

2.8 THE ATOMIC ENERGY OF CANADA LIMITED (AECL)  
EMPLOYEE HEALTH STUDY: A STATUS REPORT

J.L. Weeks

In 1976, it became apparent that organized data on the health and, in particular, the causes of death of AECL employees were not available. At that time, therefore, planning began for a study by means of which mortality data could be assembled for a group consisting of current and past AECL employees. The planning period lasted four years and the AECL Employee Health Study commenced formally in 1980 April. Programs related to the epidemiology of nuclear generating station employees and of employees in the mining, milling and refining sectors of the Canadian nuclear industry were already in existence [1], and epidemiological data will eventually become available for a large part of the Canadian nuclear fuel cycle.

The AECL study has been designed to make full use of data that had already been put together for other purposes. Use has also been made of medical record linkage techniques developed by Dr. H.B. Newcombe that could link individual identifying data with the National Mortality Data Base maintained by Statistics Canada. This data base contains information on the causes of death of people who have died in Canada since 1950 and is a major epidemiological asset, which greatly facilitates the follow-up of those who have left the service of AECL. Access to the data base is strictly guarded and data are released in statistical form only.

The study population has been divided into three groups:

- (1) Past employees at the Chalk River Nuclear Laboratories (CRNL) and Whiteshell Nuclear Research Establishment (WNRE). (A past employee is defined as one who left the employ of AECL before 1980 January 1.)
- (2) Current (1980 July 1) employees at all sites.
- (3) Future employees (those joining after 1980 July 1) at all sites. (These names are at present kept separate from the main study file.)

The study is being carried out in four phases:

- (1) The identification of past and current employees by means of an Employee Identity Summary (E.I.S.) form (see Figure 1).
- (2) The transfer of data from the E.I.S. form to magnetic data tape.
- (3) The linkage of the data tape, containing up to 32 pieces of information for each of some 14 000 employees, to the National Mortality Data Base.
- (4) The analysis by staff of the Epidemiology Unit, National Cancer Institute of Canada, of the mortality data emerging from the first and the subsequent linkages.

It is expected that linkages will take place on a triennial basis and data from the first linkage are at present (1984) being analyzed.

The potential confounding of the interpretation of mortality data by individual life-style and occupational characteristics has been recognized. A Medical/Life-Styles Questionnaire (MLSQ) has been distributed to all current employees, with a response rate of slightly more than 50%. The MLSQ was lengthy and was an attempt to assess factors other than occupational exposure to ionizing radiation that might have a bearing on the mortality experienced by the study population. The value of this survey has yet to be assessed, but the fact that it was considered necessary serves to underline the need for the assembly in machine-readable form of life-style and occupational exposure data for individual employees.

With the completion of the first linkage with the Mortality Data Base, the attention of those working on the study is now being directed to the verification of data. Death linkages of low weight are being manually checked and an effort is being made to retrieve data that may not have been included in the preparation of the first study tape. This work will occupy most of the time available before the next linkage with the Mortality Data Base, planned for late 1986.

A study of this type is necessarily of long duration and it is expected that many linkages and analyses of data will be required before valid information begins to emerge. The purpose of the AECL study is to determine the causes of death among a population of radiation workers and to compare this information with data available for the causes of death in the general population. Given the population size, and the relatively low occupational exposure to ionizing radiation, it is improbable that the study will, at its conclusion, provide hard information on occupational dose-effect relationships. It is hoped, however, that this study, in conjunction with others of a similar nature, will serve to determine the real occupational risk of being a radiation worker.

Detailed accounts of the AECL study are contained in references 2 and 3.

#### REFERENCES

1. John D. Abbatt, T.R. Hamilton and J.L. Weeks, "Epidemiological Studies in Three Corporations Covering the Canadian Nuclear Fuel Cycle, IAEA-SM-266-9," in Proceedings International Symposium Biological Effects of Low-Level Radiation, IAEA, Vienna, 1983.
2. J.L. Weeks, "A study of the Health of The Employees of Atomic Energy of Canada Limited. I. Setting Up The Study," Atomic Energy of Canada Limited Report, AECL-6813 (1981).
3. J.L. Weeks and L.H. Johnston, "A Study of The Health of The Employees of Atomic Energy of Canada Limited. II. Implementing The Study," Atomic Energy of Canada Limited Report, AECL-7828 (1984).

**EMPLOYEE IDENTITY SUMMARY**  
RESTRICTED STAFF INFORMATION

SITE -

The following information is required in the interest of Atomic Energy of Canada Limited employees for a health study to help insure that our safety standards are soundly derived

		<i>PLEASE PRINT</i>	
1. SURNAME .....			
2. ANY OTHER SURNAME(S) YOU MAY HAVE HAD .....			
3. FIRST GIVEN NAME .....			
4. SECOND GIVEN NAME .....			
5. THIRD GIVEN NAME .....			
6. USUAL NAME OR NICKNAME .....			
7. SEX .....	<input type="checkbox"/> MALE	<input type="checkbox"/> FEMALE	
8. MARITAL STATUS .....	<input type="checkbox"/> -SINGLE/WIDOW/WIDOWER <input type="checkbox"/> -MARRIED <input type="checkbox"/> -OTHER		
9. BIRTH DATE .....	YEAR	MONTH (Spell Out)	DAY
10. BIRTH PLACE .....	CITY OR PLACE PROV (for country of nat. Canada)		
11. FATHER'S SURNAME .....			
12. FATHER'S FIRST NAME .....			
13. FATHER'S SECOND NAME .....			
14. FATHER'S BIRTH PLACE .....	PROVINCE (for country of nat. Canada)		
15. MOTHER'S MAIDEN NAME .....			
16. MOTHER'S FIRST NAME .....			
17. MOTHER'S SECOND NAME .....			
18. MOTHER'S BIRTH PLACE .....	PROVINCE (for country of nat. Canada)		
19. SPOUSE'S BIRTH SURNAME .....			
20. SPOUSE'S FIRST NAME .....			
21. SPOUSE'S SECOND NAME .....			
22. EMPLOYEE NUMBER .....			
23. SOCIAL INSURANCE NUMBER .....			
24. PROVINCIAL HEALTH INSURANCE NUMBER .....	PROVINCE	NUMBER	
25. SUPERANNUATION NUMBER .....			
26. STARTING DATE .....	YEAR	MONTH (Spell Out)	DAY
27. EMPLOYEE'S ADDRESS .....	CITY OR PLACE PROV (for country of nat. Canada)		

DIVISION - BRANCH \_\_\_\_\_ DATE \_\_\_\_\_ MONTH \_\_\_\_\_ DAY \_\_\_\_\_ SIGNATURE \_\_\_\_\_  
MO 118 -1 CW

FIGURE 1: Employee Identity Summary Form