

# The human environment in Korea

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As a developing country, Korea has given primary attention to economic development and the maintenance of its defence forces. At this stage of economic and technological development, it has not been possible to conduct as much research on environmental pollution control which might appear desirable, nor has it been possible to initiate as many control programs as might be practical in developed and affluent nations. The following report reflects the progress achieved, and the future plans which are now being given consideration.

1) In major cities and urban areas, air and water pollution is becoming an increasingly serious problem with rapid industrialization. This year there was a survey of air pollution carried out in several cities which demonstrated that the ambient air has rapidly become worse. The emission of air pollutants is critically increasing in the nation from the consumption of huge amounts of various fuel. During 1971, in Seoul, about 243,200 tons of pollutants were emitted. This figure shows the fact that Seoul which occupies only 0.6% of the whole nation's land size is heavily polluted with 23% of pollutants emitted in the country. There is no reliable survey done on the diffusion of air pollutants. According to the survey done on health injuries by air pollution in Seoul, about 7.7% of total hospitalized patients suffered from the upper respiratory infection: acute or chronic bronchitis, bronchial asthma, pulmonary emphysema and bronchiectasis. The daily visiting rate to the clinic of these respiratory patients suggested the fact that there may be some connection

between sulfur dioxide and carbon monoxide in the urban air with the occurrence of the respiratory diseases. A critical review of air pollution in Seoul City showed that in 1965 the maximum concentration of sulfur dioxide was 0.024 ppm representing an average concentration of 0.0005 ppm. By 1970 the maximum concentration of sulfur dioxide in ambient air, however, increased to 0.619 ppm with an average concentration of 0.092 ppm at the same points.

## SULFUR DIOXIDE IN THE AMBIENT AIR IN DOWNTOWN SEOUL CITY

	1965	1967	1969	1970
Range of concentration of sulfur dioxide	Negligible—0.024 ppm	0.003—0.043 ppm	0.003—0.237 ppm	0.004—0.619 ppm
Average concentration	0.005 ppm	—	0.078 ppm	0.092 ppm

2) A typical aspect of home heating facilities in Korea is the usage of "Ondol" floor which makes use of "Under Floor" stoves. In urban areas, such stoves are fueled with coal briquettes which may present the hazard of asphyxiation by carbon monoxide if the stove is not properly installed or maintained. Such heating also contributes substantially to the problem of air pollution.

3) It is easily recognised that the obtaining of water resources and the cause of water pollution are closely treated. River water is utilized for urban public water supply, agricultural irrigation, industrial and other purposes. Therefore, if sewer and wasted water were not properly treated, it is obvious that river water will be easily polluted.

The river pollution in 1969 was as follows:→

Name of Rivers	BOD (average)
Han River	10.2—50.5 ppm (27.7ppm)
Makdong River	1.0— 1.2 ppm ( 1,1ppm)

However, there has been no proper treatment for the sewage which is emptied into the water ways of the urban areas. Some parts of these urban areas are therefore being seriously polluted by contaminated municipal sewage on the outskirts of the cities. It is urgently required that the government set up the plans for maintaining good water quality. The increase of urban population concentrations has made it increasingly necessary to meet the demand for potable water. However, the major resources for the water supply for the cities have gradually become contaminated. The use of nightsoil as fertilizer is rapidly dwindling due to increasing availability of chemical fertilizer. With the advent of water-carriage waste disposal in urban areas, streams and other water bodies to which sewage has been introduced, are bound to deteriorate in quality.

4) The polluting substances, in cities are principally garbage, rubbish, dust, nightsoil, sewage from households and industrial wastes from factories and workshops. Over 85.4% of rubbish is unburnable. Of the unburnable rubbish 83.7% is from the ashes of coal, most of which is used as sanitary land fill. In 1969, on 178,791,000 urban residents out of 11,686,000 total urban population enjoyed acceptably waste collection and disposal services. The remainder, living mostly in outskirt areas of urban concentrations disposed of solid wastes in unacceptable ways, contributing greatly to the problem of water pollution. The total quantity of anticipated solid wastes was 4,219,000 tons, of which 4,002,000 tons were collected. In Seoul city the production of garbage and wastes amounted to 1,092,000 tons in 1965, but by 1968 it had increased to 1,989,000 tons. These figures were equally serious in other cities.

5) Inadequate nightsoil treatment facilities in multiple dwellings has also caused water pollution, thus requiring the legal establishment of proper disposal facilities and the enforcement of standards as required.

In this regard, large cities in Korea have planned to construct municipal sewage disposal plants for protection of the water system.

6) The need for comprehensive city planning which would ensure the proper distribution of population and its development is becoming increasingly evident in order to meet the requirements for stabilization of urban life and proper accommodations for urban residents. The city development plan should allow for control of population density; zoning for particular type of land use, improvement of housing conditions, occupational safety, provision of educational institutions, control of traffic and transportation, adequate recreational space and controls over noise, air pollution and water contamination.

7) In regard to national development the following proposals are under review:

i) Strengthening of rural industrial development, relocation of the industries located in urban areas, deconcentration of city population and proper city development plans for distribution of population throughout the cities.

ii) Re-organization of city development plans in regard to traffic, markets, industrial workshops and residential areas.

iii) Increase the income for rural and fishery people and improve medical, sanitary and environmental facilities in rural areas.

## A Existing and Proposed Measures at the National Level.

### I. Organization and Institutional Arrangements, Including Planning.

1) In 1965, the government established a Sanitation Section at the Ministry of Health and Social Affairs which was made responsible administratively for overall sanitary programs and was to closely coordinate with other sectors regarding environmental matters: viz, Inland Transport Bureau of the Ministry of Transportation, Agricultural Products Bureau of the Office of Fisheries, Urban and Housing Bureau and National Planning Bureau of the Ministry of Construction which are responsible for their respective indicated functions. The Sanitation Section was elevated to an Environmental Pollution Control Office in 1970.

2) The Sanitation Section of the Ministry of Health and Social Affairs participated in the establishment of

National policies on industrialization proposed by the Economic Planning Board, deals with the effective implementation of environmental health services and was consulted in regard to setting up policies related to land development and local industrial planning.

3) There is the National Institute of Health (N.I.H.) attached to the Ministry of Health and Social Affairs. The Department of Sanitation of N.I.H. undertakes responsibilities for research on food and nutritional control and for research on the improvement of air and water pollution of numerous emission sources in collaboration with the related Offices of the Ministry of Health and Social Affairs. The Offices also are consulted by non-governmental institutional groups such as the Korea Institute of Science and Technology (L.I.S.T.) and the Institute for Environmental Pollution Research, Yonsei University and several other universities.

## II. Legislation and Administration

1) The environmental pollution control program is based on the provisions of the Law on Prevention and Control of Environmental Pollution of 1963. Besides this law, the prevention and control of environmental pollution is closely related to such laws as the Homeland Development Plan Law, the City Development Planning Law, the local Industrial Development Plan Law and the Regulation on Standardization of Equipment and Arrangement for Prevention of Accidents by Automobiles. Besides there are many other provisions for prevention and control pursuant to environmental pollution and other nuisances.

## III. Fiscal Policies

Our country is divided into two parts – the Republic of Korea in the south and North Korea in the north. Thus, the expenditures for national defence take a great part of the national budget. In the functional classification of central government expenditure for community services such as construction of roads and irrigation, prevention of conflagration, water supply and sanitation was 37,100 million won, and expenditures for social services such as education health and social security and welfare was 110,887 million won, representing 7.7% and 22.9%, respectively of the total central government expenditure (484,906 million won). The expenditure for economic services which includes development of agriculture and non-material resources, production fuel and power, development of mining, manufactur-

ing and construction, transport and communication and other economic services was 123,713 million won in 1970.

## IV Dissemination and Practical Use of Knowledge and Education and Training.

During the period 1972 to 1976 the government will plan to establish a National Reference Centre on environmental problems in Seoul City to exchange existing information between countries. This Centre will implement and accelerate up-to-date information exchange. In order to resolve the present personnel problem of environmental protection, an education and training program for health workers will be urgently carried out to secure well qualified technical personnel and administrative efficiency, by preparing the teaching stage and providing orientation and observation for key members of the government

The overseas technical training program will be carried out with the assistance of such international organizations as WHO UNDP and USAID. Technical cooperation has already been proposed to such organisations. In-service training for the needed technicians and specialists will be given at various educational institutions and at the National Institute of Health under a long term plan.

## Views Concerning Existing or Desirable Measures at the International Level.

Environmental protection has become an international and global problem which must be solved through collaborative efforts. However, the approach to environmental protection should be started from each local problem. It requires cooperation with owners and operators of enterprises and in-country control of all of pollutants must also be undertaken. Each nation should establish air and water quality monitoring networks for inspection and control of environmental pollution. It is also necessary to establish monitoring networks on the international level. The data from national and international networks should be reported to an INTERNATIONAL ORGANIZATION FOR ENVIRONMENTAL PROTECTION. The data should be evaluated systematically to provide a base for new measures of international environmental control.

It will also be necessary to set up a unified INTERNATIONAL ORGANIZATION FOR ENVIRONMENTAL PROTECTION against the existing specialized agencies. It is expected that the organi-

zation will contribute to human society through organized efforts for environmental pollution control and waste disposal. The major functions of this

organization would be to accomplish systematic activities on environmental protection world-wide.

## Pollution problems in the Prefecture of Osaka

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Ladies and gentlemen, I am deeply grateful and honored to be given this opportunity to speak at this Congress, the history of which is so illustrious.

Although what I am going to speak about has no direct bearing on the doctors participating in this Congress when we think of the future of mankind on this earth I feel that we must take an active interest in environmental pollution as a crucial problem confronting human beings and that we must devise effective measures against it and try to solve this problem by summoning all the knowledge and wisdom available to us in order to protect the sanctity of mankind and promote health. In view of this we in the medical profession naturally ought to offer cooperation in this task through our specialized field of work. I would be most happy if my talk might provide each of you with some sort of a guideline in this connection I would also like to tell you briefly about the current situation of environmental pollution in the Osaka Area, where I live. I would also be very pleased if you could comment on this part of my talk

I need hardly define about environmental pollution. However, in 1967 the Basic Law for Environmental Pollution Control was enacted in our country as shown in Table 1, and Article 2 of this Law gives the following definition.

The term "environmental pollution" shall mean

any situation in which the human health and the living environment suffer from air pollution, water pollution, soil pollution, noise, vibration, sinking of the ground and offensive odors which occur over a considerable area as the result of industrial or other human activities.

As you all know, we are promoting a comprehensive system of medical services aimed at the attainment of positive health, as the concept of health has become more expanded. In order to make this comprehensive system take root in the area, all the members of our Medical Society are working for the betterment of community medical care, which is given priority over the other activities of the Medical Society. In its relation with the various diseases, environmental pollution in the area poses at present a particularly grave problem in community medical care. It is also a fact that a change in the disease structure, a distortion produced by the industrialized society with a high economic growth, has become a big political issue as well as causing great anxiety to the people in regard to the appearance of the so-called "difficult-to-cure" diseases.

The Japan Medical Association, with which we are affiliated, predicted the advent of the situation today more than ten years ago and also warned the government about the urgency of countermeasures. It is to our great regret that we had to wait until as