

OCCUPATIONAL HEALTH CARE IN AN ENERGY RESEARCH CENTRE

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ABSTRACT

The Occupational Health Service at the Netherlands Energy Research Centre (E. C. N.) is part of the Health Protection Department and provides medical care to about 900 people. This kind of occupational health care is on one hand strongly influenced by the highly specific objective of the centre and on the other unmistakably tied up by legal regulations and recommendations. The paper deals with the various problems of rendering proper medical care in such conditions.

Age distribution, categories of the workers and the organisation structure are discussed. Special attention is given to the value and significance of periodic (obligatory) medical examinations. The necessity of a very broad knowledge of industrial hygiene and of a very close cooperation between specialists in different disciplines as a primary condition for providing optimum care, in which the scientist plays an important role, is underlined. Some final remarks concern the question of absenteeism.

At the E.C.N. the Occupational Health Service (O.H.S.) is part of the Health Protection Department (H.P.D.). As shown in Table 1 the H.P.D. consists of several services and groups, which are all involved in providing health protection. The main task of the services is to provide health protection to all employees. The main task of the groups is to assist the services.

TABLE 1
Organisation of the Health Protection Department.

Group or service	Main task	Number of employees
1. Occupational health	Medical supervision of workers	6
2. Radiation protection	Control and advise on radiation protection	15
3. Conventional safety	Control and advise on conventional safety	4
4. Analysis	Analysis of samples Internal contamination measurements	6
5. Dosimetry	Personal dosimetry measurements and estimations	6
6. Instrumentation	Maintenance and calibration of instruments	6
7. Biology	Environmental control measurements Biological experiments	10

A department with so many different disciplines like the Health Protection Department can function efficiently only if there is good and regular coordination between the services and groups. This is realized by coordinating committees and working groups. Table 2 gives an overview of the coordinating groups of the H.P.D. The most important is the Main Committee on Safety Evaluation, of which the head of the H.P.D. is the acting chairman. This committee evaluates the safety of installations and experiments, judges very critically the safety measures proposed, consults with the employees involved and finally advises the head of the department involved about the safety measures to be taken. The Committee's advice has a binding character and can only be overruled by the management. It must be said explicitly that the total responsibility for carrying out the work or experiment safely lies entirely with the personnel involved.

TABLE 2
Coordinating groups of the Health Protection Department.

	Main tasks	Participating H.P.D.-groups
Safety evaluation*	Advise on the safety of installations and experiments	1-2-3 4-6
	Coordination of control measurements in the working environment	
Internal dosimetry**	Establishment of internal contamination control schemes	1-2-4 5-7
	Coordination of all measurements	
Toxicology**	Establishment of control schemes on chemo-toxic materials	1-3-4
	Coordination of all control measurements	
Noise**	Evaluation of noise measurements at the workplace	1-3 + technical
	Advise on improvements of hazardous situations	department

*Main committee

**Working group

The working group on internal dosimetry mainly deals with problems regarding the most effective control measurements in the case of employees working with open radioactive sources. They decide on the means for estimating the internal contamination, such as the use of personal air samplers, the sampling of urine and/or faeces, the examination in a whole body counter. The sampling time and sampling frequency are also determined. The Occupational Health Service is responsible for this programme.

To deal with increasing chemical toxicological problems a working group on toxicology has been formed recently. The group has similar tasks as the working group on internal dosimetry.

The main task of the working group on noise is to advise on how to reduce noise to acceptable levels. The necessary noise measurements are made by the Conventional Safety Group. The Technical Department is responsible for taking the necessary noise reducing measures. Periodic audiometric examinations are performed by the Occupational Health Service.

An occupational health service programme is provided for almost 900 persons. Table 3 shows considerable changes in age distribution that have taken place since 1968. The periodic medical examination is an important part of the occupational health programme of the E.C.N. For all workers occupationally exposed to ionising radiation the Dutch regulations require a medical examination at least once a year. For non-occupationally exposed workers in the E.C.N. the rate of examination depends on age: age group 18-30, once every 3 years; 31-54, once every 2 years and 55-64, once a year.

TABLE 3
Age distribution of employees.

Age group	Year					
	1968		1973		1976	
	Men	Women	Men	Women	Men	Women
15-24	57	61	20	36	21	34
25-34	346	28	280	35	177	29
35-44	253	22	327	21	315	20
45-54	87	7	154	10	201	14
55-64	24	2	35	2	51	1
Total	767	120	816	104	765	98

TABLE 4
Results of the periodic medical examinations. Criterion: referring for remedial measures.

Age group	1973		1974		1975		1976		1977	
	N	%	N	%	N	%	N	%	N	%
	15-24	25	5.7	26	0.0	19	5.0	23	4.3	23
25-34	180	6.7	174	6.0	128	8.2	189	2.6	109	2.8
35-44	235	3.8	258	5.8	199	5.5	295	5.1	201	4.5
45-54	138	9.4	133	6.8	190	11.5	84	4.8	185	6.0
55-64	24	21.8	28	20.7	34	5.8	36	13.8	43	4.9
All ages	602	6.6	619	6.4	570	8.2	627	4.8	586	4.3

The results of the examinations carried out from 1973 till 1977 as judged by the criterion "referred for remedial measures" are given in Table 4. The percentage of all referrals remained fairly constant during these years. During

the last two years another criterion for judging the results of the periodic medical examination has also been used, the so called change in the fitness graph. It is not yet possible to estimate the value of this criterion.

The results of periodic medical examinations (627 in 1976 and 586 in 1977) using as criterion a change in the fitness graph showed permanent changes in 14 workers in 1976 and in 11 in 1977, while temporary changes were found in three persons each year. In almost none of these cases did the changes result in a change of job. For special categories of employees additional examinations were carried out. Details are given in Table 5.

TABLE 5
List of special categories of workers and special examinations during the periodic medical examination.

Category of workers	Tests performed
Users of breathing equipment	Spirometry (peak flow, V_I and VFC) inspiration and expiration
Wearers of pressurized suits	Spirometry + ECG during rest and after exercise
Fire brigade personnel	Spirometry + ergometry (140 Watt) + ECG during exercise
Users of laser	Visual acuity (Landolt) Visual field (Friedmann Analyser)
Personnel exposed to neutron radiation	Slit lamp examination of the eyelens

Finally some sickness-absence figures are given in Table 6. With some reservations the parameters given may be used as an index for the well-being of an industrial organisation. The E.C.N. values compare favourably with the average values for the Netherlands.

To summarize, for an energy research centre like the E.C.N. an adequate health programme can only be realized jointly with other safety disciplines. Only a few aspects of this cooperation have been discussed in this paper.

TABLE 6
The average duration of sickness absence per spell in days (A) and average point prevalence rate (B) in male population.

Age group	1973		1974		1975		1976		1977	
	A	B	A	B	A	B	A	B	A	B
15-24	4.3	1.9	5.5	4.6	4.1	2.8	5.6	2.9	4.4	3.1
25-34	6.2	2.6	5.8	3.1	7.8	3.9	7.2	3.9	6.0	3.8
35-44	7.1	3.1	6.3	2.7	5.5	3.6	7.4	4.1	7.2	4.8
45-54	10.9	5.1	11.3	6.4	11.3	5.3	10.2	5.3	10.3	5.6
55-64	12.1	8.5	25.6	8.6	7.2	13.9	13.3	6.4	15.7	10.5
All ages	7.7	3.7	7.2	4.0	7.2	4.7	8.3	4.5	7.8	5.2

ACKNOWLEDGEMENT

Acknowledgement is made to Dr. Y. v.d. Feer for reading the paper very carefully and for his helpful discussions. In addition the painstaking work of Mr W. Hamel in designing and making the posters for the Congress is acknowledged. Thanks are due to Miss L. Wigbout for correctly typing the manuscript.