

INDUSTRIAL DERMATITIS IN SINGAPORE AND SOME EPIDEMIOLOGICAL FEATURES

W. H. Phoon

SYNOPSIS

Industrial or occupational dermatitis is reported to be the most common occupational disease in many industrialised countries. This is shown to be the situation also in Singapore, where 429 cases of the disease were confirmed in 1979 and 1980. More than half of the cases occurred in factories involved in the manufacture of metal products, machinery and equipment. This was related to contact with solvents and coolants. Second comes the transport industry, where workers were in contact with oils and greases. In fact, oils of various types were responsible for more than a third of all cases. Other causes included, metallic salts, acids, alkalis, solvents, plastic resins and glass fibre. About 64% of cases affected young workers below 30 years of age. But this age distribution was not significantly different from that of the general working population. 63% of the cases contracted the disease within 2 years of starting work at their particular place of employment.

INTRODUCTION

Industrial or occupational skin diseases are the most common of all occupationally related diseases. This condition has been defined by the Committee on Occupational Dermatoses of the American Medical Association as, "a pathological condition of the skin for which job exposure can be shown to be a direct or contributory factor". (1)

In the US, it tops the list of all occupational diseases. The Department of Labour in 1979 computed that skin problems made up 60% of all work-related illness (1). In Sweden, nearly half of all registered occupational diseases are skin diseases (2). Other European countries also reported a similar experience. The WHO had, in fact, summed up the position worldwide by describing it as the most frequent of all occupational diseases. (3)

The situation in Singapore is now described and discussed.

METHOD

In Singapore, there was little information on industrial dermatitis until the condition was made a Notifiable Disease under The Factories Act, and a compensable disease under the Workmen's Compensation Act, in late 1975. Prior to that, the Industrial Health Division of the Ministry of Labour had been informed only of a few large outbreaks of dermatitis, especially in 1973; these were mainly in the wood industry. After the disease was made notifiable in 1975, there was a rise in the number of cases in 1976, and this has been kept up ever since. (Table 1) All cases notified by doctors were investigated by the Industrial Health Division. The affected workers were individually interviewed and a detailed medical and occupational history taken. Their skin was also examined. Details of their work were asked for and their work practices observed.

Industrial Health Division
Ministry of Labour
Singapore

W. H. Phoon, M.B.B.S. (Singapore),
M. Sc (London), D.I.H. (England),
A.M. (Singapore), M.F.O.M. (London)



Table 1 : No. of Confirmed Industrial Dermatitis Cases, 1973 - 80

Year	No. of Cases
1973	144
1974	0
1975	9
1976	187
1977	177
1978	219
1979	174
1980	255
Total:	1165

RESULTS

In terms of numbers, industrial dermatitis is now the most common occupational disease in Singapore, (Table 2).

Table 2 : The relative frequency of the common occupational diseases in Singapore

Occupational Disease	1978	1979	1980
1. Industrial Dermatitis	219	174	255
2. Noise Induced Deafness	257	158	229
3. Compressed Air Illness	18	21	25
4. Silicosis	11	7	5
5. Asbestosis	0	0	2
6. Poisonings	21	12	18

The distribution of cases by industry and causative agent is shown in Tables 3 and 4. More than half of the cases occurred in factories involved in the manufacture of metal products, machinery and equipment. Second, comes the transport and related industry.

Table 3 : Distribution of Industrial Dermatitis Cases by Industry, 1980

Industry	No. of Cases
Manufacture of fabricated metal products, machinery and equipment	133
Transport, storage and supporting services	43
Manufacture of chemicals and chemical products; petroleum, coal, rubber and plastics products.	13
Electricity, gas and water	12
Social, community and related services	10
Manufacture of wood and wood products, including furniture	10
Manufacture of non-metallic mineral products	7
Construction	5
Textile, wearing apparel and leather industries	4
Manufacture of paper and paper products, printing and publishing	4
Miscellaneous	14
Total:	255

More than a third of all cases were caused by oils of various types. Other causes included metallic salts, acids, alkalis, solvents, plastic resins and glass fibres.

Analysis of the cases showed that 70.4% were male and 29.6% female. (Table 5) The age distribution shown in Table 5 shows that 64% of the cases in 1979 and 1980 were below 30 years old, with the age group 20 - 24 years having the largest number.

Table 7 shows that 63% of all affected workers had been "exposed" for less than 2 years at their particular place of work when they contracted the dermatitis.

DISCUSSION

As reported in other industrialised countries, industrial or occupational dermatitis is now the most common occupational disease in Singapore. It is noted, however, that industrial dermatitis overtook noise-induced deafness as the most common occupational disease only from 1979. (Table 2) The figures given are for notified cases only. There might have been other cases which, for various reasons, had not been officially notified.

The industry manufacturing metal products, machinery and equipment was by far the most common for dermatitis cases. This was related to the widespread usage of, and contact with, solvents and coolants. Second came the transport industry. In this industry, it is common for workers to have frequent contact with oils and greases. The problem is also not uncommonly aggravated by the practice of some workers of using raw solvents like kerosene and turpentine to wash their hands.

It can be seen from Table 4 that more than a third of cases were caused by oils of various types. This occurred mainly in the metal and transport industries. Reports from other countries have indicated that

Table 4 : Distribution of Industrial Dermatitis Cases By Causative Agent, 1980

Causative Agents	No. of Cases
1. Oils (including engineering oils, mineral/vegetable oils, lubricant, grease and tar)	85
2. Metals and metallic salts	40
3. Acids and alkalis	31
4. Solvents	26
5. Plastic resins	25
6. Glass fibre	15
7. Cement	7
8. Wood and wood products	7
9. Paints	4
10. Others	15
Total:	255

Table 5 : Age Distribution of Industrial Dermatitis Cases, 1979 & 1980

Age	Male	Female	Total
15 - 19	26	31	57
20 - 24	93	39	132
25 - 29	68	18	86
30 - 34	33	12	45
35 - 39	17	8	25
40 - 49	32	14	46
50 +	33	5	38
Total:	302	127	429

solvents, plastic resins and glass fibres are common causes of occupational dermatitis. We see a similar pattern in Singapore.

Of the cases in 1979 and 1980, 70.4% were male. (Table 5) This is probably because there are more male workers especially in industries prone to give rise to

dermatitis, eg. the metal and transport industries.

The age distribution of cases (Table 5) seemed to suggest that younger workers are more prone to the condition; the largest number of cases were in the 20 - 24 years age group. But a comparison of this age distribution with that of all the employed persons in Singapore shows no significant difference (Table 6). This appears to be contrary to the general impression within industry that industrial dermatitis affects mainly young workers. In the UK and some other countries, it was also the general impression that young workers seemed more prone to dermatitis. Some writers ascribed it to the careless way of working among young workers, while others believed that there is a "hardening" effect on the skins of older workers, thus making them less susceptible. (1)

Although age did not seem to be a factor in our cases, the duration of employment in the particular department or section of a factory may be. About 63% of all affected workers of both sexes were "exposed" for less than 2 years at their particular place of work when they contracted the dermatitis. (Table 7) It is difficult to test the statistical significance of this, but it is possible that new workers, rather than young workers, may be more susceptible to industrial dermatitis. Older workers (older in terms of employment) may have a "hardened" skin, thus making them less prone to dermatitis. (1, 4).

Industrial dermatitis can occur as sporadic cases - as commonly happens - or in "epidemics". This is not common, but there had been a few large outbreaks in the past, eg. in 1973.

Doctors who see industrial dermatitis cases in their clinics may treat each case as it appears. But this does not ensure its non-recurrence. Preventive measures must be instituted. Industrial dermatitis, after all, is a preventable disease. It is therefore important to see, not only the patient, but also his place of work and prescribe "treatment" to both.

Table 6 : The age and sex compositions of industrial dermatitis cases (1979 and 1980) in comparison with those in the total working population in Singapore.

Age	*Economically active persons employed in Singapore		Industrial Dermatitis Cases	
	Male (%)	Female (%)	Male (%)	Female (%)
15 - 19	9.55	17.19	8.61	24.41
20 - 24	19.18	30.08	30.79	30.71
25 - 29	16.07	17.92	22.52	14.17
30 - 34	12.57	10.39	10.93	9.45
35 - 39	10.24	8.00	5.63	6.30
40 - 49	17.18	10.13	10.60	11.02
50 +	15.20	6.30	10.93	3.94
Total:	99.99	100.01	100.01	99.99

(*Adapted from : Year book of Statistics, Singapore 1979/80, Dept of Statistics, Singapore)

Male workers : $\chi^2 = 7.5341, p > 0.10$

Female workers : $\chi^2 = 2.5258, p > 0.10$

Table 7 : Distribution of industrial dermatitis cases by duration of employment in the particular department at onset of rash, 1979 and 1980

Duration of employment in Dept at onset of rash	No. of Males	No. of Females	Total
<6 months	72	45	117
6 months	44	32	76
1 year	62	17	79
2 years	14	10	24
3 years	33	15	48
5 years	40	7	47
10+ years	37	1	38
Total:	302	127	429

ACKNOWLEDGEMENT

Acknowledgement is made to the kind approval by the Permanent Secretary, Minister of Labour, to publish this paper. Grateful thanks are also due to the doctors at the Middle Road Hospital for consultation advice given on some dermatitis cases. Thanks are also due to the doctors and nurses in the Industrial Health Division for the investigation of individual dermatitis cases, and to Staff Nurse Nancy Yeo for tabulation of the cases.

REFERENCES

1. Herszenson, S: Dermatitis - in touch with the omnipresent causes. *Occup. Health & Safety*, 1980; 49: 19-24.
2. Ekman, I: Skin allergies - the most common of all occupational diseases. *Working Environment*, 1979; 7-9.
3. World Health Organisation. *The Work of the WHO, 1971: Annual report of the Director-General to the World Health Assembly Geneva, 1971.*
4. Adams, R.M.: *Occupational Contact Dermatitis*. J.B. Lippincott; Phil; 1969; 6.
5. Singapore Dept. of Statistics. *Year book of Statistics*, Singapore, 1979/80.