one of our urgent tasks will surely be to base all regulation and policy decision in this field upon progressively more solid and more widely agreed scientific assessments of this kind. In this area, the Radiation Committee has developed a close and fruitful co-operation and has become a well balanced scientific instrument at the disposal of the General Assembly of the United Nations.

HIGH ENERGY RADIATION IN CANCER TREATMENT

Certain basic recommendations on the use of supervoltage radiation and radioisotope teletherapy in the treatment of malignant growths have been made by an expert study group which met in Vienna in August this year. The group, convened jointly by the International Atomic Energy Agency and the World Health Organization, was composed of 20 radiotherapists and radiation physicists from 12 countries, under the Chairmanship of Professor B. W. Windeyer of the Meyerstein Institute of Radiotherapy, Middlesex Hospital, London.

High energy radiation, used in the treatment of malignant tumours, can be either in the form of gamma- or x-rays or in the form of beams of accelerated electrons. The source of radiation is kept at a certain distance from the patient.

The study group was agreed on the value of supervoltage radiotherapy, including gamma-ray and high voltage x-ray therapy as well as electron beam therapy. The required gamma radiation can be obtained from large sources of radioactive materials like cobalt 60 or caesium 137, while electron beams are produced by high voltage accelerators.

Four Categories

The experts felt that while it would be somewhat arbitrary to divide the various sources of supervoltage radiation into rigid categories, certain broad divisions might be useful. They considered the sources in four broad categories: large supervoltage units, intermediate units, small isotope units and units of electron beams or very high energy x-rays.

The first group includes supervoltage x-ray units in the range of 2-6 MeV (million electron volts) and radiocobalt units in which the radioactivity is of the order of 1 000 curies or more. These sources are kept at a minimum distance of 75 cm from the tumour to be attacked. The group agreed that such apparatus was essential for all institutions undertaking the treatment of cancer by ionizing radiations.

Intermediate units were defined as smaller cobalt units working at source/tumour distance in the range of 35-50 cm. It was felt that on purely scientific grounds, such units were not as good as the large units and should not be encouraged; the only reason for their adoption would be one of economy.

As regards small isotope units working at a distance of 25 cm or less, it was agreed that these were of value for the treatment of certain selected sites in the body (e.g. head and neck) and they should be made available either in addition to, or in the absence of, large units. Such units may be specifically designed to hold either cobalt 60 or caesium 137.

The experts were of the view that electron beam therapy or very high energy x-ray therapy (for example, from betatrons and other accelerators) were of great interest and had a valuable part to play in the treatment of cancer by ionizing radiations. While they did not consider such facilities essential for all radiotherapy centres at the present stage, they thought it advisable to install such facilities at the larger and better equipped centres so that more experience could be gained of their use.

The experts made it clear that while supervoltage radiation should be a part of an organized radiotherapy department, the radiation facilities at any particular establishment should not be of the supervoltage type alone. The high energy facilities could be fruitfully used only when there was a background of general radiotherapy.

Need for Training

The group emphasized that supervoltage radiotherapy, in common with other forms of radiotherapy, should be conducted only by adequately trained and qualified personnel, including radiation physicists, and specified the training and qualifications required of such personnel. It was felt that specialized training was one of the main requirements at the present stage and the training programmes of IAEA and WHO should be utilized extensively for this purpose. It was further suggested that post-graduate training of radiotherapists and radiation physicists should be arranged by means of fellowships, visits of experts should be organized to give instruction and advice in different countries, and composite groups of workers should be enabled to study new techniques in other countries.

The experts recommended that further study groups should be convened to discuss such subjects as the determination of radiation doses in clinical practice and standardization of radiotherapy methods for their clinical evaluation. Another suggestion was that IAEA and WHO should promote, support and undertake research on problems of radiation medicine as related to atomic energy in those fields in which international co-operation was most desirable.

It is pointed out that the recommendations have been drawn up with a view to giving practical guidance and should be considered for that purpose rather than as a contribution to fundamental knowledge on the subject. In particular, it is felt the recommendations may be of special value in those countries where radiotherapy is not yet firmly established.