# THE ROLE OF INTERNATIONAL ORGANIZATIONS

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In this paper I shall first summarize WHO's role and activities in the overall field of radiation safety, and in the related psychosocial field, over the past 30 years; then I shall discuss the central role of an International Health Agency in this area and its main tasks.

## WHO'S ROLE AND ACTIVITIES IN RADIATION SAFETY

WHO involvment in radiation protection dates back to the 1950s when atmospheric atomic testing was the primary cause of concern. Since then the Organization has provided support and advice to Member States on various aspects of radiation protection, working either independently, with various national institutions, or in collaboration with IAEA and other U.N. agencies, such as the United Nations Environment Programme (UNEP), the World Meteorological Organization (WMO), the Food and Agriculture Organization (FAO), the United Nations Scientific Committee on the Effects of Atomic Radiation (UNSCEAR), the International Commission on Radiation Units and Measurements, and other international bodies (1-3).

As early as 1969, WHO launched a network of national institutions to monitor environmental radioactivity, with the aim of studying trends in levels of Stronzium and Cesium originating from atmospheric nuclear testing. Countries occupying about 20% of the earth's territory have been involved in this environmental monitoring.

As a result of the Chernobyl accident, WHO intensified its

efforts to strengthen the ability of Member States to respond adequately and consistently to any future accidental release of radioactivity. Therefore a special project on the public health response to nuclear accidents has been undertaken by the WHO Regional Office for Europe (4-8).

A WHO/UNEP expert meeting held in December 1987 considered the principles on which to base a global network, both for monitoring environmental radioactivity on a routine basis and for the rapid exchange of information in the case of radioactive releases (9).

In 1988 WHO officially signed the International Convention on Early Notification of a Nuclear Accident and the International Convention on Assistance in the Case of a Nuclear Accident or Radiological Emergency (10-11). According to these conventions, the World Health Organization is to act as the directing and coordinating authority in international health work in matters covered by the Conventions, and to provide related assistance upon request or acceptance of governments, without prejudice as to the national attributes of of its Member States.

Moreover, WHO has designated 3 collaborating centres (in Oak Ridge, in France and in the USSR) on emergency medical assistance to provide guidance and assistance in cases of overexposure. Finally, the Director-General has recently signed a memorandum of agreement with the Government of the USSR for the launching of a special research programme on the Chernobyl accident, including its psychosocial consequences. A special international research centre should be established in Ominsk, USSR, to carry out and

coordinate this programme.

WHO current activities are therefore largely directed toward the improvement in capabilities, both national and international, for dealing with possible future radiation emergencies. These include: (1) provision of more specific guidance on intervention levels and elaboration of internationally recommended standards and guidelines for radiation emergencies; (2) preparedness of medical services to handle radiation emergencies, including practices in the diagnosis, treatment and follow-up of overexposed persons; (3) health-related monitoring of environmental radiation, and rapid collection, compilation and exchange of data; (4) strengthening of national radiation protection services; and (5) follow-up to the Chernobyl accident.

Furthermore, in the Eighth General Programme of Work covering the period 1990-1995 (12), it is assumed as an official target that "By 1995 50% of countries will have formulated national policies for the protection of people against environmental hazards, with the active participation of the health sector." These hazards include radioactive contamination.

It should be noted that such detailed emergency planning is not limited to nuclear emergencies. The acceptance by the public of emergency planning measures poses a psychological problem. This may be reduced if it is emphasized that such a plan should be integrated with other emergency schemes available to meet natural as well as industrial accidents, such as in the chemical or petrochemical industry. In this regard WHO has been coherently

developing, through its Division of Emergency Relief Operations, comprehensive activities related to preparadness, mitigation and relief in case of natural and man-made disasters (13-15).

## WHO'S ROLE AND ACTIVITIES IN THE PSYCHOSOCIAL FIELD RELATED TO NUCLEAR ENERGY AND NUCLEAR REACTOR ACCIDENTS

Before the occurrence of the Chernobyl accident, the global social situation regarding nuclear energy could be briefly characterized as high level anxiety about atomic radiation, but simultaneously, high expectations concerning the safety of nuclear installations. In this sense, it was assumed at that time that no nuclear accident would ever happen. The social acceptance in the eventuality of nuclear accidents turned out to be very low - much lower than for any other possible type of accident.

It has been suggested (16-17) that the relationship between the public, on the one hand, and the nuclear technocrats and governments, on the other, is de facto of a collusive nature: low social acceptance produces low risk probabilities. However, a social collusion, which can function as symbolic protection, is powerless to act as real protection in the area of technology and its operational failures. The dynamics attached to the rupture of a tacit social contract, to the loss of an idealized technological image, to the removal of established and structuring distances, are all significant in industrial accidents such as nuclear accidents or others concerning invasive toxic substances.

While the Chernobyl accident deeply challenged this overall

psychosocial framework related to nuclear energy acceptance and to preparedeness and intervention programmes in emergency cases, it did not find WHO unable or not ready to cope with it. As early as 1958, WHO convened a Study Group on the 'Mental Health Aspects of the Peaceful Uses of Atomic Energy' (18). The Study Group Report carefully addressed and analyzed all the psychological dimensions related to nuclear energy and envisaged many of the developments which have actually taken place in the last 30 years. The Study Group recognized that "the opening of the atomic age may also be accompanied by pathogenic influences in the sphere of mental health. In addition, it is logical to infer that mankind's encounter with a source of energy of such shattering possibilities as atomic power will cause strong psychological reactions, and that some of these will probably have to be considered as more or less pathological... In contrast to the health effects previously described, the level of anxiety generated by possible exposure is not related to the level of exposure. Psychological stress may well be exhibited where radiation is low or insignificant. Psychological effects can be attributed to:

- the association of nuclear accidents with the explosion of a nuclear bomb;
- the inability of the human senses to detect ionizing radiation;
- inadequate and often conflicting information concerning the accident."

"... the peculiar qualities of radiation are that it is

invisible, unheard, unsmelt, untasted and unfelt, apparently infinitely powerful, yet springing from an almost infinitely small source, and - as far as the individual is concerned - uncontrollable.

Of all these aspects the most terrifying and most characteristic is perhaps that of a tremendous power which may get out of control".

Already in this report it was suggested that anxiety in the off-site population is a true health consequence of a radiation accident, although it is not necessarily related to the magnitude of any release or exposure. As such, it must be dealt with as part of the public health aspects of nuclear emergency planning.

Following the Chernobyl accident, WHO intensified its involvment in this area. A WHO Working Group on the Psychosocial Effects of Nuclear Reactor Accidents took place in Kiev last May, in the framework of the Special Project on the public health response to nuclear accidents set up by the WHO Regional Office for Europe. The report from this Group, which contains specific reccomendations for future action, will soon be printed (19). A large portion has been given to psychosocial issues related to preparadness, mitigation and relief from a nuclear accident in the above-mentioned memorandum of agreement signed between WHO and the Government of the USSR.

## WHO'S LEADING ROLE IN THE PSYCHOSOCIAL FIELD RELATED TO NUCLEAR REACTOR ACCIDENTS

It now seems necessary to discuss the main reasons which underscore the need for WHO's involvment and role in the specific psychosocial field. They have to do with the inherently 'transnational' character of nuclear reactor accidents; with the importance of public information in provoking and modulating its psychosocial effects; with the importance of the primary care sector in dealing with the bulk of the psychological morbidity associated with the accident; with the transfer of knowledge and skills in this area from countries with experience and detailed programmes to countries having less resources, such as developing countries, which are increasingly equipped with nuclear energy; and finally with the need for international monitoring and epidemiological data collection of possible long-term effects of exposure, such as mental retardation.

(1) THE TRANSNATIONAL CHARACTER OF NUCLEAR REACTOR ACCIDENTS

A specific characteristic of nuclear accidents is the dynamic they entertain with distances. Chernobyl is especially striking in that it has had the effect of radically removing a variety of distances. Be they geographic or national, corporeal or fantastical, economic or social, many slowly built and firmly installed distances have suddenly collapsed. The protective role of frontiers, those official and legal limits, markers of where proximity becomes invasion, historically established through countless wars and treaties, suddenly ceases in this type of accident.

Given the inherently 'transnational' character of this type of disaster, an adequate response has to be set up at the same transnational level. In the psychosocial field, this means that international coordination by a specialized health agency is indisputably needed in terms of preparedness and intervention programmes, in order to ensure consistent and uncontradictory responses in the various countries affected.

Moreover WHO is in a special position to ensure a common scientific international language among the various researchers and clinicians active in the medical and psychological field. The adoption at an international level of the 10th Edition of the ICD will certainly be a crucial step in this direction (20).

## 2) PUBLIC INFORMATION

Public information is of critical importance in provoking and modulating the psychosocial consequences of a nuclear reactor accident. Already in the 1958 Study Group Report it was openly recognized that in the field of nuclear energy "... what is found with particular frequency is a sense of confusion, and a mistrust of the sources of information. Many people point out that a number of repeated reassuring assertions by atomic experts have subsequently been contradicted by other atomic experts or by later events... It cannot be doubted that widespread among people is a sense of disorientation with regard to atomic energy matters, but far more damaging is a general mistrust of information sources... There is a general distrust of scientific dicta. This mistrust is

expressed often in deliberately unscientific or anti-scientific attitudes on the part of the general public... It is the right, even the duty, of scientists to give an opinion on a scientific matter, but they must do it in a way that will avoid any confusion between facts and judgments on facts... A further difficulty is in the nature of communication between scientist and non-scientist. The latter may be trained to think in arbitrary terms requiring "yes" and "no" answers and may in consequence be bothered by the scientist's answers in terms of gradation and multiple qualifying considerations. Wherever the authorities' need to distinguish "black" from "white", to define a "right" answer and a "wrong" answer to every problem is for some reason excessive this pressure for what might be thought of as "bipolar" thinking and decision-making is bound to be a source of great exasperation, misunderstanding and irrational decision: the authorities feel they are getting answers which are impossible to use, while the scientist feels he is being confronted with unanswerable questions and coerced or tempted into committing himself."

Difficulties of technological acceptance involve therefore both a communication problem and a far-reaching erosion of confidence in the experts. In this sense analyses of the impact of Chernobyl often refer to loss: loss of control, loss of confidence, loss of credibility.

A very important implication which emerges from these considerations is the need to define victim groups. Traditionally victims of a catastrophe would be defined as those who were

physically touched by its effects. On the contrary, however, the notion of victim cannot be limited to those persons physically exposed to toxic emissions. The victim group in the case of a major disaster such as a nuclear reactor accident potentially encompasses all those who receive the bad news of the accident. For larger populations, the bad news will not be accompanied by directly visible events or damage. The Chernobyl disaster was especially striking in this regard. In the first weeks and months after the accident, very limited public information was provided to the affected populations. Then, over the last two years, these populations have suddenly been exposed to a barrage of information, with many contradictory and inconsistent news items and rumours, all of which has resulted in an information overload. The severe psychosocial effects of this situation have been stressed in the Report of the WHO Working Group (19) mentioned above, as well as in other papers (16, 21-13).

International organizations with responsibilities in nuclear safety and radiation protection have therefore a clear duty to provide both general and specific background information. WHO is in a strong position, as the international health authority, to encourage such activities. Diverse interpretations from these organizations of the potential public health consequences of an accident could seriously confuse the public, and create additional difficulties for national authorities. Accurate, trustworthy, and easily understood information about radiation and its health effects should be provided to the population at a local level.

Equally or even more important is to consider the way in which the authorities should present information if an accident occurs. In many cases people have merely been flooded with data; nobody has shown them how to deal with or cope with these data. One of the few 'principles' in this field that seems to be useful is that comparisons are more meaningful than absolute numbers or probabilities, especially when these absolute values are quite small. WHO can provide guidance in presenting correct but inherently complex information. The key role which can be played by an international organization is crucial at this level, since the information provided by it is generally seen as more 'neutral' and 'authoritative' than that coming from other sources, and it can therefore facilitate public compliance with necessary measures, prevent or minimize worries and fears likely to produce extensive psychosocial consequences, and finally help to restore a cooperative climate.

However, building a better public understanding of nuclear risks and informing the public correctly in case of an emergency is only a part of what needs to be achieved if people are to be enabled to respond more rationally to a future emergency.

The central issue then is how to facilitate an evolution from the provision of information and recommendations, to a situation of effective learning. Effective learning, in this sense, is that which allows individuals and groups to develop better adapted and more efficient coping strategies during and after an accident.

Setting up such effective learning implies more than providing

available knowledge of the risks associated with industrial activities and substances through improved risk analysis and assessment. It implies as well improving the knowledge and understanding of the reactions and needs of individuals and groups in times of emergency.

This last supposes a substantial change in the current methods of risk analysis/assessment/management, which today could be called substance centered, i.e. focusing on the nature of the substance, ways in which it may be emitted, its effects at various doses, and its means of measure and control. The new methods should focus risk analysis and actions on populations: understanding and anticipating risk perception, individual and group behavior in industrial accident situations, coping strategies, learning. In this area the role played by WHO can be crucial, as the inclusion of specific preparedness and intervention programmes in the framework of more general programmes dealing with emergencies provides general guidelines for psychosocial preparedness and interventions in case of disasters.

3) TRAINING PROGRAMMES FOR THE PHC WORKERS

As seen following the nuclear accidents which have occurred to date, besides a certain number of people who have been severely affected by radioactive exposure, there will be a much larger number of people who will probably not have received a dose that could cause a non-stochastic effect or even a dose of any

significance. Functional complaints and somatization disorders will be particularly common among people attending primary health care and medical facilities. A large number of people who have not been exposed to radiation at all will present themselves to medical facilities, especially to primary care centres. In order to cope with general anxiety and uncertainty about the possible health effects of explosure to radiation, people focus on the more tangible aspects of their physical state of health, seeking out the health care system and requesting explanations. In the absence of reliable data about the health effects of the accident, medical care workers lack adequate explanations and respond predictably with the extensive and intensive diagnostic screening of populations and individual patients. As a result, hitherto unobserved morbidity patterns and individual variations emerge which are without explanation and which confuse the situation further. The paradox in the situation, however, is that attempts to reduce such illness behaviour and such extensions of the diagnostic procedures, in order to diminish the probably unfounded attribution of symptoms to exposure to radiation, would deprive people of a coping strategy if no alternative were made available.

There are, therefore, three main consequences of this situation: first, it is likely that the bulk of the psychological morbidity associated with a nuclear reactor accident will be seen in the primary care sector, or within the medical services available to the population. Second, it is unlikely that the majority of people will ask the help of specialist mental health

services, if available, as they see themselves as victims of an extreme adversity, needing medical help for their somatic problems. Third, it is mandatory to train health care personnel in handling this morbidity. The proper handling of the psychological problems associated with a nuclear accident is of great importance and must be included in the training programme of all medical care workers potentially involved in the care of affected people. In this regard WHO is in the unique position to help in setting up these training programmes, thanks to its long-lasting experience in incorporating mental health into primary health care (24).

In general terms, educational programmes and training courses should be aimed at increasing the level of knowledge about radiation in general, about its possible effects on health, including psychosocial consequences, and about the environmental consequences of an accident. These programmes need to be tailored to specific groups, such as medical personnel, school teachers, civic and religious leaders, and the general public.

Specific programmes for health care providers should include the health aspects of radiation exposure, general psychological and psychophysiological concepts about people's reactions after a disaster and other stressful situations, and variations in the way different groups of people perceive the risk from different types of hazards. The programmes should also include simple and effective ways of dealing with psychosocial problems.

## 4) TRANSFER OF KNOWLEDGE AND SKILLS BETWEEN COUNTRIES

It is well known that an increasing number of developing countries are choosing nuclear power as a primary source of energy. However, these countries generally do not have the necessary knowledge and resources to deal appropriately with any possible emergency. It is therefore essential that WHO accept responsibility to act as an indispensable tool for the transfer of knowledge and skills from the richest countries, or from the countries with extensive experience in this field, to countries which do not have this knowledge and these skills and which may lack the resources and the capabilities to acquire them in a short time. This transfer of knowledge encompasses also the psychosocial field, in particular preparedness and emergency programmes.

5) EPIDEMIOLOGICAL MONITORING AND DATA COLLECTION

The importance of ensuring proper epidemiological surveillance of populations exposed to a radioactive release has been emphasized on several occasions. As regards neuropsychiatric consequences of radioactive exposure, mental retardation deserves special importance. Studies of the survivors of the atomic bombing of Hiroshima and Nagasaki who were exposed to ionizing radiation while pregnant have demonstrated a significant increase in perinatal loss and the vulnerability of the developing fetal brain to injury, especially in the period ranging from 8 weeks to 15 weeks after fertilization, when the fetus's developing brain is known to be especially sensitive to radiation. However, the epidemiologic data are too sparse to settle unequivocally the

nature of the dose-response function and, in particular, whether or not there is a damage threshold (25). On the other hand it has been determined that the effects on the intelligence of people irradiated in utero at Hiroshima and Nagasaki resulted directly from the effect of irradiation on the brain, not indirectly from damage to the fetal thyroid gland (9). Therefore, among exposed populations a group requiring special consideration is pregnant women, particularly those between the eighth and fifteenth weeks of pregnancy. It is essential to ensure reliable, ongoing monitoring and epidemiological data collection, in order to ascertain the possible higher incidence of mental retardation and the overall long-term effects on the brain of in-utero exposure.

A programme which has provided and will continue to provide valuable information in this field is EUROCAT. This is a project, supported by WHO, for the epidemiological surveillance of birth defects in the majority of countries of the European Communities (9). The monitoring system includes 23 regional registers each covering a defined population and including live-born and stillborn babies and children up to the age of 1 year. The data base includes 32.000 cases of congenital anomaly registered in 1980-1986 from a reference population of about 1.6 million births.

The EUROCAT study on the frequency of Down's syndrome in its registers between January 1986 and March 1987 showed no statistically significant increase in the number of cases following the Chernobyl accident. Other studies were underway, including investigations of effects on the central nervous system

(26).

## CONCLUSIONS

WHO, as the leading international health agency, is in the unique position to work actively in the overall field of preparedness, prevention and relief with regard to nuclear accidents. Its role in the specific psychosocial field has become increasingly important for a variety of reasons, and should be carefully considered by all researchers and clinicians active in this field.

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