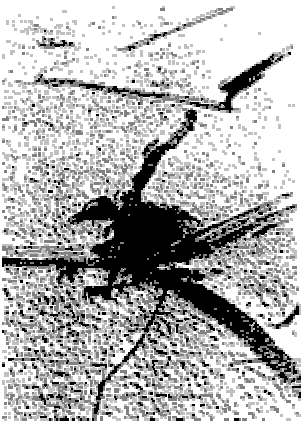

SHORT ARTICLE ON POLAND AND POLLUTION

WE HAVE CONTAMINATED ALMOST EVERYTHING...

According to the State Inspection of Environmental Protection, the air that Poles breathed during the year 1990 contained 1,950,000 tons of dust, 3,210,000 tons of sulphur dioxide, and 280,000 tons of nitrogen oxides. **The yearly average sulphur dioxide concentration exceeded the norms in 80% of the monitoring points located within specially protected areas, and in 50% of points in all other areas.** Some improvement in air quality in comparison with previous years resulted mainly from the economic recession. Among the most contaminated voivodships were the Katowice, Wa³brzych, Jelenia Góra, Kraków, and Warsaw voivodships.

Poland's territory is influenced by air pollution coming from other European countries. According to data from the European System of Monitoring Trans-Border Transported Contamination (EMEP), 47% of the sulphur dioxide in the air over Poland in 1990 came from sources located outside Poland's borders. During the same period, however, Poland "exported" 1.7 million tons of SO_2, which means that the '"export" of sulphur dioxide was larger than the "import'."

At the same time, in areas of urban and industrial agglomerations, a tendency towards a change in air quality has been observed. The yearly average concentrations of particulates suspended in the air and of sulphur dioxide have declined, while the concentration of nitrogen oxides has increased. This could indicate the increasing importance of transportation as a source of air pollution.

Apart from that, 21% of the total area of the country is exposed to excessive levels of noise, resulting from transportation (both car and airplane) and from industrial production. One third of the population in Poland is exposed to noise level of around 60 dB.

WHERE THE WATER IS CLEAR AND THE GRASS IS GREEN?

The bad condition of river waters did not improve during the year 1990. **Among 43 rivers of a total length of 8620 km, no first class waters were found, and 80.2% of waters were beyond all health norms.**

The condition of lake waters is generally poor as well. Among the lakes monitored in the years 1984-88, only four were classified as having first class water. These four lakes made up only 1% of all monitored waters. Ninety one lakes - more than 40% of those monitored - were classified as third class (exceeding all norms). Also alarming is the decrease in water quality in the lakes of the Lublin region, such as Piaseczno, Krasne and Firlej, which until recently had been almost clear. The majority of the water pollutants flowing into the Baltic Sea comes from inland Poland and is being transported to the sea via the Wis³a and Odra rivers. **The most polluted waters are now in the Gulf of Gdañsk, where the concentration of ammonia is about 100% higher than in the open water of the Baltic Sea.**

In 1990, due to a decline in industrial production, the amount of sewage being discharged into rivers decreased. However, 33% of the discharged sewage was not treated and 35% was treated only mechanically. Only 32% was purified chemically or biologically. The main reason for this is the lack of sewage treatment facilities, which

are still lacking in 44% of all Polish cities and in almost 50% of industrial plants.

Other sources of contamination of surface waters are mineral and natural fertilizers, pesticides used in agriculture, and sewage produced in rural areas. Only 2% of Polish villages have sewage treatment facilities, only 29% of villages have water supply systems, and only slightly more than 5% of villages have sewers. Manure from large animal farms and sewage from houses in rural areas, discharged without purification into the waters, can be a menace to human health.

Waters being pumped from deep mines and quarries also constitute a major threat to surface waters (mainly to rivers). **In 1990 almost 6500 tons of chlorides and 500 tons of sulphides were discharged each day into the rivers in the catchments of the upper Wis³a and upper Odra rivers. The majority (78% of the salty waters) came from the 18 coal mines in the Katowice voivodship.**

Protecting deep waters from different types of contamination, especially from chemical contamination, is becoming not only an economic problem; but a problem concerning human existence. Data gathered by the Regional Departments of Environmental Protection identifies 12,323 sources of contamination which could be considered a potential threat to the deep waters in Poland. The sources of contamination include 865 communal waste dumps, 310 industrial waste dumps, and 10,267 objects of petroleum product management. It should be stressed that these numbers are based upon data which is far from complete, and not upon a detailed examination. All of this proves that cardinal mistakes are being made in landscape planning and in land management practices. In the meantime, a steady increase in the number of identified cases of contamination of deep waters has been observed, from 48 cases

in the years 1971-75 to 845 cases in the years 1986-90. The most common (489 cases) were cases of contamination of ground waters by petroleum products. There were 47 cases of heavy metal contamination. Except in a few cases, the extent of these contaminations has not been examined.

ECOLOGICAL BOMBS

All arable lands in Poland are threatened by degradation. The main cause is the negative influence of gaseous and fluid air pollutants emitted by industry and by various means of transportation.

According to a study conducted by the Institute of Mineral Nutrition and Soil Science, about 15-20% of arable lands in Poland (2.8-3.8 million hectares) have concentrations of heavy metals in the soil which exceed natural levels. This refers mainly to the soils in the Katowice voivodship.

Surface water erosion is occuring on 27.9% of the land area in Poland. It is especially intense in the Bielsko-Bia³a, Nowy S¹cz, Kraków, and Krosno voivodships.

Land which has been severely degraded amounts to 0.5% of Poland's total land area. Areas of medium and slight degradation comprise about 2.2% of the country's total area. Including large areas of degraded forest land, evident deterioration of land may be observed on 4.4% of Poland's area.

Around 30% of the country's area is classified as threatened by deterioration, especially in the Katowice, Bielsko-Bia³a, Kraków, and Tarnów voivodships. Apart from the Katowice voivodship, the largest areas of serious land degradation occur in the Bielsko-Bia³a and Kraków voivodships.

Another serious threat to the environment is solid waste materials. The total amount of industrial waste is increasing faster than the

quantity of waste materials which is being recycled. Recycling is marginal -- only 0.2% of all waste materials are recycled. This causes a steady increase in the amount of waste being stored. During the years 1975-1990, both the amount of waste and the area used for its storage have doubled.

The quantity of municipal waste has also been increasing. Since 1975 the amount of municipal waste has increased by 50%. The total area of 1500 legal waste dumps comprised around 2600 hectares in the year 1990. The total area of illegal waste dumps was many times larger, and we know that new illegal waste dumps are being established almost everyday. There is a lack of facilities for municipal waste incineration, and only about 0.1% of the total mass of waste is being used for compost production.

BEFORE US, THERE WAS A FOREST ...

Forests cover 8.7 million hectares, which comprises almost 28% of the total land area in Poland. **According to current estimates, 3/4 of all forests are under constant threat.** As with soils, air pollution is considered the main problem. Only 14.5% of all trees in Polish forests are still healthy. More than a third of the trees are slightly or moderately damaged, and almost 4% are seriously damaged. The most threatened species in Poland is the silver fir -- next come Norway spruce and Scots pine. The deciduous forest stands are in better condition.

In the mountain areas, the destruction of forests is increasing quite rapidly. Silver fir has been practically eliminated from the Sudety mountains and from the western part of the Carpathians. A significant dieback of Norway spruce stands is occurring in the Sudety mountains, and also locally in the ¦l¹ski and ¯ywiecki Beskid. In some areas it is becoming a disaster.

In the whole Sudety forest region, only 1.8% of the forests are still healthy. In the Izerskie and Karkonosze mountains, healthy forests do not exist anymore. The area of completely deforested land has been growing from year to year. Up till now, 13 thousand hectares have been deforested. In general, the degree of forest damage in Poland is among the highest in Europe.

THE SHADOW OF CHERNOBYL

Radiation dangers to Poland result from the contamination which took place after the Chernobyl disaster, and from the use of devices utilizing ionic radiation and radioactive isotopes. Other potential threats are the 30 atomic power plants located in neighbouring countries (Sweden - 3, Russia and Ukraine - 5, Czech Republic and Slovakia - 4, Germany - 18), among which are a few that, according to the opinion of international experts, do not fulfill the internationally accepted safety requirements. The atomic weapons of the former Soviet Union, located in Ukraine, Belarus, Russia, and Kazakhstan, also constitute a potential threat.

Following the Chernobyl accident, today only the levels of soil contamination (mainly with cesium-137) are still higher than before the disaster. The highest levels of contamination were recorded -- and still are -- in the eastern voivodships, as well as in the Opole and Wroc³aw voivodships. The content of cesium-137 in the soil there is still five to ten times higher than before the Chernobyl disaster. **This results in a higher content of radioactive isotopes in some plants (mushrooms, black currants, some vegetables). Therefore, an examination of agricultural products before they are allowed to be sold in the market is still needed in those areas.**

In general, the radiation contamination of the environment does not produce an immediate threat to humans. The level of radiation above ground does not now exceed levels prior to 1986.

A prediction of the results of the Chernobyl disaster has been made based upon the results of long-term health monitoring of 100,000 people who survived the explosion of nuclear bombs in Hiroshima and Nagasaki. It has been estimated that due to the Chernobyl disaster, within the next 50 years we can expect an additional 740-6600 cancer-related deaths annually. Among these, 80-250 would be caused by cancer of the thyroid gland. This means 15-130 more deaths annually as compared with 70,000 deaths caused annually by all kinds of cancer, which would make proof of this phenomenon by regular health investigations impossible. However, this does not mean that people will not die because of cancer caused by the emission of radioactive substances after the Chernobyl disaster.

In Poland alone, about 3000 sources of radiation are in use. Sixty are considered large ones. **The central Collector of Radioactive Waste, in which about 9000 kg of nuclear waste is currently being stored, is located in Ró¿an in the Ostro³êka voivodship.** A serious problem is the used fuel from the nuclear reactors EWA and MARIA. Contracts for buying this fuel from the Soviet Union have not included a clause which could force the furnisher to take back the used fuel.

(*prepared by G. K.*)

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(Based on "Information about the condition of the natural environment in Poland," prepared by the State Inspection of Environmental Protection, Warsaw, December 1992).