



# Practical Implications of the ICRP Recommendations (1977) and the Revised IAEA Basic Safety Standards for Radiation Protection

The Seminar provided a forum for exchange of views concerning the practical problems associated with the implementation of the recommendations published in ICRP report No. 26. The papers presented and the discussions which followed will greatly help the IAEA, WHO, ILO and OECD/NEA to finalize the draft of the Basic Safety Standards for Radiation Protection.

The papers and discussions centered mainly on three items — risk assessments and the associated detriment which might result from exposure to ionizing radiation as encountered in radiation work, optimization of protection; and some practical difficulties associated with the implementation of the recommendations.

Examples of the application of optimization were presented which helped clarify the methodology of optimizing protection. General and panel discussions helped to clarify the question of intuitive versus quantitative optimization. The consensus was that optimization of protection is mainly an intuitive operation, the quantitative tools being an aid to the process. These tools are more important in optimizing the design of installations and equipment, while the process is less quantitative in the case of optimization of operations.

The value of the man-rem was discussed in a few papers and in panel and other discussions. It became clear that its value can be different in different cases of justification and different again in justification and optimization assessments. Therefore a range of values is needed rather than a single universal value. However, for optimization assessments where parts of the collective dose occur in different countries, the principle of geographical equity was advocated, implying the same value to the man-rem in all countries.

Some papers and discussions centered around the identification and evaluation of detriment. Two types of detriment were identified, namely "objective" detriment (composed of stochastic effects which could be assessed from knowledge of the collective effective dose equivalent commitments and is therefore quantifiable) and "perceived" detriment which includes non-quantifiable effects. To take account of the latter it seems feasible to use quantified optimization first and then for decision-making to take other non-quantifiable factors into consideration in value judgements.

In the area of practical application, the new meaning of the dose limits, whether to the worker or the public, and the meaning of the "authorized limits" have been clarified as well as the use of the new quantity – the effective dose equivalent – both for control of doses in relation to dose limits and in assessments of the collective dose for purposes of justification and optimization. Practical problems have been mentioned with regard to dose limits for the eye and the skin. The dose equivalent index and alternative quantities for assessing exposure from, in particular, soft X-rays were presented.

It was also noted at the national level that there was some diversification in the application of the dose limitation system. Representatives from employees and workers circles from several countries participated in the Seminar. Papers were presented from groups of some of the trade unions – Confédération Française Démocratique du Travail (France) and Dansk Metal Arbejderforbund, Copenhagen (Denmark) – pointing out some aspects that the workers organizations would like to see considered in greater depth by ICRP.



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The symposium was attended by more than 100 participants from 24 countries and 3 international organizations. Thirty-eight papers were presented in seven sessions.

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# Manpower Requirements and Development for Nuclear Power Programmes

It has been once more recognized that the availability of adequately qualified manpower is an essential condition of success of any nuclear power programme or project, as well as of transfer of technology. This is especially relevant for the developing countries with nuclear power programmes or intending to start such programmes. At present, there are six developing Member States of the IAEA which have 12 nuclear power plants in operation with a total of 3600 MWe installed capacity. These and six more have 25 nuclear plants under construction with a total of 15 000 MWe. Thirty additional developing countries are in different stages of planning or implementing their first nuclear projects. It is expected that by the year 2000, the installed nuclear capacity of the developing world will be between 150 and 200 GWe.

It has been estimated that if these development goals are to be achieved more than 100 000 people of the developing countries will have to receive specialized training during the next two decades. This means a very large effort and implies serious commitments to carry out adequate manpower development programmes. It will also require foreign assistance, wherever domestic training opportunities are unavailable.