

## **4<sup>th</sup> European ALARA Network Workshop**

Management of occupational radiological and non radiological risks:  
lessons to be learned

### **Compensation of radiation workers in Germany**

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## Compensation of Nuclear Workers

Compensation in Germany concerns only to the restitution of injuries or diseases which developed due to an occupational accident or after the impact of hazardous substances or after physical impact e.g. of radiation. Compensation does not regulate any actual loss which may be the result of such an accident.

Depending on the circumstances of the single case, the first aim of the compensation regime is the complete rehabilitation of the worker. Due to the grade of injury the measures may be limited to the curing of the injury, or may be extended even to a re-education if the person can not longer work in his job. If the ability to continue work has got lost at all, a pension is part of the compensation regime also.

If the accident or the disease leads to the death of the worker, the compensation also includes his dependants. A pension is paid to widows and to orphans-as long as the latter are in the education or on the job training phase.

The compensation regime is codified in the books of social security laws and the standard of occupational diseases. There are no differences in this codification concerning different industries or different impacts. That means, that the claim for occupational diseases in nuclear industry is formally treated equal to that in chemical industry or electrical engineering industry. The legal codification also does not leave any leeway for private regulations between employers and employees as they are possible and fact in other countries.

The implementation of the compensation regime is one of the tasks of the mandatory industrial accident insurance institutions. This insurance is part of the mandatory social insurance system in Germany. It was erected about 100 years ago when establishing chancellor Bismarck's social system. Health insurance, pension insurance fund and occupational accidents insurance were created followed by the unemployment insurance later on. Nearly all employed people in Germany are legally forced to be insured in this system. To be free of this insurance is only possible when being employer (accident insurance) or having a yearly income above certain limits.

The refunding of the health- pension- and unemployment insurance is shared between employers and employees while the Accidents insurance is all paid by employers. Therefore this insurance replaces the liability insurance regarding the sequels of occupational accidents and diseases of the employers against the employees.

The Result of this very special structure of social security system is, that benefits from the occupational accident insurance can only be granted under certain, strictly defined conditions. If these conditions, to be reported further on, are not fulfilled, the legal accident insurance is not allowed to take over any compensation costs for the particular case. In this case, health- or pension insurance have to enter.

If an accident happens or a disease occurs which is presumed to be in causal connection with the work, notification should be made at the responsible occupational accidents insurance. The incident may be claimed e.g. by the involved person, his physician or the employer or even somebody else. The insurance institute will then start a legal act investigation to clarify the circumstances of the event or impact or exposition and to come up with a decision

concerning whether compensation is to be granted or not, whether the case has to be admitted or not.

Formally, accidents and diseases are treated in the same way. But there is a special fact about occupational diseases. Only those diseases can be admitted as "occupational diseases" which are defined in a statutory standard list. As far as a particular disease is not included in this list a scientific discussion must show that new scientific results will lead to a soon inclusion of the special disease to the list. Otherwise it is definitely excluded from the compensation.

Diseases, caused by ionising radiation are included in that list since about 1920. While first concerned only to X-rays it was extended to Radon and other nuclides in the fifties. Since the sixties the general phrase: "diseases caused by impact of ionising radiation" ensures that all diseases, which are connected with the impact of ionising radiation by medical or biological science, can be acknowledged.

The procedure of compensation longs first for a proper investigation of all circumstances concerning the claimed impact. It must be verified, that the impact or exposure was causal in connection to the occupation. (Unnecessary to stress the fact, that in the case of ionising radiation the evaluation of the conditions of exposure and the resulted dose are most important.), secondly it is to verify, that the impact or exposure caused the injury or disease.

Compensation can only be granted, if both causalities have been investigated and proved to be true.

The first coherence, the connection between the occupation and the exposure, has to be shown as an unequivocal evidence. For the second coherence, the connection between exposure and disease, it is sufficient to show a prevailing evidence for causation. It is evident, that, if the second condition would have been of similar strength than the first one, stochastic diseases never could come to a compensation. In the case of ionising radiation, we all know, that a direct causality between exposure and injury or disease at the best can be shown for deterministic effects but never for stochastic effects.

The practical procedure of investigation of both causalities is shortly shown in the following paragraphs.

First, as already was shortly mentioned before, in the case of a claimed impact of ionising radiation, we start with an extensive investigation about the working conditions of the claimant to work out all possible phases or possibilities showing her or him as radiation worker or in connection with radiation in any other way. Even in the case of controlled radiation workers, where dose files should be kept for 30 years, this is no trivial problem. Think e.g. about the fact, that in the Federal Republic of Germany a central Dose Registry started work not before some few years ago. Even more complex the situation becomes, when exposure is claimed having happened years ago and the person was not radiation worker and so not under control.

Investigation is done by the occupational accident insurance institution on legal act basis. The institution has to investigate carefully and extensive. The investigation has to take into account all circumstances who can help to clear up the situation and thereby it has to stress all circumstances which can be of advantage for the claimant. The latter phrase is an original quotation from social security act. Although this causality between occupation and exposure or impact has to be shown as unequivocal evidence the lower courts tend to soften this line in the last years for the benefit of the claimant. They take into account the very difficulties to approve for workplace circumstances after 20, 30 or more years.

In any case it is not accepted, when we, who are performing this investigations, rebut the claimed circumstances just by referring our experience or knowledge. Almost all investigations lead to a final report,(which must not be as bulkily as a thesis) but where the legal and scientific bases of our recommendations have to be quoted or referred to.

In Germany a large number of rejected claims for compensation will be brought to court. It is expected, that the statements and reports of the insurance institute will be done very carefully and the decisions are justified on a scientific level. No doubt, that in case of exposure of ionising radiation, this can mean a long lasting investigation and an unavoidable delay in closing the case and finding a decision.

From a scientific point of view, the second causality which we have to investigate, is of more interest. When the impact or exposure was verified with sufficient accuracy, we have to find coherence between this exposure and the disease.

If an impact or exposure had undoubtedly happened and a dose reconstruction was made, the case usually is given to a expert in the field of radiation medicine or biology. His duty is to check, whether the claimed disease is known as a possible consequence of the impact of ionising radiation; and more important: he is also requested to give a statement to clarify the causality between impact and disease in that particular case.

Of course it must be clear, that in the case of stochastic effects causality can not mean an unequivocal evidence but can only mean a prevailing evidence in a legal sense.

The expression "prevailing evidence" which follows from the legal requirements of compensation acts, has to be translated to medical or scientific language now as the insurance institute has to request the medical expert to prove whether just this evidence is given.

The supreme social court in the federal republic defined this kind of prevailing evidence for a damage as given, when more arguments affirm the connection between impact and damage or injury than arguments negate this connection.

In the case of stochastic damage and radiation. scientists translate this legal demand into a comparison of risks. The radiation induced risk for a particular disease is compared to the sum of all other risk which may induce that disease. The latter is known then as spontaneous risk.

During the last 20 years in Germany the probability of causation established as quantitative size for this comparison of risk. Nevertheless the radiation risk is to evaluate in each particular case very carefully. It is not sufficient just to use the radioepidemiological tables , which have been re- edited new by Chmelevsky, Nekolla and Barclay some years ago, in the sense of simple mathematical tables.

The medical expert has to evaluate and compare the relevant risks and to make a statement then about the relevant causalities . He also has to take into account all uncertainties of the risk evaluations and give a final recommendation whether the accident insurance may accept the claim or not. And he makes suggestions to the grade of diminution of the earning capacity, if necessary.

Under certain circumstances a probability of causation may rise above 50% even if the annual dose-limits never have been exceeded. In fact, in Germany in some cases compensation has been paid in case of leukaemia with lifetime dose under 400mSv (which is legal limit in Germany).

There is one more detail in the compensation regime system in Germany which may be of interest. The occupational accident insurance institutes are public bodies with a self-

governmental structure whose supreme boards consist of equal numbers of employers and employees representatives. So the committees who finally come to the decision whether a claim is successful or not also consist (only) of employers and employees representatives.

The legal instrument of contradiction against this decision leads first to a new investigation and a new recommendation statement of the institutes administration until it meets again a self-governmental committee (other than the first one) to decide the case again.

Against this decision, the claimant may go to 1<sup>st</sup> level of social court (which is cost free for him.) We notice the number of cases taking this way is growing which may be the result of increasing sensibility of German public against radioactivity and everything which is connected with nuclear power.

Maybe it is further more of interest, that in Germany, where about 300,000 Persons are controlled as radiation workers, about 5 to 7 compensations due to ionising radiation are acknowledged per year outside former uranium mining! Most of those cases are radiographers or physicians with acute or chronic injuries. The uranium mining in the former German Democratic Republic, which was given up in 1990 completely, still results in about 250 lung cancers per year during the next 20 years or more.