

## No.: 0214 Appraisal of cases of occupational disease involving exposure to radiation

### ○ Problem

Employees may be exposed to ionizing radiation when they handle radioactive substances or operate x-ray equipment. Long-term exposure to elevated doses of ionizing radiation may cause disease (such as cancer) in exposed persons. At many workplaces, employees are also exposed to elevated doses of ultraviolet (UV) or infrared (IR) radiation. Examples include welding; the use of UV lamps for disinfection, crack detection or code reading; outdoor work (solar radiation); and work on metal furnaces and in glass-blowing shops. Following many years' or decades' exposure to UV or IR radiation, diseases such as cataracts, premature ageing of the skin or skin cancer may occur.



### Illustration

Reconstructed case of occupational disease: doctor's assistant irradiating babies with a sun lamp, which emits UV and IR radiation

If application is made for a disorder caused by radiation exposure to be recognized formally as a case of occupational disease, an investigation must be conducted into whether the radiation exposure may have caused the disease at the workplace (occupational diseases Nos. 2401 and 2402 in the annex to the Ordinance on Occupational Diseases (BKVO)).

### ○ Activities

In the course of such investigations into cases of suspected occupational disease, the radiation exposure is assessed by the BIA. In some cases, the exposure is

calculated mathematically; generally, however, measurements are performed at the diseased person's workplace. In cases of exposure to ionizing radiation, the effective dose or the partial body dose is measured to which the employee was exposed for several years. The probability of disease having been caused by the radiation exposure is calculated from this figure with the aid of radiation epidemiological tables. In the case of optical radiation, the effective UV/IR radiation for the duration of radiation exposure is determined. The result is compared to trauma thresholds or exposure limit values. A causal relationship has not been established for optical radiation to the same degree as for ionizing radiation, and some degree of experience is required in the appraisal of such cases.

### ○ **Results and Application**

Together with the associated medical assessment, the BIA assessment of radiation exposure at the workplace forms the basis for formal recognition of a disorder as an occupational disease. In close co-operation with ophthalmic experts, it has now been possible for the first time in a case to establish a direct link between cataracts and the effect of UV radiation. In another case, the BIA's assessment formed the basis for a policy decision by the Federal Social Court on the recognition of cataracts caused by exposure to UV radiation as an occupational disease.

### ○ **Area of Application**

Departments in the Institutions for Statutory Accident Insurance and Prevention (BGs) and other accident insurance institutions responsible for occupational diseases, occupational disease assessors, occupational physicians

### ○ **Additional Information**

- Siekmann, H.; Hockwin, O.; Müller-Breitenkamp, U.: Grauer Star durch UV-Strahleneinwirkung – Begutachtung eines Berufskrankheiten-Falls und Bestimmung der Schädigungsdosis. *Arbeitsmed. Sozialmed. Umweltmed.* 32 (1997) No. 10, pp. 385-393
- Ruling by the Federal Social Court dated 23 September 1997 - 2 RU 10/96, guiding principle: "Eine durch UV-Strahlung verursachte Linsentrübung kann eine Berufskrankheit i.S. der Anl. 1 Nr. 2401 zur BKVO (Grauer Star durch Wärmestrahlung) sein" (clouding of the lens caused by UV radiation may be an occupational disease as defined in Annex 1 No. 2401 of the ordinance on occupational diseases (cataracts caused by thermal radiation))

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[BIA, Division 4: Ergonomics – Physical environmental factors]  
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