HEALTH PHYSICS ASSISTANT - A SPECIAL TRAINING IN HEALTH PHYSICS IN THE FEDERAL REPUBLIC OF GERMANY

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The expansion of nuclear research, the large-scale economic use of nuclear energy for electricity generation and the increasing number of radioactive substances and ionizing radiation used in medical applications entail continuously rising requirements to health physics staff regarding not only its number but even more the quality and degree of training. So, in addition to training technical health physics personnel to be instructed within a short period about the performance of routine tasks in particular fields, special expert staff will have to be trained in the future who will be capable to recognize and solve health physics problems due to the well-funded varied health physics training they have received over several years.

In the Federal Republic of Germany knowledge in health physics is imparted mainly as a supplement training in courses of some days up to a few weeks duration. This may be adequate for strictly defined sectors, although it is not sufficient as to the education of a true health physicist. Already in the early sixties the necessity of such special training was recognized at the Karlsruhe Nuclear Research Center and training was started of "healths physics assistants" as we call this profession.

The problems to be solved by health physics assistants in the execution of their occupational duties from the very outset made it clear that the training objective could be met only by means of the dual training system: practical training in a nuclear facility, the Karlsruhe Nuclear Research Center in this case, and theoretical education, to back up and add to the knowledge acquired, in a vocational or technical school. This dual type of training imparts both the technical, practical knowledge, i.e. the skill and the theoretical aspect, i.e. the knowledge of one's occupation.

Training at the Karlsruhe Nuclear Research Center was begun on the basis of this concept in 1960; to this day, 1977, this agency has remained the only training facility for this vocation in the Federal Republic of Germany. By 1976, 72 health physics asssistants, mostly ladies, had completed their training courses with a final examination, 15 are presently undergoing their training.

Rougly one third of the health physics assistants began their careers in jobs at the Karlsruhe Nuclear Research Center or have stayed with the Center, others work in nuclear industry, in reactors, research institutions and hospitals with nuclear medicine sections, not only in the Federal Republic of Germany, but also abroad and with international organizations.

The training takes two years; courses always begin on September 1 of a year. As a result of the small number of training facilities available, no breakdown into age groups is attempted either for the practical or the theoretical part of the training. Admission to the courses requires the leaving examination of a high school (the German Abitur), a rule which has not been adhered to only in a few cases so far.

The practical curriculum emcompasses all areas of health physics and is implemented mainly at the Karlsruhe Nuclear Research Center. The duration of practical training in the areas listed below is a function of the significance of each of these fields; it varies between 1 and 3 months.

- Work station monitoring in scientific institutes, reactors, accelerators.
- Environmental monitoring.
- Water and liquid effluents monitoring.
- Dosimetry (RPLD, TLD).
- α- and γ-spectroscopy, β-energy determination.
- Incorporation measurement (human body counter, lung counter).
- Radiochemical analysis.
- Maintenance and calibration of measuring equipment.
- Health Physics in nuclear medicine (in connection with the Vincentius Hospital of Karlsruhe).
- Radiation protection management (Atomic Energy Act, Radiation Protection Ordinance, nuclear safeguards).

One feature of the pracical training courses is the possibility to have a look over the fence, as it were, by attending health physics courses organized at a foreign institution, in this case the Service Central de Protection contre les Rayonnements Ionisants (S.C.P.R.I.) of Le Vésinet, France, and a supranational institution, the European Institute of Transuranium Elements run by Euratom at Karlsruhe.

Theoretical education includes the following fields:

- Lectures in special areas (mathematics, atomic physics and nuclear physics, biology and electrical engineering) at a vocational school (one day a week).
- Lectures on "basic principles of health physics" and "radiations protection measurement" at the University of Karlsruhe.
- Special courses of 1 to 3 weeks at the Nuclear Engineering School of the Karlsruhe Nuclear Research Center (basic course and supplementary course in health physics, radiochemistry laboratory lessons).

The training courses are completed with a practical examination (to be carried out over a period of two weeks) and a theoretical examination (written test paper and oral exam).

The training costs are paid in full by the Gesellschaft für Kernforschung; the trainees are granted a monthly training allowance of DM 600 - 700.

After the successful testing and execution, for a period of 15 years, of such health physics assistance training it was found necessary to seek government recognition of this training course and the final examination. We felt that the dual training system had to be retained at all cost, because it is characterized by its closed integration of theory and practice. A cours of studies purely geared to the system of a technical school or university would be too theoretical for purposes of practical health physics. For this reason, a solution was adopted which involved cooperation with the Vocational Academy of the State of Baden-Württemberg, because the main characteristic of that academy, unlike the general trend in this country, is the connection of specialized scientific and practical professional training. Theoretical education with the government-supported Academy and practical vocational training alternate for periods of 3 months each. In this way the positive experience with the dual training system can be conserved and the desired government recognition of this training course is now even enhanced by government supervised training connected with a state examination. Moreover, there is a possibility of a follow-on course: after at least one year of successful activity as a health physics assistant a trainee can add one year's course of studies to graduate with the state examination of "health physics engineer." Following the conclusion of negotiations still under way, the new kind of training is to be started on October 1, 1977; the present curriculum will remain unchanged. The number of applicants is high: there are more than 200 for 12 vacancies.