



## ***Original article***

---

Scand J Work Environ Health [1983;9\(2\):140-147](#)

doi:10.5271/sjweh.2432

**Occupational health and safety in Finland.**

by [Rantanen J](#)

This article in PubMed: [www.ncbi.nlm.nih.gov/pubmed/6648411](http://www.ncbi.nlm.nih.gov/pubmed/6648411)

---



This work is licensed under a [Creative Commons Attribution 4.0 International License](#).

# Occupational health and safety in Finland

by Jorma Rantanen, MD<sup>1</sup>

RANTANEN J. Occupational health and safety in Finland. *Scand j work environ health* 9 (1983) 140—147. The tradition of Finnish legislation on occupational health and safety began 180 years ago. The renewal cycle of the principal acts has been about 20 to 30 years. At present the Finnish occupational health and safety legislation meets the Scandinavian standard well, though the structure of the Finnish legislation is more fragmented. The organization and manpower resources of occupational health and safety comprise more than 100,000 persons (5 % of the labor force), and the number of full-time experts is about 3,600. The finances amount to 0.3 % of the gross national product. Although intensive reforms for strengthening legislation, research, and practice were carried out during the 1970s, one-third of the labor force still works under daily health and safety risks. Several occupational and nonoccupational risk consequences cumulate into one and the same high risk population. Accident risk still remains the most prevalent and severe type of risk in the Finnish work environment. Three major national programs (National Occupational Health and Safety Program, National Occupational Health Service Program and National Program for Science Policy) were established so that the needs of occupational health and safety can be met. The programs are designed to respond not only to current problems, but also to those which can be expected in the future (caused, eg, by the large-scale implementation of new technology).

*Key terms:* occupational health and safety programs, organization of occupational health and safety, science policy.

## Legislation

The first statutory regulation including occupational health statutes was issued in 1805 (13). The first occupational safety regulation came in 1889. Since that time Finnish occupational health and safety legislation has been renewed at intervals of 20 to 30 years. However, during the 1970s, more new legislation was produced for occupational health and safety than during any other previous decade; it included new acts on labor inspection, occupational health and safety administration, occupational health services, the nationalization of the Institute of Occupational Health, job security, study leaves, and the Work Environment Fund.

At present our labor legislation is in many respects comparable with that of the

other Scandinavian countries though the Finnish legislation is more fragmented (15). In certain areas — such as the provision of occupational health services (28), the marking and labeling of hazardous chemicals (9), and the registration of carcinogenic exposures — Finland has gone further than its Nordic neighbors (3, 14). Right now two comprehensive legislative reforms are being prepared. The first is new legislation on job security. Its intention is to combine the former rather fragmented regulations into one and the same act so that the individual's employment security can be improved and strengthened. The bill on job security is currently being discussed in Parliament. Another extensive reform is the renovation of the comprehensive occupational safety act of 1958. The main issues of this reform will be the promotion of safety activities at the plant level by increasing the statutory power of safety commissions and by granting safety delegates more power to regulate work conditions at the plant level. Although it will be some time before this

<sup>1</sup> Institute of Occupational Health, Helsinki, Finland.

Reprint requests to: Prof J Rantanen, Institute of Occupational Health, Haartmaninkatu 1, SF-00290 Helsinki 29, Finland.

latter reform is accepted, the practice of occupational health and safety continues, because the present act gives already comparatively strong power to the authorities, especially to labor inspection.

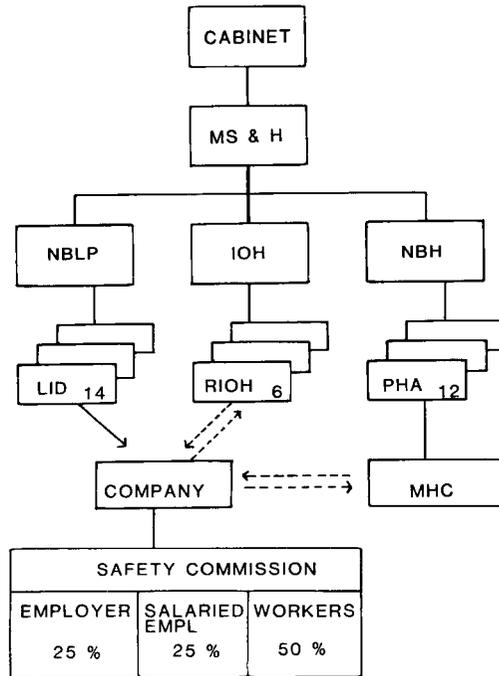
### Organization and manpower resources

The organization of the administration of occupational health and safety is described in fig 1. There are three parallel central organizations reporting directly to the Ministry of Social Affairs and Health. The safety activities are administered by the National Board of Labour Protection; the medical aspects of occupational health are controlled by the National Board of Health; and research, training, and advisory expert services are the responsibility of the Institute of Occupational Health.

The regional level comprises 14 labor inspection districts, health administrations in 12 provinces, and six regional institutes of occupational health.

The activities at the local level are carried out by municipal health authorities, municipal labor inspectors, and plant-level safety commissions, safety delegates and occupational health physicians and nurses, who all are present in the local organizations because of legislation. The total number of personnel in the Finnish occupational health and safety system comprises more than 100,000 persons (about 5 % of the labor force) who have received specific training for occupational health and safety functions (1 + 3 weeks). About 3,600 of the 100,000 are full-time occupational health and safety experts.

The financial resources of various organizations are approximated at a total of FIM 540 million per year. This sum is 11 % of all the annual losses caused by labor accidents and occupational diseases and 0.3 % of the gross national product (18). The total allocation of funds to occupational health and safety activities in Finland is about FIM 550 million, which makes an average of FIM 245 per capita of the total active labor force per year, whereas losses caused by the consequences of risks are approximated to be FIM 2,300



**Fig 1.** Organization of the administration of occupational health and safety in Finland. (MS & H = Ministry of Social Affairs and Health, NBLP = National Board of Labour Protection, IOH = Institute of Occupational Health, NBH = National Board of Health, LID = labor inspection districts, RIOH = regional institutes of occupational health, PHA = Provincial Health Administration. MHC = Municipal Health Council, EMPL = employees)

per capita of the labor force per year (2, 6). It could be mentioned that, eg, in 1978, social expenditures totaled 22.4 % of the gross national product or FIM 9,800 per capita (15—64 year of age) (12). Because the consequences of occupational health and safety risks cause considerable losses and because of the immeasurable positive impact of safe work environments, much money could still be invested in occupational health and safety before the costs and attainable benefits would be balanced (19).

### Occupational health and safety risks

During the 1970s the Institute of Occupational Health and the National Board of Labour Protection both surveyed the risks to health and safety in Finnish industry. Rough approximations of the occurrence

of various risk factors are given in table 1. More-detailed calculations indicate that at least a third of the Finnish labor force still works in an environment which involves daily exposure to agents or factors containing health risk (7, 10).

The consequences of risk are partly registered as occupational diseases (24) and as labor accidents (8). As seen in fig 2, the number of occupational diseases increased during the 1970s and are again increasing in the early 1980s. These increases reflect the impact of altered registration criteria, improved registration, better diagnostics, and the effect of research in finding new diseases and improved methodologies for the detection of occupational diseases. One of the most important factors has been the expansion of occupational health services. The incidence rate of occupational diseases is 23.7/10,000 of the active working population.

The trends for the total number of labor accidents have not been very positive during the last decade. The number of accidents has been strongly determined by the rate of overall economic activity in the country (20). In 1981 the average rate of workplace accidents causing at least a 3-d absence from work was 620/10,000 active workers. As seen in fig 3, the number of fatal accidents at workplaces decreased by 42 % and the corresponding number for accidents on the way to or from work by 49 % between the years 1970 and 1980. The reduction of fatal accident rates was from 1.3/10,000 workers in 1970 to 0.7/10,000 (46 % reduction) in 1980, and the trend toward a decrease is still continuing. However, the success in preventing traffic accidents was better than that of preventing workplace accidents.

Recent studies have found that several nonoccupational risk factors cumulate within that part of the labor force which is also running under the highest occupational accident and hygienic risks. Therefore, these groups should make highly interesting objects for preventive measures (16, 21), not only to regulate the occupational risks, but also for prevention of the overall risk of the population.

## Programs

After the recognition of the aforementioned and other risk charts and a consideration of the intensive development of the Finnish economy, the following three national programs have been established in response to the problems already discussed: the National Occupational Health and Safety Program, the National Occupational Health Service Program, and the National Program for Science Policy.

### *National Occupational Safety and Health Program*

On the basis of the surveys already referred to, the National Board of Labour Protection has selected twelve priority areas for a National Occupational Safety and Health Program. When the priorities were set, the following criteria were used (10): (i) the prevalences and the seriousness of the negative health consequences, (ii) the occurrence and intensity of risk factors, (iii) the number of exposed workers, (iv) the qualitative and quantitative perception of risks among employees and employers, (v) the cost-benefit ratio of the preventive measures, (vi) the trends of the

**Table 1.** Approximations of the numbers of workers exposed to various occupational risks in Finland and the number of registered consequences per year.

Exposure	Population at risk	Percentage of total labor force	Number of registered occupational diseases or accidents in 1981
Noise	300,000	14	1,856
Chemicals	1,000,000	45	1,307
Monotonous work	200,000	9	1,396
Psychic strain	200,000	9	—
Accidents	1,300,000	59	115,125

development in the problem area and the trends of the development in foreseeable solutions, and (vii) international trends in the regulation of the problem.

On the basis of these criteria, the following problem areas were given a priority position:

*Dangerous work, tasks, and branches of economic activity*

1. Promoting occupational safety in dangerous branches of economic activity
2. Preventing large-scale accidents and taking precautions against emergencies
3. Combating accidents in mounting, servicing and repair work
4. Decreasing the number of accidents in the internal transport of materials and personnel within plants

*Machine safety*

5. Improving the safeguarding of machinery

*Occupational diseases*

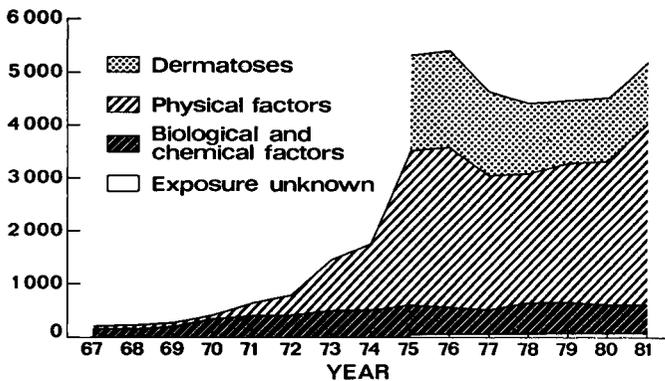
6. Combating noise at workplaces
7. Reducing air pollution at workplaces
8. Preventing occupational allergies
9. Preventing occupational cancers
10. Reducing occupational diseases in the musculoskeletal system
11. Reducing work-induced psychic overstrain

*Employment security*

12. Developing employment security

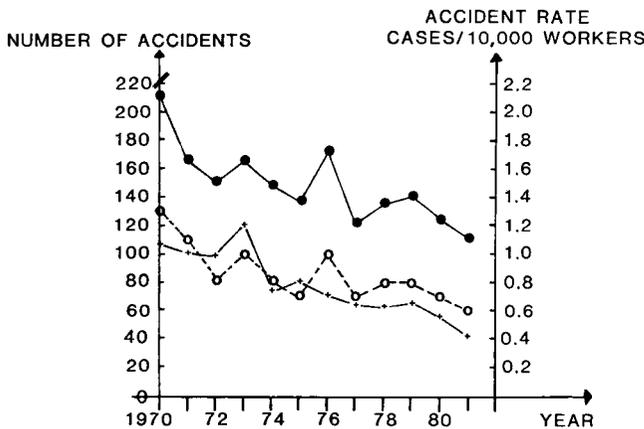
Wide consultation with various interested groups and with the social parties

**Number of registered occupational diseases**



**Fig 2.** Number of registered occupational diseases in Finland in 1967—1981. The registration of dermatoses was started in 1975.

**NUMBER OF FATAL ACCIDENTS**



**Fig 3.** Total number of fatal accidents at workplaces (●—●) and on the way to or from work (+—+) and the rate of fatal accidents at workplaces (○--○) in 1970—1981.

led to the registration of great variation in the setting of goals.

In fact the resources of the occupational safety and health administration are not sufficient for the intensified activity considered necessary in all priority areas. Besides, some of the priority areas need to be investigated before concrete measures can be taken. Therefore the occupational safety and health administration will primarily intensify its activity during the next years, particularly in areas 1, 4, 5 and 6 of the preceding list.

In connection with the decision concerning priority areas, the importance of the priority area "reducing work-induced psychic overstrain," especially in the future, has been pointed out, but the possibilities of the occupational safety and health administration to take practical action in that field are at present very limited.

Practical actions within the priority areas will be undertaken as projects. Three projects were started in 1981, and they may serve as examples of the operational measures of the National Occupational Safety and Health Program. They concern (i) epoxy and polyurethane resins, (ii) internal transport within workplaces, (iii) and preventing the inadvertent starts of machines.

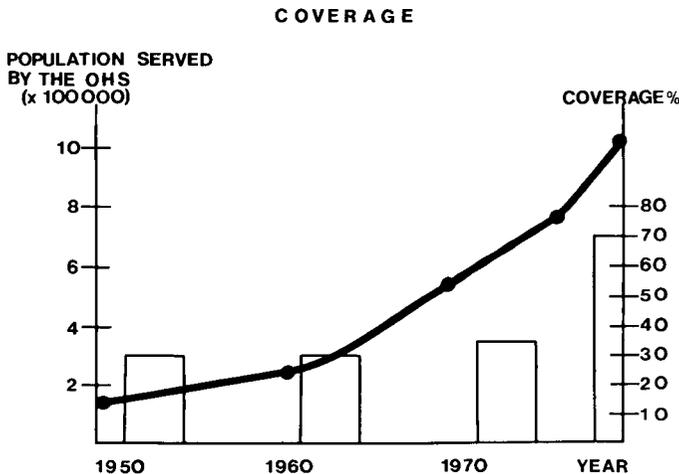
#### *National Occupational Health Service Program*

Occupational health services have developed very positively during the 1970s

(fig 4). At the moment more than 75 % of the active labor force is provided with such services. The areas not covered are small industries and the self-employed, eg, farmers (26, 27). The National Occupational Health Service Program, which was partly given in the form of a new Occupational Health Service Act, stipulates the provision of preventive occupational health services for all employees independent of the branch of industry, size of the company, or of whether one is an employee or self-employed (25). Theoretically, then, coverage is 100 %. The implementation of the act has taken place in five separate steps according to an order of priority. The last step began 1 August 1982, and the entire act will be in force by 31 March 1983. Numerous problems, concerning the content and methods of occupational health services for farmers and the self-employed, have been met in the stages of implementation. Therefore two major research programs have been started so that more information can be gathered on the most effective methods for providing services in agriculture and to small enterprises.

In spite of the difficulties already mentioned the enforcement of the new act has proceeded well. At the end of the third stage of implementation, 89 % of the companies controlled by labor inspection were covered by occupational health services, and 96 % of the labor force working in the branches of industry of stage 3 were provided with services (11).

An essential part of the National Occupational Health Service Program is



**Fig 4.** Development of the coverage of occupational health services in Finland in 1950—1980. The curve indicates the number of workers provided with occupational health services (OHS). The columns give the proportion of workers out of the total active working population served by OHS (in %).

the effective training of occupational health personnel (25). Specific training curricula for occupational health physicians and occupational health nurses have been prepared, and a new medical speciality in occupational health services has been established (5). The old speciality in occupational medicine, which has existed in Finland for 20 years, was simultaneously transformed to a sub-specialty for occupational health services. After full implementation of the program the Finnish occupational health services will employ 1,000 physicians and 2,500 nurses, which makes one physician per 1,800 workers and one nurse per 740 workers (ratios which have already been achieved for 75 % of the active labor force). This situation implies that 500 new occupational health physicians and about 1,000 nurses should be trained during the next few years, as some of the presently working occupational health personnel also needs training (27). Since the general primary care services will be given by the municipal health center without charge, the capacity of occupational health physicians can be effectively directed toward preventive work.

When calculated in monetary terms, the present budget for occupational health services is about FIM 300 million per year or about FIM 250 per year per capita of the population which is served.

#### *National Program for Science Policy and related research programs*

More than 20 different organizations carry out occupational health and safety research in Finland, and the total sum of funds used for occupational health and safety research in 1980 was about FIM 50 million. This was 2 % of the total research budget in the country and about 1 % of the losses caused by labor accidents and occupational diseases. The Finnish funds for occupational health and safety research were about 17 % of the respective funds in Sweden and about one-third of the sum allocated for occupational health and safety research in Sweden per active worker in industry. Furthermore the Finnish occupational health and safety research budget was about 20 % of the research budget of the US National

Institute for Occupational Safety and Health for 1980 (17).

There are three main research programs which could be mentioned. In the National Program for Science Policy for the 1970s occupational health and safety research was declared one of the five national priority areas for research. Accordingly the Academy of Finland prepared its national medium-term program for occupational health and safety research (1, 22). This program was able to increase the funds of the Academy of Finland for occupational health and safety research threefold in three years during the mid-seventies. The main interest of the program was focused on traditional chemical and physical hazards, on psychosocial factors, and on accidents.

Another important program is the science policy program of the Finnish Fund for Labor Protection Research (23). High priority is given to ergonomic research and to research concerning safety in materials handling in industry. The Fund is intended to respond quickly and effectively to the immediate research needs of practical work life and to problems at the plant level.

The third research program is that of the Institute of Occupational Health, which was revised in 1981 (4). The main emphasis is given to applied research concerning the following priority areas: (i) hazardous exposures (including selected chemical and physical exposures and, especially, their long-term effects and combined effects); (ii) occupational origin of diseases (including new occupational diseases, allergy, genotoxic effects, occupational diseases of the musculo-skeletal system, and work-related cardiovascular diseases); (iii) physical strain (including the adverse effects of physical overload, monotony and static muscular work); (iv) psychosocial problems (including problems of machine-paced work, psychological monotony, inconvenient work shifts and problems derived from the implementation of new technology); (v) industrywide studies on high risk branches, their risk profiles and preventive measures; (vi) hypersensitive groups (pregnant women, the handicapped, young workers and elderly workers) and their

special requirements in the work environment; and (vii) labor accidents.

The criteria used for the selection of problems for research projects are in accordance with those already described as priority criteria for the National Occupational Health and Safety Program. Within the priority areas, the focusing of the scope is done in order to obtain the necessary depth in the scientific approach. The most important characteristics of research carried out under this program are the following: high applicability, high practical relevance for occupational health and safety, multidisciplinary, and a problem-oriented and problem-solving nature. This emphasis should, however, not lead to the exclusion of basic research when it is found to be necessary.

## References

1. Academy of Finland. Työsuojelututkimuksen kehittämissuunnitelma vuosille 1977—81 [Programme for development of research on occupational health and safety in years 1977—1981]. Helsinki 1975. 87 p.
2. Ahonen G. The economic analysis of labour protection and its development in Finland — In the light of accidents at work [in Finnish with English summary]. *Politiikka* 3 (1979) 228—247.
3. Herva A. The Finnish register of employees occupationally exposed to carcinogens. In: Institute of Occupational Health International symposium on prevention of occupational cancer 21—24 April 1981, Helsinki, Finland. Helsinki, 1981, p 192.
4. Institute of Occupational Health. A summary of the research policy program. Helsinki 1981. 12 p.
5. Institute of Occupational Health. Specialty in occupational health, a working group report [in Finnish]. Helsinki 1982.
6. Laitinen H. Reporting non-injury accidents. *Am j occup accid* (in press).
7. National Board of Labour Protection. Työolojen parantaminen. Osa 1: selvitys työolojen epäkohdista. [Improving working conditions: Part 1 Survey of risks and hazards at work]. Valtion painatuskeskus, Helsinki 1980. 309 p.
8. National Board of Labour Protection. Työtaturmat 1980. [Industrial accidents 1980]. In: National Board of Labour Protection. Official statistics of Finland XXVI: 32. Tampere 1981.
9. National Board of Labour Protection. Identification and labelling systems of hazardous substances. Tampere 1981. 12 p.
10. National Board of Labour Protection. Työolojen parantaminen. Osa 2: työsuojelun painopistealueita [Improving working conditions: Part 2 Focal areas in occupational safety and health]. Valtion painatuskeskus. Helsinki 1982. 78 p.
11. National Board of Labour Protection. Communication concerning implementation of occupational health service legislation. Tampere 1982.
12. Nordic Statistical Secretariat, ed. Yearbook of Nordic statistics 1980. Nordic Council and the Nordic Statistical Secretariat, Stockholm 1980. (NU A 1980: 20).
13. Noro L. Työterveyslaitos, tausta ja kehitys [Institute of Occupational Health, background and progress]. Institute of Occupational Health, Helsinki 1979.
14. Norseth T. National policies of the Scandinavian countries in prevention of occupational cancer. In: Institute of Occupational Health. International symposium on prevention of occupational cancer 21—24 April 1981, Helsinki, Finland. Helsinki 1981, pp 196—197.
15. Rantanen J. New developments and policies in the optimisation of the working environment. In: International Labour Office. Occupational safety and health series 43. Geneva 1979, pp 19—45.
16. Rantanen J. Risk assessment and the setting of priorities in occupational health and safety. *Scand j work environ health* 7 (1981): suppl 4, 84—90.
17. Rantanen J. Työsuojelua koskeva tutkimus meillä ja muualla [Research on occupational health and safety in Finland and abroad]. *Studia generalia* lecture. University of Tampere, Tampere 1980.
18. Rantanen J. Effect of accidents on public health and national economy. *Am j occup accid* 4 (1982) 195—203.
19. Rantanen J, Luoma K, Hemminki K. Losses of working years from mortality and morbidity in various Finnish occupational groups. In: XX International Congress on Occupational Health, Cairo, 25 September—1 October 1981 (in press).
20. Saari J. Long-term development of occupational accidents in Finland. *Scand j work environ health* 8 (1982) 85—93.
21. Sauli H. The socio-economic aspects of occupational mortality in Finland. *Nord företagshälsovård* (1979): 3, 72—85.
22. State Research Council. Suomen tiedepolitiikan suuntaviivat 1970-luvulla [Guidelines for science policy in Finland for the 1970's]. Valtion painatuskeskus, Helsinki 1973. 31 p.
23. The Finnish Fund for Labor Protection Research. Annual report 1981. Helsinki 1982.
24. Vaaranen V, Vasama M. Ammattitaudit 1981 [The Finnish occupational disease register 1981]. Institute of Occupational Health, Helsinki 1982. 100 p. (Reviews 51).
25. Ylikoski M, Rantanen J. Johdatus työterveyshuoltolainsäädäntöön [An introduction to occupational health service legislation]. Suomen Teollisuuslääketieteen Yhdistys, Helsinki 1979. 216 p.
26. Ylikoski M, Rantanen J. Lagstadgad före-

- tagshälsovård målinriktad förebyggande verksamhet [Statutory occupational health services, target-oriented preventive activity]. Nord med 94 (1979): 12, 325—328.
27. Ylikoski M, Rantanen J. Evaluation of efficiency and effectiveness of occupational health services in Finland. WHO Regional Office for Europe, Working Group on Evaluation of Occupational Health and Industrial Hygiene Services, Stockholm 1980.
28. ———. Occupational health care act and council of state decree 1009. Institute of Occupational Health, Helsinki 1982.