

## THE RADIATION PROTECTION PROGRAMME ACTIVITIES OF THE WORLD HEALTH ORGANIZATION

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A number of World Health Assembly and the Executive Board resolutions have stressed the World Health Organization (WHO) responsibilities at the international level in respect of protection from radiation hazards, in collaboration with other interested organizations and societies in the radiation field, and in particular the IAEA, UNSCEAR, ICRP, IRPA etc. They have also called "the attention of Member States and Associate Members to the responsibility of their national health authorities in the protection of the population from radiation hazards" and emphasized inter alia the role of WHO in "encouraging and assisting" those authorities "to accept their major role in the public health aspects of radiation from all sources".

### RADIATION PROTECTION STANDARDS AND GUIDELINES

The IAEA, WHO, ILO and OECD(NEA) are the four international organizations which have statutory obligations and responsibilities in the field of radiation protection standards. These organizations are now engaged in revising the Basic Safety Standards for Radiation Protection (IAEA Safety Series No. 9, 1967 edition) to implement new ICRP recommendation 26.

A topical seminar on the practical implications of the ICRP recommendations was held in March 1979, by the above-mentioned four organizations, to discuss the practical problems of the implementation of these recommendations. The joint IAEA/WHO Code of Practice on the Basic Requirements for Personnel Monitoring was revised and will be published in 1980. In August 1978 a joint WHO/IAEA/ILO meeting was held to discuss a code of practice on Radiation Protection in Mining and Milling of Radioactive Ores. The resulting document will be published in 1980.

### PUBLIC HEALTH ASPECTS OF NUCLEAR POWER

The rapid development of nuclear power in developed countries since the early seventies and, especially, the plans of a number of developing countries to offset the high costs of oil and other fuels through the generation of nuclear energy, will pose new public health problems. Of particular concern is the obvious fact that the operation of nuclear power reactors requires an even higher level of training and competence in health and safety fields than has been

considered adequate in highly developed countries a year ago. The strong diversity of opinions between the advocates of nuclear energy as a necessary alternative to power from fossil fuels and their opponents who wish to avoid nuclear power completely, makes it not only more difficult, but also more important for WHO as the lead international organization in health problems, to present a balanced view of health detriment of nuclear power and its alternatives, and other applications of radiation.

Special attention has been given in the WHO programme to the environmental and health aspects of nuclear energy production. In the joint IAEA/WHO publication *Nuclear Power and the Environment*, published in 1972, the main principle and philosophy of public health implications of nuclear energy production has been presented, and a statement was made that the nuclear power industry could operate safely for the general public and environment when all technical and control measures are taken and properly executed. To further advise public health authorities on this subject, a report on *Health Implications of Nuclear Power Production* was published by the WHO European Office in 1977. In the same series of activities, the European Office has held a meeting on the health aspects of transuranium elements, and will organize a meeting on the health implication of the handling of high-level radioactive waste.

The emergence of nuclear power as a significant component of energy systems in developing countries has created the need for extensive training of personnel, particularly of those to hold posts of responsibility in the various aspects of a nuclear programme at all stages of planning and implementation. In these countries, the scarcity of resources and the other pressing priorities of public health will render the task of public health authorities, even though limited to a few key ones, particularly important and at the same time difficult.

To assist these public health authorities, WHO is planning an interregional training course on public health aspects of national nuclear power programmes.

Radiation accidents are of major concern to national and international authorities in relation to nuclear power development and the increasing use of radiation in industry, agriculture and medicine. To cover this aspect, appropriate activities have been developed in close collaboration with the IAEA, ILO and FAO. In 1978, the IAEA/WHO manual "*Early Treatment in Radiation Accidents*" and a report on the *Treatment of Incorporated Transuranium Elements* have been published.

WHO has been running an extensive study on biological indicators of radiation injury, including the use of chromosome aberrations. Investigations performed in various countries have indicated the usefulness of this method for biological evaluation of radiation dose, by scoring the chromosome aberrations in lymphocytes of accidentally-irradiated persons.

The question of diagnosis and treatment of internal and external accidental exposure of persons has been dealt with extensively in terms of manuals and scientific meetings. Moreover, WHO is playing

a prominent role in this connection because of its traditional competence and responsibilities in preventive and curative medical domains.

To extend the service to member states WHO are now planning to establish three WHO collaborating centres on human radiopathology to serve in actual cases of human radiation injuries:

- one in Paris (Institute Curie, Department of Radiation Protection) for Member States in the African, Eastern Mediterranean and European Regions
- one in Oak Ridge University Medical Research Center; for the Americas
- one centre for Western Pacific and South East Asian Regions.

The terms of reference of centres would be:

- (i) to serve as focal points for advice and possible medical care in cases of human radiation injuries;
- (ii) to facilitate when necessary the establishment of a network of equipment and specialized staff in human radiopathology;
- (iii) to assist in the establishment of medical emergency plans for the event of large-scale radiation accidents;
- (iv) to develop and carry out coordinated studies on human radiopathology and epidemiological studies that may be appropriate;
- (v) to assist in the preparation of relevant documents and guidelines.

In addition, revision of the IAEA/FAO/ILO/UNDRO document on the mutual emergency assistance in radiation accidents is in preparation to provide information on the assistance that Member States might be able to make available at the request of another country.

#### SURVEILLANCE AND CONTROL OF ENVIRONMENTAL RADIOACTIVITY, ASSESSMENT OF POPULATION EXPOSURE AND HEALTH EFFECTS

Periodical reports prepared by 4 WHO collaborating centres in cooperation with 27 laboratories in 19 countries, are being provided to the Regions and Member States, which include the world data on radioactivity in air, water and food. Intercomparison of measurements of radioactivity in samples of milk and bones were maintained by collaborating centres, to improve the accuracy and comparability of data from various countries. Information on strontium-90 in human bones obtained from tropical area countries were made available to UNSCEAR and participating countries.

A WHO European working group has considered the problem of the acceptable levels of radionuclides in drinking water for the revision of WHO International Standards for Drinking Water. The report of the working group makes few significant changes in comparison with the previously published WHO International Standards. A significant departure from previous practice is the explicit statement that "Where these levels are exceeded, it is recommended that the competent authorities be required to decide what further action, if any, is necessary".

The radiological analysis of fresh water is dealt with in two chapters of a three-volume handbook on "Examination of Water for Pollution Control", sponsored by the WHO European Office and due for publication. Radiation exposure from naturally occurring Radon as one of the pollutants of Indoor Air has been discussed by a working group in Bilthoven in April 1979.

In the assessment and control of health risks from radiation exposure, the Organization also plans to study the exposure of the population due to radiation-emitting consumer products, technologically enhanced natural radiation, building materials etc.

WHO will assist the public health authorities in keeping the public currently informed on the likely health consequences of various uses of radiation. Promotion of education and training of medical personnel in radiation hygiene and protection is an important task of WHO in establishing contacts with populations in order to assure adequate health protection.

#### NONIONIZING RADIATION

The very high potential for cancer and genetic damage from ionizing radiation in comparison to a high tolerance for less energetic forms of radiation have led most health officials to disregard non-ionizing radiation (NIR). However, NIR, which ranges from ultraviolet through visible light, infrared and microwaves to radiofrequency radiation, as well as electromagnetic fields, is the result of a fast developing technology with a growing potential for affecting public health. To draw the attention of public health to this problem, in 1972 a special chapter on non-ionizing radiation was included in WHO monograph "Health hazards of the human environment"; and an International symposium on biological effects and health hazards of microwave radiation was jointly organised by WHO and the health authorities of the USA and Poland in 1973, with the participation of an IRPA representative. The WHO European Office has organized a series of meetings on various aspects of NIR which will result in the publication of a manual on NIR protection. The WHO/UNEP/IRPA environmental health criteria document on ultraviolet radiation was published in 1979, and the document on microwave and radiofrequency radiation has been presented to the publisher.

New environmental health criteria documents on lasers and ultrasound are at present in preparation, as joint activities with IRPA.

WHO resources for all radiation protection activities are limited but considerable support has been received from WHO collaborating centres and national authorities, e.g. Belgium's and the Federal Republic of Germany's contributions.

Most of these programmes are being carried out in close cooperation with other international organizations and bodies such as the International Atomic Energy Agency, the International Labour Organization, the United Nations Scientific Committee on the Effects of Atomic Radiation, the International Commission on Radiological Protection and the International Radiation Protection Association.