

# Stockholm: One Year After

The UN Conference on the Human Environment, convened in Stockholm during June 1972, was the first large-scale intergovernmental conference devoted exclusively to environmental problems. It underlined the interest of world public opinion for concerted effort at international level to preserve and improve the quality of the environment. The Conference was not a forum for exchange of scientific information but was organized primarily to develop a series of action proposals, to be instituted by States and by international organizations, which would lead to a better understanding and an improvement in the quality of the environment. A number of these action proposals gave direct responsibilities to the Agency.

The Agency has a statutory obligation to be active in and make contributions to the correct understanding of the environmental consequences of large-scale uses of nuclear power. In this field the Agency has access to the advice of the world's leading experts, as was clearly demonstrated in 1970 at the Symposium on the Environmental Aspects of Nuclear Power Stations which the Agency organized together with the United States Atomic Energy Commission. Moreover the Agency has had considerable experience in dealing with regulatory questions. This is demonstrated by the numerous publications in the Agency Safety Series. This series, started by the Agency in 1957, now numbers 36 issues and includes

- (a) the Agency's Safety Standards, which are approved by the Board of Governors, which consists today of 25 Member States and
- (b) general recommendations to Member States on radiological safety, waste management and nuclear safety.

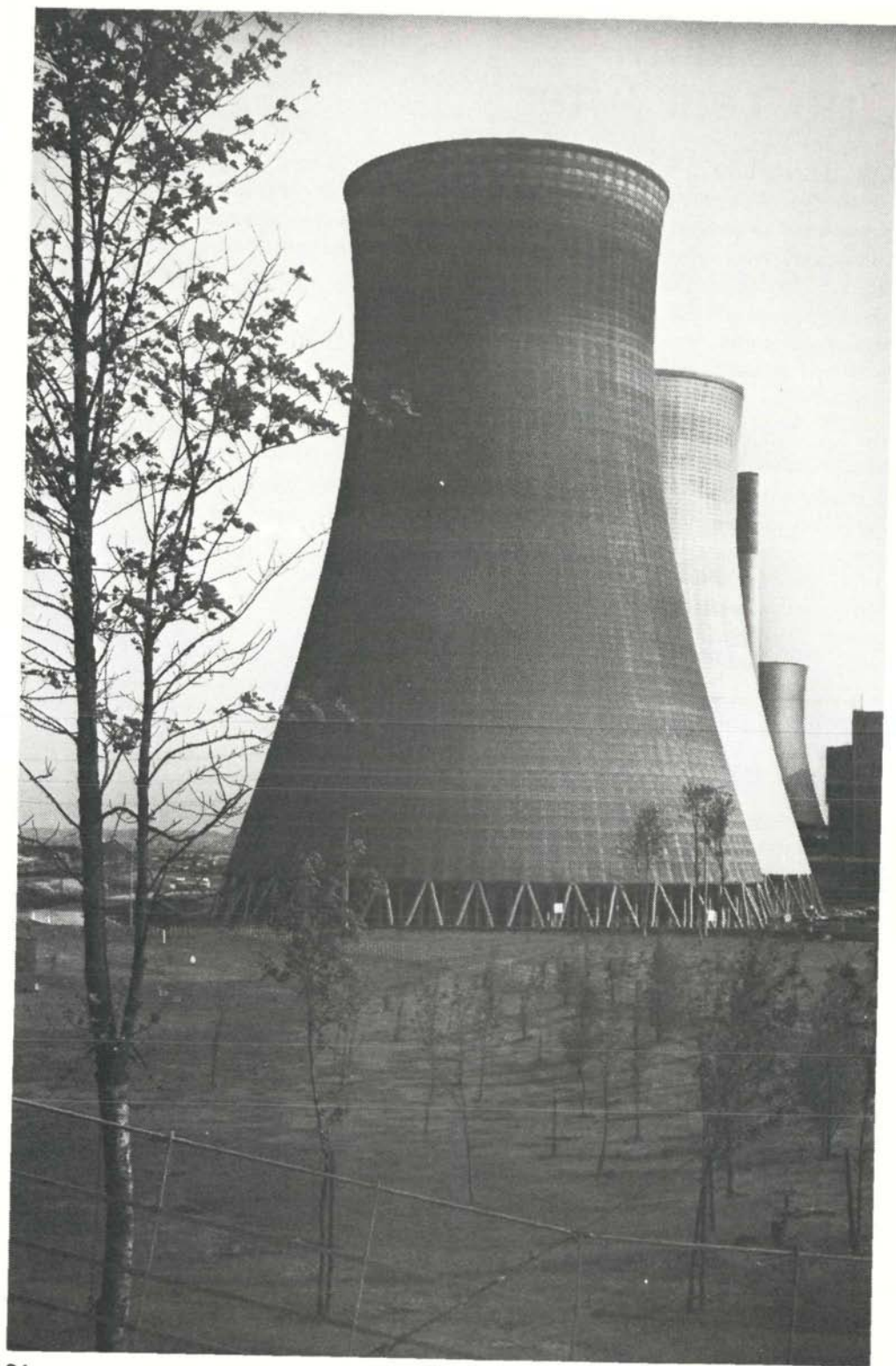
These are sometimes prepared and issued solely by the Agency, but more often in collaboration with other international organizations, such as WHO, FAO and the Nuclear Energy Agency of OECD (NEA). These have the form of safety standards, recommendations and codes of practice.

**Although the Agency plays a key role in the development of such guidance it can only recommend the standards and codes of practice, the responsibility for implementation lies with Member States themselves.**

The nuclear industry is unique in that it has, from the very beginning, been subject to stringent regulations designed to control possible deleterious effects on the environment. Correspondingly, the Agency's interest and activities in environmental protection have been reflected in its programme since the earliest days.

Due to the special nature of the fuel used in nuclear facilities, and to the expected growth in the magnitude of the nuclear industry, responsible authorities have been using all the skills and methods of modern technology to keep the industry safe and clean.

More energy, and particularly electricity, is essential if one is to achieve a society which conserves its environment by recycling its wastes, and developing non-polluting means of urban transport and non-polluting forms of industrial and domestic heat. In the industrial countries electrical capacity is now doubling every 9 or 10 years; in the



developing countries, the doubling time is much shorter. In the next 30 years, man will use as much energy as he has since he first appeared on earth; by the year 2000, electricity production may be eight times as high as it is today. With the tremendous expansion of nuclear power when the installed capacity will be brought from 27,000 MW at present, to some 190,000 in 1978, it is certainly wise to start facing the problems which this increase will carry with it. This must be done now if we want to be certain to achieve solutions for the much greater problems associated with the further enormous increase of nuclear power to some 3,000,000 MW at the end of the century. No nation in the world is prepared to forego the benefits that cheap and plentiful electrical power bring to the well-being of its citizens and the progress of its economy. The question to be answered is *what is the best way of meeting this rapidly growing demand while at the same time keeping the impact on the environment at an acceptable level?*

At the Stockholm Conference the Agency contribution showed that nuclear power plants are decisively better than fossil fuelled plants with respect to common atmospheric pollutants, but that the generation and release of radioactivity in various phases of the nuclear fuel cycle require continuing attention to ensure that the acceptable low levels of radiation are maintained.

An interesting point is that the techniques and concepts used in safety analysis and control of radioactive releases can usefully be adopted in the control of other pollutants.

Nuclear power is, of course, only one sector of the world's energy resources; its expanded use will help to reconcile energy needs and environmental concerns. The Stockholm Conference recommendations have rightly stressed other pollutants as of primary concern.

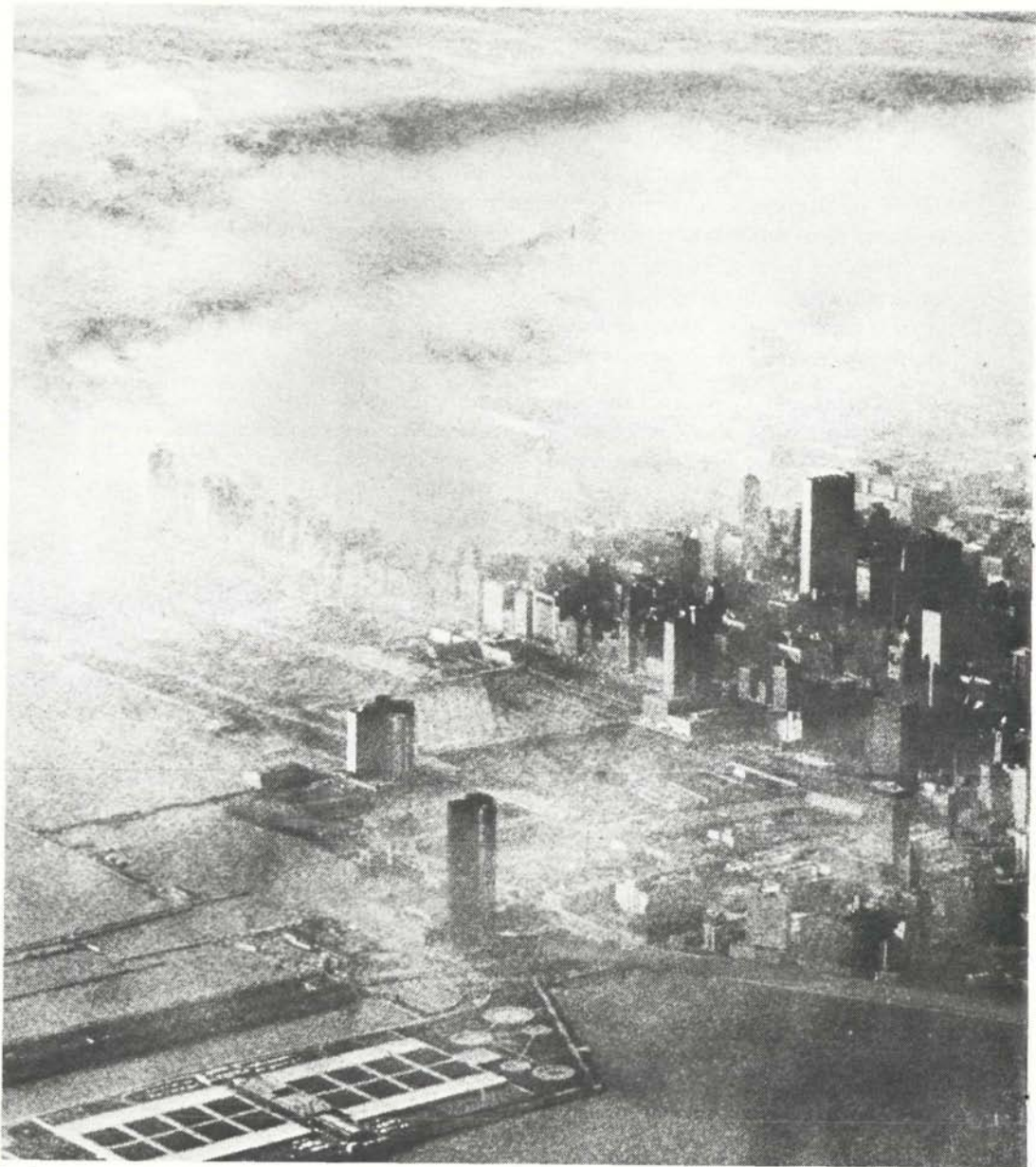
As regards radioactivity – in February 1972 the Board of Governors considered that one of the Agency's most important and urgent tasks was the elaboration of standards of safety concerning the dispersion into the environment of radioactive waste from the peaceful uses of nuclear energy.

The Stockholm Conference more specifically recommended that governments:

- a) explore with the IAEA and WHO the feasibility of developing a register of releases to the biosphere of significant quantities of radioactive material; and
- b) support and expand under the IAEA and appropriate international organizations, international co-operation on radioactive waste problems.

Both of these recommendations follow the line of the Board's February 1972 decision. The idea of a register has already been studied by the Agency since 1969. The essential ingredient to its early establishment of course is the support of the Governments concerned.

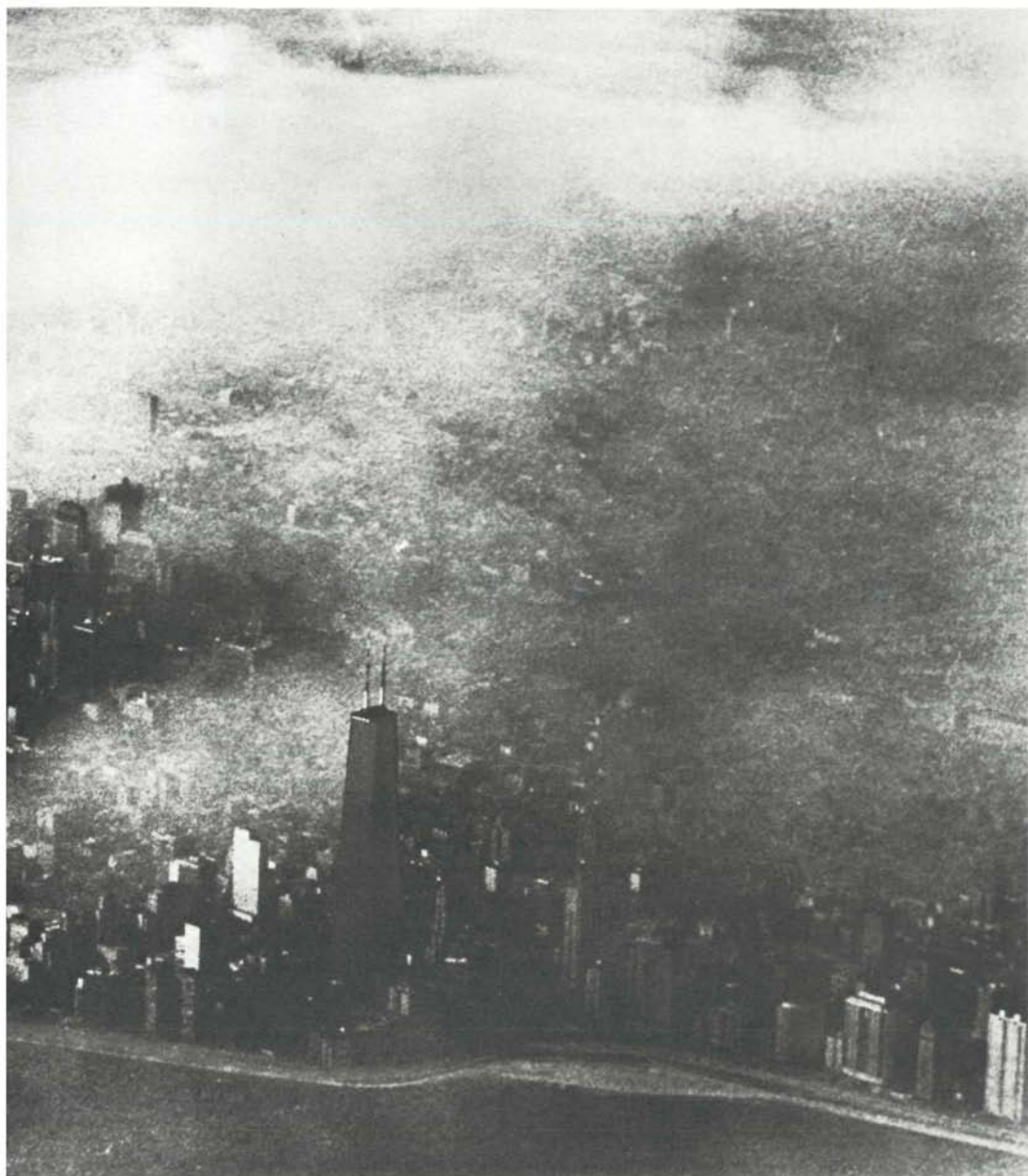
The nuclear industry is drawing on the longer experience of the fossil fuel power industry in solving its common problems of thermal waste disposal. The Central Electricity Generating Board's 2000 MW coal-fired power station at West Burton, Nottinghamshire, which has eight of these 375 ft. high cooling towers, won an award from the Civic Trust for its "outstanding contribution to the surrounding scene."



Environmental pollution, left uncontrolled, resulted in this pall of smog over Chicago, USA.

International co-operation on radioactive waste problems has taken various forms. The Intergovernmental Conference convened in London in November 1972 in response to Recommendation 86 of the Stockholm Conference adopted a Convention on the Prevention of Marine Pollution by Dumping of Waste and other Matter. There were 80 participating States. The Convention provided inter alia that:

1. High level radioactive waste or other high level radioactive materials, *defined by IAEA as unsuitable for sea dumping* are prohibited from such dumping and



2. The IAEA recommendations should be fully taken into account in the granting of permits for dumping other radioactive waste or materials.

In view of the relatively small number of ratifications required for entry into force, it may be reasonably expected that the Convention will become effective in 1973. For its implementation in respect of radioactive wastes, States party to the Convention will have to adhere to the Agency's safety criteria and recommended standards. It is expected that the UN Environment Programme will be vested with co-ordination

responsibilities in the implementation of this Convention. An Agency panel of experts meets in June 1973 to define the Agency's precise responsibilities in this respect.

A systematic evaluation of the environmental impacts of nuclear power production has led the Agency to formulate an expanded programme in this field; a panel of world-known experts met in Vienna in November 1972 and their conclusions, endorsed by the Scientific Advisory Committee of the IAEA, were approved by the Board in February 1973. This programme at present covers seven main areas:

- a. Assessment of the environmental impacts of nuclear power programmes;
- b. Research on the fate and behaviour of radioactive materials released to the environment, with special emphasis on the study of critical radionuclides and their environmental transfer mechanisms, to provide the basic data necessary for establishing limits for releases;
- c. Development of methods for establishing the capacity of the environment to accept radioactivity;
- d. Review of appropriate environmental surveillance around nuclear installations;
- e. Research on cost-benefit analyses of nuclear programmes from the environmental aspect;
- f. Estimation of population doses from radioactive releases into the environment; and
- g. Elaboration of principles and standards of safety for the longterm management of high-level and alpha-bearing wastes.

This is an ambitious programme whose implementation faces two immediate limitations. The first is a financial one imposed by the limited resources available to the IAEA and the second is the day-to-day problem afflicting scientists and all international organizations: i.e. that of excessive documentation and proliferation of meetings. Most scientists today express a preference for less meetings and better preparation; the usefulness of panel meetings is in fact proportional to the degree of preparation. The first limitation, that of financial resources, has been partly met by voluntary contributions from Member States particularly interested in an expanded programme in 1973. Approximately \$150,000 was recently pledged by Canada, Finland, F.R.G., France, Japan, South Africa, Sweden, U.K. and U.S.A.

The Board also authorized the Director General to enter into appropriate arrangements with the new United Nations Environmental Programme for implementing activities or projects regarding the impact of nuclear energy on the environment or the use of nuclear science techniques in environmental studies.

This programme will, as in the past, be carried out in close co-operation with other international organizations such as FAO, ILO, IMCO, NEA, UNSCEAR and particularly WHO.

It will be seen from the above that although the IAEA has always been active in this field, the UN Conference on the Environment has provided a new impetus both to the Agency and to Member States who are particularly concerned with the effects of nuclear energy on the environment.