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OCCUPATIONAL HEALTH

CSR - 1975

Report Following Survey of the CSR Group

FINAL REPORT

Mr. O.L. Aubrey
Mr. J.H. Elfverson
Mr. V.J. Winley
Miss C.M. Akehurst

SYDNEY
SEPTEMBER 1975

C 3441

S U M M A R Y

An occupational health survey, spanning 7 months, was carried out to assess the company's present status and needs within the field of occupational health and hygiene.

The survey comprised:

- a walk through hazards survey of 74 establishments within the group of CSR and associated companies.
- discussions with management, staff in factories, and persons with industrial hygiene expertise within CSR.
- discussions with experts in government, industry and academic circles, throughout Australia.
- discussions with people in industry, government and medical research overseas.

Australian and foreign legislation was reviewed to determine our present and likely future obligations. Our existing status is evidenced by the following observations:

- A healthy attitude, but inadequate awareness, on occupational health matters.
- A lack of defined aims and goals.
- A few major problems in industrial hygiene, and a large number of minor ones, many of which represent borderline compliance with [redacted] existing or imminent regulations.

C 3442

- Inadequate momentum of existing programmes.

- Company expertise frequently contained within one group or division and largely unavailable to other groups.

- An unsophisticated approach to pre-employment medical evaluation for job placement, to health monitoring of persons exposed to hazards, and to health conservation, when compared to some other Australian companies and companies overseas.

- No specific knowledge of the health status of the bulk of CSR employees.

We recommend a corporation-wide approach to occupational health and hygiene in order that our total expertise can be used to maximum effect. The system should be essentially self-regulatory, with establishments adopting the principal responsibilities, and corporate and divisional areas playing a supporting role. Administration of, and support for, this scheme should be through a system of policy, planning assumptions, standards and codes of practice. Regular reporting on compliance with, and evaluation of, goals is envisaged.

We recommend a co-operative approach, through the extension of existing functions in order to include new roles.

We recommend further evaluation of the medical, psychological and sociological aspects of occupational health in CSR.

We draw attention to the needs of office workers, no less than those of people in factories and mines.

Recommendations

(1) That industrial hygiene matters be included into a general programme of workplace improvement, rather than being treated as a separate issue.

(2) That we seek to make all the resources of the corporation available to the solution of a problem arising in any CSR establishment, rather than leaving the people in each workplace or group to use only their own resources.

(3) That the control of occupational health and hygiene programmes be exercised through a system of policy, workplace standards, planning assumptions and codes of practice.

(4) That the company develop its own standards for workplace conditions, and that responsibility be vested jointly in the corporate area and in the divisions, through the appointment of a committee on standards.

(5) That standards for workplace conditions undergo some form of economic impact assessment before becoming binding on operations.

(6) That the principal responsibility for improving workplace conditions remain with local personnel.

(7) That establishments have individual responsibilities to meet company standards on workplace conditions.

(8) That any person introducing a new substance into a factory or into the market be responsible for evaluating its potential effects on health and for ensuring that adequate steps are taken in mitigation of potential hazards.

(9) That each proposal for capital expenditure include a statement of compliance with company standards.

(10) That the duties of the existing corporate environment function be increased to include the technological aspects of the workplace environment, and that staff be increased to enable the assumption of these additional duties.

(11) That responsibilities in occupational health and hygiene within the corporate area be divided and shared between the personnel and environment functions.

(12) That an annual report on compliance with company policy and standards be submitted by each establishment and each division.

(13) That the corporate area assume the responsibility to combine and co-ordinate the establishment and divisional reports into a statement of our status in occupational health as a corporation.

(14) That the following aspects of occupational health be investigated further:

- Means by which non-staff factory personnel can be included in the administration of occupational health and hygiene programmes.

- Health care schemes.

- Medical surveillance of employees subjected to health hazards in the workplace, with particular emphasis on the use of industrial nurses.

- Survey techniques for both health and hygiene, and their indicators.

(15) That the company introduce a hearing conservation scheme forthwith.

(16) That the health status of employees be established as soon as practicable, as a datum for assessing future improvement (see (14) above), as well as for guiding working environment programmes.

(17) That the company adopt and promulgate a written policy on occupational health and hygiene that is sufficiently detailed to direct the standards and the approach to be adopted - see Section 7 of the report.

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GLOSSARY OF TERMS USED

carcinogen - any substance or agent that produces cancer, accelerates the development of cancer, or acts upon a population to change its total frequency of cancer in terms of numbers of malignant tumors or distribution by site and age. Oncogens cause both malignant and benign tumors.

mutagen - any substance or agent that causes a genetic mutation.

teratogen - any substance or agent that causes deformities.

synergy - the combined action of two or more substances or agents, often greater than the sum of their individual actions.

epidemiology - the study of occurrence and distribution of disease.

pneumoconiosis - any disease of the lung caused by the inhalation of dust.

dermatogen - any substance or agent that causes an inflammation of the skin.

allergen - substance capable of inducing a specific, acquired alteration in the capability of a human to react and of evoking the characteristic response of that new reactivity.

Reference: Blakiston's Pocket Medical Dictionary

1. INTRODUCTION

In August, 1974, Planning Assignment No. 48 (Appendix 1) spelt out the need to improve attention to industrial hygiene and occupational health matters within the CSR group. It foreshadowed a study of hazardous and unhealthy aspects of the working environment in CSR, leading to:

- an understanding of our performance in relation to legal and socially acceptable standards
- draft planning assumptions
- proposals for a continuing capability to generate up-to-date standards and planning assumptions, and to monitor and assess performance of the CSR group.

This led to the establishment of an Occupational Health Project Team which began work at the end of January, 1975. The team, consisting of:

Mr. V.J. Winley (Manager) - part-time
Mr. O.L. Aubrey
Mr. J.H. Elfverson
Miss C.M. Akehurst (from March to June, 1975)

carried out the project work and reported to Mr. C.W. Davis who headed a steering committee of:

Mr. C.W. Davis	(Chairman)	
Mr. J.F. Blaxland	(alternate Mr. I.G. Burgess)	
Mr. B.L. Brennan	(alternate Mr. J.G. Henningham)	
Mr. N. Tuffley	(later Mr. P.J. Field)	
Dr. B.M. Munday		
Mr. G.C. Pickford		

(Refer Staff Circular 657, Appendix 2).

A Programme of Work was issued as the basis of project work carried out between January and August of 1975 (Appendix 3). Regular meetings of the Committee were held during this period to discuss progress and advise the survey team.

2. METHODOLOGY

2.1 The Situation

2.11 The Status of Occupational Health in CSR

The status of occupational health within CSR is seen as a combination of our awareness of problems, the nature of the problems themselves, our ability and willingness to rectify them, and the resources available.

2.12 Definition and Scope of Occupational Health

The definition of occupational health, adopted initially for the purposes of this project was "a person's health and well being insofar as it is affected by work and work conditions".

Occupational health, may be further divided into two areas: industrial hygiene, and, for want of better terminology, occupational health of individuals.

Industrial hygiene is directed at the provision of a workplace environment which is, as far as is reasonably possible, free of direct hazards to health and threat of physiological distress. It is in this area that the primary emphasis of the project was placed, this facet being the most amenable to definition in terms of standards for assessment purposes.

Factors relating to the nature of the work, and the administration of health within the CSR community, were examined in less detail. Little information was available on the health status of individuals within CSR. (This raised the question of the need for health monitoring in the future).

Industrial hygiene was examined mainly in terms of the following physical factors:

- toxic substances
- noise and vibration
- heat, cold and ventilation
- dust
- illumination
- radiation
- ergonomics.

Comfort considerations were included with direct hazards to health within this definition of industrial hygiene, since the distinction is often merely one of priority.

2.13 Standards for the Project

The standards by which our assessment of the occupational environment was made were based, where possible, on published industrial hygiene standards.

Standards for heat, cold and ventilation for comfort where they do exist, are not suitable for use in rapid assessment. In these cases the observations of the project team and factory personnel formed the basis of the evaluation.

Standards for social and psychological stressors were not considered beyond an evaluation of the criteria on which they are based.

Our administration of health was assessed by comparison among members of the CSR group and with other Australian and overseas companies.

2.2 Procedure

2.21 General

The team members entered on the project without prior training or study in the subject. Expertise was gained as the project progressed through reading and discussions with experts and company staff.

2.22 Factory Visits

A programme involving visits by the project team to virtually every establishment in the CSR group was adopted. Personal visits were preferred to sending questionnaires. A list of factories visited is presented in Appendix 4.

The following benefits accrued from factory visits:

- Factory personnel were able to discuss the questions raised with the project team. This saved time for both the project team and factory staff.

- There was uniformity in form and content of the information collected. This allowed for a better comparison between factories.

- The factory's requirements for further information could be assessed.

- The attitudes of people in the field could be determined, and hopefully influenced.

- Awareness of factory personnel of the factors of occupational health was improved.

Contact with non-staff employees during factory visits was not sought.

The project team carried a small kit of instruments to allow for a preliminary assessment of some of the problems encountered.

2.23 Headquarters

A brief survey was conducted of Chatsworth and Knox Houses at Headquarters.

The factors studied, chosen after discussion with experts, were:

- noise
- illumination
- temperature control
- ergonomic aspects.

Some instruments were used. However, most information was obtained through discussion.

2.24 Other Discussions within CSR

Discussions were held with a number of persons throughout CSR in order to elicit technological expertise in the field of occupational health. (Appendix 5)

2.25 Visits to Government Bodies

State government departments were visited in each state.

The reasons were fourfold:

(1) to determine present and impending standards;
(2) to assess the attitude of government officials to occupational health;
(3) to determine what assistance they can render;
(4) to establish liaison for collaboration and influence.

A list of departments and people visited is presented in Appendix 6.

2.26 Visits to Other Companies

The approach to the administration of occupational health programmes in other companies was examined. A list of companies visited is presented in Appendix 7.

2.27 Overseas Visit

An overseas visit was made to gain further insight into foreign legislative trends, and to examine the administration of occupational health in foreign corporations.

A list of companies and people visited is presented in Appendix 8.

2.28 Published Information

A selection of references used is presented in Appendix 9.

3. LEGISLATION AND STANDARDS

3.1 General

Legislatures throughout the world are showing increased interest in occupational health, industrial hygiene, and safety matters. This trend is being reflected to varying degrees within Australia.

3.2 The Problem Facing the Legislatures

The problem facing legislatures was not that enabling legislation and standards did not exist, but simply that there was too much law. Legislation had developed empirically, with amending acts and associated regulations being promulgated, each to remedy a single ascertained "evil". The end result of this approach was law that was badly structured, contained in a multiplicity of documents, and rendered unduly elaborate and complex by a lack of unifying elements. Parliaments and administrators were unable to cope with the task of keeping this large body of law up to date, and many of the provisions became obsolete. The system was incapable of enforcement by factory inspectorates. The problem was particularly acute in America where each independent state had its own set of laws and regulations. The only entry by the United States federal legislature into occupational health and hygiene matters was by the Walsh-Healy method of imposing terms in government contracts.

Both:

(1) to collaborate in order to establish a safe and healthy working environment

(2) to ensure that safety delegates are appointed and adequately trained.

Safety delegate:

(1) to supervise the healthiness and safety of work within his safety sphere and to participate in the planning of new premises, equipment and processes, and alterations to existing ones.

(2) where there is an immediate and serious danger to the life or health of an employee, and if no immediate remedy can be obtained through representation to the employer, the safety delegate may order suspension of the work pending a decision by the Labour Inspectorate.

Safety Committee:

A Safety Committee must be formed where the number of employees exceeds fifty. This committee is to deal with matters concerning:

(a) occupational health services

(b) planning of new premises

(c) new equipment and working methods

(d) alterations to existing ones

Manufacturers and vendors of technical equipment are under a duty to ensure adequate security against accidents and injury to health.

3.33 United States of America:

In America the federal legislature has passed an Act overriding state legislation, through the legal fiction of preservation of interstate commerce. The model adopted by the Occupational Safety and Health Act of 1970 is that of the state enforcing regulations under the Act through a factory inspectorate issuing citations for violations of the regulations. The essence of co-operation between employers, employees and the government, so essential to the success of the schemes in the United Kingdom and in Sweden, is not present in the American model.

The American scheme necessitates a vast bureaucracy to detail, administer and enforce the scheme. The most important of these groups are:

NIOSH : (National Institute for Occupational Safety and Health) is established within the Department of Health, Education and Welfare. Its principal responsibility lies in health and safety research, standards and toxicity determinations. Its most important activity is the production of criteria on which improved standards for toxic materials and harmful reagents can be established and promulgated by the Department of Labour.

OSHA : (Occupational Safety and Health Administration was established under the Act as the administrative body.

NACOSH : (National Advisory Committee on Occupational Safety and Health) is a twelve member group appointed by the Secretary of Labour, and the Secretary of Health, Education and Welfare, to advise, consult and make recommendations in the administration of the Act, and to permit the establishment of ad hoc advisory committees to assist in standard setting functions.

The Act does impose a general duty on employers to furnish to each employee, employment and a place of employment that is free from recognised hazards causing or likely to cause death or serious physical harm to employees.

The Act also imposes a duty on employers and employees to comply with occupational safety and health standards and all rules and regulations promulgated under the Act. It is this duty that is almost invariably the basis for a citation.

3.4 Standards

The standards sought to be enforced throughout the world are very similar. The American approach to administration has resulted in a large amount of work being done on standards, and other legislatures have generally adopted these standards. Differences do occur between countries largely as a result of independent research and epidemiological studies.

3.5 The Approach Taken in Australian Legislation

3.51 General

In Australia, State legislatures have retained control of legislation on occupational safety and health. However, some uniformity in approach has been sought through committees such as the Departments of Labour Advisory Council. Uniformity in standards is sought through Health and Industrial hygiene sub-committees of the National Health and Medical Research Council, which include representatives from State Departments of Health. The NH & MRC recommends standards such as Atmospheric Contaminants of the Workplace. These recommendations are cited in the regulations in some states and inferred in others.

In each state, with the exception of Tasmania, occupational health sections are attached to the Departments of Health.

In Tasmania there is no separate occupational health section, but the duties are performed by medical officers of the Department of Health. Industrial hygienists are attached to occupational health sections in N.S.W. and Victoria. In Western

Australian and Queensland industrial hygiene measurements are performed by the Government Analyst.

However, in every state the responsibility for the formulation of regulations on occupational health and safety rests with the Department of Labour and Industry. The responsibility for occupational health and safety in the mining and quarrying industries remains traditionally vested in the Department of Mines in each state.

Only in South Australia has separate legislation on occupational safety and health been enacted: in the Industrial Safety, Health and Welfare Act of 1972. However, in other States essentially similar provisions have been embodied in existing Factories Acts. In N.S.W. provisions on noise exposure in industry are included in the Noise Control Act of 1975.

Due to the very great similarity of provisions in the various states only the South Australian Act and regulations will be discussed in any detail.

3.52 <u>The South Australian Act and Regulations</u>

The Act establishes an Industrial Safety, Health and Welfare Board, with membership comprising a chairman and equal representation drawn from employers' organisations and the United Trades and Labour council. The function of this board is to investigate, report, and make recommendations to the Minister on any matter referred to the Board by him, including any proposals for regulations or proclamations under the Act.

Enforcement of the Act is sought by two means:

(i) the appointment of a Chief Inspector and inspectors with powers of entry, inspection and copying of relevant documents, questioning of any individual, inspecting, and testing of any matter or thing. Where it appears to an inspector that a situation involves a risk of detriment to the safety and health of any person he may require, by written notice, the occupier to take steps to remedy the situation.

(ii) the registration of premises declared by proclamation to be industrial premises to which that section of the Act applies. The Permanent Head (of the department for the time being responsible for administration of the Act) shall not register any industrial premise unless he is satisfied that there is compliance with all relevant provisions in the act and regulations. Registration must be renewed annually.

The Act imposes a duty on an employer to:

(a) do all things necessary to ensure compliance with the Act.

(b) take all reasonable precautions to ensure the health and safety of employees.

The Act imposes a duty on workers not to render any action taken by the employer less effective by any act or omission.

Where there are ten or more workers, an employer is obliged to allow workers to elect a safety representative.

The principal features of the regulations under this act are:

. Provisions for specific industries, such as the asbestos industry.

. The wide discretionary powers given the chief inspector. For example: audiometric testing and the use of hearing protection as a solution to noise exposure problems is left to the discretion of the chief inspector. Industrial hygiene standards for workplace exposure are defined merely as "standards of exposure" without reference to the source of numerical values to be applied.

. Exposure to harmful substances in the workplace is treated in the following manner:

(a) the employer is under a duty to take all necessary precautions to protect workers from harmful substances where such substances are manufactured, or are generated or released in quantities liable to injure health.

The regulations contain, in addition to the above, the usual requirements in Factories Act regulations as to working space, sanitory facilities, etc.

Short of providing a general outline of legal obligations, the South Australian Act and regulations do very little to assist and encourage a policy of self-regulation of occupational health in factories. The twin approach of registration of specified premises, and the inspectorial system appears to be primarily directed at factories handling highly dangerous materials such as asbestos or lead. The Act itself envisages inspectors directing what is to be done in mitigation of hazards, and employers complying with these directions. The regulations specify that atmospheric testing for contaminants must be carried out, but provide no guidelines on how this testing should be carried out. However, the Act grants inspectors the power of inspection of results of any monitoring work.

The Act and regulations do not impose any duties on the manufacturer of hazardous materials towards their consumers, nor any right on consumers to demand information from manufacturers.

We do not think that this Act is adequate to guarantee the safety, health and welfare of the work force or of consumers. However, it remains as the best example available from Australian legislation.

3.6 Our Duties Under Common Law

The British Health and Safety at Work etc. Act of 1974 codifies a statement of the common law pertaining to occupational safety and health. This statement is relevant [redacted] in Australia, and is reproduced in the following pages.

HEALTH AND SAFETY AT WORK ETC. ACT 1974

General duties

General duties of employers to their employees.

2. *(1) It shall be the duty of every employer to ensure, so far as is reasonably practicable, the health, safety and welfare at work of all his employees.*

(2) Without prejudice to the generality of an employer's duty under the preceding subsection, the matters to which that duty extends include in particular -

(a) the provision and maintenance of plant and systems of work that are, so far as is reasonably practicable, safe and without risks to health;

(b) arrangements for ensuring, so far as is reasonably practicable, safety and absence of risks to health in connection with the use, handling, storage and transport of articles and substances;

(c) the provision of such information, instruction, training and supervision as is necessary to ensure, so far as is reasonably practicable, the health and safety at work of his employees;

HEALTH AND SAFETY AT WORK ETC. ACT 1974

(d) so far as is reasonably practicable as regards any place of work under the employer's control, the maintenance of it in a condition that is safe and without risks to health and the provision and maintenance of means of access to and egress from it that are safe and without such risks;

(e) the provision and maintenance of a working environment for his employees that is, so far as is reasonably practicable, safe, without risks to health, and adequate as regards facilities and arrangements for their welfare at work.

Part I

General duties of employers and self-employed to persons other than their employees.

3. (1) It shall be the duty of every employer to conduct his undertaking in such a way as to ensure, so far as is reasonably practicable, that persons not in his employment who may be affected thereby are not thereby exposed to risks to their health or safety.

(2) It shall be the duty of every self-employed person to conduct his undertaking in such a way as to ensure, so far as is reasonably practicable, that he and other persons (not being his employees) who may be affected thereby are not thereby exposed to risks to their health or safety.

(3) In such cases as may be prescribed, it shall be the duty of every employer and every self-employed person, in the prescribed circumstances and in the prescribed manner, to give to persons (not being his employees) who may be affected by the way in which he conducts his undertaking the prescribed information about such aspects of the way in which he conducts his undertaking as might affect their health or safety.

General duties of persons concerned with premises to persons other than their employees.

4. *(1) This section has effect for imposing on persons duties in relation to those who -*

(a) are not their employees; but

(b) use non-domestic premises made available to them as a place of work or as a place where they may use plant or substances provided for their use there,

and applies to premises so made available and other non-domestic premises used in connection with them.

(2) It shall be the duty of each person who has, to any extent, control of premises to which this section applies or of the means of access thereto or egress therefrom or of any plant or substance in such premises to take such measures as it is reasonable for a person in his position to take to ensure, so far as is reasonably practicable, that the premises, all means of access thereto or egress therefrom available for use by persons using the premises, and any plant or substance in the premises or, as the case may be, provided for use there, is or are safe and without risks to health.

(3) Where a person has, by virtue of any contract or tenancy, an obligation of any extent in relation to -

(a) the maintenance or repair of any premises to which this section applies or any means of access thereto or egress therefrom: or

(b) the safety of or the absence of risks to health arising from plant or substances in any such premises;

that person shall be treated, for the purposes of subsection (2) above, as being a person who has control of the matters to which his obligation extends.

(4) Any reference in this section to a person having control of any premises or matter is a reference to a person having control of the premises or matter in connection with the carrying on by him of a trade, business or other undertaking (whether for profit or not).

General duty of persons in control of certain premises in relation to harmful emissions into atmosphere.

5. *(1) It shall be the duty of the person having control of any premises of a class prescribed for the purposes of section 1(1)(d) to use the best practicable means for preventing the emission into the atmosphere from the premises of noxious or offensive substances and for rendering harmless and inoffensive such substances as may be so emitted.*

(2) The reference in subsection (1) above to the means to be used for the purposes there mentioned includes a reference to the manner in which the plant

provided for those purposes is used and to the supervision of any operation involving the emission of the substances to which that subsection applies.

(3) Any substance or a substance of any description prescribed for the purposes of subsection (1) above as noxious or offensive shall be a noxious or, as the case may be, an offensive substance for those purposes whether or not it would be so apart from this subsection.

(4) Any reference in this section to a person having control of any premises is a reference to a person having control of the premises in connection with the carrying on by him of a trade, business or other undertaking (whether for profit or not) and any duty imposed on any such person by this section shall extend only to matters within his control.

General duties of manufacturers etc. as regards articles and substances for use at work.

6. ***(1) It shall be the duty of any person who designs, manufactures, imports or supplies any article for use at work -***

(a) to ensure, so far as is reasonably practicable, that the article is so designed and constructed as to be safe and without risks to health when properly used;

(b) to carry out or arrange for the carrying out of such testing and examination as may be necessary for the performance of the duty imposed on him by the preceding paragraph;

(c) to take such steps as are necessary to secure that there will be available in connection with the use of the article at work adequate information about the use for which it is designed and has been tested, and about any conditions necessary to ensure that, when put to that use, it will be safe and without risks to health.

(2) It shall be the duty of any person who undertakes the design or manufacture of any article for use at work to carry out or arrange for the carrying out of any necessary research with a view to the discovery and, so far as is reasonably practicable, the elimination or minimisation of any risks to health or safety to which the design or article may give rise.

(3) It shall be the duty of any person who erects or installs any article for use at work in any premises where that article is to be used by persons at work to ensure, so far as is reasonably practicable, that nothing about the way in which it is erected or installed makes it unsafe or a risk to health when properly used.

.....

General duties of employees at work

7. It shall be the duty of every employee while at work -

(a) to take reasonable care for the health and safety of himself and of other persons who may be affected by his acts or omissions at work; and

(b) as regards any duty or requirement imposed on his employer or any other person by or under any of the relevant statutory provisions, to co-operate with him so far as is necessary to enable that duty or requirement to be performed or complied with.

Duty not to interfere with or misuse things provided pursuant to certain provisions.

8. No person shall intentionally or recklessly interfere with or misuse anything provided in the interests of health, safety or welfare in pursuance of any of the relevant statutory provisions.

Duty not to charge employees for things done or provided pursuant to certain specific requirements

9. No employer shall levy or permit to be levied on any employee of his any charge in respect of anything done or provided in pursuance of any specific requirement of the relevant statutory provisions.

4. HOW THE COMPANY STANDS

4.1 General

Our assessment of the status of occupational health and industrial hygiene within the CSR group of companies is based on a number of criteria. These criteria are:

- our awareness of problems and attitude to them
- the nature of problems
- expertise available to combat these problems
- what has been done or is being done in mitigation of problems
- what is being done in other corporations.

4.2 Attitudes of Management and Personnel

Attitudes of personnel to topics such as occupational health have been greatly influenced by the concept of good corporate citizenship. There is a general awareness of, and agreement with, the company's conviction towards improving the workplace.

Insofar as occupational health and industrial hygiene matters are concerned, there is a perception that we may have some problems. However, there is not, in general, sufficient knowledge and understanding of hygiene standards to allow these problems to be quantified. Major exceptions occur where the potential threat to safety and health is great. Asbestos-cement manufacture is a notable example.

In this industry a complete industrial hygiene strategy has been adopted. The restricted entry procedures for enclosed places, enforced at CSR Chemicals and the Distilleries are other examples, and are partially directed at the avoidance of acute exposures.

We encountered interest and a desire for further knowledge in all locations visited.

Factory managers believe they can, with some assistance, solve most of their own problems. However, they foresee difficulties in the preparation of proposals for capital expenditure. They have, in general, no yardstick against which to measure satisfactory conditions. They see a need for the input of a considerable amount of capital.They would prefer not to have to justify this solely on the basis of their own opinions as to desirable conditions.

4.3 The Problems

4.31 General

A list of materials used in our factories has been collected, but the list is, for the most part, in trade names. The constituents of these materials and/or their toxicological data will need to be sought from manufacturers before an evaluation of their potential as a health hazard can be made.

Our assessment of factors relating to comfort and amenity was carried out without benefit of formal definition of criteria. Representative assessments of factors such as workplace temperatures could not be determined on the basis of a one day visit

Time did not permit measurement of chemical and dust exposures. However, some estimation of concentration was possible through comparison with analogous situations and "rules of thumb".

In some areas, particularly where the potential for damage to health was severe, programmes of evaluation have been undertaken by the factories. The results of these programmes have been used in the survey.

4.32 Summary of Results

The physical and chemical stressors encountered in the CSR workplace environment include:

Noise
Vibration
Heat and cold stress
Thermal comfort
Illumination
Radiation - including sun-cancer
Dust
Toxic substances

Arsenic	)
Asbestos	)
Aldrin and Dieldrin	)
Benzene	)
Chloroform	) **Carcinogens?**
Vinyl chloride monomer	)
Polychlorinated biphenyls	)
Mica, Vermiculite	
Silica dust	
Cobalt	
Manganese	
Welding fumes	
White oil	
Zinc	
Mycotoxins (e.g. Bagassosis)	

This list will be increased when all substances used in the workplace have been examined for potential as hazards to health.

Other stressors relevant to the CSR environment include:

- personal habits - alcohol, smoking, drug dependence (including analgesics)
- ergonomics - design of tables, chairs, control panels, office and factory layout
- social and psychological stressors - shift work, job content and administration
- health hazards inherent in our products - asbestos, carbon dioxide as an asphyxiant, the possibility of children swallowing pellitised dry ice.

Table 1 summarises the results of the walkthrough hazards survey of CSR workplaces. Stressors are considered only in the context of being present or absent. Some attempt was made during the hazards survey to link stressors with job locations and individuals involved. This analysis will require further work by persons at each location.

[- Factories Visited

RIES
elsea
esloe
ville
Farm
ont
aville

ERIES

ont
aville

IAN MILLS

adwater
dong
ndi
bledon
wood
knade
toria

PYNEBOARD

17. Tumut
18. Oberon
19. Rosedale
20. Smithfield
21. Bankstown
22. Brunswick

BCMD

Wunderlich

23. Rosehill AC
24. Rosehill Tile
25. Gaythorne AC
26. Northgate Metal
27. Northgate Tile
28. Vermont Tile
29. Sunshine AC
30. Launceston Tile
31. Camden Park Metal
32. Edwardstown Tile
33. Sunshine Metal
34. Hobart Metal

BCMD Cont)

35. B.I.I. - Auburn
36. B.I. Vic.
37. B.I.W.A.
38. Brunswick Plaster
39. New Farm Plaster
40. W.A.P.M.
41. W.A.P.M. Albany
42. Concord
43. Rockard
44. Gyprock Wingfield
45. Gyprock Coopers Plains
46. Gyprock Yarraville
47. Gyprock Perth
48. Gyprock Sydney West.
49. S.A. Gypsum, K.I.
50. Rondo Building Services
51. Vinyl Flooring Factories
52. A & K Cement:
APCL Geelong
53. Independent Concrete
Penrith Quarry
54. IC Fairfield Plant
55. IC Pendle Hill Plant

CSR CHEMICALS

56. CSRC Rhodes

MINERALS

57. Mount Gunson
58. Pacminex Exploration
59. B.B.C.

CARBA

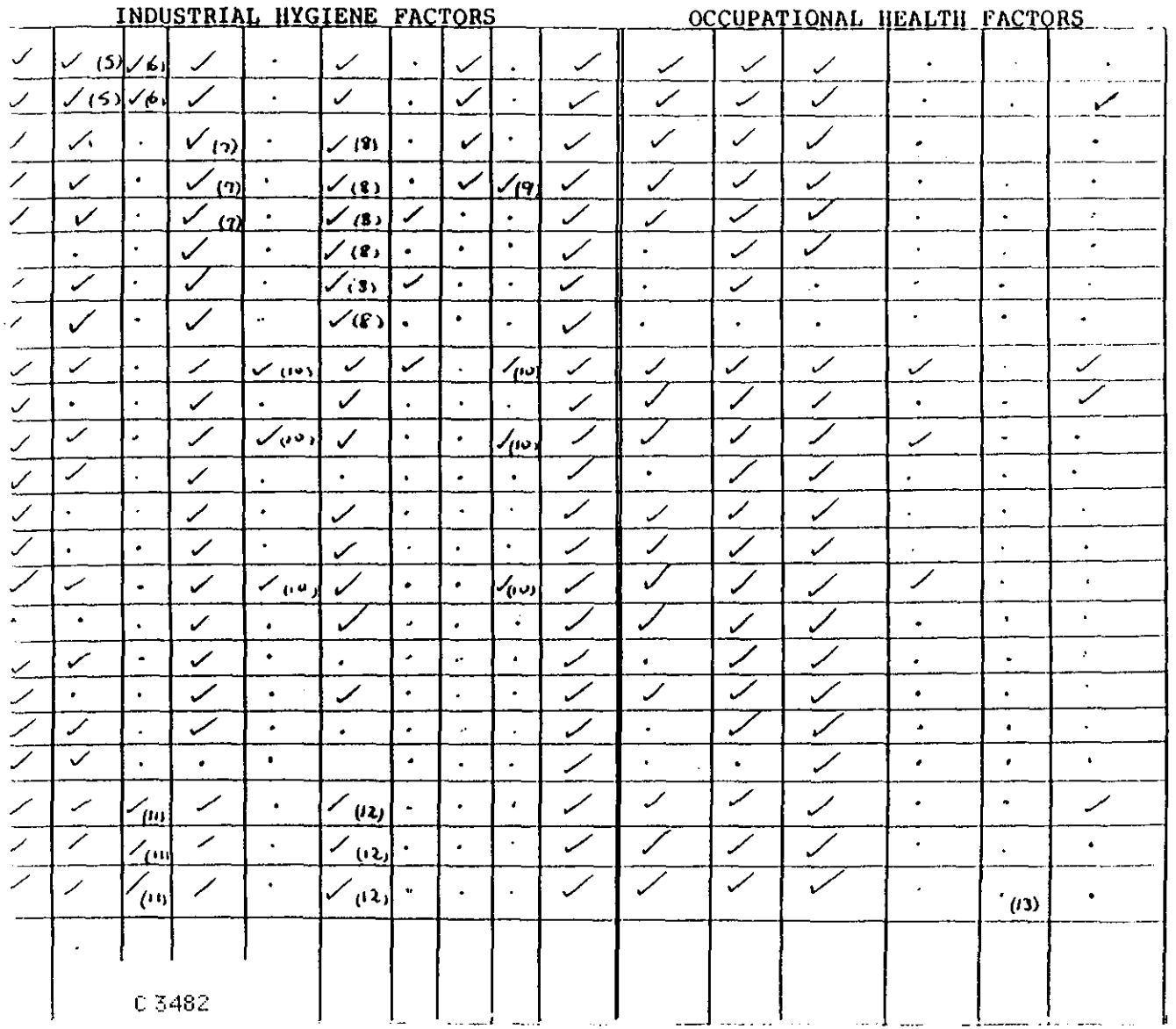
60. Botany Carba
61. Abbotsford
62. Waldown
63. Torrensville
64. Belmont
65. Darwin
66. Launceston
67. Newcastle
68. Mount Gambier
69. D.I.N.Q.
70. D.I.Q.

MACADAMIA

71. Maleny
72. Beerwah
73. Slacks Creek
74. Baffle Creek

	INDUSTRIAL HYGIENE FACTORS										OCCUPATIONAL HEALTH FACTORS					
	>85dB(A)	Noise Exposure >90dB(A)	Heat Stress	Thermal Comfort	Pneumoconiosis Producing Dusts	Inert Dusts	Radiation	Vibration	Carcinogens	Toxic Chemicals	Shift Work	First Aid Room	CSR Type Pre-employment Medical	Other Form of Pre-employment Medical	Audiometry	Industrial Nurses (or Site Doctor)
Chelsea		•	√(1)	√	•	√(2)	√	•	•	√	√	√	√	•	•	√
Cottesloe		•	√(1)	√	•	√(2)	√	•	•	√	√	√	√	•	•	•
Glanville		•	•	√	•	√	√	•	•	√	√	√	√	•	•	•
New Farm		•	√(1)	√	•	√(2)	√	•	•	√	√	√	√	•	•	•
Pyrmont		√	√(1)	√	•	√(2)	√	√	•	√	√	√	√	•	•	√
Yarraville		√	√(1)	√	•	√(2)	√	•	•	√	√	√	√	•	•	√
A.N.P.A.	(3)	•	•	√	•	•	•	√	•	√	√	√	√	•	•	•
Pyrmont		√	•	√	•	•	•	•	√(4)	√	√	√	√	•	•	√
Yarraville		•	•	√	•	•	•	•	√(4)	√	√	√	√	•	•	√
Broadwater		√	√(6)	√	•	√	•	√	•	√	√	√	√	•	•	•
Condong		√	√(6)	√	•	√	•	√	•	√	√	√	√	•	•	•
Goondi		√(5)	√(6)	√	•	√	•	√	•	√	√	√	√	•	•	•
Hambledon		√(5)	√(6)	√	•	√	•	√	•	√	√	√	√	•	•	•
Harwood		√	√(6)	√	•	√	•	√	•	√	√	√	√	•	•	•

C 3481


INDUSTRIAL HYGIENE FACTORS
OCCUPATIONAL HEALTH FACTORS
Macknade
Victoria
Tumut
Oberon
Rosedale
Smithfield
Bankstown
Brunswick
Rosehill A.C.
Rosehill Tile
Gaythorne A.C.
Northgate Metal
Northgate Tile
Vermont Tile
Sunshine A.C.
Launceston Tile
Camden Park Metal
Edwardstown Tile
Sunshine Metal
Hobart Metal
BII Auburn
BI Vic.
BI W.A.
C 3482

INDUSTRIAL HYGIENE FACTORS									OCCUPATIONAL HEALTH FACTORS						
															Brunswick Plaster
															New Farm Plaster
															W.A.P.M.
															W.A.P.M. Albany
															Concord
															Rockard
			(15)												Gyprock Wingfield
															Gyprock Cooper's Plains
															Gyprock Yarraville
			(15)												Gyprock Perth
															Gyprock Sydney West
															S.A. Gypsum K.I.
															Rondo
			(16)				(17)								Vinyl Flooring Factories
(18)															A & K APCL Geelong
															Independant Concrete Penrith Quarry
															I.C. Fairfield
															I.C. Pendle Hill
				(19)								(20)			CSRC Rhodes
			(21)			(22)						(23)			Mt. Gunson
	(24)	(25)	(25)												Pacminex Exploration
(26)	(26)			(27)			(28)					(29)			B.B.C.

INDUSTRIAL HYGIENE FACTORS										OCCUPATIONAL HEALTH FACTOR					
✓	✓	·	✓	·	·	·	·	✓(31)	✓(32)	✓	·	✓	·	·	
·	·	·	✓	·	·	·	·	✓(31)	✓(32)	·	·	✓	·	·	
✓	·	·	·	·	·	·	·	·	✓(32)	·	✓	✓	·	·	
✓	·	·	✓	·	·	·	·	·	✓(32)	✓	·	✓	·	·	
✓	·	·	✓	·	·	·	·	·	✓(32)	✓	·	✓	·	·	
·	·	·	✓	·	·	·	·	·	✓(32)	·	·	✓	·	·	
·	·	·	✓	·	·	·	✓	·	✓(32)	·	·	✓	·	·	
✓	✓	·	·	·	·	·	·	·	·	·	·	✓	·	·	
·	·	·	✓	·	✓(33)	·	·	·	✓(32)	✓	·	✓	·	·	
·	·	·	✓	·	·	·	·	·	✓(32)	✓	·	✓	·	·	
✓	✓	·	✓	·	·	·	·	·	✓(32)	✓	·	✓	·	·	
✓	✓(34)	·	·	·	·	·	✓	·	✓	·	·	·	·	·	
✓	✓(34)	·	·	·	·	·	·	·	✓	·	·	·	·	·	
✓	✓(35)	·	✓	·	·	·	·	·	·	·	✓	✓	·	·	
✓	✓(34)	·	·	·	·	·	✓	·	✓	·	·	·	·	·	

C 3484

Footnotes

(1) Emptying char cisterns, and work around the char end have a limited potential for heat stress.

(2) Char and sugar dusts.

(3) Placement of new Plane Creek Mill boiler may adversely affect noise levels in the fitter's shop.

(4) Benzene used in azeotropic distillation of absolute alcohol.

(5) Mill locomotives are particularly noisy.

(6) Weekend boiler cleaning is a potential heat stress area.

(7) Cold ambient conditions in winter.

(8) Saw dust - Bankstown generates some dust from timbers known to be allergenic.

(9) Aldrin used occasionally in special batches of Pyneboard.

(10) Asbestos dust. Control programme in operation.

(11) Furnace floor areas have some potential for heat stress.

(12) Fibreglass is generally too large a diameter to be respirable, rockwool does contain some respirable fibres.

(13) Audiometric survey conducted by WA Department of Health.

(14) Forming area.

(15) Vermiculite.

(16) Asbestos; PVC is also suspected as a pneumoconiosis producing dust.

C 3485

(17) Asbestos, vinyl chloride monomer, and possible polyvinyl chloride.

(18) Raw Mills 1-7, operator console rooms in most other areas.

(19) Phthallic anhydride, is claimed to be inert, but is capable of allergenic reaction.

(20) Respiratory testing on persons exposed to phthallic anhydride.

(21) Silica dust, dust mitigation programme initiated.

(22) Severe vibration in some earth moving equipment - particularly the scrapers.

(23) Extensive pre-employment including X-rays and audiometry.

(24) Exploration drilling rigs measured at 105 dB(A). Hearing protection included as a contractual term.

(25) Some exploration work is carried out in desert regions.

(26) Coal washing area is particularly noisy.

(27) Coal dust.

(28) Polychlorinated bi-phenyls used in limited quantities.

(29) Regular health monitoring by the National Coal Board.

(30) Coal tar pitch used to coat the inside of trucks. Work carried out in enclosed space.

(31) β-naphthylamine found as a trace impurity in α-naphthylamine - used in laboratory work.

(32) Potential exposure to monoethanolamine.

(33) Zinc oxide and carbon black.

(34) Dehuskers are particularly noisy.

(35) Nut cracker is located in a sound-proofed room. Operator wears ear muffs.

Headquarters

A brief survey of Chatsworth and Knox Houses was conducted. The survey was restricted to occupational hygiene factors. No information was available, or was sought, on the health of individuals and the effect of employment on their health.

The following observations were made during the survey:

(1) Illumination in a number of areas was below the levels recommended in Australian Standard CA 30 "Artificial Lighting of Buildings". This is believed due to insufficient allowance for the "fluorescent effect" whereby fluorescent tubes rapidly lose their illumination efficiency. This effect is already recognised in the diligent attention by office maintenance staff in systematically changing the tubes before failure. However, the installed lighting capacity is often inadequate.

(2) Office furniture does not, in general, encourage correct posture. Further attention to ergonomics would be desirable.

(3) Office layout is directed primarily towards status. Most individual offices are too large to accommodate only a desk and cupboard, but too small to allow a neutral corner for discussions. Open plan areas are most frequently designed to allow for the accommodation of a greater number of people.

The existing office layout appears to need assessment to ensure that it meets social requirements. It does not appear to facilitate co-operative work, notably unscheduled discussion.

4.33 Discussion of Hygiene Factors

A. Noise

The NH & MRC has recommended, in their "Draft Code of Practice for Hearing Conservation", the adoption of 90 dB(A) time weighted average over an eight hour period as the allowable exposure to noise. This exposure should be reduced to 85 dB(A) after a period of a further five years, with the 85 dB(A) criteria applying immediately to all new equipment.

The decibel scale is logarithmic, whilst the time weighted average noise exposure refers to exposure to a given quantum of noise energy within a working day. The result of this relationship is that for each increase in noise level of 3 dB(A), the allowable exposure time is halved. The following table, based on an allowable noise level of 90 dB(A), is illustrative.

TABLE 2 Allowable Noise Exposures

Noise Level dB(A)	Allowable Exposure (hrs)
87	16
90	8
93	4
96	2
99	1
102	½
105	¼

The daily noise dose, calculated by the summation of the quotients of actual exposure to allowable exposure for each noise level the operator is exposed to during the working day, must not exceed unity.

The survey of factories has shown:

- noise exposure is our most common and widespread problem in industrial hygiene. The majority of our factories have some noise liabilities.

- we have a very large number of locations within our factories where time weighted noise exposures average between 85 and 90 dB(A).

- noise levels exceeding 100 dB(A) generally occur in unmanned areas where there is little operator exposure. Principal exceptions are saws used in board and metal factories, and the drilling rigs for minerals exploration.

- the most significant noise problem observed involved locomotive drivers and pointsmen engaged in the company's Queensland sugar milling operations. Exposure levels of over 95 dB(A) on a time-weighted average were frequent in these jobs.

The "average" individual suffers hearing loss with increasing age irrespective of exposure to noise in the workplace. However, workplace exposure to noise will increase the severity of this hearing loss.

The NH & MRC estimates that 18% of a population with no exposure to industrial noise will suffer a hearing loss from natural causes exceeding 25 dB C.A.L. A.H.L. (minor hearing impediment, representing the minimum compensable hearing loss) by the time they are sixty five years of age. Workplace exposure to 85 dB(A) time weighted average, over a 45 year career would incease this percentage to 33%, and for exposure to 90 dB(A) time weighted average, to 46%. Hearing loss at average exposures to 85 and 90 dB(A) is a gradual process. Exposure to higher levels of noise results in a rapid initial rate of hearing loss followed by a more gradual rate of loss after the initial damage. The rapidity and extent of this initial damage increases with increasing noise levels. This is particularly so at higher frequencies.

Noise control programmes should therefore aim initially at prevention of the high initial rates of hearing loss associated with exposure to high noise levels. The gain in hearing conservation from reducing exposure from 90 to 85 dB(A) time weighted average is small in the short term.

B. Dust

Not all dust is significant from a physiological point of view. To penetrate into the lung, dust particles must be less than about five microns diameter. Larger particles are generally trapped in the nose and bronchus. Particles less than 0.1 microns in diameter usually remain entrained in the airstream and are exhaled. Dust particles

in the respirable size range, unless fibrous in character, are generally encountered only where there is a process of attrition, such as crushing or grinding. Dusts encountered in the external environment during windstorms have too large a particle size to be physiologically active.

Dusts within the respirable size range may be pneumoconiosis producing or inert and may also be carriers of mycotoxins (e.g. bagassosis). Within the CSR range of activities, there are a number of areas where exposure to respirable dusts may occur.

These include:

. <u>rockwool dusts</u>:

- the rockwool process generates some fibres within the respirable size range. Rockwool dust is an irritant and is believed to be inert, but is undergoing investigation throughout the world at present. (the glass fibre process does not generate dust in the respirable size range in most processes throughout the world)

  locations: BII Auburn, B.I. W.A.

. <u>coal dust</u>:

- coal dust is pneumoconiosis producing. Extensive testing and control of dusts is instigated by the National Coal Board in N.S.W.

  locations: Buchanan

. silica dust:

- silica is fibrogenic (causes scarring of the lung tissue). Respirable dust is generally located in mining and quarrying where the overburden contains free silica. However, use of a jack-pick which is not equipped with water sprays, or dry drilling rigs on siliceous rocks, will result in excessive dust concentrations in the operator's breathing zone. May also result from cutting siliceous bricks.

  location: Mt. Gunson Mines.

. asbestos dust:

- asbestos is fibrogenic and is also a carcinogen.

  locations: Wunderlich A.C. Factories, Sunshine, Gaythorne and Rosehill - complete industrial hygiene system in operation. Exposures are controlled to current limits.
  Contingent liability from previous excessive exposures.

  Also used at

  Vinyl Flooring Factory, Concord.
  Concord Plaster (usage discontinued in early 1975)

C 3492

. mica dust:

- fibrogenic dust. Vermiculite is micaceous.

. mycotoxins:

- bagasse can carry a mycotoxin which is a lung irritant. There are no reports of bagassosis occurring in Australia, but cases overseas are fairly common. Principally encountered when bagasse has been stored for extended periods.

  location: Australian Mills.

. PVC

- The respirable dust in PVC resins has recently come under examination in England, as a potential pneumoconiosis producing dust. Results of this study are far from conclusive but are at least adequate to suggest caution in exposure to dust.

  location: Vinyl Flooring Factory, Concord.

C. Illumination

The South Australian Industrial Safety Code Regulations 1975 specifies illumination standards effective from September 1st 1975. These regulations require that all parts of a building regularly used by workers receive at least 110 lux of general illumintion, with non-working areas receiving at least 22 lux. Provision is made for the adoption of Australian Standard CA 30 "Artificial Lighting of Buildings" to cover specific tasks.

An ad hoc approach to illumination has been adopted in most factories. Additional lighting has been installed where subjective judgement has deemed it necessary. A small number of factories have had illumination surveys carried out.

Factory visits were made during daylight hours. However, some judgement of illumination was possible from our observations, and from discussions with factory personnel.

Lighting was considered satisfactory in all but a very few areas. In many areas lighting is being improved further by the installation of mercury vapour lamps to replace fluorescent tube lighting. Fluorescent tube lighting is noted for losing up to 50% of its illumination efficiency over the tube lifetime. If lights are installed just meeting the appropriate standard when the fluorescent tubes are new, then for most of the time illumination will be inadequate.

Many factories are fitted with skylights for daytime illumination. These provide very adequate illumination but add significantly to the heat loading during summer months.

D. Carcinogens

We are aware of a number of carcinogens and suspected carcinogens in use in our factories:

. vinyl chloride monomer

Residual vinyl chloride monomer occurs in the PVC used at the Vinyl Flooring Factory at Concord and at Marrickville Plastics. A preliminary survey of atmospheric concentrations of VCM at each operator station suggests that exposures are close to the very stringent American hygiene limit of 1ppm. Exposures should decrease in future in response to a campaign by PVC manufacturers to reduce monomer levels in PVC.

PVC itself is under suspicion as a carcinogen.

. Arsenic

Arsenic is used to borer-proof hardboard. Blood level analysis of exposed workers suggests only limited exposure. However, cases of lung cancer have been reported from overseas experience with arsenic trioxide dust.

. Asbestos

Asbestos fibre is carcinogenic in addition to its fibrogenic properties referred to previously.

C 3495

There are three commercially used forms of asbestos: crocidolite (blue asbestos), amosite and chrysotile. These very in toxicity, with

chrysotile the least. Generally two forms of cancer are associated with asbestos exposure:

- bronchial cancer
- mesothelioma of the pleura and peritoneum.

Mesotheliomata occur after a dormancy period of 30 - 40 years and are almost totally confined to crocidolite exposure. Chrysotile, the least dangerous of the asbestos group, is the major form of asbestos used in our present manufacture. It is used in the manufacture of asbestos cement products at the Wunderlich A.C. factories at Gaythorne, Sunshine and Rosehill. Small amounts of amosite are also used. At all three factories exposure is less than the Australian standard of 4 fibres per ml. However, this standard is based principally on the avoidance of asbestosis. A regular programme of dust and health monitoring is carried out at all three plants. A major conclusion of the IARC is that if exposure levels are low, there is no excess risk to workers of lung cancer. A working party committee of the IARC is meeting in early December to update the monograph on asbestos. This is an example of the dynamic state of likely asbestos regulations.

IARC International Agency for Research on Cancer

Compressed asbestos boards are used in the manufacture of marine panels and doors at the Wunderlich Camden Park Metals factory. High efficiency dust collection equipment has recently been installed. This operation takes place for 2 or 3 days of each month, with 12 men exposed.

The Concord Plaster Mills formerly used chrysotile in the manufacture of jointing cements. Its use was discontinued early in 1975.

Insufficient measurements have been carried out to determine the asbestos exposure at the Vinyl Flooring factory. An automatic bag opening machine has been installed to minimise exposure. However, as this machine is unreliable and unsatisfactory, its operation and future is under review.

There may be a legacy of asbestosis cases from previous exposures to asbestos dust; principally from the Wunderlich A.C. Factories. Conditions in these factories today should guarantee that this situation is not repeated. However the situation regarding cancer is contingent.

Our involvement in Australian Blue Asbestos at Wittenoom may have resulted in a large number of people being exposed to crocidolite dust. Mine tailings were used extensively for filling throughout the Wittenoom township, including the school yard.

As mesothelioma can have a dormancy period of up to 40 years, and is documented as having resulted from minimal exposures, it will be many years before the complete extent of the effect is known. Epidemiological studies are being undertaken on Wittenoom employees.

C 3497

We are still using Wittenoom as a base for some geological survey work.

E. Dermatogens and Allergens

Dermatitis is an inflammation of the skin. It is common in our factories in non-serious forms, but rare in the serious forms that can develop from allergic reaction.

Rockwool is a material that commonly causes a minor skin irritation. However workers in this industry tend to become immune to the effects, or leave the industry. A similar tendency has been observed in the cement industry.

Lime, used extensively throughout the sugar industry is a dermatogen to which many people cannot adjust. However, a natural process of selection, through sensitive persons avoiding contact, prevents serious troubles in this area.

We do not know very much about allergens and allergi (contact) dermatitis in our industry. Workers' compensation cases arising in this area are rare. One allergen is the toxin in bee stings, and bees are common in a number of sugar refineries.

Heat stress and thermal comfort

Heat stress is frequently confused with thermal discomfort. Heat stress refers to situations where the body cannot dissipate heat as fast as it absorbs it. The body temperature rises until it exceeds tolerable limits. This physiological reaction is usually reversible, but can result in permanent damage and even death.

Thermal standards are required that will insure safe working conditions for the normal industrial population working at the rates and for the periods of time necessary to the performance of their tasks without physiological distress or impairmen

In CSR heat stress is rare, and most cases occur in infrequent jobs. Situations in which it may occur include the cleaning of boilers in sugar mills, and pulling tile kilns. Infrequent jobs deny acclimatisation.

People working regularly in a hot area become acclimatised after 7 - 9 days. After this period stress may be measured for paced, regular jobs. However, for unpaced, infrequent exposures to heavy work in heat it is not yet possible to assess the stress in terms which predict the health consequences for the workers with any confidence. Thus these jobs require careful selection of personnel and consideration of conditions.

Thermal discomfort is common in our factories. The major factor influencing thermal comfort is the climate of the area in which the factory is located. Locations range from very cold (Pyneboard factories) to tropical regions and deserts.

However, the design of our factories frequently add to the discomfort arising from climatic causes. The air intakes on the driers in Pyneboard factories commonly draw air from within the factory, resulting in high air turnover rates. In naturally hot factories, the area with least natural ventilation often has a major heat source as adjacent plant.

Ducted fresh air is uncommon in our factories. Open factory design mitigates against comfort control by denying distinct operator areas the manageable volumetric dimensions necessary to allow forced ventilation or air conditioning.

~~Fig (1) illustrates the progression from a comfor~~

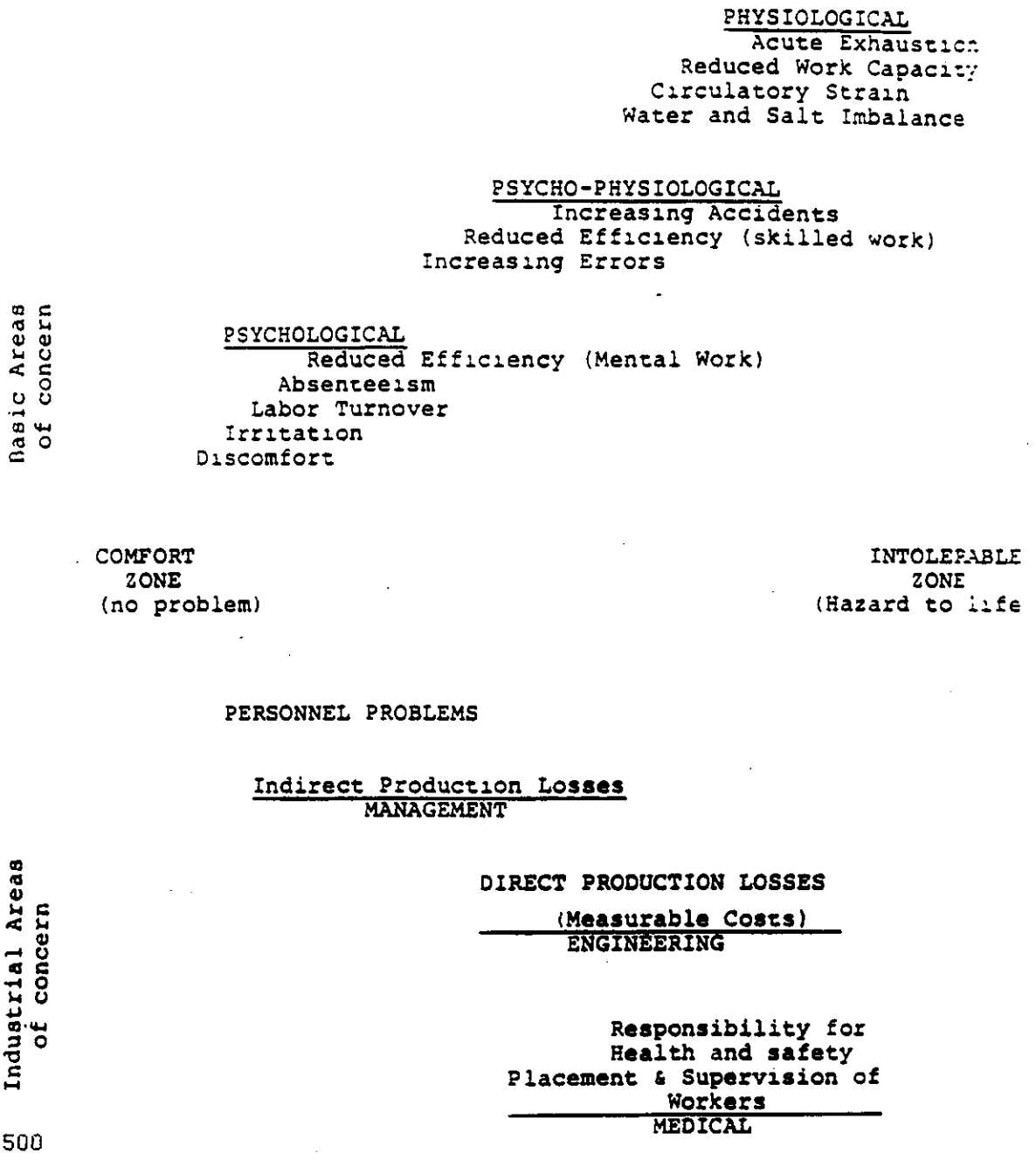


Fig. 1. Effects of heat on man, ranging from no effect (comfort) to extreme physiological breakdown (heat exhaustion, stroke, death).

Reference: Industrial Hygiene and Toxicology
F.A. Patty (Ed.)

4.34 Miscellaneous Observations

A. External Factory Appearance

From the outside, most CSR factories are little more than galvanised iron sheds or asbestos cement 'barns'. Attention to the grounds surrounding these factories has, in many cases, helped to offset this impression.

We do not think CSR is in accord with community expectations on external factory design. Many of our factories are now in residential areas. The company should actively seek methods of improving the appearance of existing factories, and pay attention to the architectural merit of future installations.

B. Internal Factory Design

From the inside factories are too often a production line encapsuled in a large, essentially barn-like building. Division into operator areas is more likely the result of process requirements, or equipment placement, than any conscious effort at design. This procedure may ensure that factories are built at minimum cost, but does little to ensure their habitability.

The expansion of capacity in many factories has resulted in the installation of equipment in areas which were previously occupied by operators. This has too often been to the detriment of operator comfort. Newly created operator areas often have diminished natural ventilation, and

sometimes increased exposure to factors governing industrial hygiene.

We believe that some form of building code will be necessary to prevent a recurrence of this situation, and to allow for the upgrading of operator comfort in ensuing years.

C. Trends in Factors Governing Industrial Hygiene

There is no general trend in CSR towards dramatic improvement in occupational hygiene. Very great progress has been made in some areas, notably where exposures to extremely hazardous conditions are involved. However, in other areas, conditions have deteriorated. Individual efforts in some factories have yielded laudable results.

Noise is the most widespread and documented industrial hygiene factor. The first company-wide noise survey was carried out by BMRL in 1968 and 1969. In many areas throughout the company, the results of that survey are still valid today. Some major noise sources within the factories have been tackled successfully. However, many areas have had little attention. Some noise exposures have worsened through new machinery being installed or through the power to existing equipment being increased.

Thermal comfort has decreased in a number of locations where new equipment has been installed. Placement of new equipment has sometimes interfered with natural air circulation patterns, creating hot spots in operator areas.

We do not believe that the momentum of existing programmes is adequate to meet future legislative requirements or community expectations.

D. Awareness in the Unions

The unions are showing an increased awareness of health and comfort matters. An indication of this trend is that recent trade union logs of claims have contained items requiring -

- employers to keep workplace noise levels below 80 dB(A). (Metal Industry Award, National Claim, April 1975)

- employers to take out an insurance policy if employees are working with a known carcinogen. (Association of Foremen and Supervisors claim on CSR Chemicals Ltd. August, 1975).

A recent item in the press stated that the AWU has received a grant from the Australian Government to set up a mobile testing unit to monitor the health of its members.

E. Survey Techniques

A survey team, under Associate Professor A.G. Andrews of the University of NSW, has been established to survey health status in the districts served by Prince Henry Hospital.

A short questionnaire, taking about 10 minutes to complete, is filled out by interviewees. The questions deal with obvious illnesses, diseases and defects, and then deal with psychological and sociological factors. The essence of the approach is a simple and pragmatic manner.

Current work in the Prince Henry survey has tended to show a strong correlation between physical, psychological and social health. Persons with physical disabilities are generally uneasy in other aspect of their being.

4.4 Expertise within the Company

Many pockets of expertise in occupational hygiene matters exist within the CSR group. Expertise ranges from monitoring, through design and contract specifications to engineering control. However the potential of this expertise is generally realised only in the division or group to which it belongs. The existence and availability of the expertise is not well known throughout the company. Nor does any formal system exist whereby this information can be exchanged. Liaison is more often based on personal friendships than conscious desires to co-ordinate the company efforts. A group faced with a particular problem is more likely to engage an external consultant than to seek consultancy within the company.

4.5 Work Being Done in Mitigation of Hazards

The picture presented in preceding sections represents the situation at the time of the visits. It takes little account of the work that has been done or is to be commenced in mitigation of these hazards. The divisions have a number of current programmes. Some factories have embarked on extensive control programmes on their own initiative.

Two notable examples of work being done are:

- the extensive dust control programme being undertaken at Mt. Gunson. The cabins of earth-moving equipment at the pit are presently being air conditioned, and dust generation points in the primary and secondary ore crushing area will be controlled by engineering means. Dust measuring equipment is being investigated.

- The forced ventilation programme being undertaken at Harwood Mill. Extensive duct work will enable fresh air to be fed to hot areas within the process house. A control programme for nuisance dust from the boiler station has also been initiated.

4.6 What is Being Done in Other Companies

4.61 General

A number of corporations, both within Australia and overseas, were visited with a view to examining their approaches to occupational health and industrial hygiene. The opinion of health departments in State governments was also sought.

Mount Isa Mines was of particular assistance. Mr. G. Stewart, Industrial Hygiene Engineer at Mt. Isa, helped to guide the survey team in the initial steps by visiting CSR headquarters and a number of other CSR establishments. He hosted a visit by the survey team to Mount Isa.

The companies visited within Australia were:

Alcoa
Mount Isa Mines
ICI
Olympic
ACI
National Coal Board
James Hardie

The companies visited overseas were:

ICI
Dow Chemical
Monsanto
Johns-Manville
Olin Corporation.

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In addition, the Swedish model for

4.62 Australian Corporations

Pre-employment examinations are used by all seven companies visited, but the type of examination varies. James Hardie and the National Coal Board use a questionnaire approach, the latter having, in addition, a comprehensive medical examination for all potential underground workers. The other companies have medical examinations carried out, in the main, by industrial nurses. A physician examines people only for specific jobs, or when the nurse's examination yields abnormal results.

As well as pre-employment testing, the majority of companies have some sort of regular examination of employees. Alcoa examines all individuals over 30 years of age annually, while James Hardie's programme ensures that all employees exposed to asbestos are medically tested every 2 years.

The use of industrial nurses is widespread in all of the corporations studied. Olympic have 12 industrial nurses, six of whom staff two major factories on a twenty-four hour basis. ACI have nurses at major plants, with minor plants using a sharing system. ICI have eleven nurses, including one in their Head Office.

Audiometric testing of at least some employees is undertaken by all companies studied. Some companies (Mount Isa Mines, ACI, Ansett Industries) have had a full hearing conservation programme running for several years, while others (Olympic) are still in the development stage. However, all are moving in this direction.

The majority of companies have some form of health scheme for executives. At James Hardie some 100 senior people are examined. The results are not available to the company. Ampol's programme is co-ordinated by Dr. R. Richards, a consultant, and covers 200 executives. The type of examination varies, but most include both examining and counselling functions.

Administrative organisation varies widely. All companies except ACI have a medical officer/directo: They use a consultant in each state who refers people to the particular specialist required. The majority have an industrial hygiene group who work with or under the medical group.

Comparison of the above companies with CSR may be made under the headings of placement, monitoring and health care.

The CSR system of pre-employment medicals is a brief questionnaire followed by a cursory physical by a doctor. Other systems place more reliance on questionnaires and the use of paramedical staff for testing purposes. (Section 5.321).

Monitoring of health in CSR is extremely limited, and usually occurs only where severe damage has already occurred.

Preventive health care is one of the most neglected areas in the company. There is no executive health programme or a co-ordinated hearing conservation programme. Some factories use nurses but in most cases the access is on treatment rather

4.63 Corporations Overseas

All the companies visited have had a comprehensive occupational medical service for some years. All now have industrial hygiene groups. ICI and Dow have extensive toxicological laboratories.

Organisational Structures

Organisational structures for an occupational health function vary widely, depending on company requirements. In Dow, because of the large toxicological research function, the central environment and occupational health groups report through the Director of Health and Environment Research to the Vice President in charge of Research.

In Olin Corporation, the Director Corporate Medical Services and Director Environmental Hygiene and Toxicology report to the Corporate Vice President - Health Affairs.

Dow and Monsanto have full time industrial hygienists at each major plant location.

Johns-Manville has several occupational health teams (and laboratories) organised by geographical region.

Attitudes Overseas

In virtually all places visited overseas, whether government or industry, the reaction to a statement that CSR did not have a medical service or medical director ranged from surprise to incredulity.

Industry reaction to existing or proposed legislation for occupational health varies. The attitudes may be summarised as follows:

United Kingdom:

Cautious, but generally welcomed by responsible companies. Industry representation on the UK Health and Safety Commission should ensure fair and sensible regulations.

Sweden:

General acceptance.

United States of America:

Over-reaction by industry on some questions (e.g. vinyl chloride) has undermined the credibility of the industry position with the government, the public and the unions. This has damaged responsible companies such as Dow (which in general, already meets most proposed standards).

THE SWEDISH SYSTEM

In Sweden, the provision of occupational health services is specified in an agreement between the employers (SAF) and unions (LO). The model followed is that of a small team comprising a trained occupational physician, together with a "safety engineer" and supporting nursing and clerical staff. Where an industry has 1500-2000 employees on site, these teams are in-house. Smaller industries are served by regional centres on a co-operative basis.

THE DOW MODEL

Dow Chemicals is an acknowledged leader in the area of occupational health and industrial hygiene. It provides a model which we could adopt in many respects.

Dow has:

- clear policy guidelines on environment and occupational health, with visible and strong general management backing;
- internal standards which apply world wide, and are enforced;
- an inventory of physical and chemical hazards for each operator function in all Dow plants;
- comprehensive safety data sheets for each material handled (including raw materials, intermediates, by-products and products);

ctive monitoring of the working
ronment:

nprehensive system of medical records for
employees, which can be computer linked
employment locations, job histories,
rials handled and the results of work-
e monitoring.

licy of ensuring that each employee is
aware of the potential hazards in his
pl e.

t of the Present Status of Occupational
n CSR

SR personnel have a satisfactory attitude
ges posed by occupational health and
giene. However, awareness of potential
g om the substances used in processes
derable attention.

er t where there is a real risk of
damage to health arising from short term
owever, in those of which we are aware,
control have either been commissioned,
development stage.

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rreversible damage to health occurring
m exposures is quite prevalent in our
Noise is the principal example of this
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5. TASKS TO BE PERFORMED BY AN OCCUPATIONAL HEALTH FUNCTION

5.1 Elements of the Function

5.11 General

The purpose of an occupational health system is to provide and promote a workplace environment that will make a positive contribution to an individual's health and well being. The system includes individuals in the community who handle and use company products.

The aims of occupational health monitoring are expressed in the following extract from the W.H.O. Technical Report No. 535 (p. 18):

Fundamental Aims of Occupational Health Monitoring

"The fundamental aims of occupational health monitoring are to measure all the stressors encountered at work and to assess the overall health status of employees. The stressors to be measured include not only physical, chemical, and biological hazards but also such factors as adverse psychosocial conditions and the poor adaptation of work processes and tools to human capacities. Furthermore, monitoring should be carried out with a view to detecting the positive aspects of work, which play an important part in health promotion.

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Unfortunately, knowledge of factors beyond the normal industrial hazards is far from complete, and a good deal of research will be needed before practical monitoring systems can be devised to cover them. At present, therefore, efforts must be concentrated on improving existing monitoring systems in order to promote the health both of the gainfully employed and of the community at large. This may be done by extending the system of monitoring so as to:

(1) strengthen further the preventive action against occupational health hazards;

(2) identify unrecognized health hazards;

(3) determine how variation in individual susceptibility influences the response to adverse working conditions;

(4) determine in what ways conditions of work add to or lessen the burden of general ill health in working communities."

Stressors in the workplace environment may be chemical, physical, psychological or social. However, the human organism generally reacts with one and the same defence plan, producing a radical adjustment of the body's processes. This adjustment is of approximately the same nature whether the stressor is physical or mental.

Any stressor may cause disease by itself. When more than one stressor is present the situation becomes more complex. Hygiene limits ignore possible synergy between chemical stressors by assuming that the stressors are additive, and take no account of inter-reaction between physical and mental stressors. The presence of a social or psychological stressor may radically alter an individual's adaptability to physical or chemical stressors. Both physical and mental stressors should be taken into account in the design of the workplace environment.

Monitoring the health of individuals will enable the detection of persons with higher than normal susceptibilities to particular stressors or combinations of stressors. It will also provide a measure of the effectiveness of a workplace environment programme.

5.12 Problems of Size and Logistics

In any strategy the logistics of variations in size and isolation of locations must be considered.

Table 3 shows the distribution of employees throughout CSR as at July 31, 1975.

Table 3 Distribution of employees in CSR

No. of employees	No. of locations	Cumulative number of locations
0 - 50	41	41
50 - 100	17	58
100 - 150	16	74
150 - 200	6	80
200 - 300	6	86
300 - 400	4	90
400 - 600	4	94
over 600	1	95

The average number of employees at a location is 122, and the ten largest locations account for 45 per cent of employees. Relative percentages of locations employing less than 100, 200 and 300 employees are important in consideration of health services (e.g. industrial nurses). These percentages are 61, 84 and 91 respectively.

5.13 Involvement of the Workforce

The models for an occupational health function inherent in both the British and Swedish Acts call for the involvement of the workforce. In the United Kingdom the Act provides that an employer must consult with employees in systems for promoting and developing measures to ensure the health and safety at work of the employees, and in checking the effectiveness of such methods.

5.2 The Occupational Environment

5.21 General

The occupational environment includes all aspects of workplace design that are capable of creating a stress situation for an individual. It embraces industrial hygiene, (or the exposure to direct physiological stressors), as well as design factors for job content and those that limit the social manner in which a job may be performed. The technical aspect includes all factors of workplace and job design that are capable, and desirable, of being translated into physical specifications.

Occupational environment differs from health conservation in being directed at the average rathe than the individual. Its object is to provide an environment to which the average person can adapt without excessive stress, but allows for individual differences through design for flexibility.

Industrial hygiene is that branch of an occupational environment that deals with physical and chemical stressors.

Specific aspects are considered in the following subsections.

5.22 Toxic Chemicals Register

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Essential to any programme of industrial hygiene is a knowledge of the potential of materials of

this end, a list of the chemicals used in our factories was requested and supplied. However, this list is, for the most part, in trade names. The potential of these substances as hazards to health must be determined and suitable precautions specified.

5.23 Workplace Standards

We have outlined our attitude to existing legislation and regulations pertaining to occupational health in Section 3 of this report. We do not believe that the regulations are sufficiently extensive to guarantee the standard of industrial hygiene we seek. Nor are they suited to ready application. A standard should be capable of being used as a yardstick in evaluation.

We recommend that the company develop its own standards and codes of practice. Such standards must, of course, be compatible with the law, and therefore must reflect, at a minimum, the most stringent requirement of any state legislature. Standards are not likely to be static. Further testing and epidemiological studies are being undertaken throughout the world and we expect that this will result in changes to published hygiene limits. It will be necessary to monitor published literature, recommendations of learned bodies, trends in community expectations, and the initiatives of Australian and foreign governments. Continuing review of standards and codes of practice will be essential.

Measures for controlling exposure to occupational health hazards should be an integral part of the design and administration of workplaces. Designs directed at improving comfort in the workplace very often also control hazards to health. The same goes for measures designed to improve the appearance of factories or the care and interest of work.

The criteria on which we seek standards and planning assumptions include:

- company building codes
- environment considerations
- safety and health codes
- employee amenities
- workplace comfort and ergonomics
- job specification criteria
- medical and welfare facilities available to the workforce.

Current obligations to comply with the law and to prevent damage to health would require interim standards. Longer term strategic planning would require standards that anticipate legal and social requirements.

Obligations under the law are evidenced in a multiplicity of documents. These obligations need to be assembled into a single document if our liabilities are to be fully understood.

5.24 Cost-Benefit

The ideal standard for a stressor in the occupational environment is that level to which every individual can adapt. In practice, however, society sometimes accepts levels beyond the ability of some individuals to adapt. Indeed a basic criterion in the determination of many hygiene limits is that no more than 1% of exposed population should show adverse effect.

Presumably some forms of societal cost-benefit judgement is operating. This choice is the political process, and requires the sanction of society rather than of individual companies. Individual companies need to make their own cost-benefit analyses in assessing the risks involved in their own, more limited sphere. (Some corporations have, presumably, already made a form of cost-benefit analysis for specific substances, e.g. the British Post Office and Alcoa bans on the use of asbestos.)

In to-day's climate, the costs are being increasingly emphasised and attributed to the employer. Thus a corporation's cost-benefit analysis, taking into account contingent liabilities, must result in a need to meet standards increasingly geared towards eliminating traumatic stress.

5.25 Monitoring of Hazards

We do not think that an attempt to measure every chemical in the workplace is feasible. The hygiene limits for exposure to many substances likely to be encountered are based on irritant effects. These substances have no known long term effects. There is little value in extensive formal monitoring of such substances.

The chemicals and hazards we seek to monitor in the first instance are those with a capability for acute and/or chronic injury to health.

Factors influencing the need for, and frequency of monitoring of toxic substances are:

- published industrial hygiene limits
- severity of the potential physiological reaction
- proximity of previous measurements to the industrial hygiene limits
- frequency with which the substance is used and the duration of exposure
- feed-back from health surveillance programmes.

Some development work on methods of determining contaminants in the workplace atmosphere will be required.

5.26 Carcinogens

Carcinogens and suspected carcinogens require particular attention. Cancer is a highly emotive issue, and cancer from industrial pollution, both inside and outside the factory, is being brought frequently to public attention. An increasingly adverse reaction towards working with carcinogens is not unlikely.

The community, through legislation, accepts the risks associated with working with carcinogens, but requires strict precautions (e.g. the 1 ppm exposure limit on vinyl chloride monomer). However, some large corporations are unwilling to accept the risk, and have banned specific carcinogens (e.g. Alcoa bans the use of asbestos, including asbestos cement).

The probability of cancer resulting from strictly controlled workplace exposure is said to be very small. However there is, most likely, no safe limit for exposure to a carcinogen.

The I.L.O. recommends that the use of carcinogens in industry should be restricted to cases where there are no viable alternatives. Should CSR adopt a similar policy considerable investigation of alternatives will be necessary.

Tobacco smoking is claimed to synergise with other carcinogens, and should be taken into account in job placement.

5.27 Liaison within the Company

The full success of this occupational health programme is dependant on it being undertaken as a corporation-wide activity.

Pockets of technical expertise in specific functions exist throughout the Company. These are very often ignored in favour of consultants when a problem arises. One reason for this is that persons faced with specific problems are unaware of the technology available within the company.

Improved liaison within the company requires the development of lateral communications between divisions and within divisions.

5.28 Liaison Outside the Company

Continuing liaison should be sought with other companies, with government departments and with the public. Likewise, CSR should actively seek to influence legislation in this field.

Full advantage should be taken of the assistance government departments can offer in this area. State Departments of Health, particularly in New South Wales, have wide areas of expertise. However approaches to these bodies should be made only for specific problems. CSR, with its resources, would be expected to solve most of its own problems.

5.3 Health Conservation

5.31 General

As an alternative to the present company system, a health conservation model will now be discussed.

Monitoring of health has generally been left to the individual. Only when health has deteriorated to such an extent that the individual can no longer perform his principal function has the company sought involvement.

From the health conservation point of view, there are inherent weaknesses in the existing private general-practitioner system. The system is largely health repair, rather than preventive medicine.

A company health maintenance programme would seek to supplement the existing private practitioner system. The basis of any such scheme would be the detection of reversible changes in individuals whilst they are reversible. Irreversible changes in health are adequately covered by existing systems, with established doctor-patient relationships.

5.32 Employee Health Conservation Schemes

The principal elements of a health conservation scheme are:

- the identification of reversible physiological change
- identification of the stressors influencing the change
- remedial actions.

The elements are the same whether the stresses arise through exposure to physical hazards or to social hazards. Physical hazards may be more readily quantified and controlled. In all cases, the remedies available are similar; viz

reduction of the stressors in the environment;

or

shielding the individual

or

removal of the individual from the stressor;

or

improving the individual's adaptation of stress

Without health monitoring we cannot manage the work environment realistically, nor be seen to be doing so. Health conservation not only monitors the adaptation of an individual to the environment, but also seeks to adapt the environment to the individual.

The emphasis in modern health care is shifting towards preventive medicine. The effectiveness of preventive medicine in promoting health is still speculative. Techniques for the detection of still-reversible physiological changes are being developed and refined.

Physiological changes must be attributed to particular stressors, and means of controlling those stressors developed if the potential of preventive medicine is to be realised.

5.321 Identification of Physiological Change

Health monitoring procedures range from a brief questionnaire to a full medical examination and counselling by a physician.

Some possibilities are outlined below:

(1) a full health examination of all employees, at regular intervals, may become practicable in the forseeable future. Such a process may emerge, for instance, from the current proposal to form a health foundation related to the University of New South Wales.

(2) a full health examination of a limited number of employees (some hundreds only) is possible through schemes such as the one offered by Dr. Rowland Richards. This is the scheme to which Ampol subscribes for executive health. The number of examinees may be extended through

Dr. Richards is medical director of the health testing services.

Dr. Richard's scheme involves two hours of examinations, testing, and counselling. the individual receives a confirmatory letter of the results of the examination, and the company receives a simple statement of whether that individual is fit, or not fit, to perform his duties.

Financial arrangements for this scheme involve a retainer paid by the company. The doctor bulk-bills Medibank for 85% of the scheduled fee, leaving the individual examined nothing to pay.

(3) A health examination for some or all employees, either on a pre-employment only, or periodic basis, by local general practitioners. This scheme is principall health repair orientated. The ordinary general practitioner may not have extensiv training, equipment or organisation for determining the reversible physiological change.

(4) An assessment of health through a survey technique. This may constitute pre-employment evaluations, similar to the type favoured by BHP Ltd., or may be general health status surveillance startin with the 10 minute questionnaire evolved by the University of N.S.W. Further selected enquiries, including medical

examinations, would arise from the questionnaire.

The bulk of medical testing in any of the schemes may be carried out by nurses specially trained in the relevant techniques. Institutions such as the Cumberland College of Health Sciences rely on nurses for the majority of testing, but on medical practitioners for evaluation and counselling. There is no reason why occupational nurses, under local management and backed by medical consultants, cannot be used for the majority of medical testing in any scheme. Specialists may be required for specific items of health care, e.g. for alcohol and drug dependency, or for unusual sensitivity.

All of the above schemes may be replaced, supplemented, or managed by a salaried company physician. For the present, however, it may be preferable to employ medical consultants and subsequently collaborate with them in assessing the need for a salaried officer, and his selection.

5.322 Identification of Stressors in the Workplace

Where health monitoring has revealed a physiological abnormality that may be the manifestation of workplace stress, or may affe the individual's ability to adapt to stress, then the particular stressors need to be identified.

The individual must play the principal role in identification of stressors. The examining physician can merely counsel in likely causes of maladaption, and suggest remedial measures.

This aspect of health conservation risks encroachment on the person's private life, as it necessarily deals with the whole man, and not just that part of him that works for the company.

Where physiological stressors are concerned we may counsel people or their behaviour outside the workplace. In hearing conservation one would have no hesitation to advise an employee who was a rifle shooter on the wisdom of hearing protection during this activity. Safety programmes have long sought to have employees apply attitudes of safety in their personal lives. However in the case of tobacco, analgesics or other drugs, the relationship is complex. In the case of social stressors diagnosis and advice become more difficult.

A person's private lifestyle and habits may influence his ability to adapt to stresses. The ultimate choice a person may have to make is whether to modify his habits in order to increase his adaption to stress, or modify his ambition.

5.323 Remedial Actions

The industrial hygiene programme outlined in Section 5.1 of this report is directed at controlling physiological stressors to within the level of adaption of the majority of individuals. Health monitoring for the effects of these stressors is aimed at identifying individuals of greater-than-normal susceptibility. By reducing the exposure of these individuals to the stressors we are seeking a guarantee against ill effects greater than that offered by hygiene limits alone.

Remedial actions where stressors are primarily social may be more difficult. The aim of such actions is to match the individual with the job, and adjust the job to the individual as far as possible.

Remedial actions directed at reducing mental stresses are an extension of conventional job placement techniques and management strategies. They seek to place an individual in an environment where he is obtaining maximum stimulation without the destructive effects of excessive stress. They differ from normal techniques principally in employing medical parameters. They require the participation and co-operation of both the individual and the company.

An individual may take unilateral action towards improving his adaption to stress. This may be achieved by altering his personal lifestyle by, for instance, changing his diet or entering upon exercise programmes. Medica counselling should be capable of assisting the individual in planning suitable strategies

5.324 Recommendations on Health Conservation Schemes

Our investigations into health conservation programmes were a preliminary assessment only. However they were sufficient to reveal that a successful scheme could make a real contribution towards protecting the health resources of the company, and meeting community requirements.

The company shall, presumably, be expected to apply any such scheme to all employees. This level of penetration could be achieved in the immediate future through occupational nurses under local management and backed by medical consultants. Outside services, such as those offered through the Cumberland College of Health Sciences are capable of handling a fairly limited number of individuals. Even if the availability of outside services is increased through health foundations such as one being considered in the University of NSW, it will be a number of years before full health evaluation within the CSR community becomes a practicable reality.

Initially a health care scheme based on preventive medicine could be offered to executives, solely on the grounds that their health affects so many others (for the individual the greatest need is probably in the middle managers and foremen group). A service such as that offered by Dr. Rowland Richards would be both suitable and desirable. This would give us a feel for the usefulness of this type of scheme and enable some assessment of its potential for wider application.

Health care in factories could be initiated through medical examinations of only those persons exposed to contaminants with potential for irreversible damage to health.

The social aspects of the workplace environment can be assessed through an extension of the 10-minute questionnaire technique developed by Associate Professor Andrews and the 'Prince Henry Group'. Press reports suggest that this approach has recently been applied to the Federal Public Service. A properly designed survey would indicate whether present management techniques and social organisation are suited to the majority of employees, or whether less stressful alternatives should be sought. It should also give some indication of the levels of physical health within the CSR community, providing a reference point for future assessment of progress. It would provide a basis for the formulation of planning assumptions on the social aspects of workplace design.

Recreational facilities have a place in a health conservation strategy. However initiatives should be deferred until an assessment of our health needs has been made.

The pre-employment scheme utilised in CSR would appear to be the most costly and least effective of all schemes examined. We believe that it warrants a full investigation. Other systems known to us place more reliance on questionnaires and the use of paramedical staff for testing purposes. In most schemes applicants are examined by doctors only where the questionnaire or results of paramedical testing indicated that this is desirable, or where health requirements for the proposed job are particularly stringent.

5.325 Results of Medical Examinations

The approach taken to the reporting of the results of medical evaluations in employee health schemes varies widely between organisations.

At one extreme the results are reported directly to the company. At the other, there is a complete confidence between the doctor and the officer concerned.

In the BHP scheme, the findings of the doctor and the employee concerned are confidential. However, employees are encouraged to report the results to the company and in most cases they do. It is at the doctor's discretion

whether he reports some major health problem which, if not dealt with, may endanger the individual or some other person.

The BHP scheme described includes some 1,300 persons. The scheme involves yearly medical examinations, or more frequently if that is desirable. Most people are checked prior to promotion.

Medibank supports employee health schemes. The criterion applied in determining whether Medibank will meet the cost of the scheme is whether the examination is principally for the benefit of the individual, or the company The assessment is made primarily on whether results are reported to the individual or to the company. To ensure the support of Medibank, reports of medical examinations should be made to the individual. The individual may be encouraged to discuss the report with the company.

5.33 Hearing Conservation Programme

The introduction of a hearing conservation scheme is more urgent than other facets of health conservation. Regulations under the South Australian Safety, Health and Welfare Act of 1972 leave the requirements of a hearing conservation programme to the discretion of the Chief Inspector of factories. However, in regulations mooted under the New South Wales Noise Control Act of 1974, hearing conservation programmes may be obligatory.

We believe the company should act now in the implementation of a hearing conservation programme throughout the CSR group.

Programme Elements

There are a number of factors in a hearing conservation programme:

- identification and magnitude of the problem
- engineering noise control
- hearing protective equipment
- audiometry and counselling
- motivation; training and supervision.

Noise surveys and engineering control have been discussed elsewhere in this report.

Hearing Protective Equipment

Engineering noise control may not be practicable for all exposures. Noise transmission barriers may be erected, but maintenance work may be necessary on the enclosed machine while it is operating. Individuals will still be required to use equipment such as grinders and needle-guns. Total engineering noise control may not be possible for a number of years.

Ear protectors are necessary to fill this gap. Ear muffs and plugs are available throughout the company, but it is usually left to the individual to request them. He is rarely told when and why he should use this equipment.

Audiometry and Counselling

Screening audiometers are designed to enable hearing assessment on a large number of people. Persons showing significant hearing loss require medical evaluation and examination with a more sophisticated audiometer.

Audiometry serves the following purposes:

- determining the effect of the hearing conservation programme
- detecting individuals with greater than normal susceptibility to hearing loss
- providing an opportunity for counselling
- detecting reversible hearing loss from

Counselling individuals in the conservation of their hearing is the most important aspect of audiometric testing. Excessive noise exposures may result from failure to use hearing protection during noisy operations in the workplace, or exposure to excessive noise in the individual's personal life. Counselling should be directed at both possibilities.

Training and Supervision

All persons involved in the administration of a hearing conservation programme must be fully trained in advance.

The involvement and co-operation of management, supervisors and individuals are essential to the success of the programme.

6. MODEL FOR AN OCCUPATIONAL HEALTH FUNCTION

6.1 General

We seek involvement of all people in the company in local self regulation of occupational health matters within a framework of overall policy guide lines and standards.

This model proposes co-operation between individuals and groups within CSR and associated companies, through joint formulation of standards and strategies and the sharing of information - in essence a corporation-wide venture. It relies, therefore, on a division of duties, and means of co-ordinating the various responsibilities.

Four administrative tools are necessary to the model proposed viz:

(1) policy
(2) planning assumptions
(3) standards
(4) codes of practice.

For the purposes of this report, we make the following distinctions and usage of the terms:

Policy -

The prerogative of the Board of Directors through its Executive Directors. A statement of intent in broad terms, but binding on planning assumptions, standards, and the administration of the programme.

Planning Assumptions -

Statements of future community expectations. To be taken into account in planning ventures. Not intended to be immediately binding on existing installations, but binding on future installations. These must be in accord with company policy, and will usually be more stringent than the working standards.

Standards -

Detailed translation of company policy into working terms. These are intended for immediate implementation through modification of existing installations.

Codes of Practice -

Suggested means of meeting the standards. They are not binding but where followed are sufficient compliance with the standards.

6.11 Division of Duties

The principal responsibility for the health and well-being of the workforce rests with the workers themselves, their supervisors, and finally in each location the Manager. Central administrative functions such as divisional headquarters and the corporate area act in a supporting role. Medical systems advise individuals on their adaptation to stressors, and management on the need for initiatives in the further control of stressors.

6.12 The role of Individuals

Individuals in the workplace have a duty to ensure that their actions do not endanger their own health or that of others. This duty applies equally to persons doing a specific job and persons designing new equipment or process strategies. Thus any person seeking to introduce a new chemical, substance or process into the workplace is under a personal duty to ensure that by doing so he is not risking detriment to the health of the workforce. Persons seeking new administrative strategies must ensure that adverse effects on health and wellbeing are not a foreseeable consequence of that strategy.

6.13 The Role of the Workplace Administratio:

Only people in factories can adequately assess compliance of the existing workplace with the aims of the company. They should develop strategies and design modifications to enable compliance with workplace standards. They should assist in the evaluation of the consequences, both economic and otherwise, of planning assumptions for the workplace.

6.14 The Supporting Role

The supporting role is shared jointly by the divisions and corporate headquarters. Its object is to:

- translate the aims and policy of the company into standards and planning assumptions capable of being used for assessment purposes in factories.
- assist individuals in developing the knowledge requisite to the performance of their duties.
- ensure that the people in factories have adequate support by increasing and supplementing their expertise.
- develop initiatives from the company's aims.

(1) Factory Standards

We recommend that a committee, representing divisional and corporate interests, be formed to formulate standards for workplace conditions. The terms of reference of this committee need not be confined to industrial hygiene factors, but could incorporate all aspects of company aims and policy that bear on the design of the workplace environment. The membership of this committee may be variable to allow for different areas of expertise.

Standards recommended initially may strike at the

easily determined. For this reason we recommend that standards be released initially as planning assumptions, pending full evaluation of likely effects. Necessary modifications can be made before they become binding standards.

(2) Assisting Individuals

Individuals will need to be fully informed in order to fulfil their responsibilities. Some of this information will be drawn from their own resources. However, this will need to be supplemented from the wider resources of the company.

The system of policy, planning assumptions, standards and codes of practice will fulfil part of this supplementary role. Further information on specific factors and their engineering control may be necessary. Colloquia would greatly assist dissemination of information, and more importantly, its use in practice.

(3) Development Work

Present expertise may not be adequate to meet all problems encountered in complying with company standards. Further development work will be necessary in some instances. This responsibility is shared principally by divisional headquarters and their factories, either as a single venture, or as a joint venture with other divisions or groups.

The role of the corporate area in development

(4) New Initiatives

New initiatives will be required from time to time to expand our coverage of the workplace environment and health conservation. The responsibility for developing initiatives is shared jointly and severally by the corporate area and the divisions.

6.15 Medical Systems

The need for health conservation schemes has been outlined in section 5.3 of this report. Requirements will need further analysis before a suitable scheme can be proposed. Some medical expertise will be necessary for this evaluation, and for the operation of any resulting scheme.

The function of medical systems within this occupational health scheme is to allow an individual to be matched to the workplace environment without his health suffering adverse affects. Without some form of health monitoring we can only design our system for the average individual. We are seeking an integration of medical and management functions in this scheme. The medical function is not paramount. It merely provides an assessment of the need for further initiatives in controlling health.

C 3543

The medical function also provides information to the individual on his adaptation to work-place stressors, and steps he should take to avoid damage to his health.

6.2 Co-ordination of the Programme

We recommend that occupational health be approached as a corporation-wide exercise. This will enable our total resources to be available to combat any particular problem. It will also allow for joint approaches to problems common to more than one type of factory.

Improved liaison throughout the CSR group of companies will be necessary to a corporation-wide approach. Forms of lateral communication will need to be devised.

We envisage the corporate area playing a central role in liaison throughout the company, supplemented by information networks existing within and between divisions. The corporate area will play a major role in liaison outside the company.

We believe that a system of formalised reporting is necessary to the achievement of our aims in occupational health. Factories, and ultimately the divisions, will need to report on their compliance with company standards and the initiatives necessary to meet these standards.

Annual reporting should suffice once the system has become established. More frequent reporting may be necessary in the initial stages of standards formulation.

C 3544

The corporate group should prepare an annual statement of compliance and progress for the general management group.

6.3 The Corporate Area

The role of the corporate area in this scheme includes the joint responsibilities outlined in the previous subsection, and in addition:

- the corporate staff function: providing an overview of the status of occupational health throughout CSR, and advice on policy and standards.

- a support function to supplement that provided jointly with the divisions.

- representation of the company's policy and performance to the public, recruits, other companies, the government and to individuals within CSR.

- innovation.

A complete occupational health strategy will involve an extension of many of the duties already performed within the corporate area. Functions such as safety, workers' compensation, employee relations, industrial and environment all have legitimate claims to some of the activities that constitute an occupational health programme.

As one alternative approach, we could seek to separate those components pertaining to occupational health from each of these functions and incorporate them under an occupational health manager. However, we prefer a system of co-operation among existing functions in a joint approach to occupational health.

C 3545

A unified approach to occupational health within the corporate area will then be secured through meetings and discussions and through involvement in joint projects.

Formal meetings, on a regular basis, will be necessary to ensure that the overall approach is unified, and to allow progress to be reviewed.

Existing duties within the corporate area do not adequately cover occupational health. Tasks to be performed fall into two distinct but inter-related areas - health of individuals and the quality of the working environment. We propose that the duties of the personnel administration be extended to include the health of individuals, and the environment function be extended to include the quality of the working environment. Some increase in the staffing of the environment section will be necessary.

The distinction between safety and health appears arbitrary. If the effects of exposure to a hazard are acute, then the problem is safety, if chronic then the problem is health. We propose that the technological aspects of safety be included in the workplace environment responsibility and the motivational and trauma aspects be retained within the personnel function.

Representing the Company

C 3546 Where representations to other companies or government departments directly involve company policy then the corporate area should be involved.

All representations need not be by corporate staff, but any representative must represent the corporation rather than an individual division or factory. Representations should be co-ordinated through the corporate area.

Support Function

The support function provided by the corporate area supplements that provided in conjunction with the divisions. It includes:

- the provision of specialist information;
- ensuring communication, liaison and co-ordination between groups within the company;
- seeking avenues of assistance from outside the company.

Innovation Functions

Responsibility for new initiatives is joint and several between the divisions and the corporate area. However, through more diverse contact with groups outside the company, the corporate area may be in a better position to determine where initiatives are necessary. The examination and implementation of new initiatives may be carried out as a project by the corporate or divisional area, or as a joint venture.

Health Conservation Schemes

The evaluation of health conservation schemes should be undertaken, in the first instance, by the corporate area. The personnel administration, aided by medical consultants, is the most suitable area for this task.

We do not recommend the appointment of a salaried medical officer in the initial stages of this programme. We are seeking self-regulation to the largest practicable extent, and wish to establish the coverage of our own initiatives in determining the need for a medical system. CSR has existing medical systems that require evaluation in the light of future needs. The premature appointment of a salaried medical officer could polarize medical and management functions, denying integration.

The implementation of any health conservation scheme would, of course, constitute a joint venture between the corporate area, divisional headquarters and the factories.

6.4 Project Work

Some project work will be necessary whilst the proposed scheme is being implemented, and subsequently for innovations.

The need for a toxic chemicals register was referred to in Section 5.22 of this report.

C 3548

The environment section of the corporate function should undertake the initial detailing of this

large number of people requesting the same information from the same manufacturer on behalf of the company.

Responsibility for keeping the register up to date should be joint and several between the corporate environment section and the divisions. The environment section will keep the central register up to date through its own investigations and through information supplied by the divisions.

The introduction of a hearing conservation programme is of greater urgency than the introduction of other health conservation schemes. For this reason we think it should be done as a project. The corporate environment section has developed some expertise on hearing conservation during this survey, and should be included with the personnel administration area and the division involved in the initial piloting of the scheme.

7. RECOMMENDED POLICY ON OCCUPATIONAL HEALTH AND HYGIENE

7.1 General

People throughout CSR are uncertain as to what their responsibilities, and indeed their aims are with regard to industrial hygiene and workplace conditions.

We therefore recommend that the company adopt and promulgate a written policy on occupational health and industrial hygiene. Such a statement should:

- include a general statement of the company's aims
- act as the final measure of compliance with company aims
- direct workplace planning assumptions and standards
- direct further investigation into relevant areas
- inform all employees of the company's attitudes and declared obligations, and their own obligations
- enable, contain and sanction personal initiatives
- regulate the liabilities for compliance with company aims throughout the company
- define and regulate obligations towards consumers.

C 3550

A written policy statement should impose liabilities on individuals but not give rise to personal rights. Its intention should be to control programmes and actions within the compa-

A suggested statement of policy, embodying the principal recommendations of this report, is outlined in the following section.

7.2 General Policy

We suggest the following for consideration as a statement of the company's policy with regard to occupational health and industrial hygiene:

The purpose of this policy is to provide a workplace environment that will make a positive contribution to the health and wellbeing of individuals. Its aim is to regulate responsibilities for occupational health and hygiene, and consumer safety within CSR. It does not give rise to enforceable rights to individuals, either within, or outside of CSR Ltd. It does not create a basis for contracts with persons or companies outside the CSR group. It poses a moral, but not legal, obligation on CSR officers with respect to such contracts and dealings with individuals.

1. CSR Ltd. recognises that it has a joint responsibility with its employees to prevent injury to health resulting from employment.

   This responsibility will be met by taking all reasonably practicable steps towards:

   (i) a comprehensive understanding of the potential effects on health of our materials of process, our processes, our products and our systems of administration.

   (ii) the prevention of exposure, to contaminants or

(iii) actively seeking to replace hazardous materials of process, processes and administrative strategies with less hazardous alternatives.

(iv) the provision of information, instruction, training and supervision necessary to enable employees to guard their health and the health of others.

(v) assisting employees to control the effects of employment on their health.

2. CSR Ltd. recognises that employees have a right to jobs that are, so far as is reasonably practicable, interesting and performed in an environment of comfort and amenity.

3. The responsibility for taking the necessary steps to secure the health, safety and welfare of persons at work lies with those persons who create the hazards and those who work with them - employer and employee, both.

4. CSR Ltd. recognises that it has a responsibility to ensure that its products are free from hazards to the consumer, or where this is not so, that the consumer is aware of the hazards of the product and is aware of the precautions that must be taken to prevent injury being realised.

This responsibility will be met by taking all reasonably practicable steps towards -

- a comprehensive understanding of the potential effect on health of our products.
- dissemination of information on the potential hazards to health of products, and precautions to be taken in mitigation of those hazards.
- actively seeking to reduce the potential for damage to health in our products.

ADMINISTRATION OF THE POLICY

5. (i) The policy of CSR Ltd. on occupational safety and health will be administered through a system of planning assumptions, standards, and codes of practice.

(ii) Planning assumptions for workplace conditions are statements of the future intent of the company. They are not necessarily binding on existing installations.

(iii) Standards are binding on all existing and future installations. They may be limited to take effect on some future date.

C 3553

(iv) Codes of practice represent accepted means of complying with company standards. They are not binding on existing or future installations but are deemed to be sufficient compliance with

company standards. Provided that no code of practice will act in mitigation of an obligation to take other precautions with substances, processes or administrative strategies involving risks of irreversible damage to health.

(v) Standards formulated under this policy are binding on each and every employee of the company.

6. The responsibility for the formulation of plannir assumptions, standards and codes of practice is vested jointly in the corporate area and the divisions.

7. The responsibility for ensuring compliance wit company standards is vested jointly and sever in the divisions and factories.

8. Each factory and each division shall submit annual statement, in approved form, on thei with company standards. The corporate ar charged with collating these reports into on the current status of occupational hea CSR for the purposes of general managemer

9. No statement shall be issued as a stand preliminary assessment of its economic been made. Responsibility for the pr economic impact statement is vested jo ...e area and the divisions.

C 3554

10. Exposures to hazards shall be as low as is reasonably practicable. Standards formulated under this policy represent maximum exposure to particular hazards. Where a further reduction is feasible, reasonable practicability shall be assessed according to:

    (i) the desirability of such further reduction with respect to potential effects on health, comfort and well being.

    (ii) the costs, economic and otherwise, of such further reduction.

11. Any person seeking to introduce a new substance, process or administrative strategy into the work-place has a responsibility to ensure a comprehensive understanding of the potential effects of that substance etc. on health and that adequate precautions are taken in mitigation of that risk.

12. Every application for capital expenditure will include a clause of compliance with company standards.

13. A register of the toxic chemicals used in our factories is to be kept in the factory and in the corporate area. Responsibility for ensuring that this register is complete and based on current information is vested jointly and severally in the factories and the corporate area. The form and content of this register shall accord with company standards.

14. CSR Ltd. intends that its total expertise and total technology should be available for the solution of problems pertaining to occupational health and industrial hygiene. Responsibility is vested jointly in corporate and divisional areas to ensure:

    (i) liaison and co-operation between the corporate, divisional, group and factory areas of the company.

    (ii) dissemination and exchange of relevant information to specifically interested parties within the CSR group of companies.

15. Officers representing the corporate area are entitled to reasonable access to work locations and information necessary to the fulfilment of their obligations.

HAZARDOUS SUBSTANCES

16. Wherever use of a substance, process or administrative strategy involves a real risk of irreversible damage to health, then control programmes shall be initiated to monitor this possibility.

17. Wherever a substance with potential for irreversible damage to health is used in, or associated with a process, the exposure of individuals (whether employee or not), to that substance will be measured. The frequency of measurement shall accord with company standards and will depend on:

    (i) the degree of risk associated with the substance

18. Especial precautions shall accompany the use of carcinogens, mutagens and teratogens and substances suspected to be in these classes. If they are present in the workplace environment, either as a material of process or otherwise associated with the process then alternative materials, processes or administrative strategies shall be sought to minimise risks to health.

The following provisions apply equally to products and the workplace environment. Particular regard shall be paid to whether a product is in its final form or whether it requires further processing.

Whenever a carcinogen, mutagen or teratogen is used in or associated with a process or product then:

(i) there shall be, so far as is applicable, an active programme to find an alternate substance or process

(ii) there shall be monitoring and exposure control programmes complying with company standards

(iii) there shall be provision made for contingent liabilities.

Females should not be exposed to teratogens. Where males are exposed to teratogens adequate precautions shall be taken to avoid subsequent contact with the substance by females.

C 3557

Whenever use of a mutagen or suspected mutagen cannot immediately be avoided through substitution or modification to process then reasonable precautions

19. Wherever employees are exposed to a risk of irreversible damage to health arising through direct physiological assault, their health shall be monitored to detect reversible physiological changes and to prevent further irreversible damage to health.

20. Wherever a process, item of equipment or machine is fitted with a device to protect individuals from excessive exposure to contaminants, that process, equipment or machine shall not be operated when the device is not functioning satisfactorily, unless suitable other precautions can guarantee that individuals are not exposed to excessive concentrations of the contaminant.

21. Applicants for jobs shall undergo a pre-employment medical evaluation prior to being offered a permanent position. The examination shall take particular notice of physiological stress likely to be encountered in the performance of that job and the ability of the individual to withstand such stresses.

22. [redacted]

23. Applicants for jobs with CSR shall not be rejected on medical grounds unless there is no available job to which the applicant is suited.

24. CSR Ltd seeks to co-operate with government, industry and academic institutions in the promotion of occupational health and industrial hygiene. Responsibilities arising from this desire shall be met by the corporate area through:

(i) discussions

(ii) interchange of information where such interchange does not prejudice the security of our processes

(iii) joint ventures where applicable.

APPENDIX I

PLANNING ASSIGNMENT NO. 48

OCCUPATIONAL HEALTH

We need to improve attention to industrial hygiene and occupational health matters in CSR factories and other work places, in accordance with the proper obligations on the company to behave in accordance with emerging law, and community expectations.

Already, in the field of environmental protection, we have developed an understanding of the company's performance, and have formally issued standard assumptions in respect to environmental matters, that managers are to adopt in planning and forecasting. In this way we have set up standards of future performance that managers are expected to achieve.

It seems appropriate that the same approach be broadly adopted in respect to the company's obligations on occupational health. The products of work to be done should include:

- an understanding of our performance in relation to legal and socially acceptable standards
- draft planning assumptions
- proposals for a continuing capability to propose up-to-date standards and planning assumptions and to monitor performance over the CSR group.

C 3560

The scope of studies and of planning assumptions should include all hazardous and unhealthy aspects (actual or

APPENDIX II

Staff circular 657

Occupational health in CSR

Managers throughout CSR are responsible for recognising factors in the work place that may affect health, and for controlling these factors to agreed standards.

Standards for CSR must meet the legitimate expectations of the community.

To help managers with this responsibility, a project team is being formed. Practices both inside and outside the company will be surveyed, in order to determine what standards exist, and how they are being applied. The survey will go on to examine needs for CSR initiatives in respect of both standards and practices.

Support from all levels of management is needed for this project, as it deals with the concerns of normal management responsibility.

A small team will work on this survey. Mr. V.J. Winley will commence part time, as team manager, on 2 Dec 74. Mr. O.L. Aubrey will commence full time, on 28 Jan 75. They will report to Mr. C.W. Davis, who will head the following steering committee:

Mr. C.W.	Davis	(Chairman)
Mr. J.F.	Blaxland	(alternate,Mr.I.G.Burgess)
Mr. B.L.	Brennan	(alternate,Mr.J.G.Henningham)
Mr. N.	Tuffley	
Dr. B.M.	Munday	
Mr. G.C.	Pickford.	

Messrs. Winley and Aubrey will attend committee meetings as necessary. Other staff will be co-opted as required.

The project is intended to be completed within six months from commencement.

M G K
15 Nov 74

APPENDIX III

CSR OCCUPATIONAL HEALTH PROJECT 1974/75

(RA 38)

PROGRAMME

ISSUED 12.12.74

C.W.D.

Genesis

This project is in response to Planning Assignment No. 48, 12th August, 1974.

AIM

To assess the status of occupational health within the CSR group, and indicate where initiatives are needed.

WORK TO BE DONE

(1) Define Occupational Health

e.g. a person's health insofar as it is affected by his work and work conditions.

(2) List Institutions

(i) Governmental and semi-governmental bodies or agencies in Australia and elsewhere.

(ii) Other bodies or institutions.

(3) Ascertain Standards

(i) Australian legislative acts and regulations.

(ii) Overseas legislative acts and regulations.

(iii) Anticipated developments in the law and its regulations.

(iv) Socially desirable standards and community expectations.

(v) CSR planning assumptions.

(4) Review and Assess CSR Performance

(i) Situations in which standards are met.

(ii) Situations (past, present and emergent) in which it could be said standards may not be met.

(iii) Public complaints.

(iv) Private complaints.

(v) Court actions, past or pending, in respect of alleged breaches of regulations.

(vi) Contingent situations.

(5) Review Practices outside CSR

(i) Australia

(ii) Other Countries

(6) Recommended Initiatives

(i) The needs -

- Diagnosis
- Prevention/Improvement
- Treatment
- Compensation
- Administration

C 3564

(ii) Plans and, where possible, specific programmes for meeting legislative, societal, and scientific/technological needs, especially:-

- generating standards and planning assumptions
- monitoring and reporting performance
- designing for avoidance
- designing for adjusting inherited situations.

SCOPE

It is intended that this project employ two to three people and a committee, with secondment of others as required, equivalent to one or two full time people, over a period of six months. Consultants may be employed as well.

The work is to comprise principally a survey and assessment of existing information, with some personal visits, some meetings, and possibly questionnaires, covering the CSR group and relevant sources outside CSR.

STAFFING

Mr. V.J. Winley - Project Manager
Mr. O.L. Aubrey
Mr. J.H. Elfverson
others as seconded

Committee

Mr. C.W. Davis - Chairman
Mr. J.F. Blaxland - (alternate Mr.I.G.Burgees)
Mr. B.L. Brennan - (alternate Mr.J.G.Henningham)
Dr. B.M. Munday
Mr. G.C. Pickford
Mr. N. Tuffley

Messrs. Winley (Project Manager), Aubrey, and Elfverson, will attend committee meetings as necessary.

REPORTING

To General Manager; monthly, and finally six months from commencement.

C 3565

C.W.D.
12.12.74

APPENDIX IV

LIST OF CSR ESTABLISHMENTS VISITED

REFINED PRODUCTS GROUP

Chelsea Refinery
Cottesloe Refinery
Glanville Refinery
New Farm Refinery
Pyrmont Refiney
Yarraville Refinery

DISTILLERIES GROUP

Pyrmont Distillery
Yarraville Distillery
Australian National Power Alcohol Co. Pty. Ltd.

AUSTRALIAN MILLS GROUP

Broadwater Mill
Condong Mill
Goondi Mill
Hambledon Mill
Harwood Mill
Macknade Mill
Victoria Mill

PYNEBOARD PTY. LTD.

Tumut Mill
Oberon Mill
Rosedale Mill
Smithfield Factory
Bankstown Factory
Brunswick Factory

BUILDING & CONSTRUCTION MATERIALS DIVISION

Bradford Insulation Industries - Auburn Works
Bradford Insulation Industries - Clayton Works
Bradford Insulation - Western Australian Works
Brunswick Plaster Mill
New Farm Plaster Mill
Western Australian Plaster Mill
Western Australian Plaster Mill - Albany
Rockard Factory - Dandenong
Concord Plaster Mill
Gyprock Factory Concord
Gyprock Factory Adelaide
Gyprock Factory Brisbane
Gyprock Factory Melbourne
Gyprock Factory Perth
Gyprock Factory Sydney West
South Australian Gypsum, Kangaroo Island
Vinyl flooring factories
Rondo Building Services
Australian & Kandos Cement - Geelong
Independent Concrete: Penrith Quarry
Fairfield Plant
Pendle Hill Plant

Wunderlich Ltd.

Gaythorne Asbestos Cement Plant
Sunshine Asbestos Cement Plant
Rosehill Asbestos Cement Plant
Rosehill Tile Factory
Northgate Tile Factory
Launceston Tile Factory
Edwardstown Tile Factory

Vermont Tile Factory
Northgate Window Factory
Sunshine Window Factory
Camden Park Metal Factory
Hobart Metal Factory

CSR CHEMICALS LTD.

CSR Chemicals, Rhodes

MINERALS DIVISION

Mount Gunson Mines Pty. Ltd.
Pacminex Exploration - Perth Office
Pacminex Exploration - Mudgee
Buchanan Borehole Collieries Pty. Ltd.

CARBA AUSTRALIA LTD.

Botany Plant
Abbotsford Plant
Waldown Pty. Ltd.
Torrensville Plant
Belmont Plant
Stuart Highway Cold Store - Darwin
Goders Hill Cold Store - Darwin
Invermay Plant
Newcastle Depot
Mount Gambier Plant
Dry Ice Qld. Brisbane
Dry Ice North Qld. Townsville

MISCELLANEOUS

David North Plant Research Centre
CSR Research Laboratories
Macadamia Plantations
Slacks Creek Factory
Central Laboratory

APPENDIX V

Discussions on industrial hygiene within CSR

Discussions were held with people having expertise in some aspect(s) of industrial hygiene. A number of establishments are also listed.

This is not considered a complete list, and should be taken only as an example of available expertise within CSR.

Research Laboratories
Central Laboratory
Building & Construction Materials Research Laboratories
Mr. G.A. Austin - Hardboards Australia Limited
Mr. D.W. Butcher - Building Materials Drawing Office
Dr. K.T. Glasziou - David North Plant Research Centre
Mr. R.H. Hunter - Rondo Building Services Pty. Ltd.
Dr. W.P. Macmillan - Hardboards Australia Limited
Mr. C.F. Mervyn-Jones - Hardboards Australia Limited
Mr. A.A. Parts - Building & Construction Materials Research Laboratories
Mr. G.C. Pickford - Wunderlich Limited
Mr. P.R. Powell - Mills Division
Mr. R. Wiltshire - Pyneboard Pty. Limited
Mr. J.C. Yager - Minerals Division

APPENDIX VI

LIST OF PERSONS CONTACTED IN GOVERNMENT DEPARTMENTS

New South Wales

Department of Health, Division of Occupational Health and Radiation Control:

Dr. E.O. Longley (now with the Dust Diseases Board)
Dr. A.G. Cumpston
Mr. A.T. Jones
Mr. H.R. Weston
Mr. A. Scharfe

Sydney University - School of Public Health and Tropical Medicine:

Professor D. Ferguson
Mr. G. Major
Mr. A. Findlay.

University of New South Wales

Professor R. Walsh - Dean of the Faculty of Medicine
Professor J.G. Andrews - Associate Professor of Psychiatry
Dr. B. W. Stewart - School of Pathology.

Victoria

Department of Health:

Dr. A. Christophers
Dr. J. Milne
Mr. E. Keeley
Mr. A. Melbourne
Mrs. P. Da Silva.

Queensland

Department of Health:

Dr. M. Rathus
Dr. G. Chalk

Department of Agriculture:

Dr. T. Beckmann

Government Analyst

Mr. H. Cooper

South Australia

Department of Public Health:

Dr. K. Wilson
Dr. P. Clarke
Mr. G. Stafford

Department of Labour and Industry:

Mr. K. Rault

Western Australia

Department of Public Health:

Dr. J. McNulty
Dr. F. Hayworth

Public Works Department:

Government Analyst

Mr. D. Burgess
Mr. F. Uren

Tasmania

Department of Health Services:

Dr. K. Williams
Dr. McArdle

Australian Capital Territory

Australian Department of Health:

Dr. N. Mitchell.

APPENDIX VII

COMPANIES VISITED WITHIN AUSTRALIA

Alcoa of Australia Ltd.

Ansett Industries

Australian Consolidated Industries Ltd.

ICI Australia Ltd.

James Hardie and Coy. Pty. Ltd.

Joint Coal Board

MIM Holdings Ltd.

Olympic Industries Pty. Ltd.

APPENDIX VIII

Persons and Organisations visited overseas

Sweden:

Mr. Goron Lindh,
Head, Legal Division,
National Board of Occupational Safety and Health,
Stockholm.

Dr. Sven Illner,
Medical Adviser
Swedish Employers Confederation,
Stockholm.

Switzerland

Mr. Erik Hellen
Dr. Annoni,
Occupational Safety and Health Branch,
I.L.O.

U.K.

ICI Central Toxicology Laboratory, Macclesfield.

Mr. David Rea,
Head, Safety and Health Department,
Confederation of British Industry,
London.

C 3575

Mr. S. Loveman,
Employment Medical Advisory Service,
U.K. Health and Safety Commission,
London.

Professor R.S.F. Schilling,
London School of Hygiene and Tropical Medicine.

U.S.A.

Monsanto Company, St. Louis Missouri
Dow Chemical Company, Midland, Michigan.
Olin Corporation, New Haven, Connecticut
Johns-Manville Corporation, Denver, Colorado
U.S. Department of Labour, Occupational Safety and Health Administration, Washington.
U.S. Environmental Protection Agency, Washington.
Dr. Irving J. Selikoff,
Mt. Sinai Hospital, New York.

APPENDIX IX

SELECTED BIBLIOGRAPHY

(1) Safety and Health at Work
Report of the Committee 1970-72 Vols. I and II.
Chairman Lord Robens
London H.M.S.O.

(2) Encyclopaedia of Occupational Health and Safety Vols. I and II.
I.L.O. Geneva

(3) Fundamentals of Industrial Hygiene
J.B. Olishifski
F.E. McElroy
National Safety Council, Chicago, Ill., 60611.

(4) Industrial Environmental Health - the worker and the community.
Edited by L.V. Cralley, L.J. Cralley
G.D. Clayton, J.A. Jurgial

Environmental Science Series, Academic Press.

(5) The Hazards of Work: . How to Fight Them
Patrick Kinnersley
Pluto Press.

(6) Industrial Hygiene and Toxicology Vols. I and II
F.A. Patty, Editor.
Interscience Publishers, Inc., New York.

C 3577

(7) Work is Dangerous to Your Health
- a handbook of health hazards in the workplace and what you can do about them.

J.M. Stillman, S.M. Daum
Partheon Books.

(8) Industrial Ventilation
- A manual of recommended practice.
13th Edition, ACGIH.

(9) Documentation of the Threshold Limit Values
For substances in workroom air
ACGIH 3rd Edition 1971, 2nd Printing 1974.

(10) World Health Organisation
Technical Report Series

No. 528 Evaluation of Environmental Health Programmes.

No. 535 Environmental and Health Monitoring in Occupational Health.

(11) Health Hazards of the Human Environment
W.H.O. Geneva 1972.

(12) Promoting Health in the Human Environment
W.H.O. Geneva 1975.

(13) N.I.O.S.H. Toxic Substances List. 1974

(14) N.I.O.S.H. Criteria Documents:
Criteria for a recommended standard.....
e.g. Occupational Exposure to Asbestos
Occupational Exposure to Noise

(15) N.I.O.S.H. Technical Information
e.g. Handbook of Statistical Tests for Evaluating Employee Exposure to the Contaminants.

(16) Industrial Data Sheets
Commonwealth of Australia. Department of Labour and Immigration.
e.g. Ventilation of Industrial Processes

(17) Australian Standards Association
e.g. ASA 1055 - 1973
"Noise Assessment in Residential Areas"

(18) Shiftwork
Marc Maurice ILO Geneva

(19) Health and Safety at Work Booklets
U.K. Department of Employment, H.M. Factory Inspectorate
e.g. Basic Rules for Safety and Health at Work
Asbestos: Health Precautions in Industry

(20) Model Code of Safety Regulations for Industrial Establishments for the Guidance of Governmen and Industry.
I.L.O. Geneva 1954 (with amendments).

C 3579

(21) Occupational Safety and Health in Australi Government Employment.

I.L.O. Catalogue of Publications on Occu ealth. I.L.O. Geneva 1

APPENDIX X

ORGANISATIONS AND PROFESSIONAL SOCIETIES WORKING IN OCCUPATIONAL HEALTH

The following list covers some of the organisations and societies with interests in occupational health. Most technical professional societies publish papers on the workplace environment. However, these have not been included.

AMERICA

Professional Societies

(1) THE AMERICAN CONFERENCE OF GOVERNMENT INDUSTRIAL HYGIENISTS (ACGIH)

The ACGIH is a national professional association of practising industrial hygiene personnel in federal, state and local government agencies. It assembles guides and practical information for the evaluation and control of industrial environments.

Publications:

(i) **Air Sampling Instruments Manual 4th Ed. 1971 - describes equipment uses and performance data, operating instructions and the sampling of air borne contaminants.**

(ii) **Documentation of Threshhold Limit Values.**

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(iii) **Industrial Ventilation - A Manual of Recommended Practice - referenced in the**

(2) AMERICAN INDUSTRIAL HYGIENE ASSOCIATION (AIHA)

The AIHA is a society of industrial hygienists trained in the recognition and control of health hazards. Members of the association, working through committees, develop technology in their respective fields.

Some of the publications are:

(i) Air Pollution Manual Pts. I & II

(ii) Industrial Noise Control, Hygienic Guide Lines

(iii) American Industrial Hygiene Association Journal.

(3) AMERICAN SOCIETY OF HEATING, REFRIGERATING AND AIR CONDITIONING ENGINEERS (ASHRAE)

ASHRAE has published a Handbook of Fundamentals and a Guide and Data book on heating, refrigerating, air conditioning and ventilation.

(4) MANUFACTURING CHEMIST ASSOCIATION (MCA)

Association of chemical manufacturers in the U.S. and Canada. One of the objectives is to promote safe practices in the manufacture, transportation, handling and the use of chemicals.

Principal publications are:

(i) Guidelines for Risk Evaluation and Loss Prevention in Chemical Plants (1970)

(ii) Safety guides (approx 20 subjects)

(iii) Chemical Safety Data Sheets (approx. 90 chemicals).

GOVERNMENT AGENCIES

(5) BUREAU OF MINES

The Bureau of Mines was established to improve working conditions and safety practices in coal mines. The terms of reference have since been extended to include most minerals.

The Bureau publishes:

Bulletins describing major investigations or those considered to have permanent value.

Reports of investigations aimed at rapid dissemination of information throughout the industry.

(6) NATIONAL BUREAU OF STANDARDS (NBS)

Conducts research and provides services to industry, commerce and government in four areas:

(i) basic measurements and standards

(ii) materials measurement and standards

(iii) technological measurements and standards

(iv) transfer of technology

The NBS has issued:

(i) An Index of US Voluntary Engineering Standards

(ii) List of Voluntary Product Standards, Commercial Standards, and Simplified Practice Recommendations.

(7) OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION (OSHA)

This section was established to administer the Williams-Steiger Occupational Safety and Health Act. The function of this administration is to promulgate mandatory regulations and provide means for their enforcement.

Principal publications are standards gazetted in the Federal Register.

(8) NATIONAL INSTITUTE OF OCCUPATIONAL SAFETY & HEALTH (NIOSH)

Established within the Department of Health, Education and Welfare, its principal function is investigations into safety and health. NIOSH produces criteria documents on which many OSHA standards are based.

(9) U.K. DEPARTMENT OF EMPLOYMENT

Publishes a series of booklets in Health and Safety at Work. These are designed to give up-to-date facts and advice about the best practices in health and safety in industrial and other employment. The material is based on the experience of H.M. Factory Inspectors.

(10) INTERNATIONAL LABOUR OFFICE GENEVA (ILO)

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The ILO has published a large body of information in the field of occupational safety and health. These include: model codes for safety regulations and proposed drafts on

A principal publication is the Encyclopoedia of Safety and Health.

(11) INTERNATIONAL OCCUPATIONAL SAFETY AND HEALTH INFORMATION CENTRE (CIS)

Centred at the ILO in Geneva, the CIS was set up to supply a systematic, complete and rapid information service covering new facts, methods and media of interest from the standpoint of occupational safety and health. Through its network of National Centres it offers those concerned with any aspect of occupational safety and health:

- CIS cards issued at a rate of more than 2000 abstracts per year,
- Occupational safety and Health Abstracts bulletin, which caters specially for the need of small and medium establishments,
- CIS Information Sheets on subjects of topical interest,
- CIS Bibliographies on selected subjects,
- through its photocopy and microfilm service, access to all documents referred to in the cards,
- information on available translations of documentary material.

(12) WORLD HEALTH ORGANISATION (WHO) GENEVA

The WHO is one of the specialised agencies in relationship to the United Nations. It provides a forum for the public health and medical profession in member nations to exchange knowledge and experience, and collaborate in the

promotion of health throughout the world. Expert committees and other international groups of experts are convened to give advice on technical and scientific matters.

WHO Technical Report Series is the vehicle of publication of collective reports of such groups.

AUSTRALIA

(13) NATIONAL HEALTH AND MEDICAL RESEARCH COUNCIL (NH & MRC)

The NH & MRC has two sub-committees principally involved in occupational health: Occupational Health and Industrial Hygiene. There are a number of other sub-committees with some relevance.

Sub-committees publish draft codes on, for instance, atmospheric contaminants of the workplace and hearing conservation.

(14) AUSTRALIAN GOVERNMENT

The Australian Government has published a Code of General Principles on Occupational Safety and Health in Australian Government Employment.

Department of Labour and Immigration

The Department of Labour and Immigration have published a number of codes relevant to the workplace environment;

e.g. Industrial Data Sheets.....
H Heating
V_1 Ventilation of Industrial Processes.

(15) STATE GOVERNMENTS

Departments of Health, and Labour and Industry in each state publish information on occupational health.

MEDICAL SOCIETIES

Most medical societies and organisations publish material relevant to occupational health. Two such groups are:

- Society for Occupational Medicine
- International Agency for Research on Cancer (IARC).

APPENDIX XI

List of Meetings Attended

1. Melbourne
   Conference - "Noise Control and Hear
   Victorian Employers Federation.

2. Brisbane
   12th Annual Conference
   Ergonomics Society of Australia and

3. Karratha, Western Australia
   Conference - "Control of Dust in the
   Pilbara Iron Ore Industry"
   Institute of Engineers Australia and
   Institute of Mining and Metallurgy.

4. Sydney
   Seminar - "Noise Control in Industry
   Institute of Mechanical Engineers.

5. Medlow Bath, N.S.W.
   1975 Conference - "Planning for Nois
   Australian Accoustical Society.

6. Sydney
   Environment 75
   Second International Environment Con