RECONSTRUCTION OF THE COMPLEX JOB-EXPOSURE-MATRIX FOR IONISING RADIATION IN DIFFERENT SITES OF THE URANIUM MINERS IN THE FORMER DDR

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As now well known, in the uranium mines of the former DDR higher collective dose had been accumulated as workforce had ever before been exposed to.
More than 400,000 workers had been employed between 1946 and 1990. More than 5000 cancer diseases have been acknowledged as occupational induced by ionising radiation.

The German workmen compensation institutes, who are responsible for the rehabilitation and compensation of occupational accidents and diseases, started a great investigation and research program to secure and evaluate millions of data files and medical reports, stored in the magazines of Wismut, which can contribute to our knowledge of the biological consequences of ionising radiation. Also included in this program is a project for evaluating a job-exposure-matrix [JEM] of those workers.
Of course the project is divided in several sub-projects and a lot of institutions are contributing.

The Bergbau BG (Industrial Injury Insurance Institut [IIII] for the mining Industry) together with the Institute of Radiation Protection of the IIII is working on the JEM.

The idea is, to evaluate -either by data files or by experiments- mean annual exposition from all sources of ionising radiation (that means: Rn; Rn-daughters, Uranium in dust, external gamma exposition) for certain reference-jobs and reference sites and estimate the job-related exposition by scaling for other jobs and sites.

To do so, it must be taken into account, that the expression „WISMUT" does not describe a single site ore factory but a trust which had run more than 30 different mines with more than 400 shafts and tunnels. Surface mining as well as processing plant were operated.

The situation becomes even more complicated when knowing, that a larger number of those facilities had only short operating time and had been shut down 20 or 30 years ago.

The largest problem is given by the missing radiation measurements of the first 10 to 15 years. The first, single measurements of Radon Gas and Photons have been performed 1955. Systematically performed measurements of Radon and short living Radon daughters have not been started before 1967.
That also indicates, that the exposure situation in the first ten years of operation, can not be evaluated by existing measurements. (Experiments to fill this gap of information are described elsewhere in this proceedings.)

Some information is expected to be delivered by a study which is performed by colleges in the former CSSR which has to be implemented in the project.
Other information had already been taken from files who had been kept in Russian records in Moscow. More than 20,000 pages of (written) text and 8,000 mine-drawings have been bought back from there and have already been evaluated.

The project will be finished during 1996 with the reports of the 6 main sub-projects:

1. Radiation protection in the Wismut Mines

2. Radiation exposure in the surface mines of the Wismut

3. Radiation exposure in the processing plants of the Wismut (finished 1995)

4. Radiation exposure in the Thuringia underground mines of the Wismut

5. Radiation exposure in the Saxonia underground mines of the Wismut

6. Radiation exposure by Radon daughters in public mines of the former DDR.

It is of course expected, that the derived JEM, which is first evaluated for compensating purposes is of great value for the just started epidemiological research on the subject.