The Compensation Scheme for Nuclear Industry Workers in the United Kingdom

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Nuclear Installations Act 1965

- Imposes a strict statutory duty upon the operator of a nuclear facility in the UK not to cause injury through exposure to ionising radiation.
- A claim of personal injury as a result of such exposure must establish causation, but not negligence.

The No-threshold Dose Model

- During the 1970s, a no-threshold dose-response relationship between cancer and previous exposure to ionising radiation came to be widely accepted.
- Implied that occupational exposure to radiation leads to some increased risk of future development of cancer.

Legal Actions

- During the 1970s, five trade union-sponsored legal actions were brought against British Nuclear Fuels plc (BNFL) by Sellafield workers (or their dependents) alleging that cancers had been caused by occupational exposure to radiation.
- Eventually settled by BNFL “out of court”.
- Demonstrated the real possibility of a successful claim in court.

Sellafield, NW England

1982 Compensation Agreement

- Legal claims are expensive, traumatic and time-consuming.
- In the early-1980s BNFL and its trade unions examined the possibility of agreeing a voluntary compensation scheme as an alternative to litigation.
- A compensation agreement was introduced in 1982, covering cancer deaths among BNFL radiation workers.

1982 Compensation Agreement

- The Compensation Agreement used the “Assigned Share” (or “Probability of Causation”) methodology to assess the merit of individual claims.
- The risk models used were based upon those set out in ICRP Publication 26 (1977).

Assigned Share

- The Assigned Share (Probability of Causation) methodology allows an inferential weight to be attached to the conclusion that a particular case of cancer was caused by a specific prior exposure to ionising radiation.
- Uses radiation risk models to calculate the excess risk resulting from a specified exposure to radiation.

Assigned Share

- The Excess Relative Risk (ERR) is the proportional increase in risk caused by radiation exposure.
- ERR is obtained by standard radiation risk models.
- Then the Assigned Share, AS, is

$$AS = ERR/(ERR+1)$$

Assigned Share

The Assigned Share, AS, is the proportion of cases of the particular type of cancer under consideration occurring in a hypothetical extremely large population of people, all with the same pertinent characteristics (received dose, sex, age-at-exposure, age-at-diagnosis, etc.) as the particular case under consideration, that will have been caused by the specific exposure to radiation.

Compensation Agreement

- A planned review of the Compensation Agreement in 1986 led to the Agreement being extended in 1987 to non-fatal cases of cancer and to UK Atomic Energy Authority (UKAEA) radiation workers.
- In 1991, the technical basis of the Agreement was re-examined in the light of the US NAS BEIR V Report.

UK Compensation Scheme

- Compensation Scheme for Radiation-Linked Diseases now includes the great majority of radiation workers employed in the UK nuclear industry.
- It covers radiation workers in the nuclear power, nuclear weapons and radiochemical production industries, and in the dockyards and armed services.
- Claims are financially supported.

UK Compensation Scheme

- Private agreement between employers and trade unions to offer an attractive alternative to litigation.
- Use of the Scheme by a claimant is voluntary – legal action still possible.
- Managed and run jointly by employers and trade unions, and administered by an independent Executive Secretary.
- Applies to classified radiation workers who are members of a trade union.

UK Compensation Scheme

- Currently, the cancer risk models used by the Scheme are loosely based upon those set out in the US NAS BEIR V Report (1990).
- The Scheme also covers cataracts.
- Owing to the negotiated nature of the Scheme and to enhance its attractiveness a number of generosity factors are included to address uncertainties.

Scheme Generosity Factors

- Examples of generosity factors
  - DDREF of 1
  - Enhancement factor applied for those diagnosed under 50 years of age
  - Dose records interpreted conservatively
  - Non-smokers favoured in respiratory cancer claims.
- Proportional recovery.

Proportional Recovery

Whereas in the law courts an “all-or-nothing” decision is made on the basis of the “balance of probabilities” (usually taken as an AS of 50%), the Scheme pays out for an AS of between 20% and 50% – ¼, ½, ¾ of full payment at AS values of 20%, 30% and 40%, respectively.

Scheme Assessment of Cancers

- All cancers except chronic lymphatic leukaemia, Hodgkin's lymphoma, skin melanoma and mesothelioma are eligible for assessment under the Scheme.
- Cancers are grouped as leukaemia, respiratory, thyroid, multiple myeloma and other cancers for the application of risk models to determine AS.

Radiation Doses

- Organ-specific doses are obtained primarily from occupational dose records.
- No body shielding factors are applied for doses from external sources.
- Internal doses obtained from bioassay data.
- Some dose reconstruction (e.g. for neutron doses) may be necessary.
- All doses used in the Scheme are determined from agreed protocols.

Case Processing

- For each case an agreed set of facts is established
  - Disease (ICD code)
  - Occupational dose to affected organ/tissue
  - Employment history (and union membership)
  - Medical history
  - Other relevant issues (e.g. smoking history for respiratory cancer claims)

UK Compensation Scheme

- Certain cases (such as breast and thyroid cancers, and respiratory cancers where there is a history of smoking) are referred to an independent Expert Panel for evaluation and a decision.
- Level of payment is agreed by legal advisors representing employer and claimant.
- Successful claims should achieve final settlement within 12-18 months of initiation.

Scheme Payments

- The Scheme has dealt with ~1200 cases.
- Over 100 cases have received payments.
- Total payments made amount to >£5M.
- Most payments have been made for AS values <50%, which are unlikely to have been successful in the law courts.

UK Compensation Scheme

The UK Compensation Scheme has successfully dealt with the legacy of relatively high occupational doses received during the early years of the nuclear industry, and offers a continuing framework of dealing with claims of radiation-induced personal injury.

UK Compensation Scheme

The UK Compensation Scheme is very much a pragmatic initiative jointly undertaken by employers and trade unions in an attempt to avoid the adversities of litigation by offering an attractive alternative; but individuals cannot be prevented from taking legal action if they so choose, although they would have to personally finance such legal action.

Current Issues

- The risk models underlying the Scheme are undergoing examination in the light of the models set out in the recently published US NAS BEIR VII Report and in the immanent UNSCEAR 2007 Report.
- The Scheme assesses the potential impact of scientific developments through its Technical Working Party.

UK Compensation Scheme

More details of the Compensation Scheme for Radiation-Linked Diseases can be found at its web-site:

http://www.csrld.org.uk