefully low, a scientist who has studied the soil problems, opined.

Dr. Sehgal and Dr. S.B. Deshpande said the bureau had embarked on the most ambitious project of preparing district-wise agro-economic maps to help planners and agriculturists to evolve a proper crop pattern in future.

The survey has divided the country into 20 agro-ecological regions since nature does not recognise political divisions of the country. These regions are further divided into 60 sub-regions for which detailed maps are getting ready, bureau officials say.

Dangerously High Levels of Radon Found in Himachal Pradesh

BK2403031593 Delhi *INDIAN EXPRESS* in English
16 Feb 93 p 3

[Text] Amritsar—A heavy volume of radioactive emissions—prolonged exposure to which causes lung cancer and similar ailments—has been detected in several villages in Himachal Pradesh.

Continuous inhalation of air containing radioactive particles leads to the formation of deposits of these particles in the lungs. This layer then irradiates, or eats into the lung tissues, thus causing lung cancer and other chest maladies.

Radioactivity far in excess of prescribed safety norms has been detected in villages in Hamirpur and Barsar Rameda areas of Himachal Pradesh.

These facts have been thrown up by a research project, "Radon Pollution Studies in Human Environment", undertaken by Prof Surinder Singh, the head of Guru Nanak Dev University's physics department and sponsored by the Union ministry of environment and forest.

His studies revealed that radioactive particles are present in the soil, air, water, and vegetation—including foodgrains—in the area. They are also present in rocks, stones and other building material used in construction of houses.

These findings are based on the studies conducted in 10 houses each in 15 villages of Himachal Pradesh: Rachaon, Aghar, Batarali, Ropa, Brahmana, Kheri, Crallot, Chakmoh, Khiah, Baddu, Nalahi, Asthota, Bharin, Gajon and Manjot, said Prof Singh.

He said radon meters and plastic track detectors have been installed in each of these houses to study the volume of radioactive particles in their living rooms. People have been deputed to monitor the readings of these meters.

Prof Singh said the Environmental Protection Agency (EPA) in the United States has prescribed the safety limit for radioactive elements in the atmosphere as four "pico-curie" per litre (of air). This level, it has said, is acceptable to the human body. However, in these villages, the measure of radioactive particles is extremely higher than this limit—and obviously unsafe for the inhabitants of the area.

In the USA, thousands of people suffer from lung cancer brought about by radioactivity.

Prof Singh said the Bhabha Atomic Research Centre (BARC), Trombay, had discovered deposits of uranium in the subsoil of these hills a few year ago. It had given up excavations because recovery of uranium was economically nonviable here. Thereafter, BARC had recommended the project to the Union ministry of environment for investigations regarding the effect of emissions on the environment.

The professor said radon is a decay product of radium in the uranium decay series. Uranium is a radioactive metal, and the degenerated product—viz. radon—is also radioactive. It is in gaseous form, and diffuses through the soil into the atmosphere.

Kerala Decision To Grant Deeds to Forestland Encroachers Criticized

*BK2403044193 Delhi INDIAN EXPRESS in English
10 Mar 93 p 17*

[Text] The Kerala Government decision to grant title deeds to encroachers on forest land, with little, or perfunctory safeguards, has come as a surprise to many. And from the looks of it, the Centre appears to be falling in line with the decision, which comes less than a year after the Earth Summit.

Union Environment and Forests Minister Kamal Nath is slated to clear the decks for granting the pattayams [land deeds] for 28,500 hectares of forest and revenue land, mostly in Idukki district, at a rally there on March 19. But conservationists point out that, in doing so, the Centre would be flouting its own guidelines and laws.

There is also a feeling of *deja vu* among environmentalists as the memories of mass plunder of the State's forest wealth less than a quarter century ago have still not faded away.

As pointed out by the Centre for Industrial Safety and Environmental Concerns, the nation's interest as a whole would be sacrificed for the sake of people who had violated the laws of the land.

Prof M.K. Prasad of the Kerala Sastra Sahitya Parishad pointed out that the Central Government's sanction to the issue of pattayams would be in contravention of Para 4.8.1. of the National Forest Policy, 1988, which takes cognisance of the menace of encroachments on forest land.

It states: "This trend has to be arrested and effective action taken to prevent its continuance."

There should be no regularisation of existing encroachments."

Experience does not support the Government reasoning that once the pattayams are granted to pre-1977 encroachers and the forest boundary demarcated, protection could be carried out more rigorously.

The Government orders, issued pursuant to the acceptance of the report by a committee headed by Mr. K.P. Radhakrishna Menon, an L45 officer, had, as far back as in 1963, pointed out that effective steps should be taken to prevent encroachments on forest land in future. They were never complied with.

As the Government failed to implement its own orders, the Maniyangadan Committee, which was a sub-committee to the Consultative Committee of the Assembly appointed in 1964, was entrusted with the task of recommending measures to deal with encroachments.

It was based on this sub-committee's report that encroachments before January 1, 1968, were regularised by issuing pattayams.

The committee's recommendation that the hill settlers, who were granted pattayams, be given identity cards to prevent future encroachments was not implemented, though the Government accepted it.

The principal recommendation of the committee that no more encroachments should be allowed in future, was also accepted by the Government, but never observed, conservationists point out.

Satellite Program Monitoring Natural Resources Assessed

*BK2403050993 Delhi INDIAN EXPRESS in English
18 Mar 93 p 9*

[Text] IRS 1A [Indian Remote Sensing], the first Indian remote sensing satellite, on Wednesday completed five years in space marking a major milestone in the history of India's space effort. At a press conference to mark the occasion, ISRO [Indian Space Research Organisation] Chairman Prof U.R. Rao said that the satellite had been planned for an operational life of three years but was still providing very clear imagery. It was expected to continue functioning till the end of this year after which its batteries would run out.

Prof Rao said the batteries were designed to go through 25,000 charging and recharging cycles. In its five years of operation, IRS 1A [as published] had covered the country

82 times providing over four lakh imageries. With IRS 1A and 1B [as published] working together it was possible to get full coverage of the country every 11 days. The IRS satellites had revolutionised the use of space technology for the management of natural resources. He said India had more use of this technology than any other country in the world.

In the field of forestry, the IRS satellites were making biannual forest surveys which helped monitor and control deforestation. Now, it was not only possible to look at forest areas, but also identify dominant forest species of an area. Using IRS imagery for groundwater management, it was now possible to dig a well with 93 percent chance of success, compared to the 45 percent success ratio of wells dug without its help. In fisheries, the IRS satellites had helped double fish catch. In South India, they were being used to locate mineral resources.

Prof Rao said other applications included soil mapping, estimating agricultural acreage, monitoring snow and runoff, urban planning and flood mapping. The IRS was also being used to take up a pioneering study in sustainable integrated development in six districts all over the country.

Prof Rao said IRS 1C which was expected to be launched in 1994 would be a new generation satellite which would remain state-of-the-art well into the latter part of the decade. It would have a 20 metre resolution with middle infra red cameras that could look at pests and diseases. Its panchromatic cameras would have a 7 metre resolution and it would also be equipped with a 180 metre resolution camera for quick monitoring.

Prof Rao also said that the Indian Space Research Organisation will keep its schedules in spite of the US sanctions against it. He told reporters on Wednesday that both the INSAT 2B and the indigenous rocket PSLV would be ready for launch by June this year. The INSAT 2C, which was of a slightly different shape as it would contain a payload for mobile communication, would be ready for launch by the end of 1994.

Prof Rao admitted that the cost of the projects would go up by about 10 percent, but said ISRO had solved the problem by going in for indigenisation as well as finding alternative suppliers. Pointing out that no country in the world was completely self-reliant in space, he said one of ISRO's major successes was being able to manufacture its own maraging steel needed for launch vehicle construction.

He criticised the sanctions, terming them "extremely unhappy." He pointed out that cryogenic technology was not used for missiles, which used only solid fuel. Asked whether the new Clinton administration would change its stand on the sanctions, he said it would take some time before President Clinton was able to look into the issue. But, with institutes such as the Carnegie Foundation recommending that the sanctions be lifted, there seemed a possibility that they would go, although it could take some time.

Meanwhile, Russia had no hesitation over the supply of cryogenic rocket systems and ISRO and the Russian Space Agency, Glavkosmos, had already started working on the transfer of technology.

Prof Rao said efforts to indigenise radiation-hardened integrated circuit technology were going ahead with all speed. He regretted that efforts to develop ISRO's capabilities in the field of electronics had not started earlier. Nobody could afford to sit back and allow the electronic revolution to pass by, he pointed out.

Referring to the fledgling Antriksh Corporation—ISRO's efforts to sell its technologies and services through an autonomous agency—Prof Rao said efforts were being made to obtain European Space Agency sub-contracts through member countries like France. Efforts to obtain contracts from developing countries were also being made, but this would be difficult since most of them turned to the West for their space requirements. Still, he hoped the Corporation would be able to notch up a turnover of \$100 million within five years.

Prof Rao was critical of the Government's moves to obtain a transponder on Asiasat for Doordarshan. "Personally, I would have done it in a different way," he said. He suggested that it would be better to put in four transponders and telecast more programmes through them. Even now, Doordarshan did not have the programmes to completely utilize the existing transponders, he pointed out. He said the problem could be that Doordarshan was trying to compete with Asiasat channels such as Zee IV.

Forestry Project To Be Launched in Himachal Pradesh

BK2303052493 Delhi All India Radio Network in English 0435 GMT 23 Mar 93

[Text] The Himachal Pradesh Government will soon launch a 55 crore rupee project to protect and develop forests in the state. Stating this at a workshop in Kulu, the governor, Mr. Bali Ram Bhagat, called upon the forest officials to prevent further degradation of the forests.

IRAQ

International Consortium Building Turkish Dam To Be Sued

NC2003081893 Paris AFP in English 0420 GMT 20 Mar 93

[Text] Baghdad, March 20 (AFP)—Iraq intends to sue nine companies building a dam in Turkey on the Euphrates, according to a government official who said the project "violated Iraq's right to use the water."

Under-secretary of state for Agriculture and Irrigation 'Abd-al-Sattar Salman said: "We have begun proceedings in collaboration with the foreign ministry to bring this suit."

However he not say what court Iraq had chosen for its legal action against the firms from Germany, Belgium, Austria, France and Turkey that formed a consortium in December to build the dam and hydroelectricity plant at a projected cost of 1.4 billion dollars.

Salman said the project was "contrary to international law."

In January, Agriculture and Irrigation Minister 'Abd-al-Wahhab Mahmud al-Sabbagh raised the threat of legal

action against the nine companies involved and complained that Baghdad was not consulted over the project.

Iraq claims the scheme will reduce its share of Euphrates waters at a time when Iraqis need to develop agriculture to offset the effects of U.N. trade sanctions.

Salman said Iraq was trying to revive negotiations on water sharing with Turkey and Syria.

He said Syria had agreed "in principle" to a tripartite meeting of experts in Baghdad but Turkey had not yet replied.

New Canal on Euphrates 'Depriving' Marshlands People

NC2203180693 (Clandestine) Voice of the People of Kurdistan in Arabic 1600 GMT 22 Mar 93

[Text] The Iraqi regime has completed the building of its new canal to change the course of the Euphrates River to irrigate areas near al-Najaf. This Iraqi step aims at depriving the southern population in the marshlands from their traditional environment.

It should be recalled that the canal, which is 135 km long, has been dug in less than six weeks.

MOROCCO

Measures To Preserve Water Supply Adopted

93WN0320A Casablanca LA VIE ECONOMIQUE in French 5 Mar 93 p 13

[Article by Laila Jalal: "ONEP: Offensive Against Waste"]

[Text] *The ONEP [National Drinking Water Office] is currently involved in several actions intended to combat the wasting of water.*

On 30 December 1992, the ONEP began operating a new water supply system in the center of Sebaa Aïoun (Meknes Province) that will increase the production of drinking water with an additional flow of 2,600 cubic meters per day. This brings the total flow to over 3,000 cubic meters per day.

The project cost a total of 10 million dirhams and was financed completely by the ONEP. It remedies the problem of an insufficient water supply during peak periods and will cover future requirements through the year 2020. But combatting the wasting of water, especially in urban areas, is one of the ONEP's priorities. The fact that drinking water accounts for only 10 percent of the nationwide demand has not prevented the office from starting to reflect on the problem of water waste in urban areas. The purpose of that reflection is to come up with a national water conservation policy.

The measures adopted by the ONEP to combat the wasting of water were motivated basically by the concern to make the cost of mobilizing new resources tolerable, such mobilizations being made necessary by a sharp increase in demand. Demand for drinking water was growing by an average of about 8 percent per year. Implementation of those measures was also motivated in part and accelerated

in particular by the drought from which Morocco has been suffering for the past decade.

The measures implemented by the ONEP concern several components of demand and are part of a strategy for rational water use. For example, the ONEP has adopted a series of institutional, technical, and educational measures as well as taking steps affecting the rate structure.

At the institutional level, the decision was made to eliminate free water supplies in government buildings and to set up vigilance committees, headed by the local authority and representing everyone involved, that formulate and follow up on a specific strategy for combating waste. It should be pointed out that the threshold of waste is established on the basis of available resources.

Flexible Increases!

As far as rates are concerned, it was decided to implement a policy differentiating the various social classes. For example, the average sales price of water has undergone an increase adapted to the consumption level in order to provide the least privileged classes with access to water and encourage a reduction in waste on the part of big consumers. Because of its progressive nature, that rate structure actually penalizes the excessive consumption of water.

Moreover, and in the technical area, the ONEP has managed to set up a vast rehabilitation program at the national level with help in particular from the UNDP [UN Development Program], the WHO, and the IBRD [International Bank for Reconstruction and Development]. That program is intended to rehabilitate facilities so as to reduce leaks and losses in the production and distribution phases. The ONEP is also controlling consumption at public drinking fountains by installing pressure reducers and turning the fountains off at night.

Public awareness is another important component of the fight against waste. At that level, the ONEP is undertaking noteworthy efforts in the form of a media campaign aimed at making consumers realize that water carries a cost and that there is an urgent need to avoid wasting it.

Such measures are intended to have the direct effect of reducing the consumer's water bill by reducing the level of demand. In this connection, the rate system being applied to big consumers will have the effect of slowing the increase in water demand, especially when one considers that 5 percent of the big consumers use as much as 70 percent of the small consumers. Studies conducted following the implementation of those measures show that demand is increasing more slowly: the average annual increase in demand has dropped from 8 percent to 4 percent in recent years. That reduction has been achieved at the same time that, thanks to a system of medium-term loans to water customers, the number of connections has risen from 62 to 74 percent.

RUSSIA

Academician To Head New Commission on Nuclear Waste Disposal

93WN0296A Moscow ZELENYY MIR in Russian
Dec 92 Special Edition [Signed to press 24 Dec 92] p 2

[Unattributed article under the heading "Russia": "Commission Established"]

[Text] A commission has been established to ensure the safe disposal of nuclear wastes. "It will work on developing and implementing scientific and technical programs to provide geological support for nuclear waste disposal," said Nikolay Laverov, commission chairman and vice-president of the Russian Academy of Sciences.

According to Laverov, basic science in this field in Russia is fairly up-to-date. However, the commission's experts will not only be using that accumulated experience, but will also introduce fundamentally new research and select sites suitable for waste disposal.

Most nuclear waste disposal will involve solidification of the wastes, as this is the safest method. Currently scientists are working on a list of minerals capable of "receiving" radioactive wastes and reliably storing them for at least 150,000 years.

The commission's efforts are already being aided by personnel from the Russian Academy of Sciences, the Ministry of Atomic Energy and various production facilities. As Nikolay Laverov commented, it is such an alliance which will produce the best results, because up until now nuclear waste disposal efforts have been fragmented, with the various ministries and organizations all working independently of each other.

Kurchatov Institute Shuts Down 'Hazardous' Reactor

93WN0241A Moscow MOSCOW NEWS in English
No 51, 20-27 Dec 92 p 2

[Article by Andrei Kolesnikov: "Warning: MR Reactor Is Hazardous"]

[Text] Moscow's most powerful reactor, running since the middle of 1940s on the territory of the Kurchatov Institute of Atomic Energy, has been closed.

The attitude of the State Committee for Supervision over the Safety of Work in Nuclear Power Engineering (Gosatomnadzor) towards the MR reactor has always been rather fanciful. The Committee employees showed great interest in it as far back as 1990. Until recently the institute could not be criticized by the Committee since it was believed to be working for the defence industry. In 1990, an interdepartmental commission, which included an employee of the Supervision Committee, inspected the country's research reactors by order of the Ministry of the Power Industry and Electrification (Minenergo). Thus, civil experts were given access to all seven reactors of the Kurchatov Institute for the first time since they were put into operation.

The conclusions of the commission after investigating the reactor were discouraging. They made about 150 general remarks which showed that the reactor had to be shut down. To begin with, it was hopelessly outdated. A number of its systems, including operation and protection, have since long exhausted their service life. Despite this, they remained in use until they were completely worn out. Meanwhile, even a preliminary analysis showed that the sanitary zone of the reactor, which the institute staff had maintained passed along the institute's fence, actually also included dwellings beyond the fence. This means that in case of an accident with the MR reactor, the population will face all its consequences. The commission also did not agree with the list of preset breakdowns. Institute experts had transferred to the rank of hypothetical accidents the maximum preset breakdown—the rupture of the pressure collector, although there were no reasons to do this. The institute has not yet analyzed such a breakdown because it is expensive and takes much time.

Despite this, the reactor was running, mainly thanks to the highly-qualified personnel responsible for MR's safety. But the commission proved that any carelessness by the operating staff could lead, at minimum, to a radiation accident.

At that time the reactor was not stopped and the case was hushed up. This was not difficult to do, because the State Supervision Committee's jurisdiction didn't cover the institute. But as soon as it was ordered early this year that civil supervisors were also responsible for all the Defence Ministry's nuclear plants, these supervisors returned to the reactors of the Kurchatov Institute. The MR, as before, remains the most hazardous reactor. The institute's IR-8 reactor, the second most powerful and responsible, among other things, for the production of isotopes for Moscow's medical institutions (there are many complaints about it, too) doesn't have to be stopped, the Committee employees believe. Its defects can be removed while it is in operation.

Of course, to stop MR is an unpleasant affair. In a certain sense, it is a blow at nuclear power engineering in its entirety because a majority of the experiments to ascertain the safety of bigger power reactors were conducted on MR. In Russia there are no reactors to replace it. One thing is clear: that at last the lesser of two evils had to be chosen.

Yablokov Investigates Radiation 'Anomaly' Near Beloyarsk AES

93WN0305A Moscow ROSSIYA in Russian
No 9, 24 Feb-02 Mar 93 p 8

[Interview with Aleksey Vladimirovich Yablokov, presidential advisor, conducted by Aleksandr Yemelyanenkov: "Aleksey Yablokov, Presidential Advisor: 'Russia Has Been Accused of Ecocide'"]

[Text] "When the historians conduct the final autopsy on the corpse of the Soviet Union and Soviet communism, they may find that the cause of death was ecocide..." Strong words. But my interviewee was not quick to refute this diagnosis by Americans Murray Feshbach and Alfred Friendly, whose book "Ecocide in the USSR" has recently been published in a Russian edition, a copy of which Yablokov keeps on his desk.

[Yablokov] We must not pretend that the accusations of ecocide levelled against the USSR do not also apply to Russia today. They are all aimed directly at us...

(Aleksey Vladimirovich placed in front of me a fragment of some charts and several diagrams.)

[Yablokov] For instance, until recently this radioactive spot in the Urals was considered a "Chernobyl trace," and nobody paid any particular attention to it. I got interested in the anomaly myself for the first time when I discovered that its location coincided exactly with the coordinates of the Beloyarsk AES. I did not jump to any conclusions, but I did bring that fact up from time to time in conversations with experts. And on one occasion I was told quite bluntly that about 15 years ago there was in fact an accident at the Beloyarsk nuclear power plant, the exact nature of which was known to only a very small group of experts.

A little while after that I was shown the findings of a special aerial gamma radiation survey taken by helicopter in the vicinity of the AES. Do you see these peaks on the diagram? They denote the presence of Co-60 and U-235 radionuclides... There is reason to suspect that a nuclear disaster occurred at the plant, spewing out nuclear fuel. These little dabs of "spittle" are still there and producing background levels of several hundreds microroentgens at the altitude from which the helicopter survey was conducted.

[Yemelyanenko] That is today. What about the levels in that area 15 years ago?!

[Yablokov] The problem is that there is nowhere you can find that out, and it turns out that you are not supposed to find out, either. That decision was made by officials in the Ministry of Atomic Energy and the Ministry of Health... In late December of last year, when the government was considering a program for the development of nuclear power production, I turned over the materials gathered in the course of the aerial gamma radiation study and proposed that this AES incident be declassified.

One day before the government was to meet another incident occurred, again at Beloyarsk AES. According to their classification it was a routine incident. In my opinion it was a dangerous accident. How could it be otherwise, when a fairly significant volume of radioactive water escaped from the plant site and entered the Beloyarsk Reservoir? The atomic engineers attempted to conceal the incident—even now, after it has been repeated so many times that that sort of thing is impermissible! The motives were the same as usual: supposedly the levels involved did not present a threat to the public, so why traumatize people again?

[Yemelyanenko] The logic of that sort of pseudo-humanitarianism is familiar: today they conceal an incident with the best of intentions, then tomorrow they will be tempted to conceal a serious accident. Were you successful in getting an official explanation as to the origin of the anomaly that exists in the vicinity of the Beloyarsk AES?

[Yablokov] The Ministry of Atomic Energy sent me a laconic letter, the gist of which was very simple: nothing to worry about, these are just from an ordinary waste storage

area with a radiation stream escaping through the roof. This reply was signed by the minister, so I felt I had to call Mikhaylov himself to ask: are all your storage areas like that? In our phone call as well he attempted to "calm me down," claiming that no one had ever assumed that a helicopter would be flying directly over the site... He suggested that we go there together so he could prove to me that there is absolutely no danger whatsoever.

[Yemelyanenko] Did you agree to go?

[Yablokov] No. The degree of danger in such matters cannot be determined by visual inspection, even if a very experienced expert does the inspecting. As for the trip, we decided that it would be more productive to first visit Penza Oblast to see the areas where scrapped nuclear warheads are being disassembled.

[Yemelyanenko] Your position as advisor for ecology and health care requires you to deal with matters on two fronts simultaneously. Let us return to the first of those. What did the collapse of the Soviet Union and the dismantling of the command-administrative system mean for environmental protection agencies? Or for the institutions that are now being accused of ecocide?

[Yablokov] Now that we have moved away from our command economy, away from monopolistic ministries and overall state control, now that many things have shifted to individual regions, it is no longer possible to implement any program that originates solely with the state. Yet our environmental problems remain huge. The question presents itself: how can we solve them? We gradually came up with the idea of creating a program for Russia's ecological revival without imposing anything from Moscow, instead taking the interests and urgent problems of specific regions into account and utilizing their scientific and productive potential as well as various sources of funding, including some non-traditional ones. Naturally there will be a place in that program for state institutions, but an increasingly prominent role must be played by regions, commercial structures and banks, with a special niche for the numerous public organizations and funds.

However, in my capacity as advisor to the President virtually every day I encounter situations in which interesting and important environmental projects do not receive proper support from local officials. People have to fight for years to prove the obvious and literally wrest some decision or other from the local authorities. The question is how to unify these scattered forces, help each one find its own environmental niche, and insofar as possible harmonize their relations with state environmental agencies. Consider the investment problem: where can "greens" find funding to implement their programs? On the other hand, there are many examples of various international funds and foreign and domestic businessmen that are willing to invest quite a lot of money in environmental projects—we only need to present those projects in a timely manner and plan them skillfully.

[Yemelyanenko] Definitely a noble idea, but you will agree that the time and the circumstances are extremely

unfavorable in terms of carrying it out. With the economy collapsing, you can dream about environmental issues all you want, but...

[Yablokov] I would put it differently. Due to our lackadaisical attitude we have lost and continued to lose funds that are earmarked exclusively for environmental protection efforts. In the Italian credits alone—a total of \$6.0 billion—10 percent was set aside for ecology. We did not submit our program in time, so we lost that \$600 million. There have been other cases as well. The U.S. Congress allocated \$25 million to aid with the start-up of global warming-related programs in the CIS. I explained to the Americans that for Russia that is not a top-priority problem and that against the backdrop of our political and economic chaos it seems insignificant. But the money had already been allocated! And still we have not managed to present those programs, even though there are a great many possibilities.

In addition we have proposals from several funds—MacArthur, Rockefeller, Ford and Soros—which might even be interested in financing specific environmental projects and programs here. Over a period of several years that could total not tens but hundreds of millions of dollars. But that money can only be obtained for a specific purpose, for a specific region or problem. It cannot be paid into the government's "common pot"—the West is far more aware than we are of the zero effectiveness of that sort of transfusion into our economy.

[Yemelyanenko] So in your opinion we should work to ensure that environmental use and protection issues are resolved by the government more efficiently and more competently?

[Yablokov] For starters we need to cut the staff of the environmental protection ministry by at least half.

[Yemelyanenko] Do you feel that if such a shakeup did occur the dead weight would settle out and only the best personnel would be left? What if the exact opposite happened...?

[Yablokov] It can't get any worse than it already is.

Norilsk Metallurgical Combine Fined for Damaging Forests

93WN0298A Moscow IZVESTIYA in Russian
2 Mar 93 p 5

[Article by Aleksey Tarasov, personal correspondent (Krasnoyarsk Kray): "Norilsk Combine Seen as an Enemy of Russian Nature"]

[Text] The Norilsk Mining and Metallurgical Combine (NGMK) has been "sentenced" by the Superior Arbitration Court of the Russian Federation to pay a fine of 1,185,468,324 rubles for the damage its harmful industrial waste has inflicted on the Taymyr forests.

Half of the money will be used for the reproduction and protection of forests and half will be deposited in the Taymyr Okrug budget. An environmental disaster—this is how the situation was described to me by staff members of the East Siberian Forestry Management Enterprise and the Krasnoyarsk Forestry Administration, which brought the

suit against the combine. They called it a "natural" result of the industrial exploitation of the resources of the polar circle.

The policy of conquering the northernmost peninsula on the planet by relying on the labor of convicts and the officials who had been charged with offenses and "exiled" to this region, a policy instituted by the leaders of the CPSU and the soviet government, is still alive today. Environmental issues still have no impact on the "production process." The country still needs the strategic products of the NGMK, and so what if a session of the Norilsk city soviet acknowledged the region's status as an environmental disaster zone, and the chairman of the Krasnoyarsk Kray Environmental Protection Committee said that Norilsk would gradually turn into a dead zone within the near future?

It would probably be naive to expect one of the biggest enterprises in Russia, the main supplier of nonferrous and precious metals, to display the necessary concern for environmental issues: The requirements of environmental protection were inconsistent with the assignments of "statewide importance" that were always set for the NGMK, and they are still inconsistent with the combine's present plans to occupy a decent position in the world nonferrous metal market. After all, this will require a good product and money, and not billions in expenditures on waste treatment facilities. Furthermore, I feel that the legal proceedings that were held in Moscow a few days ago, and the amount of the fine, do not offer the slightest hope of changes in the combine's operations. The result of the arbitration proceedings is probably important only as a psychological victory for sensible officials—and nothing more.

The main zone of forest damage is located in the southwestern part of the peninsula and stretches from Lake Pyasino in the north to the Khantay reservoir in the south. It is bordered on the west by the ridge of Lontokoysk Rock and on the east by the western spurs of the Putorana plateau. Experts categorize climatic and soil conditions in the region as extreme. The zone is something like a northern oasis, however. Red currants are abundant there, for example, especially on the banks of the Khantay reservoir. The woods bordering on the tundra are of tremendous ecological importance from the standpoint of soil and water protection and climate and water regulation. The problem, however, is that the prevailing winds during the growing season carry airborne emissions from the combine to this oasis. They carry organic and inorganic dust, nickel, copper, and lead and its compounds. Most of the gaseous emissions consist of sulfur dioxide, and there are also carbon monoxide, hydrogen sulfide, chlorine, phenols, nitric oxide, and others.

The total area of lost vegetation, according to aerial photographs and forest inventory data, covers 351,361 hectares. Damaged forests cover an area of 79,000 hectares, and another 73,000 are occupied by severely weakened forests. The almost inexplicable—from the standpoint of common sense—history of the combine's altercations with environmental protection agencies already dates back 20 years. If the combine had been managed not by humans, but by mutants breathing sulfur

dioxide instead of oxygen produced by the forests, their clashes with the ecologists might be understandable. But no, the people who were putting up this resistance were ordinary Soviet administrators, who were willing to sacrifice health—their own and that of the environment—for the sake of the “plan.”

The first signs that the forests were dying in the Norilsk region were recorded in 1968. The first suit was brought against the NGMK in 1973 for 4 million rubles. In 1975 the combine was sued for 9 million when the area of dead forest kept growing. Later there were new suits following each new inspection of the region. The multimillion-ruble fines were impressive in the 1970s, but all of the money then, as we should remember, belonged to the “people,” and the combine never suffered any financial problems because of this: There were officials in central agencies who would redistribute funds in its favor. In spite of this, the NGMK was putting up a fight even then: In 1982, for example, only 2 million rubles of a 12-million-ruble fine could be collected.

The last time the combine paid a fine was in 1984. Perestroika and its innovations—the autonomy of enterprises and self-funding—evidently allowed the combine to take a position of firm resistance. It was sued for 16.5 million rubles in 1986 and for 20 million in 1989. The fines were never collected. Between 1987 and 1991, however, the area of dead forest increased by 61,000 hectares.

At the end of the 1970s the capitalist world tried to reduce environmental pollution by installing taller flues on factories. This was the object of ridicule in Soviet political literature for a long time: It was said that the pollution of Ohio had turned into the pollution of Quebec, and that people in Oslo were breathing air polluted by the waste of chemical enterprises in Glasgow. When this was done in the Soviet North, however, the zone of pollution also grew, in spite of our ideological convictions, and we do not have the desire, the tools, the methods, and the money to learn how far the harmful impact of the NGMK can stretch.

Ecologists throughout the northern hemisphere are probably disturbed by the activity of the giant enterprises making up the Norilsk nickel concern. Norway and Canada believe that these northern plants in Russia regularly subject them to chemical “bombardment.” Our “errors” in the North are posing a genuine threat to the biosphere of the whole planet—this statement was made at a general meeting of the Siberian Department of the Russian Academy of Medical Sciences.

Last year chief specialist V. Sign of the Krasnoyarsk Forestry Administration drew up a “record of forest damage,” stating that the industrial waste of the combine had damaged the trees of the Taymyr region, the Turukhan tree farm, and state reserve lands in the Norilsk region. The forestry administration’s suit against the NGMK was settled by the kray arbitration court in favor of the plaintiff, with damages set at 1,791,644,580 rubles. The defendant appealed the decision and disputed the plaintiff’s data, but without providing any evidence. The court upheld the decision, but the combine was in no hurry to pay for its environmental crimes, and the Superior Arbitration Court of the Russian Federation soon issued a

statement that the decision of the Krasnoyarsk court had been protested. The arguments against the decision were extremely vague and contradictory, so that the Krasnoyarsk officials left for the proceedings in Moscow with bad premonitions. They were right in one sense and wrong in another. The fine had to be reduced by a third. This tactical move by the Krasnoyarsk officials was justified. If Krasnoyarsk had continued to demand the payment of the full sum, Norilsk would probably have insisted on another appraisal, and the forestry administration simply did not have the money for this. This means that the NGMK would have commissioned the appraisal.... The main thing was that the collection of the fine would have been delayed, and inflation would have “eaten up” a large portion of it. Incidentally, forestry administration officials are not excluding the possibility that it will take a long time to collect even the smaller sum.

In any case, it appears that it is more convenient for the combine to put up a fight and be sued than to take serious notice of environmental issues. At the time that I turned this article in to the editors, neither party had the court decision “in hand” yet, but the people from Norilsk were already working on an appeal and had filed a complaint with the plenum of the Superior Arbitration Court.

There is no cure for the dying trees. The restoration of forests is senseless at a time of continuous gas attacks. There are no plans for the reclamation of the land in this region.

An impasse? Forestry administration officials are nurturing the slim hope that the civilized world will come to their aid. The restoration of forests in the southern Taymyr region was discussed at conference in Western Europe. The people in Krasnoyarsk have not received any specific proposals yet, but they have already been asked if they could manage a tenfold increase in manmade forest production.

The fine was levied only for the lost forests, but all natural resources on the peninsula have become the victims of the industrial giant. There has been a dramatic decline in the reproduction rate of fish, birds, wild animals, and the biomass in the Arctic zone. Acid rain is killing reindeer pastures and turning the lichen into a viscous mass. Animals are dying because of the feed shortage on the peninsula. The mortality rate of the oxen from North America is expected to rise. For several years in a row now, reindeer meat procurements have been equivalent to only one-sixth of the earlier quantity.

Who can assess the combine’s share of the blame for this, calculate all of the damages, and present the bill to the combine? No one can answer these questions today.

The story of the billion-plus fine sheds light on one of the invisible springs of the political moves of the northerners, connected with the desire of the Norilsk industrial region to escape Krasnoyarsk’s jurisdiction and become part of the Taymyr Okrug, and the okrug’s desire to separate itself from Krasnoyarsk Kray. In this case the combine would have an essential monopoly on power in the autonomous okrug. Taymyr would have its own arbitration court, and the NGMK would understandably have less trouble convincing this court than the one in Krasnoyarsk of its

integrity. A decision has already been made to establish Taymyr's own environmental protection committee. It will also be more amenable than the kray committee, which recently presented the combine with a bill for 112 million rubles. And the courageous Krasnoyarsk Forestry Administration would not be able to sue the NGMK unless traces of pollutants could be found within the territory of the kray but outside the boundaries of the okrug. This is a supplementary stimulus in the struggle for sovereignty.

The opening of a large Arctic preserve on the peninsula has been scheduled for 1 July. The project was made possible by financial aid from Germany. People there are worried about the Russian North, about the unique colonies of birds on the peninsula, about our snipes, sea gulls, and wild sea geese. And what are we doing about them?

You can never tell; it is possible that the northern oasis, which is gradually taking on the appearance of a lunar landscape, will suddenly become the site of new and more resilient kinds of trees that will thrive on technogenic poisons.

Now that we have been so merciless in our treatment of our own land, perhaps the world community might find some way of exerting influence on the Norilsk combine. In conclusion, I have to say that the Taymyr forests are dying at this very moment. According to the latest estimates of forestry officials, in the time it took you to read this report, the trees on an area of at least half a hectare were suffocated by gas.

Case for Nuclear Waste Imports Examined

934K0568A Moscow LITERATURNAYA GAZETA
in Russian No 9, 3 Mar 93 p 13

[Article by special correspondent Kirill Belyaninov: "Uranium Caravans On the Country's Roads. There Is a Chance That Russia Will Become an International Dumping Ground"]

[Text] I have the keenest desire for the practical embodiment of the slogan concerning everyone's utmost participation in the direct running of the state. For not one initiative from the localities to disappear without trace in the corridors of power but, on the contrary, to obtain the utmost support. As, for example, was the case with the legislative initiative with which the Ministry of Atomic Energy gratified us.

Strictly speaking, the entire initiative amounted to Deputy Minister Nikolay Yegorov writing a letter and sending it to the Environmental Committee of the Supreme Soviet. In his letter Nikolay Nikolayevich shared with us his thoughts on the Law "On Environmental Protection." No, the law itself would have suited the nuclear engineers perfectly were it not for one small nuance—clause three of Article 50 categorically prohibits the transportation into Russia of "radioactive waste and materials for the purpose of storage and burial." It was these words which have not simply undermined the Russian economy, which is being reformed under great strain, but have also come into fundamental conflict with world practice, threatening to knock Russia forever out of the cohort of long-time developed countries.

Nikolay Nikolayevich thus writes plainly: "The shipment of radioactive materials between states is a prevalent world practice. And no country's legislation contains a ban on imports into the country of radioactive materials." Announcing in passing that plants of Britain and France have for long enough been manufacturing "fresh fuel" for the nuclear power stations of West Europe and then reprocessing this fuel, the deputy minister explained: In having transgressed the generally accepted procedure we have achieved merely the fact that "as of 1992 the work of a number of Russian nuclear industry enterprises has in practice been paralyzed and confidence in Russia as an international partner capable of strictly discharging the commitments it has assumed has been undermined. The latter point threatens Russia with the loss of the world nuclear technology market...."

But a way out of the current tragic situation may easily be found. What is needed is merely a decree of the Supreme Soviet to the effect that "clause 3... does not extend to radioactive materials, including the spent nuclear fuel of nuclear plants, imported for reprocessing or temporary storage for subsequent processing or the subsequent return to the supplier-country of the radioactive materials...." And that is all.

"The situation is simply catastrophic," Nikolay Yegorov himself told me in a telephone interview. "Enterprises in Krasnoyarsk-26 are not being allowed to accept spent fuel from Ukraine, although we are required to do so in accordance with the international Agreement on the Non-proliferation of Nuclear Weapons. Certain regions are not being allowed to store the nuclear components of weapons being withdrawn from the republics. The reprocessing works could be brought to a halt, and, consequently, thousands of people will be out of a job. Under the conditions of closed cities this could lead to a social explosion."

The argument concerning a popular revolt, "senseless and pitiless," counts for the present times for a great deal. And the deputy minister's distress is understandable. Were it not for one slight incongruity. Appended to the letter to the Supreme Soviet was "Information on Conveyance onto the Territory of Russia of Radioactive Materials from Other States as of 1 January 1993," which had been prepared in the Ministry of Atomic Energy. It maintains entirely unequivocally that both raw material and radioactive materials continue to be calmly imported into and reprocessed in Russia. The newly created state border is today being traversed successfully: nuclear weapons from Ukraine and from Belarus and Kazakhstan "for the purpose of disassembly and warehousing for the long-term storage of weapons components of highly enriched uranium, plutonium, deuterium, lithium, and uranium waste" and natural uranium from Hungary, Czechoslovakia, and Ukraine for the manufacture of fuel for these countries' nuclear power stations; regenerated uranium from France for enrichment at Russian plants; pellets of uranium of low enrichment from Kazakhstan for the manufacture of fuel assemblies for the RBMK and VVER-1000 reactors; spent fuel of nuclear power stations and research reactors built to Soviet designs in Hungary, Czechoslovakia, Bulgaria,

Finland, Germany, Ukraine, and Kazakhstan; radio pharmaceutical preparations and radio isotopes from Britain, France, Germany, Sweden, and the United States. And, finally, natural uranium from Kazakhstan, Uzbekistan, Tajikistan, and Kyrgyzstan and from Ukraine for export on the world market crosses Russian territory in transit. According to the most guarded estimates, 8.196 million kg of radioactive materials, not counting 17,000 sets of radio isotopes, whose reprocessing yields more than \$100 million and several billion rubles annually, are brought into the country in a year. And no law has yet prohibited the Ministry of Atomic Energy together with the Ministry of Defense and the Ministry of Health from involvement in all this. Nor does Article 50 of the law "Environmental Protection" in any way prevent the importation of material for reprocessing.

"Some local organs of power understand it as banning all imports. Whence the problems," Nikolay Yegorov explained.

The deputy minister preferred not to expatiate on the fact that, however, the option of "modification" of the legislation proposed by the Ministry of Atomic Energy could essentially turn Russia into an international nuclear waste dumping ground (so vague is its wording). He said merely that the legislators could sharpen the wording as they wished, it would be beneficial. Despite this, I shall venture to assume that the nuclear engineers' calculation is built on a maximum expansion of the importation of radioactive materials into the country. Just a year ago the director of the Mayak Chemical Works, infamous for the 1957 Kyshtym catastrophe, described what prospects would be afforded the works by the importation and burial of waste from Germany. Hundreds of square kilometers around the Mayak are already hopelessly contaminated, and a hundred or so tonnes of nuclear waste would not be particularly damaging to the ecological situation but would, on the other hand, bring in a million or so Deutsche marks for social needs. And specialists of the mining and chemical works from Krasnoyarsk-26 have studied in earnest scenarios of cooperation with South Korean nuclear engineers.

Quite recently, incidentally, five federal lands in Germany decided to turn down the services of the British complex at Sellafield for enriching German fuel and processing the waste. They considered it too costly. You do not have to be an expert in the operation of nuclear enterprises to understand that the sphere of their interests will now shift to the East—in Russia the reprocessing technology is of a world level and our nuclear engineers' financial requirements are far more modest.

And there is one further point the leaders of the Ministry of Atomic Energy forgot to mention. While having announced that, given a successful solution of the question, it would be possible to channel some of the currency and ruble resources "into the solution of the environmental and social problems of the regions" and thereby

"accelerate appreciably the process of recovery of the radiation and social situation," they did not breathe a word about the fact that the reprocessing of nuclear waste produces virtually twice as much radioactive material as there was initially and that avoiding contamination of the environment would be simply impossible: Absolutely clean technology has not been created anywhere in the world. The nuclear works at that same Sellafield, long since nicknamed "the British Chernobyl," is merely added confirmation of this.

"It happens. Waste forms, there is contamination," N. Yegorov somewhat sorrowfully agreed. "But how do you avoid this? After all, neither industry nor chemical production improve nature.... And we managed somehow, it would seem, to live before 1991, before the law came into existence...."

Nonetheless, none of the departments to which the Ministry of Atomic Energy letter was sent for coordination had any queries. The idea was supported by the leadership of the Federal Inspection of Russia for Nuclear and Radiation Safety, the Supreme Soviet Committee for Industry and Power Engineering and, oddest of all, by the Ministry of the Environment even. And then the Supreme Soviet Committee for the Environment and the Rational Use of Natural Resources said its decisive "yes" also.

"The need for a change of legislation was brought about primarily by economic factors," Valeriy Menshikov, deputy chairman of the committee, explained. "But we set one condition: All new contracts for the importation and reprocessing on the territory of Russia of radioactive materials must contain a clause concerning their obligatory removal. Were any industrialists to attempt to conclude deals for the burial of foreign material in our country, this would be pure spontaneous activity and a violation of the decree."

So the question of a revision of the law has practically been decided, and the quantity of "nuclear dirt" brought into the country will grow appreciably in the very near future. Although things are not confined to nuclear materials alone: On 18 February 51 tonnes of industrial waste hauled in from Germany by the Linden Maschinen company with the participation of the national Plastik Research and Production Association were discovered in the Avsyunino community of Moscow Oblast's Orekho-Zuyevskiy Rayon. Disposing of it in Russia is, evidently, cheaper and safer also. The dry cargo ship Kirov, which had brought from the American port of Baltimore hundreds of tonnes of plastic waste, arrived a week ago in the port of St. Petersburg. Two weeks ago Romania became the last European country to refuse to accept highly toxic waste from West Europe. But it has been brought into Russia illegally for six months now, it being "buried" at conventional dumps.

For the particularly inquisitive I would report that there is in addition industrial and medical waste....

State Committee Calls for Fishing Moratorium in Sea of Okhotsk

93WN0300A Moscow *RABOCHAYA TRIBUNA*
in Russian 3 Mar 93 p 2

[Article by Viktor Yurlov: "Under the 'Flag of Convenience'"]

[Text]

The fisheries reserves of the Sea of Okhotsk are being exhausted. Only the lazy are not coming to our kray to make an easy profit

At the end of last month, the Polish fishing vessels "Foka", "Khomar", "Tavar" and "Parma" were discovered in the Russian territory of the Sea of Okhotsk. A little earlier, vessels under the flags of the Republic of Korea, the People's Republic of China, and under so-called "flags of convenience," particularly the Panamanian, were noted more than once in the open part of the sea. Foreigners are making themselves at home in our waters. As leaders of the RF Committee on Fishing announced at a press conference, at this time, tens of foreign fishing vessels are continuing to conduct poaching operations in this region.

As we know, the Sea of Okhotsk is one of the most important fishing regions for Russia, and especially for the local population of the Far Eastern coast. Two million tons of fish are caught here, mainly pollock, which makes up 38 percent of Russia's total catch. Over the entire history of this region, the foreign fishery has operated only according to inter-governmental agreements. And this strict procedure has been followed to the letter by all our neighbors.

In 1991, the situation changed abruptly. Everyone who wasn't too lazy came sneaking over. Seeing the lack of punishment on the part of the Russian authorities, poachers are continuing to increase their incessant appetite. If in 1991, the maximum number of foreign vessels located at one time in the open part of the Sea of Okhotsk was 81 units, with a total yearly catch of 700 thousand tons, then in 1992—there were already 90 units with a catch of over a million tons.

Taking into consideration the urgency and extraordinary importance of the problem for the Russian fishing industry, the RF Committee on Fishing considers it necessary to introduce a moratorium on fishing in the Sea of Okhotsk as soon as possible. At the press conference it was emphasized that delaying a decision on this question would also lead to further catastrophic injury to fisheries reserves, and that in this matter a moratorium cannot be avoided.

Will the authorities hear the fishermen? Not likely, if one recalls that quite recently, they failed to hear the sounds of a Russian vessel being fired upon by an Argentine military ship. It is as if the ears of our politicians are suited for only one thing: to react distinctly to the political turns of the opposition. As far as the country's vital interests are concerned, and even more, their violation, they are a little weaker.

St Petersburg Firm To Manufacture Water, Gas Meters

93WN0305B Moscow *ROSSIYSKIYE VESTI*
in Russian 4 Mar 93 p 7

[Unattributed article under the heading "News of the Business World": "Water Loves To Be Measured"]

[Text] Soon St. Petersburg will be the home of a Russian-French enterprise that will manufacture household and industrial meters to measure water and gas usage. The enterprise is being established by the Tekhpribor Association and the Schlumberger Company.

Plans are to operate the manufacturing facility autonomously, i.e. without imports of materials or components. The Schlumberger Company will handle training of the joint venture's personnel, while the Vodokanal and Lengaz associations will be responsible for servicing the meters.

Today average daily water use per capita in St. Petersburg is seven times higher than in Paris.

Radiation Contamination Situation in Russia Inventoried

93WN0303A Moscow *ROSSIYSKIYE VESTI*
in Russian 5 Mar 93 p 5

[Article by Sergey Ovsienko: "A Radioactive Belt Is Tightening Around the Territory of Russia"]

[Text] **How many Chernobyls has Russia experienced? Experienced without recognizing the danger of the covert stamp "Secret." And it is only now that the traces of the former accidents are coming to the surface.**

During the past two years alone more than 260 sectors of radioactive contamination have been discovered on Russian territory, including about 40 with a radiation level greater than 1 milliroentgen per hour. Included among them, for example, are the following: Novgorod, Izhevsk, Glazov, Tikhoretsk, Kropotkin, Penza, Elista, Nevinnomyssk, Kamensk-Uralskiy, Kurgan, Novosibirsk, Omsk, Ust-Abakan, Nizhneudinsk, Khabarovsk...

The entire territory of Russia—from its western borders almost to its eastern ones—has been gripped by a radioactive belt. And this has exacerbated the ecological situation within the country.

To my way of thinking, the causes of this are as follows. It was in these regions that nuclear weapons were developed, made, and tested; it was here that radioactive wastes were brought from industrial facilities for burial; it was here that uranium ores were mined—and are still being mined—without any particular cautionary measures. Aerial gamma-spectrum surveys of the Yamalo-Nenetsk AO [Autonomous Okrug], the western portions of the Tyumen and Omsk oblasts, the Krasnoyarsk and Maritime krais—including the riparian zone of the Yenisey in the region where the Krasnoyarsk-26 Enterprise is located—have allowed us to draw up a preliminary map showing the density of cesium-137 contamination in these territories.

The echoes of the nuclear explosions at the Semipalatinsk test site rolled to the Russian regions—the Gorno-Altay and Khakass republics, the Altay Kray, and the Kemerovo and

Orenburg oblasts. Last year subdivisions of the State Committee on Chernobyl and the Russian Committee on Hydrometeorology were rushed in here. Prior to this they had refined the study of the radiation situation in Russia's European portion. But they did not succeed in carrying the aerial gamma-spectrum surveys and the sampling of soil probes through to conclusion. The "eternal" prose of our life—a shortage of funds—intruded into this important matter.

Studies done in 1992 have revealed additional cesium-137 contamination in the range of 1.0 to 5.0 curies per square km (Ci/km^2) over an area of approximately 8,800 square kilometers, which is 22 percent greater than the data of two years ago. The specialists explain this increase—for the most part—by a refinement of and a greater detail in the data gathered by aerial gamma-spectrum surveys on the territories of Penza, Ulyanovsk, Voronezh, and Nizhegorod oblasts, which revealed several spots of cesium-137 contamination exceeding $1.0 \text{ Ci}/\text{km}^2$ over an area of 70 square kilometers.

Let's return, however, to a consideration of the consequences of the accident at the Chernobyl AES. A more or less exact picture (on a scale of 1:500,000) of the contamination of European Russia has been presented—based on work done in 1992—by the Institute of Global Climate and Ecology. The total area of radioactive contamination (a level exceeding $1.0 \text{ Ci}/\text{km}^2$) comprises approximately 56,000 square kilometers.

But even these results, in the opinion of the experts in the Council on Ecological Policy under the President of Russia, do not provide a precise idea of the radiation situation. The Ministry of Natural Resources is completely unable to sum up or generalize on the data relating to the contamination of European Russia. And this—in turn—has put the brakes on implementing the Law "On the Social Protection of Citizens Subjected to the Effects of Radiation as a Result of the Catastrophe at the Chernobyl AES."

A recently held session of that same Council discussed the progress being made in carrying out the presidential directive on urgent measures to provide and ensure radiation safety. Many of the departments involved were "touched upon": It was recommended that the State Committee on Chernobyl finish up additional studies of the radiation situation this year, draw up a map of radioactive contamination, and continue decontamination of their sites during the next two years.

Prior to the end of the first half of 1993 it was proposed that the State Sanitation Inspectorate, Ministry of Health, Ministry of Social Protection, Ministry of Defense, Ministry of Internal Affairs, and State Committee on Chernobyl complete the creation of a Registration List of citizens who have suffered from the radioactive effects in connection with accidents at nuclear facilities, or while working with radioactive substances.

It was also recommended that inventories be made at enterprises, military units, and organizations at which activities involving radioactive substances were and are being carried out. The goal of such work would be to bring this activity into line with the legislative acts, to work out a state system of accounting for and monitoring nuclear

materials on the basis of an integrated data bank concerning their movement, along with measures to prevent the theft or waste of radioactive substances.

By the way, about the taking of inventories. Behind this externally bureaucratic term there is a large and important task, the essence of which is the creation of a State Register of sites where radioactive wastes are buried.

The fact that Russian ecologists have become seriously engaged in the task of solving the problems of radiational safety is attested to by the creation of a Russian Scientific Commission for Radiation Protection (RNKRZ). It began by preparing an expert appraisal of the Russian Federation's Draft Law "On State Policy in the Field of Handling Radioactive Wastes" and submitting it to the Committee on Ecological Affairs and the Use of Natural Resources Under the Russian Supreme Soviet. On the whole, the Commission approved the conceptual approach to the setting of dosage levels and risk groups; it recommended that the Ministry of Natural Resources conduct a state expert analysis of the present-day appraisals of the dosage being received by the population of the Altay Kray as a result of the nuclear tests conducted at the Semipalatinsk Test Site. The RNKRZ also applied its hand to working out criteria for the above-mentioned Registration List, for the draft "Concept of Radiation Protection and Economic Activity on Those Territories Subjected to Radioactive Contamination."

The Commission's multifaceted interests are also attested to by the fact that it is planning to prepare in this six-month period yet another concept—this one dealing with radiation safety, as well as the social protection and rehabilitation of that portion of the population which has been subjected to the effects of radiation.

It should be noted that this commission is far from being a public or other kind of organization; the RNKRZ was formed in accordance with governmental decrees.

Having undertaken the task of implementing the president's directive with regard to providing and ensuring radiation safety, the government has also created the Integrated State Automated System for Monitoring the Radiation Situation (YeGASKRO). It has been designed for effectively providing the state administration with news and information about the radiation situation, along with facts, the nature, scope, and consequences of its worsening, for working out recommendations on actions in an emergency situation, for protecting the population and the environment. The system is being created on the basis of the corresponding systems of the Ministry of Defense, the GKChS [State Committee for Civil Defense Matters, Emergency Situations and Elimination of Natural Disasters], the Ministry of Nuclear Power, along with other departments and organizations operating facilities subject to radiation danger....

Russia is taking the first steps—to a large extent unprecedented for itself—with regard to providing and ensuring radiation safety. In the opinion of the experts on the Coordinating Council for Ecological Policy, other steps must also be taken, including the following: state—rather than departmental—accounting and monitoring of nuclear materials at enterprises and organizations, adoption of laws in the area of utilizing nuclear energy, handling the

problem of nuclear wastes, the presidential Edict establishing the distribution of responsibilities and jurisdictions among the ministries and organs of the federal executive branch with regard to direct interaction and cooperation with the International Atomic Energy Agency, coordinating their activities in this sector.

Area Contaminated by Cesium 137 in the European Part of Russia

Oblast	Area (km ²)	% of Oblast's Total Area
Belgorod	1,620	6.0
Bryansk	8,050	17.3
Voronezh	1,160	2.2
Kaluga	8,500	11.7
Kursk	1,200	4.0
Lipetsk	1,470	6.1
Leningrad	850	1.0
Mordovia	1,630	6.3
Nizhegorod	20	0.02
Orel	9,300	37.2
Penza	4,130	9.8
Ryazan	5,210	13.0
Saratov	150	0.2
Smolensk	100	0.2
Tambov	330	1.0
Tula	10,320	39.7
Ulyanovsk	1,060	2.9

St Petersburg Firm Plans World's First Ecological Monitoring Ship

93WN0316B Moscow KOMMERSANT-DAILY
in Russian 9 Mar 93 p 1

[Report by Anna Shcherbakova: "An Ecological Monitoring Ship Is Being Built in St. Petersburg"]

[Text] The world's first specialized ecological monitoring ship is being built in Russia on the basis of military research. The ship, manned by a small crew, will be able to do everything necessary for comprehensive monitoring of the marine environment—detect oil spills, conduct television surveys of the sea bed, and perform continuous collection and express-analysis of samples. It was designed by the Almaz Company, which used to manufacture torpedo motor-boats, guided missile ships, and patrol escort vessels. Construction of the new ship started yesterday at the company's St. Petersburg shipyard. Specialists note that the vessel can count on success in the world market, since it has no analogues, while the need for such technology has sharply increased over the past few years.

It is a paradox, but the first specialized ecological monitoring ship will be built in Russia rather than, for instance, Norway, Finland, Germany, or the United States, where incomparably more attention has been paid to environmental protection for a long time. Nevertheless, these

countries still make do with coast guard cutters modified for ecological services and a motley assortment of equipment installed on them. Russia's breakthrough in this area is the result of a persistent search on the part of former defense enterprises for objects to which they can apply their military research.

The ecological monitoring vessel was designed by the Almaz shipbuilding company jointly with the Association of Marine Instrument-Making Enterprises on commission by the Ministry of Ecology and Environmental Protection. The ship is equipped with a highly sensitive Aquatoria ecological monitoring system, which was designed on the basis of military equipment. This equipment was originally developed, in particular, for determining traces of enemy vessels. Its sensitivity permits, for instance, the remote detection of oil spills. It also allows continuous collection of water and soil samples, and television surveys of the sea bed. Samples are analyzed directly on board according to 64 characteristics, including the presence of heavy metals, petroleum products, radionuclides, and natural and synthetic toxins. The vessel is designed to operate in marine coastal areas and inland waters. It has a 54-tonne displacement, a navigation radius of 400 kilometers, is manned by a crew of three and a team of ecologists consisting of four to eight people. It is supposed to be commissioned in 1994.

Almaz' new design received high praise from representatives of the U.S. Department of Defense who visited the company in 1991. According to company representatives, Almaz is currently conducting negotiations with foreign partners on the subject of building a series of ecological vessels of this class. Specialists believe that Russian ecological monitoring vessels can make a bid on filling this—at this point practically unfilled—niche in the world market.

Radiation Victims Reportedly Receive Little Support

OW2203083493 Moscow Ostankino Television First Channel and Orbita Networks in Russian
1955 GMT 14 Mar 93

[Report by S. Sergeyev; from the "Utro" program]

[Text] The whole world knows about the Chernobyl tragedy. But there are many other grim pages in the history of our country's atomic power engineering. Tragedies and catastrophes in the Ural region were kept under wraps for a long time, yet tens of thousands of people there suffered from radiation, including professional workers and local inhabitants.

[Begin Sergeyev recording] Chelyabinsk-65. Lavrentiy Beriya himself was responsible for the secret city and the defense complex which produced the contents of atomic bombs and missiles. The personnel there worked with weapons-grade plutonium. For some 40 years they were the hostages to a system of absolute secrecy. In a way they were serfs. But they believed that they were engaged in a job that was needed by the country and people, and devoted their intellect, energy, and talents to it. [video shows building exterior, group of patients, a laboratory, and individuals undergoing diagnostic screening]

Nikolay Vladimirovich Basmannikov is now 78 years old. His diagnosis indicates that he suffers from chronic radiation sickness. The dose of radiation which he received while working at the plutonium plant was dozens of times greater than all allowable levels. His pension is 3,000 rubles [R]. [video shows legless man in a wheelchair] Yuriy Pavlovich Tatr. He was 29 when an accident occurred, and deadly radioactive material made him an invalid for life. He lost both legs and an arm. He underwent 16 of the most complicated operations. His pension is R3,500. [video shows portly woman] Galina Vasilyevna Yudina. She did not work at the Mayak plant, but lived nearby in Metlino Village on the Techa River, into which waste materials from radiochemical production were dumped. Consequently she has also been diagnosed as having radiation sickness. She gets a pension of R3,000. These are three people out of 3,000 who suffered from excessive doses of radiation during the first decade of the Mayak Chemical Combine's operations. [video cuts to show V.F. Turusin, deputy director of the Mayak Production Association, talking to camera]

[Turusin] On 18 June 1992 the Supreme Soviet amended the Chernobyl Law and included a special point instructing the Government of the Russian Federation to determine the order of distribution of Chernobyl benefits to all categories of people who had been affected, who had suffered and so forth at other military nuclear facilities through 1 September. [video shows pages of a document] Unfortunately this resolution still has not been implemented. Time goes on, and of all those taken ill at our enterprise, one third have already died. Only 1,322 people remain. If we include victims along the Techa River, then even fewer, less than half, have survived. We are talking about less than 2,000 people having survived of those taken ill in our region. The government's position defies understanding. [end recording]

Proposal To Divide Environment Ministry Criticized

LD2403044093 Moscow Russian Television Network in Russian 2000 GMT 16 Mar 93

[Video report by T. Siratskaya; from the "Vesti" newscast]

[Text] Today at the Ministry of Environment, we read a surprising document that has arrived from the Supreme Soviet. If this decision is carried out, the ministry will, in fact, split into two departments. One will deal exclusively with the supervision and inspection of the implementation of the norms aimed at protecting nature, while the other will deal with everything else that remains—so the new department has something to keep it busy. Not a single country the world over has managed to think up anything like this yet—we are the first, just like we are the first as far as the number of ecological problems is concerned. All this—the creation of a new administration and unplanned expenditures—will cause a division of what little the ministry has. When all this has taken place, there will be difficulties in coordinating the efforts of both organizations.

[Begin V. Danilov-Danilyan, Russian minister of environment and natural resources, recording] This would be

completely against the interests of protecting nature in Russia, against our people's interests. Of course, our people are interested in having their environment improved. [end recording]

Cesium Containers Detained in Taganrog

LD2203202393 Moscow Russian Television Network in Russian 1700 GMT 22 Mar 93

[from the "Vesti" newscast]

[Text] In Taganrog, workers of the Criminal Investigation Department have detained two containers of radioactive cesium-137 supplied by a small enterprise. According to the (Kumir) agency, suspects tried to sell cesium for approximately \$80,000. The containers, with flaw detectors inside, can be dangerous in case of seal failure. The cargo has already been delivered to a special storage. A special commission is to arrive in the town tomorrow.

Navy Main Staff Cited on Barents Sea Submarine Collision

PM2303142393 Moscow IZVESTIYA in Russian 23 Mar 93 First Edition p 2

[Report by Viktor Litovkin: "Foreign Submarines Are Uninvited Guests in our Training Areas"]

[Text] A Russian nuclear submarine has collided with a foreign submarine in the Barents Sea.

Your IZVESTIYA observer was told at the Navy Main Staff that a submarine of the Northern Fleet arrived on its own at its base at 0900 hours on 21 March. An inspection established minor damage to the fore section of the hull. There was no leakage of radioactive elements into the sea. The weapons, apparatus, and reactor of the nuclear submarine are in full working order. There are no casualties. The ship is in a state of full combat readiness.

At the same time when our ship was inspected foreign components and materials trapped in the casing of the submarine's outer hull. Their analysis will indicate the foreign guest's nationality.

But in the opinion of Russian experts already one thing is undoubted: The commander of the foreign submarine, in an attempt to carry out an observation of our ship, lost hydroacoustic contact with it and, by maneuvering clumsily, created a dangerous situation which led to the collision, whose consequences could have been very serious.

Incidentally, after the incident our submarine immediately surfaced, as required by the norms of international law. The "foreigner" fled the scene of the incident without surfacing.

The Russian Navy Main Command has voiced extreme concern over the increasingly frequent instances of dangerous maneuvering by foreign submarines in the Russian fleets' combat training areas. Let us recall that this is the second such incident recently. The first occurred in February 1992, involving a U.S. submarine which invaded Russia's territorial waters.

The Navy Main Staff notes in this connection the low degree of responsibility and training of commanders and

crews of foreign submarines observing our ships. In accordance with the spirit of all international documents defining the safety of navigation of surface ships and vessels, I was told, any ship or vessel carrying out observation should observe all precautionary measures and prevent the emergence of dangerous situations.

Similar principles should be applied in organizing underwater navigation, but practice shows that not everyone understands that. Russian experts believe that any side which organizes observations of military operations by another side should try not to impede its combat training, not to create critical situations, and not to allow obstacles to safe navigation at sea. All spheres of naval activity should be pervaded by the spirit of international agreements on the prevention of incidents.

A brief note from IZVESTIYA:

The Russian nuclear submarine which was the involuntary participant in the Barents Sea incident can carry 18 strategic ballistic missiles and 18 torpedoes and missile-torpedoes. It has two nuclear reactors and a displacement of 13,000 tonnes. It is 150 meters long. It has a crew of over 100.

Second Nuclear Waste Burial Ground Planned for Far East

PM2503111593 Moscow IZVESTIYA in Russian
23 Mar 93 First Edition p 1

[POSTFACTUM report: "Burial Ground for Nuclear Waste Will Be Created in Maritime Kray"]

[Text] The Russian Ministry for Nuclear Energy in conjunction with 47 Russian Federation institutes has embarked on the creation of the Far East's second radioactive waste burial ground in the settlement of Bolshoy Kamen in Shkotovskiy Rayon, Maritime Kray.

Valeriy Butov, the president's representative for Maritime Kray, has said that 27 nuclear reactors removed from dismantled Pacific Fleet submarines will be buried in the burial ground.

WESTERN REGION

Ukraine: Academic on Conservation of Timber Resources

934K0202A Kiev GOLOS UKRAINY in Russian
21 Jan 93 p 6

[Interview with Academician Ya. Koval of the Ukrainian Academy of Ecological Sciences by Leonid Brovchenko, place and date not given: "In Her Previous Life She Was a Beautiful Tree; Now She Is a Container"]

[Text] Ukrainian forests are a source of timber, technical raw materials, and edible fodder resources. Because of their protective qualities, forest stands help to improve the hydrology of the territory, slow down soil erosion, increase the yield of agricultural crops, and so on. There are not enough forests in Ukraine, however, which has a negative impact on the ecological and economic situation of the state. We are offering our readers an interview with Academician

Ya. Koval of the Ukrainian Academy of Ecological Sciences, chief of the forest resources department of the Council for the Study of Productive Forces in Ukraine of the Ukrainian Academy of Sciences.

[Brovchenko] Yaroslav Vasilyevich, Ukraine is currently experiencing an acute shortage of timber resources; it needs timber for both woodworking enterprises and the population; the natural protective function of the forest itself is diminishing. Is there a way out of this situation?

[Koval] Only 14.3 percent of Ukrainian territory is covered by forests, which is considerably below its economic and ecological needs. Considerable damage has been done to the forests over recent years. During this time the volume of primary logging exceeded the planned cutting area by a factor of two or more, which considerably depleted resources. Today the share of mature resources ready for utilization is about 2-4 percent—in coniferous forests only 2.7 percent—while the norm is 12-15 percent.

The depletion of raw timber reserves diminishes the volume of forest utilization. Therefore, it comes as no surprise that only 30-35 percent of the need for timber is met through the use of local resources. Now take into account how much more difficult it has become now to obtain timber from Russia. It is now delivered in limited quantities, mainly through barter and, as a rule, in exchange for sugar, vegetable oil, and other goods in short supply, of which we do not have enough to meet our own needs. Because of reduced timber deliveries, woodworking industry output has dropped by 30-35 percent as compared with last year; housing construction has slowed. Especially hard-pressed in terms of timber supply are Ukrainian mines, as well as pulp and paper and pulp and cardboard enterprises.

[Brovchenko] How realistic is an increase in our own timber-producing base? Do we have any reserves in Ukraine?

[Koval] Yes, we do; we have about 1.5 million hectares of nonarable land that belongs to kolkhozes, sovkhoses, and other land users; approximately 2 million hectares of washed-off agricultural land; and 2 million hectares of eroded grazing land. The aforementioned acreage is of practically no use to agriculture; therefore, it is desirable to set it aside for reforestation even before the privatization of land is completed. This will contribute to a more effective utilization of land holdings; most importantly, it will increase our own forest resources, which our national economy needs acutely. In addition, the level of utilization of the land's production capacity will increase. In areas with more forests, as a rule, natural landscapes do not degrade; forests provide a reliable system of protection for agricultural land and water resources. As an example, I will tell you that in Ukraine's southern regions the yield of grain crops in fields protected by belts of forest shelter is 3-5 percent higher than in areas without them. Each belt of forest shelter that occupies one hectare of land protects 25-30 hectares of crop area, and the loss of acreage set aside for it is more than compensated for by the additional yield received as a result of the forest's impact.

[Brovchenko] *I agree with you; however, increasing the forest area pays off in 30-40 years at the earliest, whereas we need timber today.*

[Koval] Simultaneously with expanding forestation efforts we need to introduce a strict regime of timber conservation with respect to its use for consumption and at wood-working enterprises, where the level of timber utilization is 2-2.5 times lower than that in developed countries. Out of one cubic meter of timber, our factories produce per capita half as much wood-particle board, six times less wood-fiber panels, eight times less plywood, 10 times less cellulose, and more than 20 times less paper and cardboard than those in Finland, France, Sweden, Germany, and Italy. Lumber and furniture production is inefficient. All this is the result of imperfect production, and a poor technological base. Last but not least is the indifferent attitude towards raw timber, which has been relatively cheap for our consumers in the past.

We have very inefficient production of shipping containers, for which we annually expend about 1 million cubic meters of commercial wood, which accounts for about 70 percent of republic logging. About 2 million cubic meters of timber could be saved by secondary use of mine stanchions and replacing them with ferroconcrete structures. In developed countries, timber is seldom used for mine stanchions. Research shows that introduction of progressive technologies at woodworking industry enterprises alone can save and put back into the economy about 10-12 million cubic meters annually. This is a hefty reserve of resources.

[Brovchenko] *What are the ways to increase the production of paper and cardboard?*

[Koval] The problem of supplying the republic with paper and cardboard remains. Ukraine does not have sufficient capacities for their production. There are, however, proposals and a corresponding decision of the supreme organs of power with respect to organizing the construction of a new pulp and paper combine. The environmental and economic feasibility study for its construction was recently completed. The conclusion is as follows: It needs to be built; the best option—to build it in the northwestern part of Ukraine, where appropriate resources are concentrated and which is most suitable from the ecological point of view.

The pulp and paper combine may use as raw material timber produced in the process of forest management logging, and from redistribution of timber in the consumption sphere. We should also look into the feasibility of logging certain quantities of timber from nonindigenous forests of spruce and pine in areas where they are 35-40 years old and are being intensively damaged by root fungus and borer bugs, and are drying up.

At the same time, we need to increase the volume of forest plantations, and allocate the needed land for it. It would be expedient to organize this type of forestry as part of pulp and paper combine operations, at logging enterprises, and on the basis of free enterprise. And, finally, timber logging can be increased through intensification of forest utilization.

[Brovchenko] *What does that mean—intensification of forest utilization? Do you mean that in Ukraine, with its low percentage of wooded territories, forest depletion, and the important ecological functions of forests, there are still possibilities to increase the volume of forest utilization?*

[Koval] According to the basic principles of scientific forestry, rational forest logging does not contradict nature protection measures. Forest logging within well-founded norms is an important factor in preserving the structure of forests, increasing their productivity, and strengthening their protective functions. Currently, the intensity of forest logging in the republic is relatively low. Calculated per hectare of wooded area, 1.56 cubic meters of timber is logged, while its annual growth amounts to four cubic meters. This means that forests in state forest stocks are undergoing an intensive process of wood mass accumulation—approximately 15.5 million cubic meters (without taking logging into account) annually. These timber resources, despite the fact that their accumulation takes place mostly in young and middle-aged forest stands, will relatively soon (15-20 years) become a forest utilization reserve. We should also put to better use mature and overmature stands in first-category forests, where a considerable part of the forest is withdrawn from use for economic reasons.

There are currently about 50 million cubic meters of mature stands in first-category forests; if we exclude preserves, forestation on steep slopes—especially protective forests—protected areas, and other categories withdrawn from use, this leaves about 30 million cubic meters of timber. True, a considerable share of such stands are damaged by core rot and other diseases, and therefore the yield of commercial wood fluctuates within the range of 20-30 percent. However, keeping in mind the acute need for timber, some of the forest stands withdrawn from use may be used for economic purposes—provided the volume and methods of their utilization are ecologically sound.

[Brovchenko] *Yaroslav Vasilyevich, what are the prospects for the development of a natural preserve; what is it necessary to do in order to preserve the natural genetic fund?*

[Koval] There are seven natural preserves currently functioning on the basis of forest stands, with a total area of 52,000 hectares, as well as three national parks, covering 123,000 hectares. In addition, 124 state and local protected areas have been set up, with a total area of 140,000 hectares, with protected forest and forest marsh ecosystems. Ukraine has natural complexes of great scientific and practical value for forestry. Nobody makes use of them, however, with the exception of a few enthusiasts. The land set aside for natural preserves may be increased by adding forest areas, among others, in Rovno, Sumy, Cherkassk, Ternopol, Odessa, Transcarpathian, and Volynsk Oblasts, with a total area of about 150,000 hectares. It makes sense to investigate the possibility of expanding the area of existing natural preserves by adding adjacent forests currently in state forest stocks, and reorganize some protected areas and natural and hunting preserves into state preserves. In the natural preservation areas it is necessary to establish control over production, technological level, and structure.

Ukraine: Safety Violations at Rovno AES Alleged*93WN0317B Kiev GOLOS UKRAINY in Russian
24 Feb 93 p 3*

[Article by Nikolay Peshko: "Reactors in the Back Yard and the Innovator Out in the Cold"]

[Text] Kuznetsovsk, Rovno Oblast—**Engineer Nikolay Peshko devoted 15 years of his life to nuclear energy. His labor book is dotted with notes of thanks for proposals for streamlining. Therefore he knows about "nuclear" affairs from more than just hearsay. He has exerted immense efforts to increase the safety of nuclear power plants. But with time his abilities have come to be no longer needed...**

With the beginning of the construction of the nuclear giant on my native Rovno land I left the prestigious design institute in Lutsk and got a job on the construction of the Rovno nuclear power plant.

Along with my colleague and with the support of the head engineer of the Yugenergomontazh trust, we introduced solutions that made it possible to accelerate the construction of the first and second units by several months. But others took the credit for our proposals. Moreover, they began to blatantly persecute and blackmail me.

Why? It was retribution for disobedience—I had refused to sign some "fake" documents. By a special decision of the USSR Ministry of Power and Electrification, the RAES [Rovno Nuclear Power Plant] director, V. Korovkin, was made directly responsible for organizing the work for checking on the sealing of the welded seams of the protective shells of the reactors and checking for tightness and adjustment of the sealing equipment. But it was not checked in time, before the concrete was applied over the seams, and they were covered up with all kinds of structural elements. The sealing equipment was not checked and it was not adjusted. That is why there are holes in the protective shell. The reactors actually operated out in the open air for 10 years.

The operation of a nuclear power plant in such a condition is categorically prohibited by domestic and world safety rules. Moreover, there were also many other imperfections on the units.

As a specialist I assure you that "science" saw to everything so that the units would be reliable and safe. And it was only a negligent attitude toward safety and the drive for awards and glory that led to this situation.

I tried to draw attention to this while it was still under construction. But what good did it do! "That is none of your business!"—they told me, and that was the end of it.

But the time came to start up the units. Because of their imperfections they did not operate at full capacity for a long time, and this meant failing to produce billions of kilowatt-hours of electric energy. In the GDR, Hungary, and Czechoslovakia, reactors like these reached their planned capacities much more quickly.

In 1982 I sent a letter to the minister of power and electrification. But, understandably, nobody paid any attention to my arguments.

The bosses did not like my "independence." I had to "emigrate" to Tyumen. But a year later I returned to my native region and found a job in my specialty. But after somebody made a few phone calls I was let go. Incidentally, I managed to introduce a technical improvement proposal, because of which the third power unit of the RAES produces an additional 20 million kilowatt-hours...

In 1985 I left the prestigious position of deputy manager of the Vladimiretskiy branch of Stroybank [State Construction Bank] and transferred to a job at an independent enterprise doing startup and adjustment work on a nuclear power plant which had just been organized. My colleagues at the laboratory for emergency localization systems and I eliminated thousands of leaks in the protective shells and sealed and adjusted the sealing equipment. We worked with toxic substances in radioactive premises with a complete lack of cooperation from the leadership. But we did not stop because we were aware of the importance of this work.

The protective shell is an immense structure and it cannot be sealed completely. And the safety norms do not require this: If during an emergency no more than 0.75 percent of the air or steam contained within the shell "leaks" out, its sealing is considered to be adequate. On the third unit we managed to achieve almost the ideal seal—better than the normative. Before the startup of the first and second units we tested the shell under a pressure of 0.5 atmospheres instead of the maximum emergency pressure—2.5. And we determined that the sealing defectiveness was 68 percent. And after additional calculations they came to the conclusion that...this was enough.

In reality, on the first and second units in 1988 the sealing defectiveness of the protective shells instead of 0.75 percent was all of 380 percent! Before 1990 we managed to reduce it to 180, and last year it approached 100 percent. This was still 130 times worse than it should have been. But the possibilities of improving the airtightness had still not been exhausted...

The economic effect from the improvement proposal exceeded a million rubles. But I was paid the author's remuneration only after the case was taken to court, and this took a whole year.

Some people might be surprised: The energy units are in operation, they have been inspected by the IAEA [International Atomic Energy Authority] and Gosatomnadzor. Everything would appear to be in order. But in response to my letter the chairman of Gosatomnadzor, N. Shteynberg, actually agreed that the protective shells do not meet safety requirements, but he did not think the violations occurred because of anybody's lack of responsibility but because of the imperfect scientific and technical documentation.

This is not merely about a potential threat. At the RAES there have already been cases where immense amounts of radioactivity have escaped into the environment. As early as January 1982 there was considerable damage to the reactor circuit on the first unit. The unsealing occurred in a steam generator—the only place through which the radioactive water from the reactor could escape out from under the protective shell. Even if the shell had not had any holes. So in the Rovno region they "consumed" "their

own" radionuclides long before Chernobyl. The truth about this did not spread very far.

On 5 and 13 December 1992, right at a time when the Rovno people's deputies were there, there were two emergency shutdowns of the second energy unit. According to reports from the administration of the nuclear power plant in the local newspaper ENERGIYA, there was no discharge of radioactivity. But after analyzing the reports and the operation of the nuclear power plant during those days, I came to the conclusion that the reactor circuit had been damaged again and it was in the steam generator. Now I am sure of that. True, the damage was considerably less this time. But it is not likely that they avoided radioactive discharges this time either. But they said nothing about them for this would destroy the legend about the safety of the nuclear power plant.

Why do such terrible accidents occur? Were the scientists and designers to blame again? Indeed the designers did not envision this stupid attitude toward the safety of the units. In just three years the steam generators on the first unit experienced such immense thermal loads 116 times, even though, according to the design, this number could not exceed 200 during the entire 30-year period of operation. This is a result of the fact that the units were started up "cold," with no attention to the quality of the startup and adjustment work and testing during the assembly of the equipment. And I am sure that it was precisely because of this negligence on the third unit that the cables which were supposed to have added strength to the unit's protective shell are breaking. Suffice it to look at how they are rusting on the fourth unit, whose construction is not complete. And they accuse the plants...

Will we really have to continue to tolerate such disgraces at the nuclear power plants and around them? Was Chernobyl not enough for us? Everywhere you hear that the laws are not working. But are the procuracy, the courts, and other law enforcement organs working as they should? Nuclear energy, which may be the highest of the creations of human reason, requires a reasonable daily attitude toward it. In this branch, especially among its managers, there should be people of high morality working.

The sooner we get rid of the "nuclear mafia," which is living with the traditions of the old Ministry of Medium Machine-Building, the sooner we will gain hope of preserving life for ourselves and for our posterity. That is our sacred duty. Possibly it is because of our callousness and passivity that God is punishing Ukraine.

Ukraine: Environment Minister Calls for 'Sustainable Development'

93WN0317A Kiev GOLOS UKRAINY in Russian
4 Mar 93 p 3

[Article by Yuriy Kostenko, minister of environmental protection of Ukraine: "Reforms Are Not Conducted Single-Handedly When a Country Is in a Crisis. And Not Just One."]

[Text] Today practically all the territory of Ukraine is in a deep ecological crisis. The loss of an environment favorable to human beings along with the economic decline has led to

tragic consequences. In 1991 the growth of the population of Ukraine was less than its natural attrition. The Ukrainian ethnos is beginning to die out.

But neither this situation nor the global tragedy of Chernobyl moved us to take a new attitude toward problems of environmental protection. Yet the success of the economic reforms begun in Ukraine depends on ecological factors. Calculations show that if we continue to ignore ecological factors, it will lead to such a condition of the environment that expenditures on providing for conditions suitable for human life will cancel out the achievements of a market economy, even if it is operating successfully.

Now ecological problems are closely interwoven with economic, political, and legal ones. And this means that it is simply absurd even to consider them, not to mention solve them, separately.

Analysis shows that the causes of the deep ecological crisis lie mainly in the prolonged semicolonial status of the Ukrainian state and the "cost-based" economic system of business, which satisfies mainly the needs not of society but of production itself.

Under the conditions of the rapid growth of the technogenic influence on the environment there has been a very rapid and catastrophic depletion of natural resources of Ukraine, above all sources of energy supply (up until the seventies Ukraine exported energy sources). In certain cities of Ukraine today the damage from chemical pollution of the environment is equal to the effect of radioactive contamination with a dose of 180 rem for 30 years. This exceeds even the norms for radiation of professional nuclear energy workers.

Legal regulation in questions of environmental protection, which has been adapted to the administrative-command system over the decades, has not contributed to the creation of the necessary mechanism for protecting nature either. The empty rhetoric of the majority of Union legislative acts and the lack of a mechanism for their implementation led in practice to a situation where the development of society meant the destruction of nature...

The acquisition of independence, the incipient political reforms, the democratization of the society, and the transition to market relations create favorable conditions for solving ecological problems. But today the deep ecological-economic crisis can no longer be resolved with ordinary administrative-legal levers. Escape from the existing situation is possible only if, along with the economic reform, there is also ecological reform, if the protection of nature is perceived not as an obstacle but as a possibility of further increasing the state's economic might, if ecological requirements are introduced into all areas of the economic reform, even if it takes unpopular measures.

We are speaking about more than just various methods of fighting pollution. Ecologization of the economy should be regarded as the development and implementation of a state program for the use of natural resources. Minerals, water, soil, air, various kinds of animals, etc. should be regarded as national economic resources used in production. And they have the corresponding value, which must be compensated for. This approach makes it possible for

the state to administer a balanced policy for both the use and the reproduction of natural resources and enables us to avoid steady growth of ecological costs as a part of production costs. The result would be a balance between the material demands of society and the qualitative condition of the environment. Based on this, it is necessary to create mechanisms for determining the value of natural resources and payment for their use, to introduce tax breaks for resource-saving and ecologically pure technologies, and to introduce economic sanctions for above-normative use and pollution of environmental resources. All these measures, which should become major parts of the new state policy of Ukraine in the area of the use of natural resources, will ultimately lead to a situation where it is disadvantageous to pollute the environment and use excessive quantities of resources.

Along with the formation of an economic mechanism for the use of nature, it is necessary to provide for state support of the ecology business, to form a market for ecological services, and establish a procedure for ecological certification and licensing. It is also necessary to develop and introduce a mechanism for compensation for ecological losses to Ukraine resulting from the movement of pollutants across borders: through the operation of main petroleum and gas lines, electric power transmission lines, and transportation of cargo by automotive, rail, and water transportation.

The introduction of an economic mechanism for the use of nature into all units of the new system of management should be combined with a gradual increase of state financing of environmental protection programs. The deep economic crisis is impeding this today. Therefore we must change the principles for the formation and use of state allocations. In order to provide financing and credit for ecological investments and state measures aimed at protection and reproduction of the natural environment, it is necessary to create a national ecology fund and an ecology bank. Their activity should enjoy state support. In the structure of the state budget even this year we must single out a separate section: "Protection of the environment." The Ministry of Environmental Protection should be the state client and distributor of these funds, using them in these difficult times exclusively for solving the highest-priority ecological problems.

The crisis situation also raises point blank the issue of a significant increase in the effectiveness of state management of environmental protection activity. Because of the lack of a unified system of management in the area of environmental protection and ecological safety in the former USSR, a number of ministries and departments independently monitored their production activity, and some of them conducted their own, branch policy in many important areas of the use and protection of nature, thus worsening the ecological catastrophe. And the Union's environmental protection organs for the most part merely stated that the quality of the environment was deteriorating. It was largely this arbitrariness that brought about the tragedy of the Aral and the Semipalatinsk nuclear proving ground, the nuclear disaster in Kishytym, and the explosion of the Chernobyl reactor. Unfortunately, the system of environmental protection activity in Ukraine

still has many of those shortcomings which existed in the Union organs. The Ministry of Environmental Protection of Ukraine has been deprived of the proper legal, economic, financial, and other levers necessary for performing the functions assigned to it by the law "On Protection of the Environment."

One can expect changes for the better only under the condition that the ministry as a state organ has the status and functions which will enable it to conduct a comprehensive state ecological policy, which guarantees the ecological safety of current and future generations and makes it possible to regulate ecological-economic activity in industry, agriculture, and transportation, in the development of cities and regions, military affairs, interstate relations, and many other spheres. To do this environmental protection organs must be given extremely broad legal, administrative, and economic authority.

Taking all these measures into account, it is necessary to make changes in existing legislation and develop new legislative acts regulating the activity of state, commercial, and private structures. Actually we will have to create a new area of law—ecological law, on the basis of which it will be possible to conduct ecological reform. But regardless of how perfect our legislative acts may be, they will be "dead" without an effectively operating judicial system. But there are problems here too. Because of the legal fuzziness of the concept "ecological crime," it is impossible to make full use of the mechanism of judicial liability for ecological violations. Making additions and changes to the Administrative and Criminal Codes, introducing stiff fines, and creating a special organ for state ecological control, a kind of "ecological militia," in the near future could change the situation for the better.

The role of public organizations will increase significantly during the course of the ecological reform. During past decades the role of "green movements" has been almost the decisive one in the work of protecting nature. It was the mass public demonstrations after the Chernobyl disaster that led to the revision by the government of Germany of many points of its nuclear policy and conditioned the transfer of functions and authority concerning the safety of nuclear electric power plants to the Ministry of Environmental Protection, thus making it possible to conduct a unified environmental protection policy in all spheres of production.

The ecological catastrophe in Ukraine demands a new level of public activity. We need a kind of constructive opposition to the actions of the government in the area of environmental protection. This pertains primarily to alternative proposals regarding the strategy of basic ecological research, ecological expert assessments, the development of environmental protection programs, and others. At the same time there must be support and assistance for state organs. Above all in widespread educational work, raising people's ecological awareness. In the future public organs will have to be the uniting link of the entire system of law enforcement organs and help them.

The proposed measures will make it possible to change over to a new fundamental principle of economic activity of our state—the principle of stable development. The

essence of this principle consists in conducting an ecological-economic policy which will provide for satisfaction of the reasonable material demands of society (with unavoidable, strictly limited pollution of the environment and reasonable exploitation of natural resources), and at the same time it will not threaten the right of future generations to live in a healthy environment and satisfy their needs for natural resources. Only under these conditions will Ukraine be able to overcome the ecological crisis and join the economically developed and prospering countries of Europe.

Ukraine: Bombers To Be Converted Into Ecological Patrols

AU2303224393 Kiev DEMOKRATYCHNA UKRAYINA in Ukrainian 18 Mar 93

[Unattributed report: "Military, But Peaceful, Aviation Is in the Sky"]

[Text] The question of the fate of strategic bombers stationed in Ukraine seems to have been solved. For example, it is planned that TU-95 aircraft, after they are equipped with special instruments instead of weapons, will be used as ecological patrols under the auspices of the United Nations. The program for the conversion of bombers has been elaborated by scientists at Ukraine's Academy of Sciences and the command of Ukraine's Armed Forces Long-Range Aviation.

Ukraine: Nuclear Plant Director Concerned About Nuclear Waste

AU2303093893 Kiev HOLOS UKRAYINY in Ukrainian 19 Mar 93 p 6

[Interview with Volodymyr Kostyantynovych Bronnykov, director of the Zaporizhzhya Atomic Electric Power Plant [AES], by Volodymyr Yeremenko; place and date not given: "Atomic Plants Must Operate and Not Just Survive"]

[Text] The Zaporizhzhya AES [nuclear power plant], which is the largest in Europe, needs no special preamble. The plant, whose five units were commissioned between 1984 and 1989, has incorporated all the best qualities that nuclear power technology has today. In 1992, the nuclear engineers in Zaporizhzhya produced 31.4 billion kilowatt-hours, an eighth of all the electricity generated by all the Ukrainian power stations.

It is worth meeting Volodymyr Kostyantynovych Bronnykov, director of the Zaporizhzhya AES. He was born in 1943. A professional nuclear specialist. From 1976 he worked at the Chernobyl AES, where he rose from shop manager to deputy engineer in chief in charge of the exploitation of the first series of the Chernobyl AES. In June 1985, he was appointed engineer in chief at the Minsk Thermo-Nuclear Power Station, which was under construction. However, things took a different course. Having arrived on 26 April 1986 in Prip'yat with his family, he did not hesitate to become involved in the work aimed at localizing the accident in the most difficult and dangerous places. He had to leave the zone only after he had been exposed to a high dose of radiation. Since August 1986, he has been director of the Zaporizhzhya AES.

[Yeremenko] We know how complex and all-embracing is the post of an AES director. Still, what is your particular concern, Volodymyr Kostyantynovych?

[Bronnykov] The problem of processing and storing used fuel. This problem has become extremely acute. Since the beginning of 1992, not a single container has left Ukraine for Krasnoyarsk to undergo reprocessing, as was the case before. All of these tanks have accumulated at Ukrainian AES's, including the one in Zaporizhzhya, in settling tanks [baseyny vytrymky] or in other temporary containers.

[Yeremenko] How do you see the near future?

[Bronnykov] If the situation does not change, we will soon have to shut down the nuclear reactors. In this connection, I want to mention that in Russia, all last year, staff at the mining and chemical combines were on starvation rations. People were sent on compulsory holidays because there was no money to pay their wages.

[Yeremenko] Where is a way out of this nuclear-fuel quandary?

[Bronnykov] There have long been no problems among specialists. This was confirmed yet again at the conference held in the middle of February by the directors and engineers in chief of Ukraine's AES's and the heads of leading Russian mining and chemical combines, the Novosibirsk and Krasnoyarsk research institutes, and the "TVEL" [expansion not known] concern. We coordinated schedules for transporting spent nuclear fuel [SNF] from Ukraine to Russia and specified the procedures of interaction between the power stations and the fuel processing plants. We reached an agreement to create in Krasnoyarsk a joint enterprise at the international level, taking into account all the ecological norms. It is true that Ukraine will be obliged to take the residual waste from the processing and bury it at home. It is the only possibility to resolve the problem and get between 10 and 15 years respite, during which Ukraine will be able to create its own nuclear industry as has been done by Japan, Belgium, and other countries that use atomic energy.

[Yeremenko] What is the reason for the failure of these agreements?

[Bronnykov] I think that here the politicians are "to blame." Today, the resolution of the problem of dispatching SNF from Ukraine to Russia is being delayed by Russia's Supreme Council Commission for Ecology. Russia has adopted a law that forbids bringing radioactive waste into the country for permanent or temporary storage. In the whole world, there exist amendments to such laws with regard to the import of SNF, I stress, for reprocessing. We also have an interstate agreement with Russia, but this hastily adopted law is interfering with its implementation. I have spoken to some Russian parliamentarians. They expect that this question will be tackled by their colleagues in the Ukrainian parliament. Meanwhile, things are at a standstill.

I would also like to turn to Ukraine's people's deputies on yet another important problem. In the past, the Supreme

Council established a moratorium on commissioning new units at Ukraine's AES's. Today, it is clear to everybody that it is the most up-to-date and safe units that were thus banned. It seems to me that many deputies already have a different opinion regarding this moratorium, but, obviously, they would like the government to adopt a corresponding decision. However, the government is in no hurry to take this step.

[Yeremenko] What is presently the state of the AES sixth unit?

[Bronnykov] The unit is practically ready for commission. We have double checked all its systems, taking into account all the extraordinary situations at previous units. In terms of its level, it is the latest achievement of nuclear power technology. Recently, Ukraine's people's deputies who are members of the Commission for Fundamental Branches of Industry visited it.

We showed and told them everything and they became convinced that the quality of the equipment, the reactor systems, and the reactor itself enable the new unit to function perfectly safely.

As regards the moratorium, in my opinion, it must be recommended for the plant's initial capacity. We will not increase it. The commissioning of the sixth unit will make it possible, first, to increase the annual volume of electricity generated by approximately 6.5 billion kilowatt-hours and, second, to save for Ukraine more than 4 million tonnes of conditional fuel, more specifically, coal or fuel oil. In addition to that, we will have the opportunity to carry out repairs and modernization of the plant in calm circumstances, which will ensure the highest safety levels. Even now that we have five units, we never operate all of them simultaneously. Operations are scheduled in such a way that one unit is always under repairs or is halted for refueling.

[Yeremenko] In other words, once the new sixth unit is commissioned, you will be ahead of other AES's?

[Bronnykov] At present, only two units may be commissioned in the entire CIS—ours and the fourth unit at the Balakovskaya plant in Russia. Incidentally, the decision to construct new nuclear power units has already been adopted in five Russian oblasts. The government has granted credits amounting to 200 billion rubles for the development of the fuel and energy complex. There, everything seems at least to be clear. At the same time, we do not have a concept for the development of power engineering, including nuclear power engineering.

[Yeremenko] However, for more than a year there has been talk about the need to elaborate such a fundamental state document. Several drafts have been made public on this occasion.

[Bronnykov] A joint commission of Ukrenergo [Ukraine's Main Administration for Energy], Atomenergo [the Main Administration for Nuclear Energy], and the Academy of Sciences is currently working, but it gives more attention to replacing the organic fuel at DRES [state regional electric power plants] and to other problems of coping with

the energy crisis. As for the prospects for the development of power engineering, such a document is unlikely to appear in the near future.

[Yeremenko] What, in your opinion, needs to be done urgently to rescue Ukraine's nuclear power engineering?

[Bronnykov] First, to restore, on a new foundation, those ties without which we will simply not survive. This includes, first and foremost, deliveries of fresh fuel from Russia and the reprocessing of used fuel. In the former USSR, nuclear power engineering was an international sector.

Ukraine: Defense Ministry Works To Eliminate Uzyn Aviation Fuel Pollution

AU2403202893 Kiev DEMOKRATYCHNA UKRAYINA in Ukrainian 23 Mar 93 p 2

[DEMOKRATYCHNA UKRAYINA News Service report: "...Servicemen Have Taken to Ecology"]

[Text] Ecological work began in Uzyn, which is situated in Bila Tserkva Rayon of Kiev Oblast, where the soil is literally saturated with aviation fuel. As stated by the Press Service of Ukraine's Ministry of Defense, the department had ordered the elimination of the consequences of environmental pollution in this area, where a long-range aviation garrison is stationed. The Defense Ministry Central Design Institute was authorized to fulfill the design and research work to determine the extent of contamination and to make scientific recommendations on how to purify subsurface water deposits of petroleum products. Fuel storage in Uzyn has been halted and reservoirs and water pipes prepared for fault detection. Four tankers with trailers are currently delivering water to the settlement. Another 20 tanks will be installed on carriages. Ukraine's minister of defense ordered that a new water pipeline should be built to connect Uzyn and Bila Tserkva.

Ukraine: Conference Discusses Safety of Chernobyl Sarcophagus

PM2503143393 Moscow Ostankino Television First Channel Network in Russian 0600 GMT 24 Mar 93

[From the "Novosti" newscast: Video report by Vladimir Lyaskalo and Yuriy Muravyev, identified by caption; figures in brackets denote broadcast time in GMT in hours, minutes, and seconds]

[Excerpt] [061311] [Video shows conference hall] The Ukrainian Union of Civil Engineers has organized a scientific-practical conference to discuss the problems involved in turning the Chernobyl nuclear power station's containment structure [obyekt ukrytiya] into an environmentally safe system. Practical specialists, construction personnel, fitters, military engineers, designers, physicists, and chemists, virtually all of whom took part in mopping up the aftermath of the accident, met for this unique brainstorming session. They all support a single concept: The sarcophagus is a temporary, unreliable repository for nuclear fuel and radioactive materials and it is criminal to place it in a capsule and leave it to our descendants.

In 1986 the designers [proyektirovshchiki] guaranteed this structure for 20-25 years. One-third of that period has already elapsed. And who knows when this unique structure will collapse of its own accord from age without waiting for an earthquake or a meteorite? As you know, the Ukrainian Government has announced a competition to solve the problem of the Chernobyl power station's No. 4 power unit, and I think that the work produced by this meeting of practical specialists will provide useful competition for the best foreign and national firms taking part in this tendering. [061427] [passage omitted covering interview with V.A. Pinchuk, chairman of the conference organizational committee] [video shows mockups of Chernobyl power station, blueprints]

CAUCASUS/CENTRAL ASIA

Armenia: Debate on Restart of Nuclear Station

PM2303132593 Moscow Ostankino Television First Channel Network in Russian 1800 GMT 18 Mar 93

[From the "Novosti" newscast: Video report from Yerevan by Karen Khumaryan and Mels Nersesyan, identified by caption]

[Text] [Announcer to camera] In Armenia the need to start up the Armenian nuclear power station again was discussed today.

[Khumaryan over video of President Ter-Petrosyan followed by exterior and interior of Armenian nuclear power station] In accordance with a suggestion made by the president, the debate took place behind closed doors. Understandably so. The importance of the Armenian nuclear power station is not only economic but also military and strategic. Many people in Armenia today are afraid not so much of environmental pollution from the station, or even of the fact that it is located in a seismically highly active zone and could not withstand even a force-eight earthquake: They are afraid that, should it be started up again, it could become the target of a piratical air attack or an attack by a maniacal nationalist from a far-from-friendly neighboring country. In which case the Armenian nuclear power station could turn into a huge bomb which would wipe more than Armenia from the face of the Earth.

So the question as regards the Armenian nuclear power station is—to be or not to be. Whether we are to have light and heat and live in relative sufficiency, but also in permanent fear. Or to continue to have only an hour and a half to two hours of electricity a day and eke out a miserable existence unworthy of human beings. This is the dilemma confronting the Armenian parliament today. [video shows exterior and interior of Armenian nuclear power station including control room]

Azerbaijan: Environment Emergency in Sumgait City

NC2303132393 Baku AZERTAC in English 0519 GMT 23 Mar 93

[Text] Baku, March 22 (AZERTAC)—Today the State Committee of Azerbaijan on Ecology and Control Over

Purity of Environment stated the necessity to recognize Sumgait City—the big industrial center of the Republic—as the zone of emergency environmental state. Sumgait takes first place in the world through specific load of poisonous substances by 1 square kilometre/1200 tones by a square kilometre/. [sentence as received] Concentration of oil products and phenol in Sumgait's defined area of water tops norm-limit in 7-10 and 14-17 times. The negative changes in environment are taking place at present in the city. These changes threaten natural ecological systems and complexes, peoples health, first of all the young ones. Every fourth child in Sumgait has various inborn abnormalities, and the rate of infant mortality tops average republican level by 2-25 percent. Maybe Sumgait is the sole city in the world that has cemetery for children.

Summarizing the list of mournful facts and the results of scientific analysis of the situation the state environmental committee supports the proposal of necessity to adopt the law on social protection of people suffered from long-term poisonous wastes of the environment, and measures of improvement of environmental situation in Sumgait.

Georgia: Biologist Views Effects of War in Abkhazia

93WN0296B Moscow ZELENYY MIR in Russian No 4, Feb 93 [Signed to press 17 Feb 93] p 2

[Interview with Roman Dbar, head of Sukhumi University Department of Botany and Zoology, conducted by Aleksandr Ivenskiy, under the heading "The Bell:" "Abkhazia: Everything That Will Burn Is Being Eradicated"]

[Text] *There is no child in this world given birth by its mother to face certain death. There is no house erected just to be knocked flat by a Hail rocket. Nor is there any place where a bloody war does not seem savage, unnatural and criminal. That banal truth particularly haunted me in Abkhazia, a land that would seem to have been created especially for happiness and enjoyment of life and love...*

Mansions have been burned down all along the coast highway. Untended livestock wander among houses deserted by their owners. Monkeys swing through unharvested citrus groves—refugees from the Sukhumi Primate Center. Along the front-line roads lie the carcasses of pigs shot for "rooting" among corpses. Death by starvation in the mountain towns around Tkvarcheli. And the voice of the besieged city: the sounds of axes, hollow, and of saws, more resonant. A cloud of smoke hangs over it from the wood stoves that are lit each morning. Everything that will burn is being eradicated, from centuries-old chestnut trees to wispy shrubs that yield virtually no heat...

Roman Dbar, 35-year-old head of the Department of Botany and Zoology, was caught by the war at Sukhumi State University, where admission exams were to have begun the next day. Six months later we met with him in the village of Lidzava, where he presently lives and works for the local administration.

[Ivenskiy] Roman, war is war, and probably no one is very interested in ecology right now. Nevertheless, what might be the possible effects of this war on Abkhazia's unique natural environment?

[Dbar] Not just Abkhazia's. No war is local, and the Abkhazian-Georgian war could have global effects on the European continent for an indefinite period of time.

This narrow coastal zone is one of the world's most populous migratory bird habitats, 253 species in all, including some that are rare or endangered. Even the Far East's fauna can hardly compare with our region's in terms of hoofed animals and large raptors. In the winter the Alpine zone becomes virtually uninhabitable; cold and heavy snow force animals to come down out of the mountains... To where? The force of the explosions here is so powerful that the artillery fire can be heard for tens of kilometers from the scene of the actual fighting. Changes in migration routes are something that has not been studied very extensively, but it is clear that it is by no means a completely innocuous phenomenon.

As for the uniqueness of Abkhazia's natural environment, it is attributable largely to the large number of endemics, primarily plants, some of which are relics of the Tertiary period. Often their geographical range covers only the few hectares of our Earth that lie in the narrow belt of subtropical zone lying between the spurs of the Great Caucasus Range and the Black Sea. There is the Samschit Grove and the relic Pitsunda Pine Grove, where the coastal lily and the *Cytinus* grow. Here we still find a number of species from the time of the last ice age, that is flora from the pre-ice age period. In the coastal zone there are limited geographic ranges of species of fauna that are registered in the International Red Book: the Greek tortoise, Aesculapius' serpent, and others... And that is precisely where the defensive line runs, and with it the most bitter fighting.

A unique primate center—unique anywhere in the world, not just here—has been destroyed, the Institute for Experimental Pathology and Therapy (IEPiT—*Institute eksperimental'noy patologii i terapii*). It is the oldest institute of its kind, having been in existence for 28 years, before there was anything like it in the United States. It is an institution with a huge body of highly-skilled specialists with very solid backgrounds, equipped with the most modern equipment... Several thousands monkeys were released from their cages because it was impossible to take proper care of them. Some of them have been shot by soldiers, and others are still out "foraging" on their own.

Also unique in its diversity was Sukhumi's Botanical Garden and Dendrium, which were established in the 19th century. Their value was due to their collection of a large amount of type material, i.e. the material upon which description of new species is based. There was flora from every continent: American sequoias, rare specimens of African vegetation and a unique paleontology department, with world-class scientists working in it... Almost all of that has now fallen to the axe.

[Ivenskiy] You talk about the scientific infrastructure, but will there be anything, or rather any creature, to study after this war? Or are we already missing some rare species listed in the Red Book, perhaps the only ones of their species in the world, due to this Abkhazian "sorting out"?

[Dbar] Use of Hail multiple rocket launchers and SU-25 ground-attack aircraft has resulted in damage to the

Sukhumi Oil Depot and a milling combine in the village of Nizhnyaya Eshera, to the west of which there are relic oyster banks in the tidal zone. There is just no telling what the discharge of petroleum products and aggressive liquids (from the Orgtekhnika Plant warehouses) into the sea will do.

One fougasse mine, smoke screen or chloropicrin charge would be sufficient to scorch forests in the coastal strip, which is already suffering from the effects of the anthropogenic process. Fortunately for the environment, these events did not begin in the summertime, the period of greatest fire danger. Plus the front has now shifted, with the most intensive fighting occurring mainly in population centers, for instance around Gagra or along the Kolkhida, where a typically agricultural landscape predominates. So any talk of the complete disappearance of any unique specimens of world flora or fauna would be somewhat premature at this time.

[Ivenskiy] Could one say that at this time probably the greatest threat and the greatest damage is due to the heedless human activity that is inevitable in wartime, i.e. erection of fortifications, bunker construction and digging of trenches?

[Dbar] Of course. And in regard to that it should be noted in particular that the ability to differentiate one's attitude toward the environment in a crisis situation is determined by a society's level of development and capabilities.

Boards are needed to build bunkers in Sukhumi and Tkvarcheli, and in many other cities and towns people have to heat their homes and prepare food. Our village of Lidzava as well is virtually without fuel. However, the relative distance of Pitsundskiy Rayon from the current front line has allowed us to institute a policy whereby firewood may only be gathered in the presence of and with the direct participation of a forester.

People realize that they must not touch the forests that grow in the mountains. The mountains would simply slide down onto the village in the first heavy downpour, and then there would be no way to live here.

If we look at things from a broader perspective, then perhaps we should talk about our national mentality, about the religious affinity for a pagan relationship with nature that is traditional to the Abkhaz people. Hunters' traditions forbade them to kill more than one hoofed animal per day. On private estates it was the custom to have a small forest park that was looked after and taken care of. Slopes were not cultivated, and the practice of allowing farmland to lie fallow under turf was widespread. There was magnificent pasture land, and cattle raising was highly developed... Of course, all that has been altered considerably now; the 1920's marked the beginning of extensive slope cultivation in connection with the introduction of tobacco and other cash crops, and the resulting environmental disruption was substantial. Nevertheless one must hope that the former attitude toward nature has not been eradicated at the genetic level.

[Ivenskiy] Roman, you mentioned efforts to regulate wood cutting in Lidzava. What about the rest of Abkhazia?

[Dbar] Of course, the situation is very grave. It is an objective fact: we are at war, and every resource is being put toward winning that war. Secondly, a serious problem for us, perhaps the most serious of all, is the power vacuum. As soon as the old guard, the apparatus, started the war they proved absolutely incompetent and resigned of their own accord. For better or worse state administration, which had at least included a functioning environmental protection committee with its whole bureaucratic structure and nature preserve administration, simply ceased to exist. The system was in a way decapitated. The previous head had not been a very good one, but it was the only one we had. So right now is the time for this matter to be dealt with at the lowest level, at the level of the local administration and individuals.

To me as a biologist it is clear that at this time the most pressing issue for us is development of new environmental thinking based in part on old, traditional land use concepts. There is no other solution. Moreover, here our environment is perhaps more closely interwoven with the economy than anywhere else. Virtually all of Abkhazia is a recreational zone, and preserving its environment is the number one prerequisite for development of our regional economy.

Two hours after our interview I was already far from Lidzava— on the front lines along the Gumista River. There the thinking was different. A building was burning in Nizhnyaya Eshera, Hail rockets crisscrossed the sky, and people were being swept away and killed in this hell... But there were still some people who remember what Abkhazia and Georgia were like in peacetime, and who are thinking about what they will be like when this war is over. Therein lies the guarantee that this war, cursed by both peoples, will end someday.

BALTIC STATES

Latvia: Companies Sell Russian Chemical Waste for Fuel

OW1903211293 Moscow BALTFAX in English
1746 GMT 19 Mar 93

[Following item transmitted via KYODO]

[Text] The Diena newspaper has reported that Latvian companies Solo, Vidikons, and Otrdiena sell chemical waste to the population who believe they are buying fuel for their homes. These companies show a quality certificate issued by the Russian research and production business "Cheremushki" and signed by G. Chernova, its director.

The newspaper reports that Latvian environmental protection workers have determined that the "fuel" is a mixture of equal amounts of triethylamine (which affects vision, kidneys, lungs, and heart) and xylidine (which affects the skin and blood composition and causes tumors).

Latvia: Environmental Protection Accord To Be Signed With Germany

OW2303195793 Moscow BALTFAX in English
1924 GMT 23 Mar 93

[Following item transmitted via KYODO]

[Text] The Minister of the Environment, Nature, and Nuclear Reactor Safety of Germany Klaus Topfer is expected to arrive to Riga on April, 14 to sign the Latvian-German accord on co-operation in the field of environmental protection. This information was given to "Baltfax" by the head of the press-center of the Latvian committee for protection of the environment Uldus Cakuls.

He clarified that the signing of the treaty is to occur as part of the official visit of K. Topfer to the Baltic countries.

GERMANY

Effects of Hoechst Chemical Leak Examined

93EN0233A Hamburg DER SPIEGEL in German
Vol 47, No 10, 8 Mar 93 pp 48-64

[Unattributed article: "Poison Discharged Through Factory Gate—Populace Barely Escaped Catastrophe in the Hoechst AG Chemistry Accident"]

[Text] *God created 91 elements, man more than a dozen, and the Devil one—chlorine.*—Otto Hutzinger, Professor of Ecology and Chemistry in Bayreuth.

A cupola of extra-heavy steel shields the production facility from the outside world. All entrances and egresses are covered by heavy hydraulic locks, as they are in an atomic power plant.

In the labyrinth of pipelines and reaction tanks that is hidden behind it, not a human soul can be seen: the chemical processes are being directed from a safe distance by electronic control custodians.

Now and then a worker goes on monitoring rounds through the plant that is operated by the chemical firm of Dow near the small town of Stade in Lower Saxony, but he does not go unprepared. A helmet, special glasses, walkie-talkie, respirator mask—they are all part of the equipment; and finally, there is the most improbable, but quite possibly, the most important utensil: a small cardboard sign that is to be stuck to the work clothes.

The cardboard is treated with a chemical that turns red the moment just a droplet of the substance that is circulating in the shining metal tubes emerges. By the time the stuff is "perceived by the nose," says Dow's manager Bernhard Bruemmer, it can "be too late already."

For in the plant, the super-toxin phosgene is produced. A fraction of just one five-millionths of this substance in a cubic meter of air can be fatal to human beings within 10 minutes; anyone who inhales it experiences shortness of breath, the lungs expand, cardiac arrest occurs.

If the entire 10 tons of phosgene that constantly pulse through the pipeline network of the Dow plant in Stade were suddenly to be released into the surroundings, presumably, within a radius of two to three kilometers, all life would be extinguished—Chernobyl on the Elbe.

Sealed within the system of pipes in such a way as to be leakproof, the devilish substance serves the chemists as a many-sided preliminary product for mass-produced goods: Lego blocks are made of this substance, as are baby bottles, motorcycle crash helmets, upholstered chairs, mattresses, or medicines—goods for use throughout the world that find their way into every household, every car, every office.

Just as the axe is used as a tool in splitting wood, the chemically active phosgene (chemical formula: COCl_2) is used in a wide variety of chemical processes as a tool. Above all, one element that is bonded in phosgene, in addition to carbon and oxygen, chlorine, assures the sharpness of the blade that splits substances and paves the way for new syntheses.

Chlorine has an acrid odor, it is greenish-yellow in color, and many people know it only as a disinfectant from the public swimming pool. Yet, in the chemical industry, chlorine serves as a key substance for a well-nigh endless number of reactions—it is to chemists what mortar is to masons.

Sixty percent of all chemical products contain portions of chlorine or are produced with the aid of the yellow gas: credit cards to drugs for whooping cough, wallpaper paste or telephone dial depressions, rat poison to propellants for rockets—the total number is in excess of 11,000 different products, in the production of which chlorine plays a role.

Since 1950, worldwide chlorine production has increased 10-fold, to approximately 40 million tons per annum. Chlorine, at one time a lethal weapon in WWI ("mustard gas," "green cross"), is today a mass-production agent that can hardly be thought away. The career of the toxic gas and its compounds is, as Dow manager Bruemmer puts it, "the technology success story of the 20th century."

Nylon stockings and vapor radio, artificial penicillin and anti-malaria drugs, solar cells, and computer chips—no other chemical has, in the last six decades, promoted so much technical innovation. Chlorine was a key element to post-war progress, a kind of magic wand for the economic miracle.

But, no other substance has made such a thoroughgoing contribution to the growing destruction of the environment. At all quarters, damage is coming to light that is so grave that in the meantime, it is not just the critics who are asking which feature outweighs the other, the curse or the blessing.

The question came up yet again when, late last month, in the vicinity of Frankfurt's Hoechst AG, a yellow, toxic rain fell on streets, playgrounds, and allotment gardens. As late as last week, the chemical firm's shock troops went to work, using special machines to grind down street pavements, to remove contaminated layers of soil, and to wash down roofs, downspouts, and door latches.

In irritation the inhabitants observed these cleaning efforts, and as they did so, they had good fortune mixed with bad. In an older reaction boiler in the Hoechst plant in Griesheim, where, with the help of chloronitrobenzene and other additives, a coloring component (trade name: ortho-Nitroanisol) for the production of automobile paints, plastic parts, and fabrics for clothing was being mixed up, the solution was overcooked as a result of human error on the part of those in charge of the operation.

Through a safety valve, 10 tons of the mixture, with traces of hazardous dioxins, and perhaps a dozen other substances, most of which contained chlorine, and some of which have not yet been tested with regard to their possible effect, were blown into the surrounding area. A group of 10 toxicologists were summoned from around the country to the Hessian Ministry of the Environment, and they determined, by way of "preliminary assessment" that the inhabitants were not "exposed to any discernibly elevated risk of cancer as a result of the yellow toxic cloud."

But the chemical Maximum Credible Accident [MCA] had been much closer than the experts had been willing to admit: Approximately 15 tons of the reactive mixture were still boiling in the boiler at 170 degrees [Celsius]. Had this brew been heated just a bit more (to 200 degrees), conditions would have "been ideal," says Greenpeace chemist Manfred Krautter, to produce immensely large amounts of the ultratoxin dioxin. The worst contamination of the region would have been the result, and it would have been hardly inevitable.

Krautter's conclusion: The Hoechst plant, in the midst of one of Germany's most densely populated areas, "just barely escaped being a Seveso catastrophe."

The disruption at the Hoechst plant hits the chemical bosses in a vulnerable area. He goes on to say how difficult it is, especially in older production sites, to control the risks associated with dealing with chemicals that contain chlorine. As if that were not enough, the entire industry is already under enough pressure due to its much-debated chlorine products. Environmental groups are calling, ever more loudly, for a ban on the problem plastic polyvinyl chloride [PVC]. Approximately 80 municipal governments, from Bielefeld to Berlin, have refused, in the meantime, to use wastewater pipes, window frames, or even transparent coverings made of PVC in their construction projects or when purchasing office supplies. Paper manufacturers who have always, thus far, put their cellulose pulp through a chlorine bath, are switching more and more, to gentler bleaches.

Joschke Fischer, Hesse's minister of the environment, is finding out in a broad-based study those areas in which chlorine could be replaced most readily. Those who know, like author Karl Otto Henseling, who at one time worked for the German Federal Environmental Office, prophesy: "In the future, it will not be the growth of chlorine production that will be a measure of a country's progressive nature, but rather, its decline." (Footnote 1) (Karl Otto Henseling: "Ein Planet wird vergiftet" [A Planet is Poisoned] Rowohlt Taschenbuchverlag [Rowohlt Pocket-books] Reinbeck: 312 pp; 14.80 marks.)

The irony of history: It is precisely at the present-day Hoechst plant in Griesheim, where just over 100 years ago (in what was then the independent chemical plant Griesheim-Elektron), site of the world's first facility for the production of chlorine, that a mishap could provide the deciding impetus to rethink one's position on chlorine.

A change is needed: from the Arctic's eternal ice, to the sands of the Sahara, from the ooze at the bottom of the seas, to the atmosphere's thin air, chlorine compounds are found nearly everywhere in the world these days.

They find their way via the food chain into the flesh of fish and ruminants, and thus, onto human menus as well. Chlorine additives in clothing cause skin disorders (SPIEGEL 15/1992); admixtures to products that protect wood that were allowed up until a few years ago may be responsible for making thousands of families sick.

In many places, mother's milk is so heavily contaminated with dioxin, a substance that is related to chlorine, that in accordance with foodstuff purity regulations, its sale would

be prohibited. Babies have the softening agent PCB (polychlorinated biphenyls) in their fat, adult males have hexachloronaphthalene in their sperm. In the course of thorough check-ups, researchers in the United States have found 177 different chlorine compounds in human tissue, 43 of them in human semen.

Some of the definitely aggressive chlorine derivatives can corrode steel girders, or, like the herbicide that was used in the Vietnam War, "Agent Orange," defoliate entire landscapes. Others, such as perchloroethylene, which is commonly used in dry cleaning establishments, are suspected of causing cancer in human beings, and altering the genetic code.

Leukemias or learning disorders in children, weakened immune systems, or involuntary sterility—some researchers believe these are among the effects that may be attributed to chlorine compounds. It is true, however, that due to the many other influencing factors associated with such diseases, that causative links are difficult to prove.

It is certain that nearly all major environmental problems politicians and scientists throughout the world are trying to address, have to do, directly or indirectly, with the many-branched chlorine clan:

- Chlorine molecules that come from spray cans, refrigerators, and air conditioners, the so-called fluorochlorohydrocarbons (FCHCs), are cracking the ozone layer that protects the earth.
- Chlorine compounds from solvents, such as those found in paints or degreasing agents are, in addition to emissions from coal-fired chimneys and automobile exhaust, decisive factors in the greenhouse effect, the progressive heating of the earth's atmosphere.
- Plant sprays and insecticides containing chlorine, such as DDT, toxaphene, or PCP (pentachlorophenol), which are banned in Germany, but which are used on a massive scale worldwide, have an adverse effect on the ability of many animals to reproduce, thus contributing to species extinction.
- Household trash that has chlorine mixed into it, such as yoghurt cups, chocolate boxes, and worn shoe soles made of PVC constitute a hazard for the groundwater under the dumpsites, and they turn household trash incinerators into hazardous spewers of toxins, namely dioxins and furanes.

Whenever severe accidents occur in the chemical industry, and the incident has brought this to everyone's attention once again, they always have to do with the technology of chlorine, which is always fraught with risk.

Images of horror went around the world in 1986, when the Rhine turned red after a fire in a pesticide plant owned by Sandoz in Basel and countless thousands of dead eels, graylings, and perch floated downstream. Two years before, in India's Bhopal, in a chemical plant owned by the American concern Union Carbide, 4000 people suffocated in a toxic cloud that contained vapors of the phosgene by-product methylisocyanate.

Even much earlier than that, pictures from Seveso, images of children with faces disfigured by chloracne, unleashed

the first critical discussions surrounding the chemistry of chlorine. Since then, ecological groups, such as the Bund fuer Umwelt und Naturschutz [Association for the Environment and Natural Protection], have been calling for dispensing with this "irresponsible, risky technology."

Recently, these critics have been acquiring powerful allies. Thus, for example, a council of experts on environmental matters dared to go before a rather slow-moving committee appointed by Klaus Toepfer (Christian Democratic Union) [CDU], the German federal minister of the environment, with a declaration that insofar as the chemistry of chlorine was concerned, it was necessary to engage in some "basic rethinking" and even "to call the basic technology to doubt." In the Bundestag in Bonn, for the first time, the members of the committee of inquiry on "the protection of mankind and the environment" are examining thoroughly, for the first time, the benefits and drawbacks of chemistry with chlorine.

Even in industrial circles, critical voices are being raised. Thus, for example, the former chairman of Bayer AG, chemistry professor Eberhard Weise, admitted, to a small circle: "It is actually unworthy of chemists that we continue to build on chlorine."

Anyone who deals with chlorine must first manufacture it: the gas does not occur in nature. Indeed, the element, which is arranged as a halogen (salt-former) in the periodic system under number 17, occurs as salt, bonded in the form of chloride, in inexhaustible supplies throughout the earth. It washes the shores of the continents in sea salt, and it is stored in subterranean salt caverns. There are also chlorides in the human organism, particularly in the blood, in sweat, and tears.

But in this form, the chlorine is tamed, the bond in the salt crystal is so stable that, under natural circumstances, it cannot be released. Not until considerable amounts of energy are expended, in a chemical explosion, as it were, is it possible to separate the chlorine atoms from the salt. In this process, the substance has pumped itself so full of energy that the chlorine molecules are stretched to the bursting point, which renders them extremely dangerous.

But that is precisely what makes them so interesting for the chemical industry: with all their stored energy, the chlorine atoms strive to attain once more their original state, namely stress-free rest within the crystal of salt. For this reason, chemists have a willing playfellow in chlorine: if they offer it a molecular partner to which it can release some of its pent-up, excess energy, it immediately forms a firm attachment to it.

In this way, the chlorine, depending upon the offer the chemists make, reacts to an ever-lower level of energy. Like a rubber ball that bounces down a flight of stairs, it develops new reactive energy, again and again.

This property, which is highly welcome from the standpoint of industry, was not recognized by the scientists until long after the discovery of chlorine gas. In 1774, the chemist Carl Wilhelm Scheele was the first to extract the substance in a laboratory experiment. In the glowing heat of the soda factories at the end of the 18th century,

appreciable quantities of chloric acid gas (hydrogen chloride)—an undesired by-product—were formed for the first time.

Many years later, in 1890, in what is now the Frankfurt borough of Griesheim, exactly where the boiler's safety valve blew up, the world's first chlorine-alkali-electrolysis system was constructed. Even then, chemists were less interested in the chlorine; above all, they needed sodium hydroxide, to supply the booming textile industry with cleaners, the glass-blowing industry, and the soap manufacturers with raw materials.

The principle of chlorine-alkali-electrolysis has remained unchanged to the present day. Rock salt (sodium chloride) that has been dissolved in water is conducted through a container in which there are two electrodes.

Driven by the power of up to 450,000 amperes of intensity of current, the chlorine components are released and migrate to the positive pole, while hydrogen collects at the negative pole. What is left is a solution of sodium and hydrogen oxide, sodium hydroxide lye. In order to prevent the products from recombining with each other, either a porous separation wall is employed (the diaphragm method), or cathodes made of mercury, which combines with the sodium (the amalgam method), are used.

The first chlorine-alkali plants were established in regions where the pertinent natural resources were in abundant supply: they needed salt, water, and coal as a source of energy. Today, atomic power has assumed the role of coal. The Dow plant in Stade, for example, is within sight of an atomic power plant. The chemical plant's energy consumption, which is satisfied in part, to be sure, by its own facilities, consumes more than half of the Stade reactor's output, 340 megawatts per annum.

Chlorine plants are electricity-eaters: Just 20 of these plants consume as much electricity today as 42 medium-sized cities (100,000 inhabitants each), almost 3 percent of the energy produced in western Germany. The electricity flows at a super-saver's rate—a mere five pfennigs per kilowatt-hour.

The first wave of environmental destruction took hold as long as 200 years ago, with the soda plants. The chloric acid gas that was generated in the large coal-fired kilns was released into the open air via the smokestacks. It ate all the ironwork in the vicinity, locks and bridge piers in the rivers, tools and fittings in the factories. High though the smokestacks were built, in a large area around these plants, trees died, entire landscapes were laid waste.

There were also plants with chlorine-alkali electrolysis facilities. Workers who stayed for longer periods of time in the oppressive heat of the dreary cell rooms, in which, as in a coffin factory, row upon row of electrolysis tubs were installed, exhibited peculiar symptoms of illness. According to contemporary reports, they complained of "coughing, discharge, insomnia, loss of appetite, and dizzy spells." Physicians noted "the appearance of countless nodes on the entire body."

The peculiar disease is now known by the name chloracne. Even the workers of the first electrolysis plant evidently "fell victim to dioxin poisoning," as Henseling speculates.

His explanation: the electrodes were made of a mixture of coke and tar that could have reacted with the chlorine.

While medicine kept making progress with its research, the chemical bosses were having trouble finding markets onto which to dump the corrosive substance, which, like an unwanted twin brother, was being produced in ever greater amounts with the sodium hydroxide lye. Initially, the material was simply mixed with lime, and used to bleach cotton and paper.

Soon the paint and dye industry, which, at that time, was still recovering its preliminary products from tar, was showing interest as well. With the aid of chlorine, the artificial synthesis of indigo blue was a success. As a result of reactions with tar (which contained carbon), the first chlorine-carbon compounds came into being, and with them, a new dimension of possibilities was opened up, but so, too, was a new horizon of risk.

In rapid succession, all kinds of solvents, dyes, and narcotics were developed, and finally, in 1935, the plastic, PVC. No one was worried about ecological hazards. At the same time, as we know today, with the advent of chlorinated carbon compounds, particularly hazardous substances were released into the environment.

In nature, they hardly decompose at all; rather, they increase to play an increasingly significant role in the food chain. In addition, under certain circumstances, the dioxins known to do the most damage, can develop. Soil samples from the sediment of Saginaw Bay, Michigan, a traditional center of the chemical industry, brought some amazing knowledge to light. Dioxin contamination throughout the region increased parallel to the development of the chlorine chemical industry.

At the present time, in the Federal Republic alone, circa 3 million tons of chlorine are being produced. From what was originally a range of products it was quite easy to list, a broad network of intertwining applications has developed that not even the industry's experts can trace in all its intricacies. Werner Frey, of Munich's Wacker-Chemie [Chemicals] says: "We do not always know where our products end up."

If, indeed, as was the case recently in Romania's Hermannstadt, highly toxic chemicals containing chlorine that were produced in Germany turn up in wild dumpsites in Eastern Europe, the industry bosses play dumb. When, four years ago, on behalf of the [German] federal environmental office, Rainer Nolte and Reinhard Joas tried to find out from the Munich-based consulting firm of Ecotec what it was that the immense amounts of chlorine produced in the Federal Republic were being used for, the managers first cloaked themselves in silence.

For reasons having to do with competition, they claimed, they could provide no information, either concerning the amounts produced, or about the amounts that were left as waste. Hard to believe, but true. In a country in which the post office, by means of a direction-finding measurement device, can count the number of television sets owned by each inhabitant, the chemical industry, with its wide range

of products that have an impact on the environment, has been able to set itself up as a great unknown entity, and to do so with impunity.

According to individual research projects that have gone on for a number of years, Ecotec engineers compiled in 1992 the 460-page "Handbook of Chlorine Chemistry." Among the experts, it became a best-seller overnight. (Footnote 2) ("Handbuch Chlorchemie I. Gesamtstofffluss und Bilanz," [Handbook of Chlorine Chemistry I. Flow of All Substances and Balancesheet]. Federal Environmental Office, Berlin, 1992.)

For the first time, it becomes apparent how closely the individual branches of the industry are enmeshed with one another in this segment of the chemical industry where the so-called linked products are concerned.

Thus, the production of sofas, mattresses, or automobile seats is directly linked to the production of the ozone-killer FHCs; solvents for dry cleaning establishments, cosmetics, coatings for preserve tins, and special resin lacquers, for example, for the lines on a sail boat, are all tarred with the same brush. Even telephone dial depressions and toothpaste are made out of related substances, as are GoreTex jackets and wallpaper paste.

To be sure, chlorine is not always necessary. Often, the substance was just allowed to slip into the manufacturing process to avoid what have always been, in the case of this environmentally harmful product, relatively high waste disposal costs. As was the case with those soda plants from way back when, today, too, by-products that are not even wanted are produced in the chemical break-down and synthesis process. What could be more obvious than selling them, too?

"The boundary line between product and waste removal," says Ecotec researcher Nolte cautiously, cannot always be discerned "in chemistry." The former chairman of Bayer, Mr. Weise, puts it in more impertinent terms: he says "the emissions of the chemical industry" are nowadays "being driven through the factory gate as products."

Indeed, the fillers in the toothpaste, in the wallpaper paste, or in our breakfast yoghurt could be produced without this troublesome substance, if they had to be produced at all. And toilet drop-ins, or even deodorants for corpses that are made of the substance with the tongue-twisting name para-dichlorobenzene, a waste product of dyestuff production, are completely useless, and hazardous to boot.

"A good third of the chlorine-containing chemicals," estimates Thomas Darimont, chemical expert in Hessian's Ministry of the Environment, who is, at present, working on a conversion program for the contested universal chemical, could, in the short term, be dispensed with. Mr. Darimont says: "That would not have that great an economic impact, but it would have a great ecological effect."

In the case of PVC, the cut-back could be even much more drastic. Even Mr. Frey, the chemicals man at Wacker in Munich, and head of PVC production, says there is "no known appreciable area of application in which PVC could not be replaced."

Such admissions to the contrary notwithstanding, the chemical industry will not deviate one centimeter, voluntarily, from the chlorine route. When, for example, the ozone killer FCHC gained more and more negative notoriety, Hoechst AG, as the largest German producer (trade name "Frigen") quickly had the tank trucks that were posted by the plant gate painted over, but production continued.

Nevertheless, in the FCHCs, as in the area of the solvents per-, tri-, or dichloromethane, incisive changes are under way. Since 1986, the use of these highly hazardous substances that escape into the atmosphere, and are considered, to some degree, to cause nerve damage or to be carcinogenic, has declined by far more than one-third. By the end of 1994, FCHC production should be discontinued altogether.

All the way down to the dry cleaning establishments, the word has been making the rounds that the troublesome "per" can be replaced quite simply, by soap and water.

Similar developments seem to be on tap in the case of PVC, which is found in flooring, window frames, electric cables, and which can, for this reason, release hazardous dioxins in fires. As far as experts such as Duesseldorf's environmental alderman, Henning Friege, is concerned, these substances constitute a "no longer acceptable risk." For months, a Duesseldorf subway station had to be by-passed because, after a cable fire, the platforms were so contaminated with dioxin.

In Lengerich, Westphalia, where a recycling firm's warehouse burned down last autumn, the inhabitants had just as valid a reason for concern as the neighbors of Hoechst's plant in Griesheim have today. Overnight, flowers wilted in Lengerich, trees were defoliated, and gutters were corroded.

One-third of all quantities of chlorine that are produced are used for PVC alone. In addition, the substance is a first-rate means of dealing with waste hydrochloric acid that is produced in other processes. "If the PVC beam is pulled out of the chlorine structural skeleton," says Ecotec employee Nolte, "the entire house will shake."

People are hard at work on doing just that, however. Municipal department heads, like the Duesseldorfer Friege, have long since placed the plastic on the hit-list. Whether for schools, swimming pools, or governmental office buildings, in all announcements of upcoming construction projects, refraining from the use of installations containing PVC, for example, in gutters, flooring, and wastewater pipes is required.

Already, some automobile manufacturers have begun banning the toxic substance from their chassis. Opel, for instance, has reduced its use of PVC, whether in dashboards, door panels, or as undercoating, by half.

The food chain "Spar" [Save] is weeding out its product assortment according to whether the products contain any PVC components or not; the stationery manufacturer Herlitz has reduced the substance in 90 percent of its products. Whether in subject organizers, clear report covers, yoghurt cups, or chocolate boxes, the printed words: "Free of PVC" have become hot advertising copy.

The chemical bosses have been paying careful attention to this trend. "Everyone in those firms," Wacker manager Frey reveals, has "played the what-if game." Frey says: "If the people no longer want it, a material of that type is history."

In the Frankfurt-based Hoechst plant, as early as March, one of the two chlorine-alkali-electrolysis units will be shut down. At the present time, the people at Hoechst do not want to invest in the area of chlorine. Production head, Josef Ertl says: "That would not make sense for a businessman."

In Stade, too, where the Dow concern just started its brand new phosgene plant with the steel containment last November, enthusiasm for construction has suddenly dissipated. Not far from the shiny cupola of the phosgene plant, a few cement pillars jut into the sky. That was where "a membrane plant was supposed to be built," explains Dow manager Bruemmer, the most modern technology in chlorine production at the present time.

Sadly, the chemistryman looks at the concrete structure. It will probably remain a structural ruin.

Industry Opposes EC Environment Performance Checks

*LD2203113093 Berlin DDP in German 1024 GMT
22 Mar 93*

[Text] Cologne (DDP)—The EC Commission's proposal to register companies' environmental performance have been sharply criticized by German industry. If the resolution for an "Eco-audit" enters into force in its present form, distortions in competition will result, the Confederation of German Industry [BDI] said today in Cologne. Moreover, there are no unified criteria for the proposed registration, the BDI stressed against the background of the meeting of the EC environment ministers on Monday and Tuesday.

The BDI added that there are no unified European standards for industrial air purification and water protection measures, or even waste programs. Also, other countries do not have monitoring comparable with the German health and safety at work requirements. Before adopting the resolution, therefore, the "technological progress" in each country will have to be taken into account in drawing up unified EC criteria for the environmental performance of companies.

At the same time the BDI called on the government to actively support this basis for comparison and to ensure that the resolution is not weighed down with "unnecessary bureaucratic ballast."

Waigel Allegedly Involved in 'Subsidy Fraud'

*AU2203162993 Frankfurt/Main FRANKFURTER
ALLGEMEINE in German 22 Mar 93 p 1*

["Fin."-signed report: "Waigel Says He Did Not Influence Decree On Subsidies"]

[Text] Munich, 21 March—Theo Waigel, chairman of the Christian Democratic Union [CSU], has said that it is "absurd" to claim that as federal finance minister he

prevented court proceedings against the management of the Swabian meat concern, Moksel, because of connections with subsidies fraud. Prior to German unification, Moksel had been doing business with the GDR for decades. The subsidy fraud, which the Augsburg public prosecutors were trying to clarify, allegedly consists of the fact that subsidies were used for the export of West German cattle to Eastern European countries, by which the export of East German cattle was to be promoted. The regulation was valid until 3 October 1990, the day of Germany's unification. Two days earlier, a GDR firm allegedly applied for subsidies with the Hamburg Customs Bureau that were then paid to Moksel. Company chief Alexander Moksel is a member of the Social Democratic Party of Germany [SPD], but has also transferred considerable sums to the CSU, as was mentioned in the Schalck-Golodkowski investigation committee in Munich.

SUEDDEUTSCHE ZEITUNG accused Federal Finance Minister Theo Waigel of having relaxed the criteria for the grant of subsidies by enacting a special decree on 15 January 1993. Whereas it was formerly necessary to submit detailed documents on the animals' origin, for instance by veterinary certificates, it was now sufficient to submit some bookkeeping documents. Thereupon, the Augsburg public prosecutors stopped the proceedings against Moksel, but said that without the special decree, legal action would have definitely been taken.

The Agriculture Ministry said that all supply firms and tradesmen had to prove the origin of the animals from the former GDR. However, because the details had not been precisely regulated, the customs authorities had asked for a more precise specification of the way the "origin" had to be proved. The Federal Finance Ministry said that this had been done by the decree of 15 January 1993, which had, however, amounted to a tightening rather than a relaxation of the regulations. The decree had been signed by a department head who was not obligated to notify the minister on the matter, said the Finance Ministry.

To defend himself, Waigel, who claims he had no influence on the decree, spoke about such things being handled at the "level of departments." Bonn CSU Bundestag group chief Michael Glos characterized the accusation of Waigel as an "evil political defamatory campaign" and described the demand of financial expert Ingrid Matthaeus-Maier of the Social Democratic Party of Germany [SPD] that Waigel should resign as "uncalled-for." Meanwhile, the Greens in the Bavarian Landtag have filed a complaint with the Bonn public prosecutors against Waigel because of the suspicion of aiding the perpetrator and preventing his prosecution. CSU Secretary General Huber has called this an "attempted defamation" and slander.

Representatives Fail To Agree on Future Energy Policy

AU2203173593 Hamburg DIE WELT in German
22 Mar 93 p 13

["Mk"]-signed report: "Nuclear Energy Dominates Beginning of Talks on Energy Consensus"]

[Text] Bonn—Over the weekend [20-21 March], party representatives quarreled for more than eight hours about

a consensus on energy policy. In particular, the different views on nuclear energy became obvious. The talks are to be continued. Lower Saxony Minister President Gerhard Schroeder, Social Democratic Party of Germany [SPD], hopes that the interim report, which is to be available by the middle of the year, will indicate what the future energy policy will look like.

The SPD and the Greens are supporting an "orderly withdrawal from nuclear energy." Schroeder demands: "We must continue to work with domestic hard coal." In addition, brown coal must be taken "into consideration" more. He expressed his satisfaction that first steps have been taken "toward a more efficient use of energy and thus toward saving energy."

Hesse Environment Minister Joschka Fischer (Greens) summarized the talks by noting that there is a deep difference of opinion regarding all essential points of using nuclear energy.

FRG Economics Minister Guenter Rexrodt (Free Democratic Party of Germany) announced that a follow-up regulation for the expiring coal contract must be found by the end of this year. It must be decided whether the "coal pfennig" is going to be continued or whether an energy tax will be introduced, which the SPD demands. Rexrodt made it clear that levying this tax must not mean an additional burden to industry.

On 19 April, the negotiating committee will meet with representatives of trade unionists, environmental groups, electricity producers, and electricity clients. On 3 May, the working groups are supposed to present their results on nuclear power and fossil fuels. On 27 May, energy saving and renewable energy sources are to be discussed.

UNITED KINGDOM

Global Technology Conference: Major Announces Environmental Measures

LD2403104893 London PRESS ASSOCIATION
in English 0915 GMT 24 Mar 93

[By Chris Moncrieff, Press Association political editor]

[Text] The Prime Minister today dramatically called on Britain to take the lead world-wide in defeating the enemies of the environment. "The environmental buck stops in our backyard—nowhere else. That means the Government must act, even when that means taking difficult and unpopular measures," he said.

Mr. Major, who announced new measures to clean up the global environment, including a "hands-on" training scheme, spoke out at the Global Technology Partnership conference in the Metropole Hotel, Birmingham. He claimed that when all the measures in hand were operative, Britain would be two-thirds of the way to meeting the target for an annual reduction of three million tonnes of carbon by the year 2000. "We need a comprehensive approach and that means using a range of instruments and seeking lower emissions from all sectors," he insisted.

But he stressed they did not want to take measures that would damage the competitiveness of British industry. Mr.

Major explained: "Growing economies can invest in technologies which save energy or recycle waste. Dynamic businesses can lead the way in raising the standard of corporate environmental practice." And he warned that no-growth policies would mean no-green policies either. Mr. Major said: "It is no accident that wherever you look in the world the worst environmental degradation is found within some of the weakest economies. Allowing countries to grow out of poverty is the best way of securing long-term environmental improvement."

"I want to see us harness together environmental protection and business opportunity to create a green virtuous spiral of growth and higher environmental standards."

He announced:

- An Energy Saving Trust, to devise and implement programmes to improve energy efficiency
- A new Energy Management Assistance Scheme to help small businesses with advice on energy efficiency
- A new unit in the Department of Trade and Industry dedicated to coordinating the initiative to develop technologies to individual business needs
- A hands-on training scheme, under which UK companies would help senior business people from developing countries to acquire practical experience of modern technology management and production methods.

The Prime Minister said he wanted Britain to be in the lead in implementing the agreements reached at last year's Rio Summit of the Earth. And he vowed that a national plan would be produced by the end of the year.

"The UK must demonstrate that it will do more than offer assistance to others. We must show that we will act at home."

"The environmental buck stops in our backyard. Nowhere else. That means Government must act, even when that means taking difficult and unpopular measures."

That is why, he said, Chancellor Norman Lamont announced in his Budget long-term rises in the real level of road fuel duties and the extension of VAT on domestic fuel. "It made no sense for the Government to commit Britain to lower CO₂ emissions but at the same time to be the only EC government with no VAT on domestic fuels—a textbook case of perverse signals."

"Nor did it make sense for the Government to exhort motorists and manufacturers to choose and build fuel-efficient cars, while refusing to give them tangible incentives to make and buy those cars."

Mr. Major said they expected the Budget measures to deliver an annual reduction of three million tonnes of carbon by the year 2000. "But we cannot—and should not—meet our targets through tax changes alone."

Announcing the energy efficiency measures, he said: "When all these measures are operative, we will be two-thirds of the way to meeting our targets."

"Environment Secretary Michael Howard is now engaged in a nationwide consultation on the remaining elements. We need a comprehensive approach and that means using a range of instruments and seeking lower emissions from all sectors."

He promised they would complete consultations with business, consumer and environmental groups and produce a national plan by the end of the year.

The Prime Minister said they did not want to take measures that damaged the competitiveness of British industry. "I will tell you why. For there is one other development essential to creating the conditions which means that Britain can meet its Rio commitments—economic recovery."

"A tax that added to business costs, dulled competitiveness, would, at best, have retarded that—at worst, undermined it completely."

He rejected the arguments of those who said there was a choice between economic growth and the environment or even that growth was the enemy of the environment. "Growing economies can invest in technologies which save energy or recycle waste. Dynamic businesses can lead the way in raising the standard of corporate environmental practice."

"No-growth policies would mean no-green policies either. They would range environmental concerns against concerns about jobs, about living standards. That would wreck any chance of the shared commitment we need to make progress."

Mr. Major said countries which industrialised in the 19th and early 20th centuries had to reinvent technology to meet today's demands for cleaner air, fresher water, unsullied land. "The aim of today's initiative is to allow those who are industrialising newly today to bypass old technologies and to move straight to cleaner processes."

"That is the way to avoid environmental degradation—and to avoid too the heavy costs of clean-up."

"The countries of eastern Europe suffered under governments which went for unclean industrial development while ignoring the environmental consequences. They now demonstrate in the starkest possible way the price to be paid."

He said people mattered as much as hardware. "There is no more depressing sight than an expensive piece of equipment, gleaming, unused or misused."

"So a vital element of this initiative will be practical training through a hands-on training scheme. UK companies will help senior businessmen and women from developing countries to acquire the practical experience of modern technology, management and production methods."

"And the benefits they gain from this will multiply as they pass on those skills back home."

NTIS
ATTN PROCESS 103

2

5285 PORT ROYAL RD
SPRINGFIELD VA

22161

This is a U.S. Government publication. Its contents in no way represent the policies, views, or attitudes of the U.S. Government. Users of this publication may cite FBIS or JPRS provided they do so in a manner clearly identifying them as the secondary source.

Foreign Broadcast Information Service (FBIS) and Joint Publications Research Service (JPRS) publications contain political, military, economic, environmental, and sociological news, commentary, and other information, as well as scientific and technical data and reports. All information has been obtained from foreign radio and television broadcasts, news agency transmissions, newspapers, books, and periodicals. Items generally are processed from the first or best available sources. It should not be inferred that they have been disseminated only in the medium, in the language, or to the area indicated. Items from foreign language sources are translated; those from English-language sources are transcribed. Except for excluding certain diacritics, FBIS renders personal names and place-names in accordance with the romanization systems approved for U.S. Government publications by the U.S. Board of Geographic Names.

Headlines, editorial reports, and material enclosed in brackets [] are supplied by FBIS/JPRS. Processing indicators such as [Text] or [Excerpts] in the first line of each item indicate how the information was processed from the original. Unfamiliar names rendered phonetically are enclosed in parentheses. Words or names preceded by a question mark and enclosed in parentheses were not clear from the original source but have been supplied as appropriate to the context. Other unattributed parenthetical notes within the body of an item originate with the source. Times within items are as given by the source. Passages in boldface or italics are as published.

SUBSCRIPTION/PROCUREMENT INFORMATION

The FBIS DAILY REPORT contains current news and information and is published Monday through Friday in eight volumes: China, East Europe, Central Eurasia, East Asia, Near East & South Asia, Sub-Saharan Africa, Latin America, and West Europe. Supplements to the DAILY REPORTs may also be available periodically and will be distributed to regular DAILY REPORT subscribers. JPRS publications, which include approximately 50 regional, worldwide, and topical reports, generally contain less time-sensitive information and are published periodically.

Current DAILY REPORTs and JPRS publications are listed in *Government Reports Announcements* issued semimonthly by the National Technical Information Service (NTIS), 5285 Port Royal Road, Springfield, Virginia 22161 and the *Monthly Catalog of U.S. Government Publications* issued by the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402.

The public may subscribe to either hardcover or microfiche versions of the DAILY REPORTs and JPRS publications through NTIS at the above address or by calling (703) 487-4630. Subscription rates will be

provided by NTIS upon request. Subscriptions are available outside the United States from NTIS or appointed foreign dealers. New subscribers should expect a 30-day delay in receipt of the first issue.

U.S. Government offices may obtain subscriptions to the DAILY REPORTs or JPRS publications (hardcover or microfiche) at no charge through their sponsoring organizations. For additional information or assistance, call FBIS, (202) 338-6735, or write to P.O. Box 2604, Washington, D.C. 20013. Department of Defense consumers are required to submit requests through appropriate command validation channels to DIA, RTS-2C, Washington, D.C. 20301. (Telephone: (202) 373-3771, Autovon: 243-3771.)

Back issues or single copies of the DAILY REPORTs and JPRS publications are not available. Both the DAILY REPORTs and the JPRS publications are on file for public reference at the Library of Congress and at many Federal Depository Libraries. Reference copies may also be seen at many public and university libraries throughout the United States.