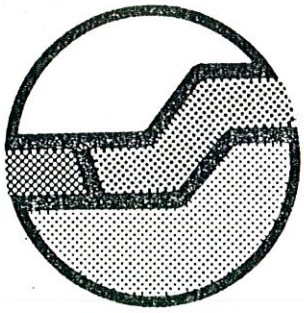


OCCUPATIONAL HEALTH AND SAFETY

FOR SUPERVISORS

PARTICIPANT'S MANUAL

Presented To: _____

_____

Date

OCCUPATIONAL HEALTH & SAFETY FOR SUPERVISORS (OH&S)

This course is the first in a two-stage approach to supervisory training in occupational health and safety for all people with supervisory responsibilities.

The course has been designed to provide a positive introduction and appropriate knowledge to enable supervisory staff to contribute effectively to health and safety practices within industry.

AIM

The aim of this programme is to provide participants with the skills to establish an effective prevention programme in their areas of responsibility.

OBJECTIVES

As a result of this programme, participants will be able to:

- describe the elements of successful health and safety programmes;
- describe the role of the supervisor in health and safety programmes;
- investigate and report on incidents and accidents;
- conduct health and safety inspections.

KEY SUBJECT AREAS

- the elements of successful health and safety programmes;
- accident causation;
- accident
- measuring programme effectiveness
- housekeeping
- planned inspection techniques

OCCUPATIONAL HEALTH AND SAFETY

FOR SUPERVISORS

MESSAGE FOR PARTICIPANTS

This course has been designed to provide you with proven techniques to improve the safety performance of your work groups.

This manual is designed to cover, in detail, the knowledge and skills involved in understanding the nature and source of occupational hazards and the identification and control of these hazards.

The manual is not intended to contain a list of do's and don'ts, rather it is hoped the manual will provide you with a range of alternative courses of action based on present knowledge of safety practices.

In this manual you will find a lot of ideas to make the work environment safer for the people in it, and as such, may be read from cover to cover. However, the best way to use the manual is to have it close at hand as a reference when problems arise. If a suitable answer is not found then you should refer to the reading list at the end of each section.

OCCUPATIONAL HEALTH & SAFETY FOR SUPERVISORS

COURSE PROGRAMME

DAY 1

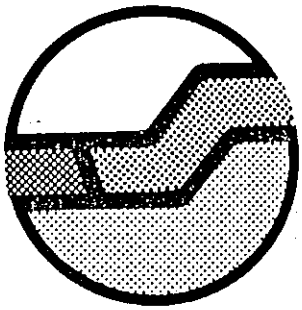
TIME	CONTENT
1300 - 1330	OPENING ADDRESS - INTRODUCTION
1340 - 1430	ORGANISATIONAL BEHAVIOUR
1440 - 1700	SAFETY LEADERSHIP

DAY 2

TIME	CONTENT
0830 - 1030	SAFETY AND THE SUPERVISOR
1045 - 1115	MEASURING SAFETY PERFORMANCE
1115 - 1215	SAFETY IN CALM
1300 - 1430	ACCIDENT INVESTIGATION
1430 - 1500	SAFETY INSPECTIONS
1500 - 1700	SAFETY TRAINING

DAY 3

TIME	CONTENT
0830 - 0930	SAFETY COMMITTEES
0945 - 1030	ANALYSING PERFORMANCE PROBLEMS
1045 - 1130	SAFETY IN CALM
1130 - 1200	M B W A



DEPARTMENTAL SAFETY AND OCCUPATIONAL HEALTH POLICY

The Department of Conservation and Land Management is committed to ensuring the highest possible standards of occupational health and safety for all its personnel.

These standards can be achieved if the principles of safety and health management are understood and implemented.

Each individual has a responsibility to develop safe and healthy work practices and conditions. In doing so, personnel will have the full backing of the Executive Director and of senior management.

The safety and occupational health policy is:

1. The Department recognises the importance of the safety and health of its personnel.

2. The Department will provide safe working conditions by seeing that every effort is made to avoid, remove and remedy the causes of industrial accidents or occupational ill-health.

3. Safety and health will be included on the agenda of all formal Departmental meetings, where applicable.

4. Management will provide effective leadership and example.

5. All personnel will receive training in safety and occupational health.

6. Safety and health rules will be formulated and put into practice.

7. Officers in charge will account for all accidents within their Region/District/Section. Immediate supervisors will investigate accidents.

8. Personal safety practice, example to others and efforts towards job safety and health management will be considered together with professional skill, directing ability, organising capacity and other qualities when assessing the efficiency of personnel.

9. Every accident resulting in loss of time or medical treatment will be investigated and an investigation report completed. All non-injury accidents which are repetitive or have a serious potential, or instances of the work environment endangering personnel health and fitness, will also be investigated and a report form completed.

10. Employee safety suggestions will be sponsored, e.g. safety induction fitness programmes etc.

11. The Department will provide first aid outfits and protective equipment.

12. Each working unit (e.g. District, Region, Research Station) shall form a Safety Committee consisting of representatives from all categories of personnel in the unit and the Officer-in-Charge. Meetings shall take place at least every three months.

EXECUTIVE DIRECTOR

DEPT OF CONSERVATION AND
LAND MANAGEMENT

1

DEPARTMENT OF CONSERVATION
AND LAND MANAGEMENT
50 HAYMAN ROAD
COMO WA 6152

REF: 135/84

COMO SAFETY

AK:es

February 20, 1986

COMPULSORY WEARING OF PERSONAL PROTECTIVE EQUIPMENT

The Departmental Safety and Occupational Health Policy (Administrative Instruction No. 6) commits the Department to provide personal protective equipment to all its employees as required. In the past the approach has been to encourage and educate our personnel to wear this equipment voluntarily, and enforcement has been used only as a last resort.

This approach will still apply in general, however, due to the number of accidents that occur in some areas, it has been decided, after consultation with respective unions and associations, that the wearing of protective equipment on specified work will be compulsory:

1. Safety Helmets

   For all work below the forest canopy and in situations where overhead hazards represent a risk.

2. Safety Footwear

   For all regular field work.

3. Eye Protection

   All chainsaw operations, low and high pruning, using rock drill, cutting and loading Christmas trees and using Verey pistol.

4. Hearing Protection

   On all work that is deemed to be emitting excessive noise as defined in the Noise Abatement (Hearing Conservation in Workplaces) Regulations 1983. (For details see circular letter 57/85 dated February 19, 1985).

5. Leg Protection

   For all users of chainsaws who are engaged in the operation of this equipment on a continuous basis.

6. Long Trousers and Long Sleeve Shirts or Overalls.

   On all prescribed burning and fire suppression.

7. Protection for Personnel Using Chemicals

Respirators, gloves, spectacles, goggles, helmets, overalls, boots, and such other personal protective equipment as stipulated in the Department's Chemical Users' Manual for the transport, use, mixing and application of specific chemicals.

Please arrange to have this circular brought to the notice of all personnel under your control and have it discussed at your next Safety Committee meeting.

S R Shea
EXECUTIVE DIRECTOR

per .....

DISTRIBUTION

LIST "D"

Department of Conservation and
Land Management
50 Hayman Rd
COMO WA 6152

REF 135/84 AK/es

April 28, 1986

DEPARTMENT OF CONSERVATION AND LAND MANAGEMENT

WEARING OF SAFETY HELMETS

Attached hereto copy of a letter from the Manager Wheatbelt Region suggesting a modified policy for the wearing of safety helmets in his Region.

The proposal is self-explanatory and it has been decided to adopt it as a general rule throughout all non-forest Regions in the Department.

It is difficult to define precisely in all situations whether an overhead hazard exists or not, and it is agreed that managers, in consultation with the staff concerned, will have to define areas or jobs where safety helmets must be worn.

The main object is that our people are concerned about their own safety and well being, and wherever possible comply voluntarily with self-preservation measures, rather than being forced to observe compulsory rules.

S R Shea
EXECUTIVE DIRECTOR

per .....

DISTRIBUTION:

REGIONAL MANAGERS : Wheatbelt, Goldfields, South Coast, Greenough, Gascoyne, Pilbara and Kimberley Regions.

O.I.C. Woodvale Wildlife Research Centre.

Mr Kimber, Como.

Officer-in-Charge,
Safety Section,
Personnel Branch,
COMO

WHEATBELT REGION - WEARING OF SAFETY HELMETS

At a recent regional meeting the wearing of safety helmets was discussed, and the following policy decided for the Wheatbelt Region.

In the Wheatbelt Region safety helmets will be worn by all personnel, including supervisors, when:

1. involved with manual work under a woodland or forest canopy;

2. operating chain-saws, or assisting chain-saw operators, irrespective of the vegetation type;

3. undertaking firebreak construction under a forest or woodland canopy;

4. involved with fire suppression and prescribed burning, irrespective of the vegetation type; and

5. in addition to 1-4 above, as otherwise directed by a supervising officer.

As wheatbelt woodland and forest canopy densities are far less than those in forest regions, this policy is largely job related. However the policy does take into consideration the dual hazard of undertaking manual work under a forest or woodland canopy. For example, personnel stacking bulldozer heaps for burning in woodland areas are at risk both from the task itself, such as branches springing back, and due to the noise and effort involved in the task, they will be less aware of any overhead hazard that may exist. In contrast, if such work were undertaken in mallee or scrub vegetation types (which is unlikely), both hazards are greatly reduced.

Would you please confirm whether or not the safety helmet policy proposed above is consistent with regulations pertaining to workers compensation. Subject to your confirmation, the policy will be instituted within the Wheatbelt Region.

K.J. Wallace.

K.J. Wallace,
REGIONAL MANAGER

April 15, 1986.

cc - General Manager. y Mr Keenes.

Department of
CONSERVATION & LAND MANAGEMENT

Our ref 135/84 AK:es

The Secretary
W.A. Branch
Federated Miscellaneous Workers' Union of Australia
61 Thomas Street
SUBIACO 6008 WA

Dear Sir

COMPULSORY WEARING OF PERSONAL PROTECTIVE EQUIPMENT

The Department of Conservation and Land Management has an active safety programme in operation which has full support of management, staff and employees.

Attached hereto copies of the

1. Departmental Safety and Occupational Health Policy
2. Compulsory Wearing of Personal Protective Equipment

These requirements cover all Departmental personnel including our Park Rangers, except that one exclusion to the compulsory rule of wearing safety helmets has been made for personnel working in the Yanchep National Park. This covers developed facility areas where the obvious overhead hazards have been removed. Hard hats have to be worn in all other circumstances, particularly on all fire control activities.

The above details are forwarded for your information.

Yours faithfully

S R Shea
EXECUTIVE DIRECTOR

per .....

May 1, 1986 DISTRIBUTION: Regional Manager, Northern Forest Region, Kelmscott
District Manager, Wanneroo

STATE OPERATIONS HEADQUARTERS 50 HAYMAN ROAD COMO, WESTERN AUSTRALIA
P.O. BOX 104 COMO 6152 PH: (09) 3676333

HEAD OFFICE HACKETT DRIVE CRAWLEY PH: (09) 386 8811
All correspondence to be addressed to Executive Director State Operations Headquarters.

THE INDUSTRIAL SAFETY MOVEMENT IN AUSTRALIA

HISTORICAL

The growth of the industrial safety movement in Australia broadly followed the pattern in the United Kingdom and the United States of America.

The first activity came in the form of legislation that provided for the inspection of factories.

1802	United Kingdom:	Health and Morals of Apprentices Act
1833	United Kingdom:	Factories Act, providing for inspection of Factories
1867	USA (Mass):	Factory Inspection instituted
1873	Australia:	Victorian legislation dealing with protection and accommodation of workers

Legislation almost certainly prompted the next phase in the form of organised safety programming on the part of individual firms.

1802 The Lever Company at the Port Sunlight soap factory and the South Metropolitan Gas Company of London institute safety campaigns

1892 Safety Department of the Joliet works of the Illinois Steel Co. formed

1921 Start of the Broken Hill Pty. Co's Safety Programme at the Newcastle Steelworks. The N.S.W. Department of Railways started development of a safety programme relating to safety of all its employees (as distinct from passenger and railway operational safety) at about this date.

Reasons such as profiting from other people's experience and contributing to future progress led to the establishment of Safety Councils which generally can be said to have co-ordinated, guided and developed voluntary safety activity as distinct from that required by law.

1913 USA first meeting of the National Council for Industrial Safety reformed as the National Safety Council in the succeeding year.

1917 United Kingdom - London Safety First Council formed. Subsequently renamed firstly the National Safety First Association, then the Royal Society for the Prevention of Accidents (ROSPA).

1927 National Safety Council of Australia formed in Melbourne.

Finally came the development of organisations catering for the professional needs of persons working full-time or part-time on the field of safety. However, development of these organisations has varied according to the nature and activities of safety organisations already existing in the various communities at the time.

1911 USA:

An organisation known as the United Association of Casualty Liability Insurance Inspections was formed in New York. In 1915 this body changed its membership to become the American Society of Safety Engineers (ASSE). In 1924 this Society merged with the National Safety Council to become the American Society of Safety Engineers, Engineering Section, National Safety Council. In 1947 the ASSE re-established itself as an independent autonomous organisation.

1945 United Kingdom:

The Industrial Safety Officers' Section of ROSPA was formed in 1945. Membership was drawn extensively from persons who had successfully completed one of the training courses for Safety Officers conducted by ROSPA during preceding years. The Industrial Safety Officers' Section became a completely independent body in 1953, known as the Institute of Industrial Safety Officers.

1945 Australia:

When the need for professional development arose, the National Safety Council of Australia, being based only in Victoria, did not exercise any co-ordinating influence as sister bodies had done in the United Kingdom. In consequence, the development of professional safety work has been relatively slow.

The sequence of events was as follows:

1945 New South Wales:

The Institute of Industrial Management Sydney, sponsored a series of lectures on industrial safety. An Industrial Safety Research Group was formed in the next year subsequently emerging into a body known as the Association of Industrial Safety (AIS).

1948 Victoria:

With the support of the Minister for Labour of the day (Mr P J Clarey, MLC) the Melbourne Technical College (now the Royal Melbourne Institute of Technology) sponsored a series of lectures in 1948. The following year saw the formation of an Industrial Safety Research Group in Melbourne. The National Safety Council of Australia supported this group for some years. Later it was suggested that the Research Group should rely on its own resources. This it did with success, developing firstly into the Safety Engineering Society in 1954, then finally in 1962 as the Safety Engineering Society of Australasia* (SESA), with a Federal Constitution.

Divisions of the SESA operate actively in all States. However, in New South Wales the A.I.S. split into two groups, one group becoming the SESA, NSW Division, the other linking with the Institution of Industrial Safety Officers *U.K.) in 1963 to form a NSW branch of the overseas body. This confusing situation, however, has not prevented progress. Relations between the National Safety Council of Australia, the SESA and the Institution are cordial and some good work is being done. However, greater progress would undoubtedly have been made had there been, in the early 1950's a better understanding of the need to foster professional training and development, and united within the professional safety movement. These comments are still relevant today.

* (Now called Safety Institute of Australia)

The Influence of Legislation

The International Labour Office, Accident Prevention Recommendation, 1929, states that any effective system of accident prevention should rest on a basis of statutory requirements.

Clause 2.1.1. of Australian Standard CZ5 General Principles for Safe Working in Industry states: "Since safe working in industry must include the observance of statutory requirements, competent authorities should prescribe practical measures for ensuring such observance by all persons concerned. In addition they should accept responsibility for giving guidance and advice on these requirements and other related aspects of occupational safety and health".

Both statements are amply justified by experience.

Legislation covers those matters pertaining to safety that are enforceable at law under all circumstances. However, most of the safety regulations have a discretionary power, residing generally with any executive officer of the administering department (very often the Chief Inspector of Factories or an equivalent position) to waive specific requirements under certain circumstances and to pronounce on the standard required when the requirement is "open".

The volume of safety legislation is steadily growing, partly due to increasing needs arising from technical developments in industry, but also due to increasing agreement on the extent of the requirement that are enforceable at all times. It is also likely that specificity of legislation is improving due to reasons such as:

* Increasing consultation between statutory authorities and industry.

* Growing awareness on the part of industry of the need to cooperate with statutory authorities.

* A growth in standardisation as expressed by safety codes of practice and safety specifications. These often outline additional areas where requirements that are enforceable at all times are clearly stated.

However, the extent of safety legislation in Australia is considerably less extensive than that promulgated in overseas countries, particularly in the United Kingdom and on the continent of Europe.

The Influence of Standardisation

The Standards Association of Australia (SAA) has worked in the field of safety standardisation since its inception. Codes of practice formulating construction rules have obviously to be linked with safety requirements. A good example of this approach is the SAA Boiler Code AS CB.1.

A second group dealt almost solely with practices and procedures relating to personal aspects of operation and includes rules relating to procedures in specific situation.

Though a good deal of work had been done in both areas prior to 1946, it was decided in that year to set up a Safety Standards Co-ordinating Committee, with members drawn from Commonwealth and State Departments of Labour and Health, other Governmental Statutory Authorities (Electricity Supply, Railways etc.) Professional Organisation, Chambers of Manufacturers, National Safety Council of Australia, Employers' Associations and the Australian Council of Trades Unions to deal with the second group of Codes. As a result of this combined effort, an additional thirty safety codes and specifications have been produced and what is even more important, kept up-to-date. At the time the Co-ordinating Committee maintains close links with safety codes work that is still being handled by other sectionale committees of the SAA.

The **Achievements**, as indicated by this analysis of the Australian safety movement, are that:

All the elements, that overseas experience has shown, are necessary to start and develop effective safety programming on a national basis, have been established in Australia.

The highly successful co-operation already achieved in the development of legislation and standardisation between these various organisations is an indication that a much wider range of safety activities could be dealt with in this way.

Long Term Needs

Two comments should be made about the long term situation:

1. It has been noted overseas that the rate of improvement of overall safety performance has slackened. There is likewise some evidence in Australia that a few highly sophisticated industrial safety programmes seem to have reached a level of performance beyond which it is difficult to progress. To achieve a break-through probably depends on knowing more about the problem.

2. There is also a significant change in thinking regarding the scope and functions of the safety engineering position. In progressive organisations it is expanding into areas such as environmental control and human engineering. The body of knowledge possessed by a Safety Engineer will certainly need to expand. More importantly, means must be found to make the best use of contributions from academic disciplines other than engineering. What is needed may be described as a "teaching philosophy" regarding injury prevention that will be understood and used by all who are professionally concerned.

STANDARDS ASSOCIATION OF AUSTRALIA

Australian Standard
for
HEALTH AND SAFETY AT WORK—PRINCIPLES AND PRACTICES

SECTION 1. SCOPE AND GENERAL

1.1 SCOPE. This standard sets out recommendations aimed at promoting the health, safety and well-being of persons in the workplace.

1.2 PURPOSE. The purpose of this standard is to outline the action which should be taken by employers and employees in all occupational groups in order to achieve healthy and safe working conditions.

1.3 APPLICATION. The requirements apply primarily to the prevention of personal damage but apply also to the minimization of property damage.

The concepts are applicable to the whole range of conditions or events at work that can damage the individual with varying degrees of severity, either rapidly or over a period of time.

1.4 REFERENCED DOCUMENTS. A list with titles of the documents referred to in this standard and of additional documents relevant and supplementary to this standard is given in Appendix B.

NOTE: Attention is drawn to the need to refer to specific standards and reference documents relevant to individual operations, hazards and/or industries.

1.5 DEFINITIONS. For the purpose of this standard, the following definitions apply:

1.5.1 **Accident**—any occurrence arising out of and in the course of employment which results in personal damage or property damage, or the possibility of such damage.

1.5.2 **Employees**—persons engaged in activities for an employer for which they receive direct payment or remuneration.

1.5.3 **Employer**—a person, agent, firm, corporation, Government Department, Commission, Board, or other authority employing any person.

1.5.4 **Guard**—a physical barrier that prevents the entry of any part of the body into an area that is hazardous.

1.5.5 **Harmful processes**—processes where harmful substances or energies are used or where harmful substances or energies are produced; and which upon release may cause injury to or jeopardize the health and safety of persons or affect the integrity of components and structures.

1.5.6 **Harmful substances**—substances which alone or in combination with others are or could become toxic, irritant, explosive, flammable, corrosive, or obnoxious, and for which special precautions are required.

NOTE: Included in this definition are all materials that are classified as 'dangerous goods' by the Australian Code for the Transport of Dangerous Goods by Road or Rail.

1.5.7 **Hazard**—a situation at the workplace capable of potential harm (i.e. capable of causing personal or property damage).

1.5.8 **Health**—in relation to work, is a condition which includes—

(a) the absence of disease or infirmity; and

(b) the physical and mental elements affecting health which are directly related to safety and hygiene at work.

1.5.9 **Management**—person(s) having responsibility, authority or accountability for the conduct of the business affairs of the employer.

1.5.10 **Personal damage**—any damage to a person which arises out of and in the course of employment.

The term includes work injuries, occupational disease, and work-connected disabilities.

1.5.11 **Reasonably practicable**—situations where, as far as is reasonably possible and economically practicable, account has been taken of all hazards which might arise from equipment or work procedures when standing, supported or fixed in a normal position and operating in a normal manner, with allowances for normal wear and tear and other depreciating factors which can reasonably be anticipated.

1.5.12 **Regulatory authority**—a Minister of the Crown, a Government Department, Commission, or other Statutory or public authority having power to issue regulations, order or other instructions having the force of law in respect of any subject covered by this standard.

1.5.13 **Risk**—the probability that the potential harm may become actual.

1.5.14 **Safeguard**—a screen, barrier, guard or safety device designed to protect persons from personal damage.

1.5.15 **Safety**—the provision and control of work environment systems and human behaviour which, together, give relative freedom from those conditions and circumstances which can cause personal damage.

1.5.16 **Safety device**—a protective device, other than a guard, barrier or screen, e.g. a presence-sensing device, which eliminates or reduces danger before access to a hazard.

1.5.17 **Shall and should**—the word 'shall' is to be understood as mandatory and the word 'should' as non-mandatory, advisory, or recommended.

1.5.18 **Standard procedures**—specific instructions prepared for the purpose of providing for operations or processes to be carried out in a safe manner.

1.5.19 **Workplace**—any place at which a person is required to be or to which a person has occasion to go during the course of employment

NOTE: Although this definition includes all places of work, some of the requirements of this standard for 'workplaces' may not be applicable or appropriate for mobile workplaces. Special provisions will need to be made for such workplaces.

OCCUPATIONAL HEALTH, SAFETY AND WELFARE COMMISSION OF WESTERN AUSTRALIA

- BACKGROUND -

The Occupational Health, Safety and Welfare Commission of Western Australia was established on April 4, 1985 with the proclamation of the Occupational Health, Safety and Welfare Act, 1984.

The establishment of the Commission signals a new era in the development of safe and healthy workplaces in Western Australia.

The establishment of the Commission is the culmination of extensive community and industry consultation. In October 1983 the Government released a Public Discussion Document which outlined the Government's intention to enact legislation in the field of occupational health and safety. In response to the Public Discussion Document submissions were received from employers, trade unions, Government departments, professional and technical groups and interested members of the public. These submissions provided a valuable resource for the Government in planning both its statutory and non-statutory initiatives.

As a result the Government decided that its policy would be implemented in two stages. Firstly, a Commission would be established to rationalise existing administrative and legislative procedures, and when this is in place, the Government will address as the second stage the issue of a comprehensive Act to cover all workers in all workplaces.

In late 1984 the Western Australian Parliament enacted the Occupational Health, Safety and Welfare Act which completed stage one by establishing the administrative framework for the Government's new initiatives. The Act has the following objectives:-

* to promote and secure the health, safety and welfare of persons at work;

* to protect persons at work against risks to health or safety;

* to assist in securing safe and hygienic work environments;

* to reduce, eliminate and control risks to the health, safety and welfare of persons at work;

* to foster co-operation and consultation between and to provide for the participation of employers and employees and associations representing employers and employees in the formulation and implementation of health and safety standards to current levels of technical knowledge and development;

* to provide for formulation of policies and for the co-ordination of the administration of laws relating to occupational health, safety and welfare;

* to promote education and community awareness on matters relating to occupational health, safety and welfare.

In addition to establishing the Commission the Act also provides for a Department of Occupational Health, Safety and Welfare. This Department is responsible for the day-to-day administration and enforcement of the Act. The Department has been formed by the amalgamation of the Occupational Health Branch of the Health Department with the Department of Industrial Affairs. This amalgamation brings together inspection, administrative, technical and scientific resources which will enable the effective and efficient application of the Act.

- THE COMMISSION'S ROLE -

The primary role of the Occupational Health, Safety and Welfare Commission is to promote and develop occupational health, safety and welfare in Western Australian workplaces. Under the Act the Commission has the following broad functions:-

* to develop and review policy and legislation and to recommend statute in the form of regulations and codes of practice to the Minister;

* to examine existing proposed licensing schemes for workplaces, individuals, chemical substances;

* to provide advice to Government departments, employer and union organisations;

* to commission and co-ordinate relevant research;

* to promote safety education and training as widely as possible;

* to liaise with other states and the Federal Government especially in relation to proposed standards;

* to prescribe reporting and recording procedures for injuries, etc., and monitoring arrangements.

The Western Australian Commission will work closely with the National Occupational Health and Safety Commission in the areas of standards development, research, training, information collection and dissemination and the development of common approaches amongst the States.

- ADVISORY COMMITTEES -

The Act provides for the Commission to appoint Advisory Committees to assist it in the performance of its functions and duties. It will be an early priority of the Commission to appoint Advisory Committees in key areas where the development of policies is urgently required. Such areas include the occupational health and safety of women, migrant and young workers; repetition strain injury, asbestos, etc.

The Advisory Committees shall be made up of persons who represent employers, employees and persons having knowledge or experience in occupational health and safety.

Special attention will be given to the desirability of having reasonable numbers of men and women on Advisory Committees as well as persons of ethnic backgrounds or from other special interest groups.

The address of both the Commission and the Department will be:-

'Wilmar House',
600 Murray Street,
WEST PERTH, W.A. 6005

TELEPHONE: (09) 327 8777

- NATIONAL OCCUPATIONAL HEALTH AND SAFETY COMMISSION -

BACKGROUND

The establishment of the National Occupational Health and Safety Commission on 11 October 1984 signals a new era of co-ordination of efforts to make Australian workplaces safety and healthy. For it will be through the National Commission that a national occupational health and safety strategy - based on the principle that everyone has a right to a healthy and safe working environment - will be put into effect.

The National Labour Consultative Council issued the first major tripartite statement on this important topic. Reduction of the national record of occupational death, illness and injury was a basic objective of the ALP/ACTU Accord, and is a significant part of the Federal Government's overall economic policy.

The National Economic Summit held in April 1983 called for concerted action in this area: the nation's leading figures from governments, industry and unions were united in urging that a greater priority be given to occupational health and safety.

In November 1983, the Government established a tripartite Interim Commission charged with advising on the most appropriate framework for developing and implementing a national strategy.

The Interim Commission reported in May 1984 with 81 recommendations - including the establishment of a tripartite National Commission responsible to the Federal Minister for Employment and Industrial Relations, and guidelines for its membership, functions, and operational and consultative framework.

The National Commission held its first meeting on 30 October. Details of the Commission's 17 members - who represent the peak employee and employer bodies, as well as the Federal, State and Territory governments - are given on the back panel of this leaflet.

When it becomes a statutory body, the National Commission will be supported by a National Occupational Health and Safety Office, as its operational arm, and by a National Institute of Occupational Health and Safety as its technical and scientific arm. In the meantime, pending legislation, it is operating under the auspices of the Federal Department of Employment and Industrial Relations. Its address is:

NATIONAL OCCUPATIONAL HEALTH AND SAFETY COMMISSION
GPO Box 9880,
CANBERRA ACT 2601

TELEPHONE (062) 73 2285

The National Commission met for the first time on 30 October 1984 and immediately embarked on the ambitious task of identifying and tackling the most pressing health and safety problems besetting Australian workplaces.

Fully aware of the high expectations generated by its establishment, and of the urgency of action required in so many areas, the Commission aims to introduce its programs and services as rapidly as possible.

However, like any infant, it must crawl before it can walk. There is much groundwork to be done, particularly recruitment of essential staff and establishment of the consultative infrastructure which will be central to the Commission's decision-making processes.

During this phase, all available staff will be concentrating on priority projects.

This leaflet contains a brief overview of the Commission, the areas in which action is already being taken, and the time frames in which the initial programs should be under way. As services become available, they will be promoted widely.

THE COMMISSION'S ROLE

The primary role of the National Commission will be to develop, facilitate and implement the Government's national occupational health and safety strategy. This will include standards development, research, training, information collection and dissemination, and the development of common approaches to occupational health and safety legislation.

At the peak level - the Commission itself - representatives of governments and organisations of employers and of employees will provide a tripartite forum in which the national occupational health and strategy may be devised and implemented.

Together, in a spirit of mutual committment to making Australian workplaces healthy and safe, they will determine national programs. An essential arm will be co-ordination to avoid unnecessary duplication and waste of scarce resources.

The important role currently played by the States will be supported and strengthened by the co-ordinating and facilitating activities of the Commonwealth, through the National Commission. The $12.1 million allocated to the Commission in the 1984-85 Budget represents a trebling of Federal funding of occupational health and safety programs.

Consultation
The spirit of participation will be continued through the Commission's consultative infrastructure. Work is already under way to establish the standing committees and working parties which will be basically tripartite in nature but will also include persons with specialist knowledge and representatives of groups with special needs.

PRIORITY AREAS

At its first meeting, the Commission approved immediate action in a number of key areas including:

- Training -
An Industry and Commerce Training Standing Committee (Chair: Mr. Bob Gradwell) will advise on the occupational health and safety educationand training of non-specialists. A particular concern will be to boost the level of training of health and safety representatives and for managers and supervisors.

A Specialist Education Standing Committee (Chair: Dr. John Bisby) will develop policy and programs for the training of occupational health and safety specialists.

Both committees are to be operational by early 1985.

- Information -
Work is proceeding on the collection of information and developing links with international OHS agencies. An information advice and referral service should be operational by mid-1985. Future plans include the development of a national occupational health and safety data base, the preparation of information packages tailored to user needs, and translation into the languages used by Australia's multicultural workforce.

- Research -
The occupational health and safety research grant scheme operated by the Federal Department of Employment and Industrial Relations has been transferred to the Commission. Further grants will be advertised early next year. In the meantime, advertisements are being placed to invite expressions of interest or submissions which will assist the Commission in assessing research capacities and developing a research program; and a register of occupational health and safety research currently being undertaken in Australia is being developed.

A Research Standing Committee (Chair: Dr. David de Souza) is being established immediately.

- Repetition Strain Injury (RSI) -
A special committee (Chair: Mrs. Joan Uhr, Secretary to the Commission) is being established to undertake a comprehensive review of RSI in Australia. It will advise the Commission on a national strategy for prevention and management of this complex problem. The committee has been asked to provide an interim report by March 1985.

It is proposed that a co-ordinated program of research be commenced immediately. Major public and private employers in all States will be asked to co-operate in this project.

- Institute Planning -
An Institute Planning Committee (Chair: Mr. Jim Brassil) will advise on the establishment and early development of the National Institute of Occupational Health and Safety, which will be the National Commission's technical and scientific arm. This committee will include people with wide backgrounds in research and scientific studies, and acknowledged by their peers as experts in occupational health and safety.

- Legislation -
Comprenensive occupational health and safety legislation is being developed for areas of Commonwealth employment, the Australian Capital Territory and External Territories. Legislation to establish the Commission as a statutory body is also being prepared.

- Hazardous Chemicals -
The Commission will assume responsibility for the proposed chemicals notification and assessment scheme when it becomes mandatory in mid-1985. A Chemicals Standing Committee (Chair: the Hon. Joe Riordan) will be established immediately.

- Statistics -
A Statistics and Surveillance Standing Committee (Chair: Dr. David Charles) is being established to advise on the collection, recording, analysis and dissemination of statistics relating to the health and safety of the working population.

- Standards -
A Standards Development Standing Committee (Chair: Mr. Jim Brassil) is to be established. Its first tasks will be to examine the role of existing standard-setting bodies, to develop appropriate priorities for standards programs, and to finalise ongoing work on subjects such as asbestos and timber preservatives.

ORGANISATIONAL BEHAVIOUR

AIM

The aim of this session is to introduce participants to the techniques and methods available for influencing and developing human performance in Occupational Safety and Health Systems.

OBJECTIVES

As a result of this session participants should be able to:

(a) describe three concepts of organisational behaviour
(b) describe a contingency approach to motivation
(c) apply motivational techniques in the work environment

METHOD

This session consists of a central presentation, two self-rating activities, small group discussion and the film "Beyond Theory Y".

REFERENCES:

(a) KOONTZ AND O'DONNELL — Management 7th edition McGraw Hill 1980

(b) SAMUELSON — Supervision in Australia Wiley 1982

(c) WATSON — Structured Experiences and Group Development Curriculum Development Centre 1981

TOPIC	DISCUSSION NOTES
ORGANISATIONAL BEHAVIOUR	
MOTIVATION	
- NEEDS	
- GOALS	
- DRIVES	
MASLOW	
- HIERARCHY OF NEEDS	
HERZBERG	
- SATISFIERS	
- MOTIVATORS	

TOPIC	DISCUSSION NOTES
MCGREGOR	
THEORY X	
THEORY Y	
MCCLELLAND	

TOPIC	DISCUSSION NOTES
EXPECTANCY	
IMPLICATIONS FOR SUPERVISORS	
IMPLICATIONS FOR ORGANISATIONS	

MOTIVATION EXERCISE

AIM

The aim of this exercise is to confirm Maslow's Hierarchy of Needs theory.

OBJECTIVES

At the end of this exercise participants should be aware of their own tendencies towards utilisation of Maslow's needs categories.

METHOD

Complete Part 1 of the attached questionnaire.

Transfer your ratings in Part 1 to the appropriate places in Part 2 and total your scores.

Record your total scores from Part 2 on the Matrix in Part 3.

CONCLUSION

The resultant pattern in the Matrix gives you an indication of the relative emphasis you as a leader would place on using each of Maslow's needs categories as motivators.

MOTIVATION QUESTIONNAIRE

PART 1

Directions: The following statements have six possible responses.

Strongly Agree	Agree	Slightly Agree	Slightly Disagree	Disagree	Strongly Disagree
6	5	4	3	2	1

Please mark one of the six responses by circling the number that corresponds to the response that fits your opinion. For example: if you "Strongly Agree", circle the number 6.

Complete every item:

1.	People who do their jobs well should be given special salary increases.	6	5	(4)	3	2	1
2.	Good job descriptions would be helpful so that individual group members know exactly what is expected of them.	6	5	4	3	2	1
3	People need to be reminded by their leaders that their job depends on their ability to compete effectively with other workers.	6	5	4	3	2	1
4.	Leaders should give a good deal of attention to the physical working conditions of their groups.	6	5	4	3	2	1
5.	Leaders ought to work hard to develop a friendly working atmosphere among their groups.	6	5	4	3	2	1
6.	Individual recognition for above-average performance means a lot to people.	6	5	4	3	2	1
7.	A leader with a "don't care" attitude when supervising work, can often bruise feelings.	6	5	4	3	2	1

MOTIVATION QUESTIONNAIRE (Cont'd)

8.	People want to feel that their real skills and capabilities are put to use.	6	5	4	3	2	1
9.	Things such as superannuation and holidays are important for keeping people in their jobs.	6	5	4	3	2	1
10.	Almost every job can be made more stimulating and challenging.	6	5	4	3	2	1
11.	People want to give their best in everything they do.	6	5	4	3	2	1
12.	Leaders should show more interest in their group by sponsoring social events after work hours.	6	5	4	3	2	1
13.	Pride in one's work is actually an important reward for people.	6	5	4	3	2	1
14.	People usually want to be able to think of themselves as "the best" at whatever they do.	6	5	4	3	2	1
15.	The quality of the relationship in your friendship groups at work is quite important.	6	5	4	3	2	1
16.	Individual incentive rewards (e.g. badges, cars, money, etc) would improve the performance of group members.	6	5	4	3	2	1
17.	Being seen with people in higher positions is important to people.	6	5	4	3	2	1
18.	People generally like to make their own decisions about when and how to work with a minimum of supervision.	6	5	4	3	2	1
19.	Having a secure job is important to people.	6	5	4	3	2	1
20.	Having good equipment to work with is important to people in their jobs.	6	5	4	3	2	1

PART 2

Transfer the numbers you circled in PART 1 to the appropriate places in the chart below:

Statement No.	Score	Statement No.	Score
10	4	2	5
11	5	3	5
13	5	9	3
18	4	19	5
TOTAL:	19	TOTAL:	16

(Self-actualisation needs) (Safety needs)

Statement No.	Score
6	6
8	6
14	5
17	2
TOTAL:	19

(Esteem needs)

Statement No.	Score
1	4
4	4
16	3
20	5
TOTAL:	16

(Basic needs)

Statement No.	Score
5	5
7	5
12	3
15	5
TOTAL:	19

(Belonging needs)

PART 3

Record your total in the chart below by marking "X" in each row next to the number of your total score for that area of needs motivation. For odd numbers (i.e. scores of 1, 3, 5, 7, etc) use the line between the appropriate even numbers.

Needs	24	22	20	18	16	14	12	10	8	6	4	2	1
Self-actualisation				x									
Esteem													
Belonging				✓									
Safety					x								
Basic					✓								

ATTITUDES TOWARD THEORY X AND THEORY Y

Read the definitions of X and Y shown below and then try to estimate on the scale where your attitudes lie.

THEORY X

- The average human being has an inherent dislike to work and will avoid it if he can.
- Because of his human characteristic of dislike of work, most people must be coerced, controlled, directed, threatened with punishment to get them to put forth adequate effort toward the achievement of organisational goals.
- The average human being prefers to be directed, wishes to avoid responsibility, has relatively little ambition and wants security above all.

THEORY Y

- The expenditure of physical and mental effort in work is as natural as play or rest.
- External control and the threat of punishment are not the only means of bringing about effort toward organisational goals. Man will exercise self-direction and self-control in the service of objectives to which he is committed.
- Commitment to objectives is a function of the rewards associated with their achievement.
- The capacity to exercise a high degree of imagination, ingenuity and creativity in the solution of organisational problems is widely, not narrowly distributed in the population.
- Under the conditions of modern industrial life, the intellectual potentialities of the average human being are only partially utilised.

On the scale below, indicate where, in terms of McGregor's Theory X and Theory Y, you would classify your own basic attitudes toward your subordinates.

-20	0	+20
THEORY X	Neutral	THEORY Y

Using the table on the next page score the questionnaire you completed first. When you are finished, be sure to compare your attitude estimate with your actual score.

(Descriptions of Theory X and Theory Y from Douglas McGregor, The Human Side of Enterprise, Copyright 1960, McGraw-Hill, pp. 33-34 and 47-48.

MANAGEMENT BEHAVIOUR

A QUIZ TO IMPROVE SELF-AWARENESS

For each question, check the choice that most accurately describes your activities. Be sure to make one choice for each question.

	USUALLY	OFTEN	SOMETIMES	SELDOM
1. I supervise my subordinates closely in order to get better work from them.	☐	☐	☐	☐
2. I provide my subordinates with my goals and objectives and sell them on the merit of my plans.	☐	☐	☐	☐
3. I set up controls to assure that my subordinates are getting the job done.	☐	☐	☐	☐
4. I believe that since I carry the responsibility, my subordinates must accept my decisions.	☐	☐	☐	☐
5. I make sure that my subordinates' major workload is planned for them.	☐	☐	☐	☐
6. I check with my subordinates daily to see if they need any help.	☐	☐	☐	☐
7. I step in as soon as reports indicate that the job is slipping.	☐	☐	☐	☐
8. I have frequent meetings to keep in touch with what is going on.	☐	☐	☐	☐
9. I back up spontaneous but unauthorised decisions made by my employees.	☐	☐	☐	☐
10. I push my people to meet schedules if necessary.	☐	☐	☐	☐

SCORING TABLE FOR MANAGEMENT BEHAVIOUR

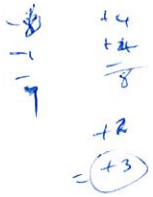
How to Score your Questionnaire:

Score all questions except number nine as follows:

- \- 2 for usually (that you checked)
- \- 1 for often
- \+ 1 for sometimes
- \+ 2 for seldom

Reverse the process for question number nine. Score 2 for usually, 1 for often, -1 for sometimes and -2 for seldom.

Total your score.



NOTES ON MOTIVATION

GENERAL

Motivation is a significant force in human behaviour. It is a broad and complex issue, some aspects of which are still unclear. However, there is good practical evidence that a systematic approach can be taken to motivating subordinates in a work environment.

MASLOW'S HIERARCHY OF NEEDS

The Hierarchy. Maslow put forward the proposition that human beings have a hierarchy of needs to be satisfied. The achievement of goals satisfies these needs. As each lower order need is satisfied individuals are motivated by the next highest. Maslow's needs levels are:

Fulfilment needs:	The needs of an individual to make the best of themselves. The needs for creative activity.
Esteem needs:	The need for job satisfaction, achievement and recognition of achievement. The mastery of skills for mastery's sale.
Love and belonging needs:	The need for love, affection and affiliation within a group.
Safety needs:	The need for physical safety, job security and freedom from anxiety.
Physiological needs:	The need for food, drink, sleep, etc.

Physiological and safety needs

Most people are probably satisfied in the lower levels of Maslow's hierarchy. When people first arrive in a new situation they may drop into the safety need area because of a fear of the unknown. The provision of a non-threatening environment is aimed at reducing anxiety and allowing people to perform at their best. As these lower level needs are largely catered for they do not offer much potential as motivators.

Love and belonging needs

If an individual is happy and accepted in the group and they get along with the supervisory staff, it is likely the love and belonging needs will be satisfied. Managers need to be aware of any disruptive behaviour, as this could mean these needs are not being satisfied, and action may be required to rectify the situation. Simple actions such as reallocation of seating arrangements are often sufficient to restore harmony and balance. In most individuals these needs are fairly well catered for and do not offer much potential as motivators.

Esteem needs

These needs are the most important needs in the work sense. They refer to achievement and willing, cheerful performance of a task. Generally speaking, the will to achieve is very strong in most individuals if the lower needs are satisfied. If the task is presented in performance terms and the individual achieves either a sense of accomplishment or recognition after a job is well done these needs will be satisfied.

Fulfilment needs

These needs generally appear in settled, mature adults. They are the needs people have to make themselves into the best their human potential allows. They should be capitalised on by supervisors working with senior (rank and experience) individuals.

Maslow's theory of needs is important in the field of supervision as it gives a good theoretical base on which to start motivating subordinates.

Herzberg's two factor theory

Frederick Herzberg conducted a number of surveys to determine the causes of motivation in factory employees. His findings are of interest to all supervisors.

He put forward the idea that before individuals, or groups become motivated, they must first be satisfied.

He also put forward that motivation and satisfaction are two separate conditions, and while satisfaction can exist without motivation the reverse is not true.

The conditions that cause satisfaction he called Hygiene Factors. The conditions causing motivation he called Motivators.

Hygiene Factors - The Hygiene Factors which must be satisfied to bring about a condition of satisfaction are:

Company policy and administration - If the policy and administrative procedures are seen by individuals to be efficient and working in their interests a condition of satisfaction is likely to exist. Whilst this is largely a managerial problem simple mistakes by the supervisor can upset this factor. For example:

- keeping people over the allotted time for a task
- failure to arrive on time himself
- failure to inform people of policy decisions and changes

Technical supervision - If the technical supervision is adequate, that is if supervisors know their jobs, act confidently without bullying and act in a supportive, enthusiastic manner, a condition of satisfaction is likely to exist.

Interpersonal relationships - If the relationship within the group and the relationship between the group and supervisory staff is adequate, a condition of satisfaction is likely to exist.

Environment conditions - If the environment conditions are adequate, such as heating, lighting, ventilation, seating, etc. people are likely to be satisfied. If, however, the management controlled conditions are poor, such as accommodation, messing and isolation are let slip, dissatisfaction will result.

If the Hygiene Factors are ignored or let slip, motivation will rapidly drop off. It is vital supervisors do their utmost to ensure a condition of satisfaction exists in their people. This will allow motivation to be encouraged by the use of Herzberg's Motivators.

Motivators - The factors which Herzberg found need to exist for individuals to become highly motivated are:

Achievement - A very powerful motivator is the sense of achievement the individual gets from the successful completion of a task. For this reason performance oriented training, using objectives is very effective. Similarly, a task which has a challenge is preferred by most individuals, this achievement is a personal or intrinsic motivator.

Recognition of achievement - Recognition of achievement is closely related to reinforcement and is a very powerful motivator. Recognition may be by the supervisor or the group. Non-recognition of achievement will quickly lead to motivation falling off. Supervisors need to be constantly aware of this and guard against it happening.

The task itself - If the task is seen as worthwhile and interesting, motivation is likely to be retained throughout until completion. On the other hand, if a task is seen as an isolated, boring and pointless exercise, there is little chance the individual will remain motivated. The role of the supervisor is to present each task in a job oriented interesting fashion in order to have their people perform willingly and well.

Responsibility - Most adults like to be given responsibility for a task. The supervisor's task here is to make the follower as responsible as possible for their own actions.

Advancement - Whilst promotion is a powerful motivator, it is not often possible, except in some specific cases, for the supervisor to offer this as a motivator. However, it is possible to use exceptional individuals in the roll of peer group supervisors and helpers. Care needs to be taken when applying this technique that the motivator doesn't become a burden or distasteful in any way or it will be counter-productive.

If the Hygiene Factors are satisfactory, it is possible to use the Motivators above to energise people. Achievement and recognition of achievement are the two most powerful short term motivators available. The remainder are classed as long term motivators and in some cases are beyond the abilities of the immediate supervisors. However, the widest range of motivators possible should be used.

McGreggor's Theory X and Y

McGreggor put forward two extremes of managerial style. He called them Theory X and Theory Y. Theory X related to "traditional management", while Theory Y related to a more enlightened approach.

THEORY X - An individual who ascribed to the ideas of this theory would believe:

- that people inherently dislike work;
- that people need to be coerced, controlled and threatened to achieve a task;
- that people avoid responsibility and prefer direction.

With these assumptions on the nature of people a supervisor would probably adopt an authoritarian style, giving individuals little chance to interact or question.

THEORY Y - An individual who ascribed to the ideas of this theory would believe:

- that work is as natural and enjoyable as play;
- that people are self-directing;
- that people actively seek and accept responsibility;

With these assumptions on the nature of people a supervisor would probably adopt a democratic, open and supportive style, giving the followers opportunity to explore issues, interact with one another and encourage questions and make decisions.

From a practical point of view, it is possible that the supervisor would need to move within these styles according to the task, people and their own ability. The total application of one style to all supervision is absolutely incorrect.

MASLOW'S NEEDS LEVELS	HERZBERG	MCGREGGOR
	MOTIVATORS	THEORY Y
FULFILMENT	ACHIEVEMENT	MOTIVATORS
ESTEEM	RECOGNITION	APPEAL TO
	THE JOB	THESE NEEDS
	RESPONSIBILITY	USING HIGH
	ADVANCEMENT	LEVEL NEEDS
	HYGIENE FACTORS	
LOVE AND	INTERPERSONAL	THEORY X
BELONGING	TECHNICAL	MOTIVATORS
SAFETY	SUPERVISION	APPEAL TO
PHYSIOLOGICAL	UNIT POLICY	THESE LOW
	AND ADMIN	LEVEL NEEDS
	ENVIRONMENT	

A COMPARISON OF MOTIVATION THEORIES

It can be seen from the above table the relationships between the three theories. In essence, it would appear supervisors are better advised to attempt to motivate people using higher levels of needs than the lower ones of safety and basic needs.

In using the skill of motivating, the supervisor may wish to achieve one or more of the following objectives:

- to gain exceptional willing performance from their people;
- to induce in people an appropriate attitude for an immediate or future task;
- to gain attention and arouse interest;
- to create needs;
- to maintain motivation at a desirable level.

SAFETY LEADERSHIP

AIM

The aim of this session is to introduce the Situational Leadership Model and to discuss its application to the occupational safety and health environment.

OBJECTIVES

As a result of this session, participants should be able to:

(a) Describe Task Readiness

(b) Describe Task Behaviour

(c) Describe Relationship Behaviour

(d) Employ Situational Leadership styles

METHOD

This session consists of small group discussions, a self-rating activity and a central presentation.

REFERENCE:

HERSEY AND BLANCHARD Management or Organisational Behaviour
4th Edition Prentice Hall 1981

TOPIC	DISCUSSION NOTES
LEADERSHIP TRAIT THEORY LEWIN - AUTOCRATIC - DEMONCRATIC - LAISSEZ-FAIRE ADAIR - FUNCTIONAL LEADERSHIP HERSEY & BLANCHARD - SITUATIONAL LEADERSHIP	

LEADERSHIP STYLES

INTRODUCTION

The Situational Leadership Model proposed by Hersey and Blanchard (1) has four Leadership Styles based on combinations of Task and Relationship Behaviour. The key words for these styles are:

TELLING	- high task/low relationship
SELLING	- high task/high relationship
PARTICIPATING	- high relationship/low task
DELEGATING	- low relationship/low task

Task Behaviour is described as the extent to which a leader engages in one-way communication, by explaining what each follower is to do as well as when, where and how tasks are to be accomplished.

Relationship Behaviour is described as the extent to which a leader engages in two-way communication by providing socio-emotional support, encouragement and facilitating behaviour.

The determining factor in deciding which Leadership Style stands the greatest probability of success is the readiness level of the follower(s). Maturity is described as:

- the capacity of the follower(s) to set high but realistic goals. This is a measure of achievement motivation;
- the willingness and ability of the follower(s) to assume responsibility;
- the amount of knowledge and experience in the follower(s).

Figure 1 shows the relationship between readiness levels and Leadership Styles. It shows the Leadership Style that has the greatest probability of success for each maturity level.

(1) Hersey and Blanchard, Management or Organisational Behaviour, 4th Edition, Prentice-Hall Englewood Cliffs NT 1982.

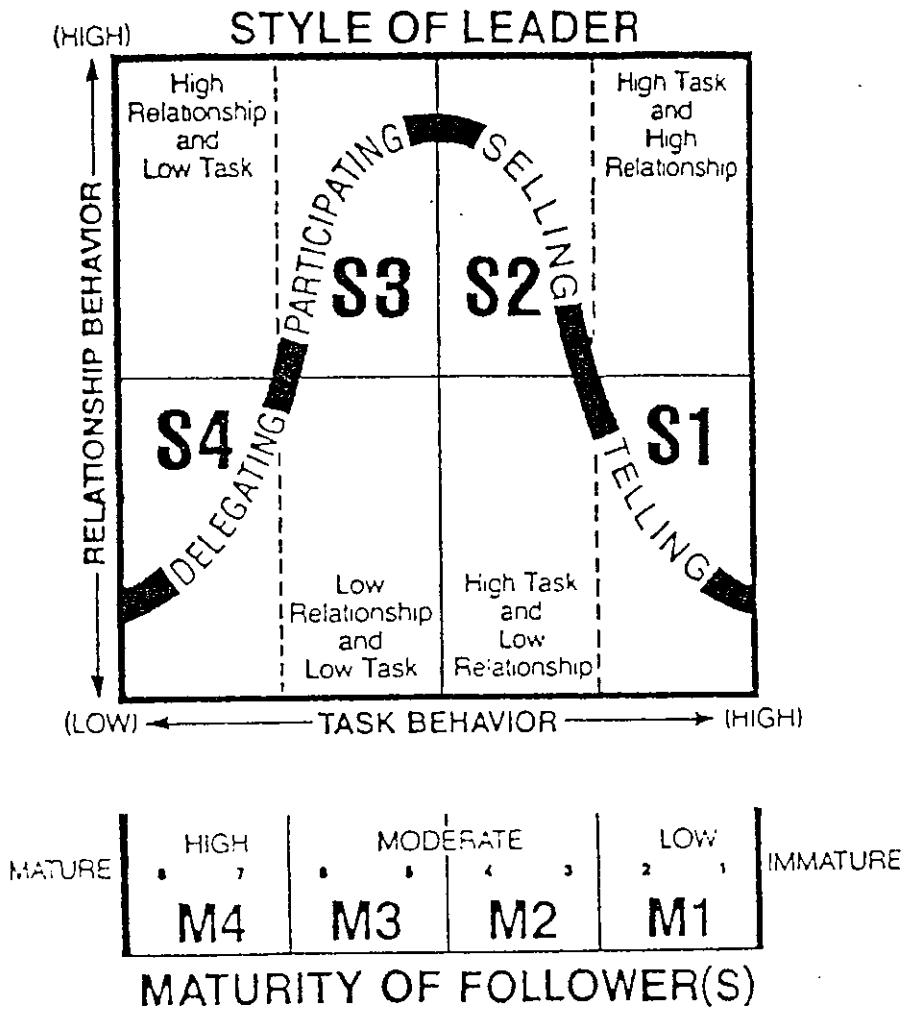


FIGURE 1 - LEADERSHIP STYLES

SCOPE

Each of the Leadership Styles shown above has been analysed to determine its component skills. These notes describe the objectives and components of Situational Leadership Styles.

TELLING - HIGH TASK/LOW RELATIONSHIP BEHAVIOUR

The Situational Leadership Model recommends that a leader should adopt a TELLING style with follower(s) who are assessed as having low task-relevant maturity.

Objective - The objective of adopting a TELLING style is to provide the follower(s) with complete and unambiguous directions for task achievement.

The Components of TELLING - The components of TELLING are shown in Figure 2.

TELLING - HIGH TASK/LOW RELATIONSHIP BEHAVIOUR

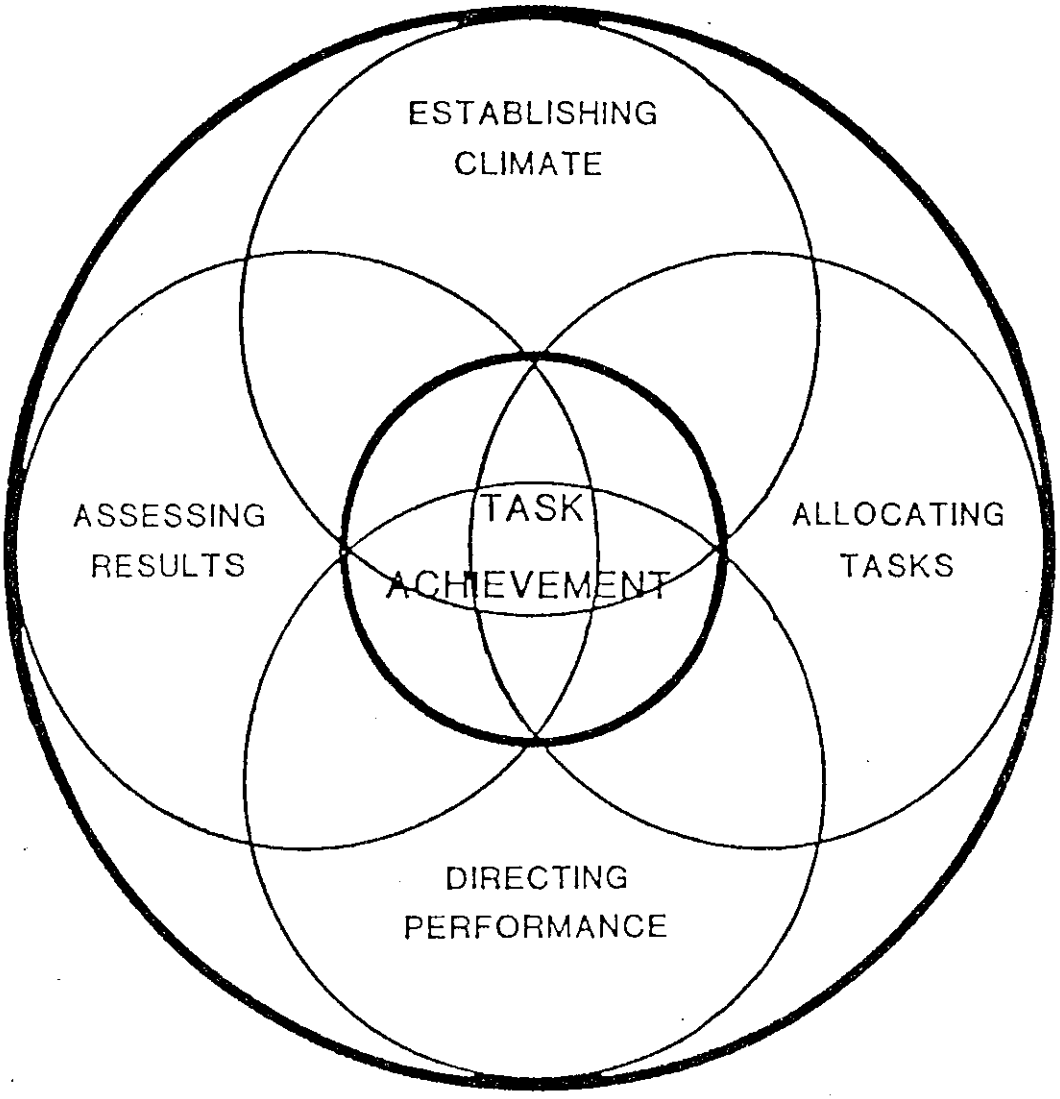


FIGURE 2 - THE COMPONENTS OF TELLING

Establishing Climate - Climate is the emotional environment in which a leader and follower(s) operate. Climate is affected by the form and structure of the organisation in which people operate, but leaders can significantly influence their environments by their attitude towards their follower, and the manner in which tasks are described. The dimensions and interrelations of climate are shown in Figure 3.

CLIMATE - THE PHYSICAL AND EMOTIONAL ENVIRONMENT IN WHICH LEADERS AND FOLLOWERS OPERATE

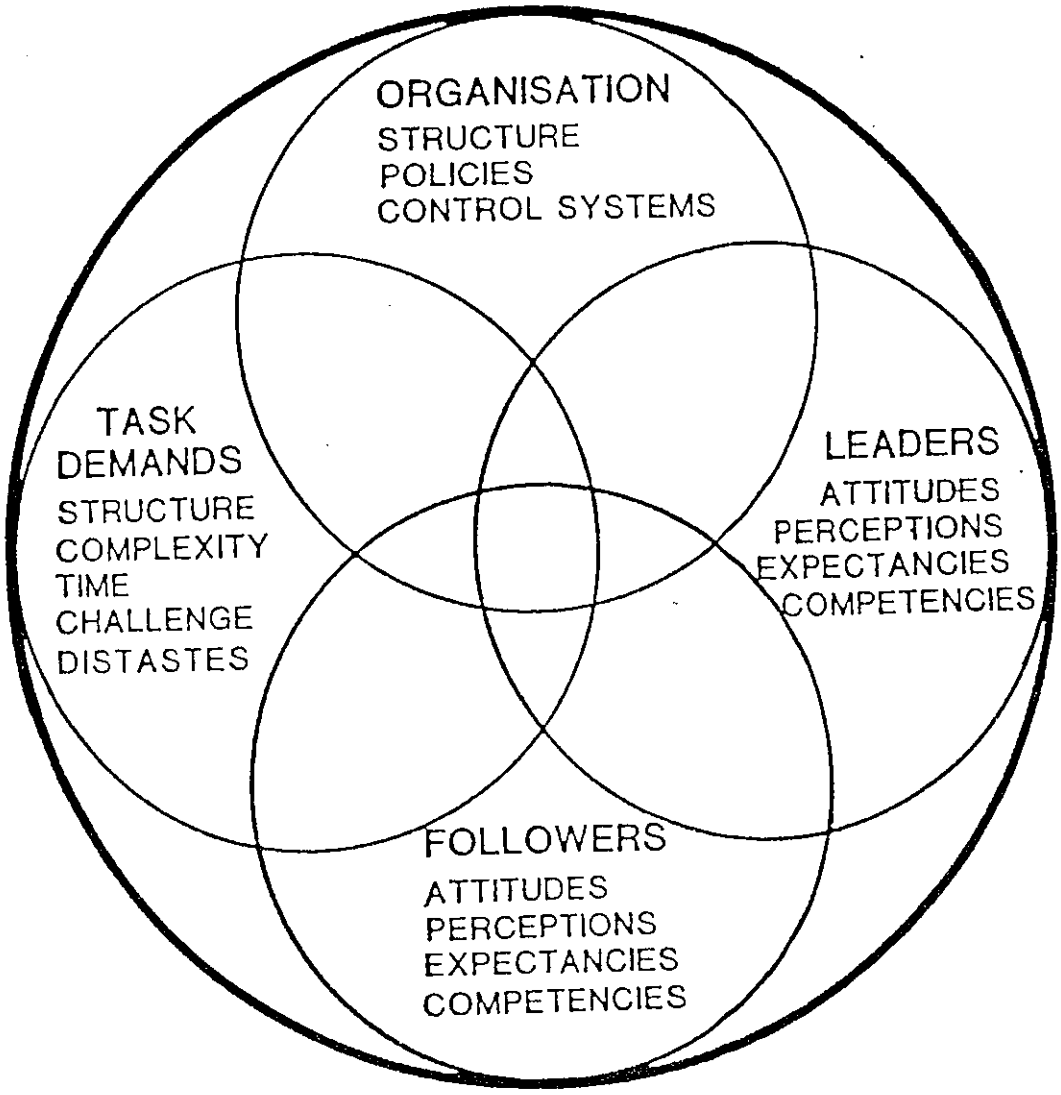


FIGURE 3 - THE DIMENSIONS OF CLIMATE

When using a TELLING style the leader should encourage a friendly controlled atmosphere. This is done by establishing relationships. The initial or introductory procedures used by a leader will have a significant bearing on how the leader is perceived by the follower(s). The Introduction should be friendly with the leader showing enthusiasm for the follower(s). If any external standards of behaviour are required of the follower(s), these should be explained. Task discipline measures should be regarded as a means of task achievement rather than as a series of impositions to reinforce the leader's position. The manner in which this is done will also affect the perceptions of the follower(s) and their subsequent willingness to carry out the task.

Allocating Tasks - When a leader allocates tasks to followers using a telling style, the task dimensions must be fully described. The dimensions of a task are:

- what has to be done;
- how the achievement of the task will be evaluated;
- when the task has to be completed;
- how the task is to be carried out;
- who is to do what.

The inter-relationship of task dimensions are shown in Figure 4.

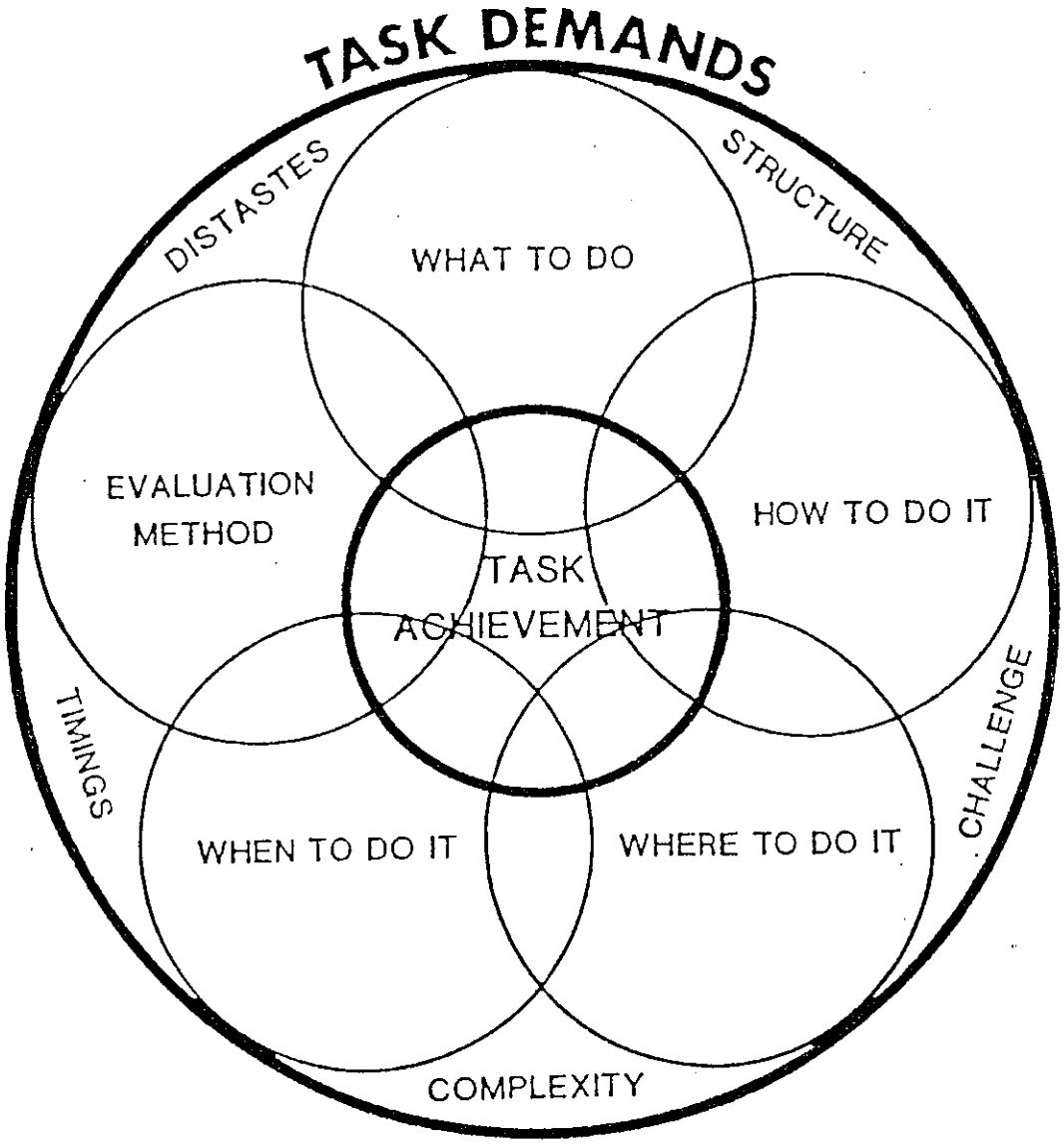


FIGURE 4 - THE DIMENSIONS OF THE TASK

When deciding on task allocation the leader must give tasks to the follower(s) best suited to carry them out successfully. This is done by assessing the follower(s)' knowledge and experience, physical capacities, attitudes and goal setting abilities and personal goals and objectives. The leader should aim to allocate tasks so that the goals of the follower(s) are satisfied as a direct result of working to achieve the task, or organisational goals. When allocating tasks the leader should show enthusiasm for the task and its achievement.

Directing Performance - When a leader directs performance using a TELLING style, a number of considerations need to be made. The leader should give a clear and effective directions at the beginning of the task. The initial direction should cover the task dimensions and will need to be detailed. It is quite likely in TELLING situations that some on-going directions will also be needed. The leader will need to be able to regulate the activities of task groups or individuals and to co-ordinate their actions. In order to do this effectively, leaders need to develop the skill of attention splitting. Attention splitting is the skill of dividing concentration amongst groups to maintain an awareness of the progress of groups or individuals towards task achievement.

Assessing Results - The leader will need to assess the results of group or individual effort. This should be done by comparing the result achieved with the initial task dimensions, or any modification to the task which occurred since the initial directions. If the task is successful the leader should reinforce the group or individual achievement. Reinforcement of achievement is a practical method of developing task maturity which should be a goal of all leaders. If the task is not achieved the leader should review the performance of the group or individual and the adequacy of his directions e.g. was the task achievable in the time allocated? Were sufficient and adequate materials available when needed? Were tasks allocated in accordance with individual competencies? Was successful completion of the task punishing with no rewards? and so on. If the task is not completed successfully, and the follower(s) have genuinely tried out failed, the leader must reinforce (reward) the effort made.

SUMMARY

A TELLING leadership style has the most probability of success if it is used with follower(s) with low task maturity. The reader should be aware that TELLING does not automatically mean a very authoritarian style which is characterised by yelling and threatening. A TELLING style can be employed in a soft, hands on manner which does not confront, or it can be as direct as the situation requires.

SUMMARY

A TELLING leadership style has the most probability of success if it is used with follower(s) with low task maturity. The reader should be aware that TELLING does not automatically mean a very authoritarian style which is characterised by yelling and threatening. A TELLING style can be employed in a soft, hands on manner which does not confront, or it can be as direct as the situation requires.

A TELLING style should be used with an awareness of individual differences it it is to be successful. Leaders should monitor the performance of the follower(s) to determine when they should move within the Situational Leadership model towards the next style SELLING.

SELLING - HIGH TASK/HIGH RELATIONSHIP BEHAVIOUR

The Situational Leadership model recommends that a leader should adopt a SELLING style with followers who are assessed as having low to moderate maturity.

OBJECTIVE

The objectives of adopting a SELLING leadership style are:

- to provide individuals or groups with adequate directions for task achievement;
- to obtain individual or group commitment to the task.

THE COMPONENTS OF SELLING

The components of selling are shown in Figure 5.

SELLING - HIGH TASK/HIGH RELATIONSHIP BEHAVIOUR

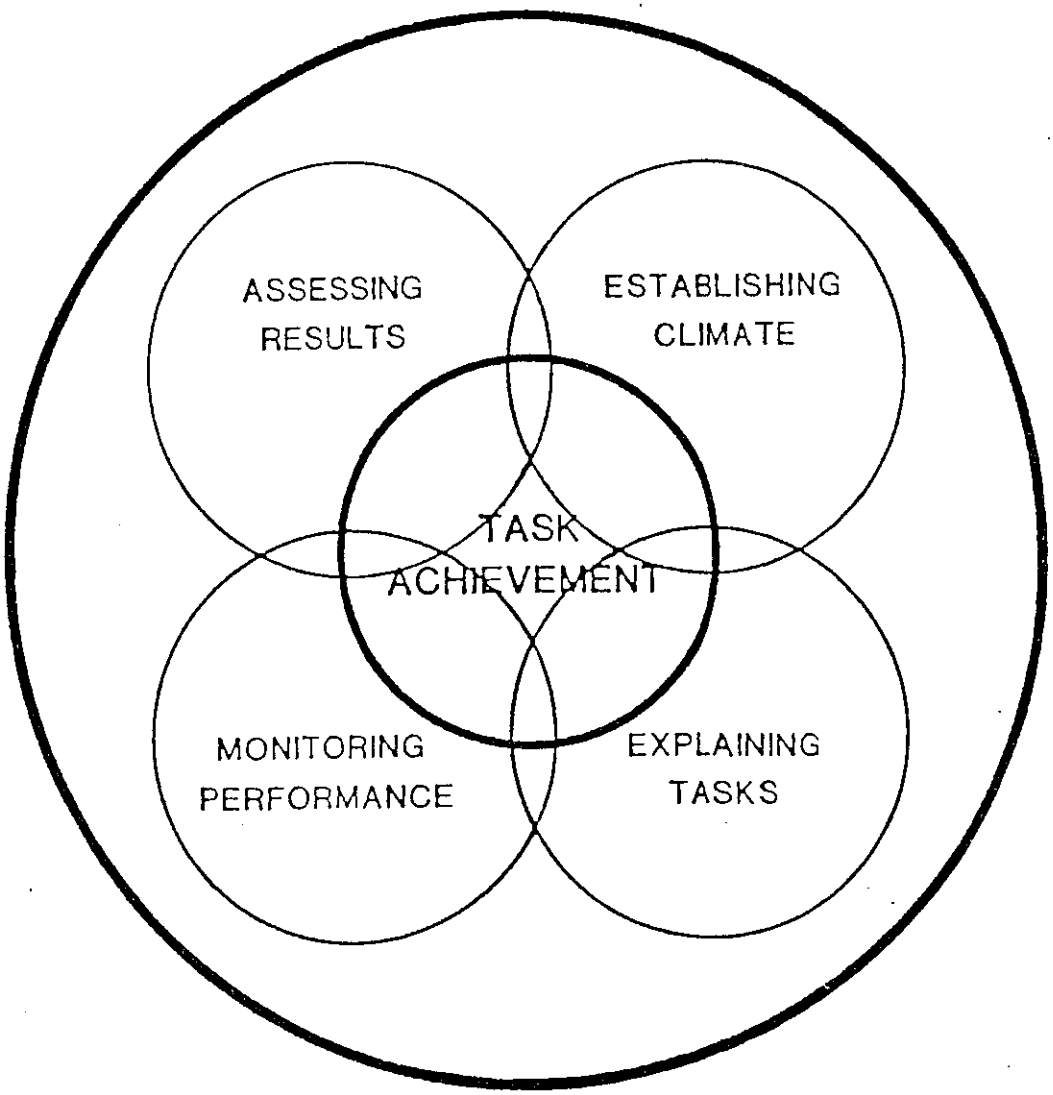


FIGURE 5 - THE COMPONENTS OF SELLING

Establishing Climate - When using a SELLING leadership style the leader should get a friendly, supportive climate in which two-way communication is encouraged. The leader should encourage participation in decision making.

Explaining Tasks - When a leader decides to use a SELLING leadership style the task dimensions need to be explained as is done with TELLING. There is, however, a difference as the leader is interested in gaining commitment from the follower(s) to task achievement. To do this the leader needs to explain not only task dimensions, but why the task is important. The leader should ask for comment on the decision and by two-way communication show the individuals or groups how task achievement can be integrated with their needs and goals.

Monitoring Performance - When using a SELLING leadership style the leader should monitor individual or group efforts towards task achievement. Two-way communication should be encouraged and the leader should positively reinforce those actions which contribute to the successful achievement of the leader's objectives - task achievement and commitment. The leader should be supportive in their approach to monitoring performance.

Assess Results - The result of the individual or group effort must be assessed in relation to the leader's objective. The results should be communicated to the group using a supportive, positive approach emphasising the integration of individual or group goals and task achievement.

SUMMARY

SELLING is a useful leadership style for followers with low to moderate maturity. SELLING requires the leader to involve the followers psychologically in task achievement. It requires high amounts of both task and relationship behaviour which should aim at developing the follower's maturity.

PARTICIPATING - HIGH RELATIONSHIP/LOW TASK BEHAVIOUR

The Situational Leadership model recommends that a leader should adopt a PARTICIPATING style with followers who are assessed as having moderate to high maturity.

OBJECTIVE

The objective of adopting a PARTICIPATING leadership style is to share the process of decision making in task achievement.

THE COMPONENTS OF PARTICIPATING

The components of PARTICIPATING are shown in Figure 6.

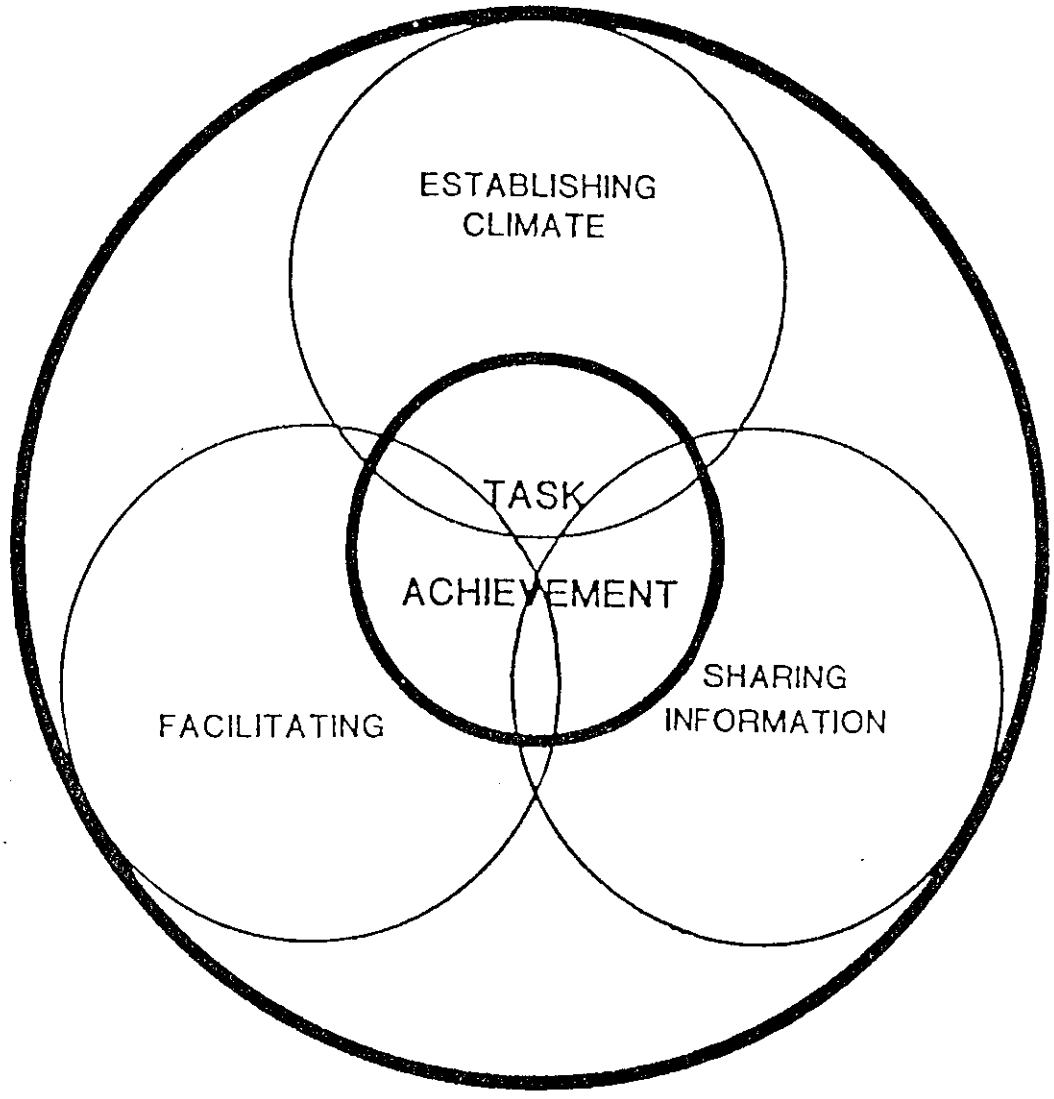


FIGURE 6 - THE COMPONENTS OF PARTICIPATING

Establishing Climate - When using a PARTICIPATING leadership style the leader should set a friendly, collaborative climate. Two-way communication must be established and the followers should be encouraged to use their knowledge to seek acceptable solutions to achieve the task set. Leaders should actively seek the followers' contributions.

Sharing Information - When a leader uses a PARTICIPATING style, broad task dimensions only need to be given. The followers should be encouraged to use multi-way communication, and the leader's role is that of consultant.

Facilitating - When adopting a PARTICIPATING style the leader must be prepared to act as a facilitator. This will mean monitoring the followers' progress and providing advice or guidance if required. Once the task has been achieved the leader should reinforce desirable behaviour and discuss the followers' performance with them to achieve mutual evaluation of objectives.

SUMMARY

PARTICIPATING is a useful leadership style for followers with moderate to high maturity. PARTICIPATING puts the leader in the role of facilitator and consultant. The style is characterised by multi-way communication, shared task achievement and mutual evaluation of agreed objectives.

DELEGATING - LOW TASK/LOW RELATIONSHIP BEHAVIOUR

The Situational Leadership model recommends that a leader should adopt a DELEGATING style with followers who are assessed as having high maturity.

OBJECTIVE

The objective of adopting a DELEGATING leadership style is to provide follower(s) with the maximum opportunity to make decisions and determine the methods of task achievement.

THE COMPONENTS OF DELEGATING

The components of DELEGATING are shown in FIGURE 7.

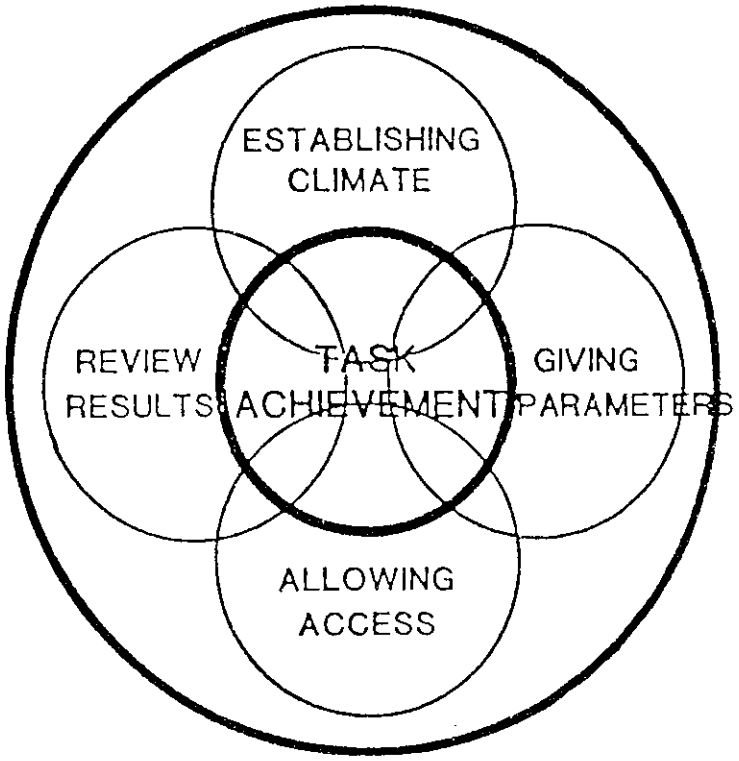


FIGURE 7 - THE COMPONENTS OF DELEGATING

Establishing Climate - When using a DELEGATING leadership style the leader should set a friendly and supportive climate. For a DELEGATING style to be successful a high trust level will need to be established between the leader and the follower(s).

Giving Parameters - When using a DELEGATING leadership style the leader should give the follower(s) the outline of the task in sufficient detail to enable its accomplishment. Any limitations or constraints such as timings, methodology, standards to be reached must be reached must be mentioned and, if necessary, discussed. The leader should avoid excessive direction. When DELEGATING, the leader should delegate responsibility and a sufficient amount of authority to enable the task to be achieved.

Allowing Access - When using a DELEGATING leadership style the leader must remain accessible as a resource to the follower(s) to overcome problems or events occurring outside the given parameters of the task.

Review Results - When a leader has delegated a task it is necessary to review the achievement of the task with the follower(s). The leader should be prepared to discuss the followers' decision making process, actions and ensuing results if necessary and to provide feedback on performance.

SUMMARY

DELEGATING is a useful style for follower(s) with high task maturity. The leader should delegate responsibility and authority to the follower(s) and then allow them to see the task through to the end. The leader should avoid intervening in the task but should remain available to provide advice on direction if required.

CONCLUSION

These notes have covered the component skills of Situational Leadership theory. The explanations should be of practical use in achieving the goals and objectives of leadership.

SAFETY AND THE SUPERVISOR

AIM

The aim of this session is to introduce participants to the principles of Statute and Common Law, and to the concept of Duty of Care. The structure and origins of OHS&W Legislation in WA is examined against ILO Convention 155 and Recommendation No 164 of 1981.

OBJECTIVES

As a result of this session, participants will be able to:

- describe the differences between Statute and Common Law;
- discuss the Structure of Statute Law relating to OHS&W in WA;
- describe the principles of ILO Convention 155 and Recommendation No 164 of 1981;
- discuss the elements of Duty of Care under Common Law;
- discuss the concepts of Reasonable Standard of Care.

METHOD

This is a central presentation and discussion.

REFERENCES

IFAP	Paper Liability of Employers
WA	Occupational Health Safety and Welfare Act 184 (Incorporating Amendment Bill 1987)
ILO	Convention 155, 1981
ILO	Recommendation 164, 1981
SKELLET E J	Safety at Work edited by J Ridley, Butterworths 1983

LIABILITY OF EMPLOYERS

INTRODUCTION

1. Employers who are injured at work have a number of rights and remedies available to them. In Western Australia the most commonly known right is to the benefits provided for in the Workers' Compensation Act. In addition, injured workmen may an entitlement to social security benefits if workmens' compensation, is for some reason, not available to them or there is some delay. The less commonly known remedy for injured workmen is a claim for damages against an employer. This claim may arise for one of two reasons as follows:

   a. a breach of the employer's duty of care (at common law);
   b. a breach of a statutory duty by an employer.

2. The aim of this paper is to examine in relation to paragraph 1a and 1b the common law liability of the employer, vicarious liability of the employer, employers' duties of care, breaches of statutory duties by employers and defences available to employers incorporating employer responsibilities.

COMMON LAW LIABILITY

3. The common law principles with regard to the relationship between employer and employee first appeared in the 1800's and have undergone a process of development and refinement ever since. Whilst initially the workman had little protection the common law has developed to the stage where there are clearly defined responsibilities which rest on both parties to the contract of employment.

4. I would emphasise here that common law is not like statute law (i.e. Acts and Regulations of a Parliament), but is based on the precedent of court decisions recorded over long periods of time. These decisions, often added to, have become the basis for common law.

5. The very essence of the claim for damages at common law arises from the relationship of master and servant (employer /employee) where one of the general duties of the master is to take reasonable care for the safety of the employee, in all aspects of that employment. It is not altogether clear, however, if in fact the cause of action in this situation is actually based on a breach of the duty of care which is generally referred to by law under the title "Negligence", or a breach of the contract of employment. In any event the difference is academic as the damages arising in either case would be identical.

6. Common law as distinct from worker's compensation considers the concept of "fault" and amounts for damages under common law are usually considerably higher. Damages are usually assessed on the degree of fault, age of the 'victim', extent of pain and suffering, disfigurement, an amount for general damages and any other relevant factor.

7. Contributory negligence is a common law factor and where appropriate, a percentage figure, determined by the Court, is deducted from the assessed damages.

EMPLOYERS DUTY OF CARE

8. The employers duty, as recognised by law, is to take reasonable care for the safety of his employees in all circumstances of the employment. This duty of care is usually classified by most texts on this subject under the following categories:

   a. provision of a safe place of work;
   b. provision of a safe system of work;
   c. provision and maintenance of safe plant and equipment;
   d. provision of competent staff to manager and supervise the business.

   However, how is the standard of 'reasonable care' defined? The standard of care required might be said to be that amount of care that would be exercised in the same circumstances by a reasonable man. In fact the degree will vary greatly according to the circumstances.

9. Standard of Care - The standard adopted by the Courts is an objective one - what would a reasonable employer have done in the same situation? In determining this standard of reasonable care several questions arise. When considering the employers duty of care should consideration be made that whilst an employer, the defendant is also an entrepreneur and businessman (and is therefore concerned to make a profit), or should safety override these considerations? Where an employer's business involves risks to workmen by the nature or method of operation, should the employer be subject to claims for damages on each occasion an employee is injured? As an ordinary, reasonable man can the employer be allowed to indulge in occasional oversight, slips or errors common to most members of society, or should the employer be considered to be "infallible"? In examining the nature of the employers duty of care and in assessing what is the standard of the ordinary, prudent, reasonable employer, it is, therefore, necessary to consider principles enunciated by courts, and to consider the extent that they are likely to provide a reliable guide.

10. Duty of care owed personally and to each employee - The duties of care are owed personally to each employee and therefore an employer is unable to delegate this responsibility concerning health and safety to a third party (Wilsons and Clyde Coal Co. V English (1938) AC 57).

Assume that an establishment was engaged in a process which was hazardous to the safety of employees. Specialists (perhaps Engineers) are called in to rectify the problem, however the plant continues to be hazardous to the workmen. The fact that the employer had called in experts to solve the problem would not be admissable as a form of defence. The employer's duty remains a personal one and compensation would be payable for an injury incurred under these circumstances. This principle applies to the whole of the employers undertaking. This will include not only plant and equipment but also that of supervision of safety of premises.

11. The duty of the employer is owed personally to each and every individual employee. Therefore in considering the nature and extent of the employers duty, one must take into account the individual characteristics and idiosyncrasies of employees that are known or ought to be known to him. Thus an employer knowing that an employee was unable, for medical or other reasons to work at heights, would be negligent in ordering the employee to so work.

12. Should the employer then not only considers the probability of personal injury but also the seriousness of the consequences of an injury to each individual if an accident were to occur? This question can be best illustrated in the Paris V Stepney Borough Council (1951) AC 367.

> "Paris was employed by the Council as a garage attendant. He had lost the sight of one eye prior to entering into this employment, a fact that was subsequently discovered by the employer during a medical examination (conducted for the purpose of assessing his eligibility to join a superannuation scheme). Thus the employer was deemed to have known of the condition of the employee's eye".
>
> "Paris received an injury to his right eye, which rendered him totally blind, when he was dismantling the chassis of a motor vehicle. He was using a steel hammer to knock out a rusty bolt when a fragment of metal broke off and lodged in the eye. He brought a claim for damages against the employer, alleging that he should have been supplied with suitable goggles to protect his eyes".
>
> "The employer had supplied goggles for welders and for employees working on grinding machines but not for men employed on the maintenance and repair of motor vehicles. There was some suggestion of the likelihood of pieces of metal breaking away and lodging in the eyes of workmen, but actual occurrences were rare. It was not the general practice of workmen employed in the garage to wear goggles. In these circumstances, it was virtually conceded that there would be no negligence on the part of the employer if it had failed to provide goggles for workmen possessing the sight of both eyes. Paris argued, however, that the gravity of the consequences of any injury to his right eye was such that a higher degree of care was owed to him by the employer".

In the majority decision the House of Lords accepted the argument of Paris and upheld an earlier verdict entered in his favour.

13. Another more common application to industry embodying the same principle can be seen in a statement by Devlin, L.J. in Wither V Perry Chain Co. Ltd. (1961) 1 W.L.R. 1314, at p.1320:

"It may also be on the principle of Paris V Stepney Borough Council, that when the susceptibility of an employee to dermatitis is known there is a duty on the employer to take extra or special precautions to protect such an employee".

14. Experienced Employees - The fact that employees are experienced does not negate the employers obligation to provide a safe method of carrying out their work, especially where the work is to be performed in the context of a systematic operation which has been established by the employer. It is the responsibility of the employer to establish and lay down a safe system of work. Where the system is defective, the employer will have failed in his obligation. It is the duty of the employer to consider each situation, devise a suitable system of work, instruct his employees as to these work requirements and any special equipment required. Obviously the employer cannot be certain that they will do as they are told, when alone, however if he does all that is reasonable to ensure that his safe system is operated he will have done what he is bound to do.

VICARIOUS LIABILITY

15. Where an employee is injured due to the negligence of a fellow employee a claim may be brought against the employer by way of a claim for damages. This is the doctrine of vicarious liability which provides that an employer is liable to compensate a person who suffers injury or loss as the result of the negligence of an employee provided the negligent act occurs in the employee's employment.

16. When is an employer "vicariously liable" for the results of his employees acts and or negligence? When can the employer avoid responsibility by saying that the fault was that of his servant and not himself?

Generally an employer is just as responsible for the havoc inflicted through the acts (or ommission) or negligence of his servants as if the damage was done by his own hand. A company has no human existence apart from those who hold its shares, run its affairs and work for it. The company can do itself no wrong - its troubles all arise through the "middemeanors" of those who work for it. The exception applies when the wrongful act occurs outside the scope of the employment. The difficulty in these cases would be in deciding if the act was within the scope of the employment.

17. "Skylarking" or "horseplay" is often discussed, albeit a forbidden aspect of company file, it still occurs. If an injury occurs to an employee and is caused by another employee engaging in "horseplay" is the company still liable? If an employee breaks the arm of another through tripping him in a workshop the company is responsible. If the same incident occurred at a dance hall in the evening then the company is not responsible.

18. Consider this statement:

"We do not allow smoking in this plant. We deal with inflammable materials and no-one is allowed even a puff inside the building, except in the canteen. In breach of our orders an operative smoked, caused a fire and explosion in which another employee was injured. Is the company responsible?"

In a word "yes". Providing he was doing something he was employed to do. Ask yourself this question "Was he doing something <u>which he was employed to do</u> - albeit in a thoroughly wrongful way - or was he doing something which came right outside the course of his employment?"

19. In the question cited in paragraph 18 the case involved an attendant at a petrol pump. He knew he should not throw matches around, but he did. He lit up, flicked away his match and the inevitable explosion occurred. The employer met the plaintiffs claims saying in defence, that the man was acting outside the scope of his employment and they should not be held liable. They lost. The man was employed to fill customers' tanks and that is what he was doing. The fact that he did so improperly did not free the employer from the responsibility of the damage caused.

BREACH OF A STATUTORY DUTY

20. Each state and particularly Western Australia has legislation designed to regulate working conditions and more specifically health, welfare and safety in the work place (however limited). A failure to comply with these statutory requirements can give rise to an application for damages on behalf of an employee injured as a result of that breach.

21. An action of this type exists independently of and in addition to an action based on common law breach of duty as mentioned earlier. It is an action at common law based on a statutory provision for the safety of employees. It is therefore sufficient for the plaintiff to prove non-compliance by his employer within the terms of the appropriate Act or Regulations. It is therefore a case of strict or absolute liability and will, by itself, and with nothing further, enable an employee injured as a result of that breach to successfully bring a claim for damages.

DEFENCES AVAILABLE TO EMPLOYERS

22. Two principle defences are available to employers enabling them to defeat claims for damages brought by injured employees. The first of these is contributory negligence, i.e. the employee has contributed to his injuries. The extent the employee is to blame will reduce by the same amount, any amount which may otherwise have been awarded. (It is important to note here that this is no defence to an action based on a statutory breach of duty). There is however, a limited defence available to employers regarding claims arising out of a breach of statutory duty. This could apply where the breach is caused entirely by the injured employee. Let us assume an employee is injured because an employer installed a dangerous machine in a factory. The machine does not comply with the appropriate Machinery Act. If the employee was given sole responsibility for the selection of the machine and ensuring that it complied with statutory provisions, then if that employee was injured whilst operating the machine he would (on the probabilities) be unable to recover damages.

23. The second defence available to employers is "volenti non fit injuria" which loosely translated means voluntarily assumes the legal risk of injury. This defence has little application in modern context and involves the employer proving the employee undertook a dangerous activity knowing there was an inherent risk of injury and foregoing any right to claim damages which he might otherwise have. The coursts are reluctant to apply it in an employment situation.

EMPLOYEE RESPONSIBILITIES

24. This paper places considerable emphasis on employers' responsibilities and perhaps quite correctly. However, I would be most incorrect if I left you with the feeling that the employee has no responsibilities.

Employee are under no obligation to take reasonable care not only for the safety of others but also for their own safety. Even where an employer has been in breach of the primary duty, an employee must nevertheless continue to take reasonable steps to avoid injury and failure to do so, will cut down the quantum of any damages to which he might otherwise be entitled. An employee may also have statutory responsibilities in various areas of State legislation which will be examined separately.

SUMMARY

25. To conclude we have a system where on one hand the onus rests upon the employer to provide a safe system of employment and on the other, the employee is bound to act with an appropriate degree of care and responsibility in the daily performance of his work.

An employer further is not - at general law - under a duty to ensure absolute safety. Negligence on his part must be proven before a liability can arise.

It is essential that both parties of the contract of service are aware of their statutory responsibilities and further the existence of the common law grounds outside workers compensation.

Perhaps if nothing more, to highlight these factors for all, may ultimately give rise to a safer and mutually respected environment between master and servant.

THE MEASUREMENT OF WORK INJURIES

AIM

The aim of this session is to introduce participants to the measurement of workplace injuries.

OBJECTIVES

As a result of this session participants should be able to:

- describbe the categories of workplace injuries;
- discuss the use of frequency duration and incidence rates.

METHOD

This is a central presentation followed by a group discussion.

REFERENCE

AUSA Australian Standard 1885 - 1976

THE RECORDING & MEASURING WORK INJURY EXPERIENCE AS PER ASA 1885 - 1976

The full code is not given to you within this paper, only the pieces which we feel will assist you to have a better understanding of MRD's and others' injury statistics. Hopefully, a better understanding of the terminology used by safety people, will increase your interest in those "pieces of paper with all the figures" which appear on your desk each month!

To avoid misunderstanding (and arguments!) we have photocopied all that follows from the code itself. The number you will see (e.g. 1.3.3, 1.3.4.1, etc.) refer to the code section numbers and not to the numbering system used within this manual.

First let us come to grips with some Definitions.

1.3 DEFINITIONS. For the purpose of this Code, the following definitions apply:

1.3.1 Employee—a person engaged in activities for an employer for which he or she receives direct payment.

NOTE: All staff are included.

1.3.2 Employment. This term includes the following:

(a) All work or activity performed in carrying out an assignment or request by the employer, including incidental and related activities not specifically covered by the assignment or request.

(b) All voluntary work or activity undertaken whilst on duty—

(i) with the intention of benefiting the employer; or

(ii) with the consent or approved of the employer.

1.3.3 Workplace—any place at which a person is required to be or has occasion to go during the course of his or her employment.

1.3.4 Work injury—an injury, occupational disease or work-connected disability which arises out of or in the course of employment and which requires first-aid or medical treatment.

NOTES:

1. For the purpose of recording and measuring, work injuries may be divided into a number of categories including lost-time and medical-treatment injuries. The category selected for use in an organization will depend on many factors and may alter as an accident prevention programme improves in effectiveness.
2. Compensable work injuries received in travelling to or from the place of employment should not be included in the record unless the means of transport is not public transport but is operated by the employer and approval to travel in the vehicle has been granted by the employer.

1.3.4.1 *Lost-time injury*—a work injury which results in death or inability to work for at least one full day or shift any time after the day or shift on which the injury occurred.

1.3.4.2 *Medical-treatment injury*—a work injury requiring treatment by a medical practitioner and which is beyond the scope of normal first-aid including initial treatment given for more serious injuries.

NOTE: First-aid treatment is any one-time treatment, and any follow-up visit for observation, of minor scratches, cuts, burns, splinters and the like which do not normally require medical care. Such treatment is considered to be first-aid even if administered or supervised by a medical practitioner.

1.3.4.3 *Occupational disease*—a disease attributed to or aggravated by the environmental factors of a particular process, trade or occupation which the employee follows.

1.3.4.4 *Work-connected disability*—a disability, suffered by an employee, which has been caused or aggravated by the working conditions or environment. The effects of a work-caused disability are cumulative and any lost time cannot be attributed to a single incident. Examples of work-connected disability are hearing loss, Raynaudism (white finger), voice loss, blood change due to non-fatal carbon-monoxide inhalation, and shock. Work-connected disability shall be regarded as a work injury.

1.3.5 Compensable injury—an injury which results in a payment being made under the terms of the appropriate Workers' Compensation legislation.

1.3.6 Time lost—the number of working days or shifts lost by injured employees as a result of lost-time injuries.

1.3.7 Frequency rate—the number of injuries per million manhours worked.

1.3.8 Incidence rate—the number of injuries per employee for the period under review.

1.3.9 Duration rate—the average time lost per lost-time injury.

2.1 BASIS OF ASSESSMENT.

2.1.1 General. Thorough investigation of all factors relating to the occurrence of each reported injury is essential. Determination as to whether or not the injury should be considered a work injury under the provisions of this Code shall be based on the evidence developed in investigations.

2.1.2 Evidence. The evidence to be considered in determining whether or not the reported injury should be considered a work injury may include, but not necessarily be limited to, the following:

(a) Facts resulting from investigation of the injured employee's work activities and working environment to which the injury might be related.

(b) Statements (written if possible) of the injured employee, fellow employee, witnesses and supervisors.

(c) Medical reports acceptable to the authority classifying the work injury.

(d) Facts concerning the injured employee's work activity for other employers, and other off-the-job activities, injuries and illnesses.

2.2 ASSESSMENT OF SPECIAL CASES.

2.2.1 General. Before inclusion in the record, special cases should be assessed. Rules 2.2.2 to 2.2.16 are intended to assist in such assessment, but the provisions of these Rules should not be used to exclude a genuine work injury from the record.

2.2.2 Inguinal Hernia. An inguinal hernia shall be considered a work injury only if it is precipitated by an impact, sudden effort, or severe strain, and meets, after investigation, all of the following conditions:

(a) There is clear evidence of an accidental event or an incident, such as a slip, trip or fall, sudden effort or over-exertion.

(b) There was actual pain in the hernial region at the time of the accident or incident.

(c) The immediate pain was so acute that the injured employee was forced to stop work long enough to draw the attention of his foreman or fellow employee, or the attention of a physician was secured within 12 h.

2.2.3 Back Injury. A back injury or strain shall, after investigation, be considered a work injury if—

(a) there is clear evidence of an accidental event or an incident such as a slip, trip or fall, sudden effort or over-exertion, or blow on the back; and

(b) a medical practitioner, authorized to treat the case, is satisfied after a complete review of the circumstances of the accident or incident, that the injury could have arisen out of the accident or incident.

2.2.4 Aggravation of Pre-existing Condition. If aggravation of a pre-existing physical deficiency arises out of or in the course of employment, the resulting disability shall be considered a work injury and shall be classified according to the ultimate extent of the injury, except that if the injury is an inguinal hernia or a back injury the requirements of Rule 2.2.2 or 2.2.3 shall apply.

2.2.5 Disability Arising Solely out of a Physical Deficiency. If a medical practitioner considers that an accident or incident such as a slip, trip or fall arises solely out of a pre-existing physical deficiency, and if a person without such physical deficiency would not have suffered such an accident or incident, any resulting injury shall not be considered a work injury. The placement of employees with physical deficiencies in a suitable work environment should receive special attention.

2.2.6 Aggravation of Minor Injury. If a minor injury is aggravated because of diagnosis or treatment, either professional or non-professional, or if infection or other symptoms develop later, either on the job or off the job, the injury shall be classified according to its ultimate extent.

2.2.7 Cardiovascular Diseases. This term is used to cover the following groups:

(i) Rheumatic heart disease.

(ii) Hypertensive disease.

(iii) Ischaemic heart disease.

(iv) Heart disease secondary to pulmonary disease.

(v) Cerebrovascular disease.

(vi) Diseases of arteries, arterioles and capillaries.

(vii) Diseases of veins and lymph vessels.

Cardiovascular diseases shall not be recorded as work injuries unless—

(a) the symptons were so severe during working hours that the attention of a supervisor was drawn to them, and

(b) a medical practitioner, authorized to treat the case is satisfied, after a thorough investigation, that the disease was work caused.

2.2.8 Miscellaneous. This category includes the following:

(a) *Purposely inflicted injuries.* An injury purposely inflicted by the employee or another person shall be considered a work injury if it arises out of or in the course of employment.

(b) *Skylarking.* An injury inflicted by or arising out of skylarking during employment shall be considered a work injury.

(c) *Athletic or recreational activities.* An injury to an employee resulting from participation in athletic activities, whether or not they are company sponsored, shall be considered a work injury only if the participant was paid by the company to perform these activities.

2.2.9 Other Disabilities. The following are examples of injuries which shall be considered work injuries if they arise out of or in the course of employment:

(i) Animal and insect bites.

(ii) Skin irritations and infections.

(iii) Muscular disability.

(iv) Injuries arising from exposure to extreme temperature (hot or cold).

(v) Loss of hearing, sight, taste, feel or sense of smell.

****

2.2.11 Hospitalization or Rest for Observation.

2.2.11.1 *Classification as medical-treatment case.* If after observation of an injured employee in a hospital, or whilst the employee is forced to rest, for a period not to exceed 48 h from the time of an injury or suspected injury known to have a delayed effect, from incidents such as—

(a) a blow to the head, back or abdomen; or

(b) the inhalation of harmful gases, known to have a delayed effect;

the physician determines that the injury was in reality slight, and that the injured employee could have returned to work without any permanent impairment or lost time, the injury shall be classified as a medical-treatment case.

2.2.11.2 *Classification as lost-time injury.* If any treatment or medication is given for the suspected injury referred to in Rule 2.2.11.1 after the first 24 h of observation, the injury shall be classified as a lost-time injury.

2.2.12 Illness from Antitoxin. Illness resulting solely from antitoxin, vaccines, or drugs used in the treatment of a non-lost-time injury shall not cause the injury to be classified as lost time.

2.2.13 Death from Undetermined Origin. In fatal cases where death might have resulted either from an illness or from an accident following the illness, the case shall be considered a work injury only if it is the opinion of the attending physician engaged or authorized by the employer that the illness arose out of, or was aggravated by, the employee's work.

2.2.14 Injuries on Public Transport. The injury or death of an employee travelling as a passenger on public transport as a result of an accident to that public transport is not a work injury within the meaning of this Code.

2.2.15 Doubtful Disabilities. In the case of doubt as to the classification of a work injury, the classification shall be based on the decision of the physician engaged or authorized by the employer.

2.2.16 Committee of Interpretations. When the proper assessment of an injury is in doubt, a copy of the full report of the circumstances of the injury or alleged injury may be submitted to SAA Committee SF/2, Industrial Accident Records, for a decision.

SECTION 6. MEASURES OF WORK INJURY EXPERIENCE

6.1 SCOPE OF PART. This Part of the Code sets out methods of measuring work injury experience.

6.2 PURPOSE. The purpose of this Part is to provide practical and uniform methods of measuring work injury experience.

6.3 MEASUREMENT OF WORK INJURIES. Recommendations are made for the measurement of work injuries under frequency, duration and incidence rates. The measures provide a basis for the evaluation of the effectiveness of a safety programme when compared over successive periods.

It is not necessary for a particular organization to make use of all rates within a category. For example, it is recommended that small organizations use incidence rates rather than frequency rates; a larger organization may find that lost-time injury frequency rate serves its purpose better.

6.4 FREQUENCY RATES.

6.4.1 General. The frequency rate can be used to relate the number of injuries of any type to the exposure to hazard while in the workplace, and is expressed in terms of a million-manhour unit.

The exposure to hazard is expressed in manhours and it is recommended that the figures be obtained from payroll or time-clock records. When this is not practicable, the exposure may be calculated by multiplying the total employee-days worked by the number of hours worked per day. An estimate may be obtained by multiplying the average number of employees per year by 2000 h.

The method used for obtaining manhours exposure should not be altered from period to period.

6.4.2 Work Injury Frequency Rate. This is the number of work injuries in the selected period, related to a million-manhour unit.

6.4.3 Lost-time Injury Frequency Rate. This is the number of lost-time injuries in the selected period, related to a million-manhour unit, as follows:

$$\text{Lost-time injury frequency rate} = \frac{\text{Number of lost-time injuries} \times 1\,000\,000}{\text{Manhours exposure}}$$

6.4.4 Medical-treatment Injury Frequency Rate. This is the number of medical-treatment injuries in the selected period related to a million-manhour unit.

6.4.5 Specific Frequency Rate. This is the number of specific injuries in the selected period related to a million-manhour unit. This frequency rate can be used for any individual classification under Rule 3.4.3. Examples are: Eye-injury frequency rate: Strain-while-manual-handling frequency rate

"Frequency Rate" is the measure most commonly used to assess safety performance and while we may calculate a frequency rate for any category of injury we are always talking about LOST TIME INJURY Frequency Rate when we use the shortened term "Frequency Rate".

As you can see from 6.4.3 above, the calculation is a simple one. However, to explain to workers what a Frequency Rate means is not so simple.

The following idea should help you. First, let us forget about "a million man-hours"———that is as meaningless as the dark side of the moon for most people! Calculate how long it will take your division (or your section or your department) to work one million man-hours and express this in weeks, or months or years.

For example, say you have 150 men in your group, all working 40 hours/week.

Thus the group will work (150 x 40) man hours in one week.

or They will work (150 x 40 x 4) man-hours in one month, providing you have not a 5 week month, of course!

so it will take your group $\left(\frac{1,000,000}{150 \times 40 \times 4}\right)$ months, i.e. 41.6, say 42 months, to work a "million man hours".

Now, if your group's Frequency Rate is 81 (I have simply pulled this figure out of my head) this means that over the next 42 months your group can expect to have 81 Lost Time Injuries, (or about 2 every month!). This explanation is always easy to understand.

Of course, if your group is very small you will have to talk in "years" instead of "months". We are now ready to start comparing the safety performance of different groups. Here is a simple one to start with!

	GROUP A	GROUP B
No. of L.T.I.'s Last Month	7	5
No of Employees	253	275
No. of Man-hours Worked	40480	44000
No. of Days Lost	44	87

Monthly Frequency Rate for Group A = $\frac{7 \times 1,000,000}{40480}$ = 172.9

Monthly Frequency Rate for Group B = $\frac{5 \times 1,000,000}{44000}$ = 113.6

So we could safely say that Group B has the better Frequency Rate, but is it really the safer of the two groups? Look at the "Days Lost" for both groups. What might they tell us?

6.7.3 **Incidence Rates.** As shown in Rule 6.6, incidence rates may be calculated for any class of injury, and an example based on medical-treatment injuries is given below:

Number of medical-treatment injuries = 15
Number of employees = 25

$$\text{Medical-treatment injury incidence rate} = \frac{15}{25} = 0{\cdot}6$$

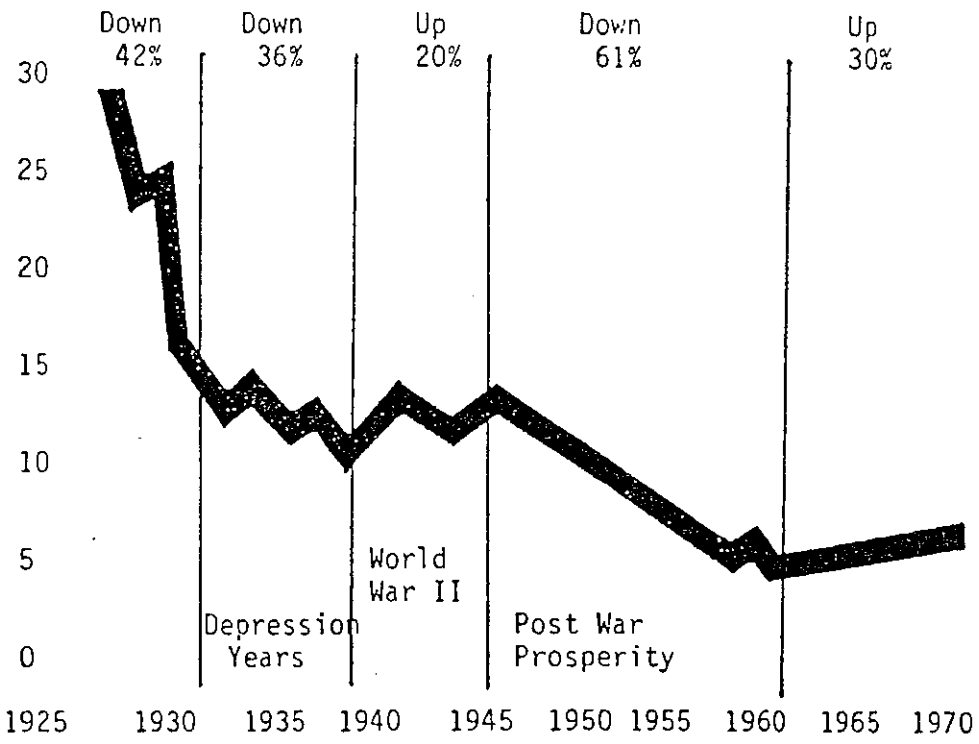
This rate may be expressed as a percentage by multiplying by 100; in the above example 0·6 becomes 60 percent.

Of course, MRD will never have to use this measure, because of its large workforce.

Now, how do we use Frequency and Duration Rates?

Their chief use is to provide people, at all levels, with information on (1) past and present performance, and (2) to help set safety targets. Here are some examples:

(A)



LOST TIME INJURY FREQUENCY RATE: USA : 1925-1970

(Source: National Safety Council, USA 1976)

Simply, that Group B can have a lower Frequency Rate, but at the same time have more SEVERE injuries. So to look at Frequency Rate in isolation can be deceiving. We need another measure to take care of the discrepancy we have seen; the Duration Rate gives us this measure.

6.5 DURATION RATE.

6.5.1 General. Duration rate is a method of measuring the time lost in days in relation to the number of injuries. Prolonged cases are to be regarded as closed after one calendar year from the date of first absence.

The figure obtained is an average of the time lost due to injuries.

6.5.2 Calculation. This rate is computed from the number of lost-time injuries and the time lost during the selected period, as follows:

$$\text{Duration rate} = \frac{\text{Time lost}}{\text{Number of lost-time injuries}}$$

Thus

Monthly Duration Rate for Group A = $\frac{44}{7}$ = 6.28

Monthly Duration Rate for Group B = $\frac{87}{5}$ = 17.4

We see that B's Duration Rate is almost 3 times that of Group A! But how would you explain 6.28 or 17.4 to a worker! In "easy to understand" terms we might say:

(1) "In Group A the average lost time per injury is 6.28 days".

(2) "In Group B the average time lost per injury is 17.4 days".

Always remember, this is what costs you money! Duration Rate is most important and should always be viewed together with Frequency Rate.

SPECIAL NOTE: For small groups or very small organisations the Code recommends a measure called Incidence Rate"

6.6 INCIDENCE RATES.

6.6.1 General. Incidence rate is a measure of the number of injuries per employee during the period under review. It may be expressed as a percentage by multiplying by 100

6.6.2 Lost-time Injury Incidence Rate. This is the number of lost-time injuries per employee during the selected period, as follows:

$$\text{Lost-time injury incidence rate} = \frac{\text{Number of lost-time injuries}}{\text{Number of employees}}$$

6.6.3 Medical-treatment Injury Incidence Rate. This is the number of medical-treatment injuries per employee during the selected period.

6.6.4 Work Injury Incidence Rate. This is the number of work injuries per employee during the selected period.

6.6.5 Compensable Injury Incidence Rate. This is the number of compensable injuries per employee during the selected period.

CONCLUDING REMARKS ON MEASUREMENT

Some of the biggest arguments in the safety field centre around the use of Frequency Rates, especially when the rates are used in the form of "league tables" —— we shall discuss this in detail during the course.

MRD use the Code we have just examined, to collect injury statistics and the specific breakdown used will be examined in Paper 4.

REFERENCE: Australian Standard 1885-1976, Recording and Measuring Work Injury Experience.

ACCIDENT INVESTIGATION

AIM:

The aim of this session is to provide participants with a systems approach to accident investigation.

OBJECTIVES:

As a result of this session participants will be able to:

(a) Describe the elements of an accident investigation system.

(b) Explain why the front line supervisor is the best person to investigate accidents.

(c) Describe the benefits to the supervisor of accident investigation.

(d) Discuss the reasons why incidents are not reported and describe techniques to improve reporting rates.

(e) Investigate accidents.

(f) Analyse accidents.

METHOD:

This is a central session followed by a case-study exercise.

ACCIDENT INVESTIGATION AND THE SUPERVISOR

It is essential to identify those kinds of accident which should receive detailed investigation. Generally speaking they will fall into these categories:

(a) Any accident which alters the future of the individual (fatality, paraplegia, amputee, permanantly disable back, disfigurement, etc.) or results in substantial material damage or loss or major interruption to business activities.

(b) Any accident which temporarily alters the future of the individual (eg. lost time and medical treatment injuries from which the individual recovers), or results in significant damage loss or business interruption.

(c) Any accident which has the potential for (a) or (b) above.

So called minor incidents and first aid injuries should be investigated but they would not normally demand the detailed attention given to a first aid or near-miss incident which had the potential to kill, or permanently disable or result in major loss.

The continuous monitoring of the first aid log or computer printout will allow the indentification of problem areas which may require further in depth investigation if this is deemed necessary.

The answer to the question "Why should we investigate accidents and other incidents?" is one of the most obvious in the whole scheme of loss control. One can easily imagine a child responding to such a question after a bad accident in the home with the answer, "Why, that's to keep another one from happening!" Management's reasons for the investigation of accidents and other incidents that could downgrade operations are just as logical and understandable. But, it isn't the logic of investigation that presents the major roadblocks to accomplishment of good investigations by front-line supervisors. It's the very real concerns that any busy member of the management team has about the best utilization of his time in the interest of achieving the goals he knows the boss wants. It's not having answers to questions like:

"Where do you get the time to do it?"
"Which ones do you spend the time on?"
"How do you do it the easiest way?"

Such dilemmas can keep a supervisor from properly using one of the best tools to make his job easier and his operations more efficient.

WHAT INCIDENTS SHOULD BE INVESTIGATED?

Common sense and logic would indicate clearly that any incident that resulted in a serious or major loss ought to be investigated promptly and properly. Such serious losses could include, but not be limited to, injury, illness, property damage, fire, theft, production delays, etc. Many interested parties will seek detailed information on the cause and prevention of certain of these losses. Such parties could include upper management, the press, insurance or government officials. When such incidents occur, the loss itself and the ultimate involvement of personnel serve to remind the supervisor that serious losses not only degrade the organization's resources, but point out drastic deficiencies in the management system that need correcting.

So, a more complete answer to the question, "What incidents should be investigated?" begins to evolve as we consider the logical fact that any incident possessing the potential to cause major loss should be investigated properly. Loss control research, emphasizes that the causes of no-loss incidents can be used to control the causes of more serious incidents. In effect, the supervisor has a fore-warning system to clearly predict management deficiencies that could cause serious or major losses. The remaining ingredient is proper incident investigation. The answer to the original question, then, must logically be, "All incidents with the potential for loss should be investigated."

Where does the supervisor get the time?

In the beginning of the program, he simply has to take the extra time required. Extra time spent now to control tomorrow's problems will be infinitely small when compared to the enormous amount of time to be lost if a predictive system is not accepted and used. Further discussion will also indicate that the supervisor who uses his investigation tools properly will soon realize that an equal amount of time is not spent on all incident investigations. In the final analysis, the effective control of serious injuries, illnesses, damage, defects and delays which he gains can only spell increased efficiencies for the supervisor and for the entire organization in the future.

Why The Front-Line Supervisor?

This already busy member of the management team is not the only one involved with inident investigation, but he is the one who must assume an important immediate responsibility whenever an investigation occurs in his assigned area. Let's examine the reasons, and see why the front-line supervisor is the best investigator:

1. **He has a personal interest to protect.**
   There is no way the supervisor can escape the responsibility for his assigned area. Downgrading incidents can affect the safety, quality, production, and costs in his area and he must be deeply and selfishly involved in their prevention and control.

2. **He knows the most about people and conditions.**
Since it is his area, these are the people he works with daily, the equipment, materials, and environment he manages day in and day out. Who would know more about the reason for whatever exists or transpires within this area than the front-line supervisor?

3. **He knows best how to get information.**
The good supervisor has established a spirit of cooperation with his own group, as well as with other support personnel such as engineers and maintenance personnel. He knows and understands the way each person thinks. He is aware that he will be working with them in the future and must maintain a relationship that encourages trust and confidence. In effect, he has learned to communicate with them because he "speaks their language". If anyone can get people to "tell it like it is", it is their immediate supervisor.

4. **He will take the action anyway.**
After all, because it is his area, in the final analysis, anything that must be done will involve him anyway. He's the one who will have to follow up anything that needs changing, correcting or doing. It just makes good sense that if he is in on the investigation from the start, it's better for him and for his people in the end.

How Does the Supervisor Benefit from Incident Investigation?

The broad value of total efficiency was mentioned earlier, but let's examine some of the more specific benefits. The list below is certainly not complete, but it does present several of the major benefits to be achieved by utilizing investigations.

1. **They evidence and reflect concern for people.**
Improvements related to equipment, material and environment that inevitably result from good investigations are directly connected to the person who directly suggested and helped bring them about. The supervisor who consistently does a good job of investigation creates evidence that inevitably communicates to his people his true concern for their total welfare.

2. **They increase his production time.**
One of the main characteristics of a downgrading incident is that it interrupts work. Time spent on good investigations today (to prevent recurrence of incidents) increases the available time to produce work tomorrow. Effective incident investigations eliminate and control the bottlenecks and causes of lost time involved with work interruption.

3. **They reduce his operating costs.**
The costs of injuries, fire, delays and property damage can play an enormous role in determining whether a supervisor has succeeded... or failed to do his job well. Reduced incidents spell reduced operation costs and increased benefits for everyone.

4. **They focus attention on a manager with "control".**
Persistent efforts to establish meaningful measures that eliminate or minimize deficiencies by proper incident investigation can only produce results that reflect the image of a capable supervisor, one who has control. It is "control" that upper management people look for and recognize. Perhaps this is why the supervisor's incident investigation work becomes an integral part of his overall performance evaluation with many companies.

PROMPT REPORTING - A KEY TO EFFECTIVE INVESTIGATIONS

Many supervisors who think they are investigating the majority of the accidents or incidents that occur in their areas of responsibility would be shocked to learn the actual number that go unreported and consequently uninvestigated. A conscientious supervisor can investigate every incident reported to him, but he is very naive if he thinks this tells the whole story of what is actually happening.

One of the most significant values of incident reporting lies in the resultant capability to predict the causes of serious events by investigating those that may or may not have resulted in any loss at all. This value is lost completely when incidents are not reported.

The result-oriented supervisor recognizes that the real values of investigation can only be achieved if he can get people to report all incidents they have knowledge of.

In order to encourage incident reporting in a manner that produces desired results, it could be helpful to evaluate the reasons most commonly given in confidential studies and interviews for failure of workers to report incidents.

Reasons for Failure to Report Incidents

1. **Fear of discipline.**
Many employees have been conditioned through experience to associate personal negligence with any loss. Punishment of people for their "contributory negligence" when property is damaged, material is lost, or defects are incurred is one of the oldest and most widely used practices of management people. While discipline is sometimes in order, the good supervisor recognizes that substandard behaviour is frequently only a symptom of the real problem and, by trying to use the worker as a scapegoat for management inadequacies, he merely drives his problems underground. The fact remains that many people react to the methods of the average supervisor and, fearing the high probability of discipline, consistently withhold information rather than cooperate.

2. **Concern about the record.**
Whether it's a machine delay and a consequent production record that's missed, or an injury reported and an accident-free record broken, the average worker does not want to spoil the record. There are workers who get caught up in the spirit of competition and the desire of the group to "break the record" and actually withhold reporting injuries or property damage to avoid being the one who prevented the achievement of the goal for the work unit or department.

3. **Concern about reputation.**
Few people want to be called "accident prone" or labeled an "unsafe worker" by their supervisors or the work group. For this reason only, another segment of workers fails to report injuries and damage.

4. **Fear of medical treatment.**
It's surprising how many people dread the thought of receiving simple medical care. A vast number of people die each year because they delayed getting medical aid, due to fear of what they would be told or of the treatment they might receive. This fear prevails with even minor conditions, and injuries go unreported.

5. **Dislike of medical personnel.**
The fact may or may not be related to item 4. There are certain people who fail to report injuries at particular times because they don't want to be treated by certain medical personnel. As a result, some injuries never get reported.

6. **Desire to prevent work interruption.**
There are those workers who have a sincere interest and concern for getting the job done and, to them, taking the time required to go "all the way over to the first-aid area" just doesn't seem practical. Others recognize that an entire work crew could be held up by one worker's need for minor first aid. Accidents unreported for these reasons most frequently involve very minor injuries.

7. **Desire to keep personal record clear.**
It is not uncommon for organizations to give various types of tangible recognition to workers with accident-free records. Neither is it uncommon for workers to withhold information on minor injuries or damage in order to protect their own record and chance of such personal recognition.

8. **Avoidance of "red tape".**
Most supervisors have, at some time or another, heard a worker say, "Why, you have to answer two dozen questions over there, just to get a band-aid." This is the only reason given by some workers for failure to report minor accidents.

9. **Concern about attitude of others.**
Workers are generally concerned about their supervisor's attitude toward them, and want it to be favorable. The average worker wants acceptance by the work group, and is also concerned about their attitude toward him. In both cases, some workers tend to feel that since neither the supervisor nor the group wants accidents that reflect on them, it would risk those desirable relationships needlessly to report minor accidents.

10. **Poor understanding of importance.**
Again, almost everyone has heard the comment, "If I'd known how important it was, I would have reported it," or "I didn't think it was really that important." There are always people who haven't received this vital communication.

These are the ten most common reasons given for not reporting accidents.

THE POSITIVE APPROACH TO ACCIDENT-INCIDENT REPORTING

The problem of not reporting accidents and incidents is an important one, deserving special attention and concern. The knowledge gained about why accidents are not reported has led management leaders to draw certain logical cnclusions, which can assist the supervisor in getting wider reportage of incidents of all types. Here are those conclusions:

1. **React to reporting in a more positive way.**
If information can be utilized to prevent or control future incidents that could be of major or even catastrophic dimension, let the worker know the contribution his information is making. If reactions are handled properly and positively, the experience of sharing valuable predictive and preventive data will present an atmosphere of cooperation... and not one of interrogation.

2. **Give more attention to loss control performance.**
Emphasize such before-the-fact measurements as the degree of compliance with safety rules and protective equipment compliance. Give increasing attention to the group's housekeeping rating, its degree of protective equipment and safety rule compliance, etc; reward good performance with your pride in their efforts. Develop much greater interest in those measurements and records related to prevention and control, and the desired loss results and records can be achieved. The good athletic coach concentrates on measuring and improving his players' skill; he is interested in the score, but recognizes that it is skill improvement that gets the desired score.

3. **Recognize individual performance.**
Learn to pay more attention to positive worker habits and practices that are contributing to the prevention and control of downgrading incidents. Make the deserved recognition meaningful. Use earned commendations as frequently as you use warnings and discipline. In effect, develop pride in good performance rather than fear of failure.

4. **Develop a value awareness of incident information.**
Use meetings and personal contacts to emphasize the many values to be gained by everyone when incidents that could or did result in loss are properly reported. Make this an important part of every training session and meeting, particularly with new or transferred employees.

5. **Demonstrate personal belief by action.**
Make sure that information shared by incident reporting is followed up; if it is important to loss control, take action promptly. Determine what you can do immediately, and do it. There is always something that can be done, temporarily, while permanent installations and measures are being accomplished. Think in terms of education and training as well as physical needs and changes. The worker's reactions and feelings will usually reflect the supervisor's personal belief, so make sure your belief in the importance of reporting is clearly communicated by your positive, prompt action.

6. **Make mountains out of molehills!** (Incident seeds can germinate into accidents.)
Give particular emphasis to reporting of incidents that do not involve loss, or to those that seem minor but could have resulted in major loss. Highlight a really good example whenever possible, to clearly teach the benefit of reporting minor incidents. Encourage employees to share outstanding examples with the group. Have good examples typed and placed on the bulletin board after discussion, for further thought and reinforcement. In all these efforts, avoid embarrassment of individuals. Highlight the problems... not the people.

THE WHAT, WHEN AND WHY OF INCIDENT INVESTIGATION

What is an incident investigation?

Basically, an incident investigation is an analysis, evaluation, and report of an incident, based on information gathered by an investigator (most frequently the supervisor). The quality and usefulness of the information is directly related to the degree of thoroughness and conscientiousness of the investigation. A complete investigation includes the objective evaluation of all the facts, opinions, statements, and related information, as well as an action plan, or steps to prevent or control a similar recurrence.

1. ACCIDENT INVESTIGATION - A MANAGEMENT COMMITMENT

A systematic approach to accident investigation, identification of causal factors, and implementation of preventive actions is essential to a good safety and health program and management system.

A less orderly approach can increase the potential for injury and financial loss. Good accident investigation procedures:

- Provide information needed to determine injury rates, identify trends or problem areas, permit comparisons, and satisfy workers' compensation requirements
- Identify, without placing blame, the basic causal factors that contributed directly or indirectly to each accident
- Identify deficiencies in the management systems set up to control accidents
- Suggest preventive action alternatives for a given accident
- Suggest preventive action alternatives for the management system

This manual provides management supervisors, and safety personnel with a way to focus on determining those factors that cause accidents so they can recommend effective preventive actions. Its emphasis on causal factors and preventive action sets this manual apart from most other guides to investigative techniques. It provides management with a powerful tool to improve safety performance and reduce the human suffering and financial loss caused by accidents.

The fact that an accident occurred usually means something went wrong in the management system. There was an oversight, an omission, or a lack of control of circumstances that permitted the accident to occur. The accident investigation process must determine not only the causal factors that contributed to a given accident, but also the deficiencies in the management system that permitted the accident to occur.

A good accident investigation will usually yield a number of causal factors and preventive actions. The preventive actions selected should include both the specific measures needed to eliminate or reduce the probability of recurrence of a given type of accident and the measures needed to improve the management system.

When management insists on excellence in safety performance, it shows its respect for human values. It also is likely to achieve greater productivity, improved quality, lower production costs, and increased profits.

An effective accident investigation requires strong management commitment and involvement. Management must support the investigation process and act on the results. It must make sure that the investigators are capable and have sufficient resources for an adequate investigation. Otherwise, the investigation may fail to uncover serious problems, including defects in the management system that could lead to other accidents and to inefficiencies.

When management fails to show strong support, employees are likely to

believe that it is not seriously committed to safety. But management's commitment is demonstrated when a vigorous, objective investigation is conducted, with high management visibility and a focus on uncovering causal factors rather than placing blame, and the investigation is followed by decisive action to correct deficiencies. This demonstration of management's attitude can not only enhance productivity; it can encourage employee cooperation and interest in maintaining a safer workplace.

2. PRINCIPLES OF ACCIDENT INVESTIGATION

An accident is an unplanned, undesired event that results in personal injury or property damage. An accident investigation should determine what happened, how it happened, and why it happened, and what should be done to prevent similar accidents.

The method presented in this manual is flexible.

Flexibility, however, does not mean abandoning common sense. The investigation should be limited to factors that relate directly to the accident.

The investigation should follow a sound plan, developed and tested before an accident occurs. The plan should guide the investigators from the moment they learn of the accident until they release the final report. Following the plan described in this manual will lead to the best results although unusual circumstances may dictate occasional deviations from the tested, structured approach.

Investigation Criteria

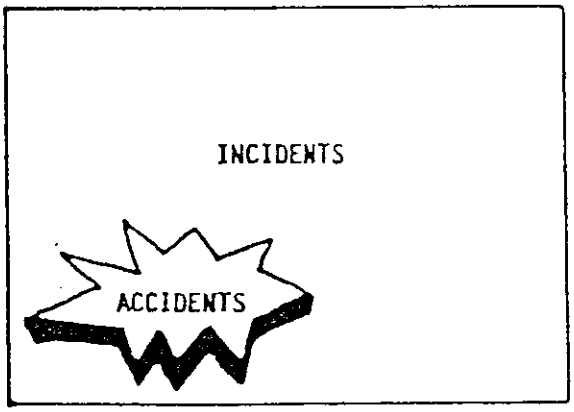


FIGURE 1: Accidents are a part of a broad group of events that adversely affect the completion of a task. All of the events in this group are called incidents.

All Lost Time Accidents should be investigated, regardless of the extent of injury or property damage.

An accident that involves injuries requiring medical treatment normally requires extensive investigation.

An accident that doesn't involve injuries but involves significant property damage, also will normally require extensive investigation.

An accident that involves only first aid or very minor property damage should be investigated, but will not require extensive investigation. An extensive investigation is warranted, however, if there was a potential for more serious consequences.

An incident is an unplanned, undesired event that adversely affects completion of a task. All accidents are incidents. Incidents that have the potential to result in personal injury or property damage should be investigated in the same way that accidents are investigated.

To minimize special terminology, this manual's use of the term injury includes any illness that results from a single or identifiable event, and its use of the term safety includes occupational health.

No Blame Placing

The aim of any accident investigation is to identify the causal factors and recommend preventive actions that will emininate or minimise them. Investigators should avoid any emphasis on identifying the individuals who could be blamed for the accident. Looking for someone to blame jeopardizes the investigators' credibility and effectiveness and will usually reduce the quantity and accuracy of the information recevied.

This does not mean that relevant oversights or acts of omission or commission on the part of hourly employees, supervisors, or other management personnel should be ignored. Many accidents result from actions someone did or did not do, know about, or judge correctly.

Investigation Group

The size and makeup of the investigation group should be dictated by the accident's seriousness or complexity. The supervisor alone, or with the help of the employees involved, usually investigates cases resulting in Lost Time Accident (LTA), Medical Treatment Accident (MTA), minor injury or property damage.

The group for a major investigation involving a serious injury, a fatality, or extensive property damage might include the employee(s) directly involved, the supervisor, safety personnel, technical specialists, and employees familiar with the process or operation. If there is a fatality or a major property damage accident, the team may include Head Office safety and health staff and Head Office officers. A group can add more members as the investigation uncovers complications, injury, or damage potential that was not recognized when the group was formed.

Action Plan

When an accident occurs, the investigator(s) must be ready to act immediately to turn chaos into order. There's no time for training after the accident. Investigator(s) need advance training and preparation so they can act promptly and effectively.

Local management should adopt a written action plan for group investigations. The plan should provide for:

- Identification of the individual who is in charge and assigns responsibilities
- Authority to conduct the investigation
- Prompt notification of group members that specifies when and where they should report
- Instructions on the personal protective clothing or special equipment to be worn or brought to the scene
- Provisions for a work area and administrative support
- Transportation and communication, if needed
- Securing the accident site for the duration of the investigation after rescue and damage control are complete
- Provision for access of the group members to the accident site
- Photographic support or capability
- Procedures and equipment to ensure the observation and recording of fragile, perishable, or transient evidence (for example, instrument readings, weather and other environmental conditions, chemical spills, stains, skid marks)
- Development of a comprehensive report

Immediate Action

The safety and health of employees, visitors, and the public must be the primary concerns immediately after an accident. Activities related to the investigation are important, but they are secondary. The first response must be to:

- Take all steps necessary to provide emergency rescue and medical help for the injured.

. Take those actions that will prevent - or minimize the risk of - further accidents, injury, or property damage.

These immediate actions are stopgap measures to prevent further adverse consequences.

Determining the Facts in Major Accidents

As stated earlier, the level of effort involved in the investigation largely depends on the seriousness or complexity of the accident. Investigators should perform only those tasks that are pertinent to identification of the causal factors. For a major investigation, the accident investigation group should:

. Visit the accident scene before the physical evidence is disturbed.

. Take samples of unknown chemical spills, vapors, residues, pesticides, and other substances, noting conditions that may have affected the sample.

. Make comprehensive visual records. No one can predict in advance which data will be useful, so photographs should be taken from many different angles and accurate and complete sketches or diagrams should be made before the accident scene is restored.

. Determine which accident-related items should be preserved. These may become critical evidence if there is litigation later. When the investigation reveals that an item may have failed to operate properly, or was damaged, arrangements should be made either to preserve the item as it was found at the accident scene or to document carefully any subsequent repairs or modifications.

. Identify the people who were involved in the accident. Also identify all eyewitnesses, including those who saw the events leading to the accident, those who saw the accident happen, and those who came upon the scene immediately following the accident. Identify others who may have useful information.

. These people should be interviewed as soon as possible. The validity of their statements is highest immediately after the accident. Immediate interviews minimize the possibility that witnesses will subconsciously adjust their stories to fit the interviewer's concept of what occurred or to protect someone involved. Witnesses should be interviewed individually and in private so the comments of one do not influence the responses of others.

. Conduct interviews with everyone who was involved or can provide information. Tactful, skilled investigators usually get uninhibited cooperation from employees by eliminating any apprehension they may have about incriminating themselves or others. Witnesses must be convinced that the investigators want to find the cause of the accident and don't want to place blame. If witnesses provide misleading information, the purpose of the investigation is thwarted and a similar accident may occur again.

. Carefully document the sources of information. This documentatin avoids an unwarranted impression that information actually obtained from third parties is based on the investigator's own observations or analysis. Documentation of information sources can prove

valuable if the accident investigation is expanded at some point or reopened later. Note any contradictory statements or evidence and attempt to resolve discrepancies. If resolution is not possible, indicate which statements or evidence are considered most reliable.

- Review all sources of potentially useful information. These may include original design; design specifications; drawings; operating logs; purchasing records; previous reports; procedures; equipment manuals; verbal instructions; maintenance, inspection, and test records; alteration or change of design records; design data; job safety analysis; records indicating the previous training and job performance of the employees and supervisors involved; computer simulations; and laboratory tests.

Facts must be separated from opinions, direct evidence from circumstantial evidence, and eyewitness statements from hearsay testimony. Investigators should divide the data they collect into the following categories:

HARD EVIDENCE: Data that usually cannot be disputed, such as the time and place of the accident, logs and other written reports, and the position of physical evidence (providing investigators can establish that it has not been moved).

WITNESS STATEMENTS: Statements from persons who saw the accident happen and from those who came upon the scene immediately following the accident.

CIRCUMSTANTIAL EVIDENCE: The logical interpretation of facts that leads to a single, but unproven, conclusion. Investigators should be cautious in handling such physical evidence as pieces of equipment and tools. After visual assessment of the extent of damage or defects, it may be necesary to send this evidence to a laboratory for further analysis of failures or fractures. In such cases, the equipment should be identified, tagged, and secured.

Investigators should not attempt to reassemble failed or damaged equipment at the accident site. Such attempts might prevent an accurate laboratory analysis. It is also unwise to disassemble damaged equipment unless the correct reassembly procedure is known. In most cases, the investigators should determine what analysis is needed and leave the actual analysis to those who are qualified to conduct tests.

If a fatality is involved, investigators should not attempt to determine the cause until a coroner issues a preliminary report indicating a cause.

Investigators must understand that the accuracy and thoroughness with which they obtain and record data will largely determine the quality of the final report and the effectiveness of the preventive actions.

3. THE GUIDE FOR IDENTIFYING CAUSAL FACTORS AND PREVENTIVE ACTIONS

The Guide for Identifying Causal Factors and Preventive Actions is the first key document in this manual. A sample appears at the end of this section on pages 22 through 31. Completion of the Guide is essential in this new method. It focuses on the four elements of a basic system: equipment, work environment, people, and management - which brings the first three elements together and controls them. These four system elements are combined to make organisations work efficiently. But sometimes they work together in unexpected ways to produce accidents.

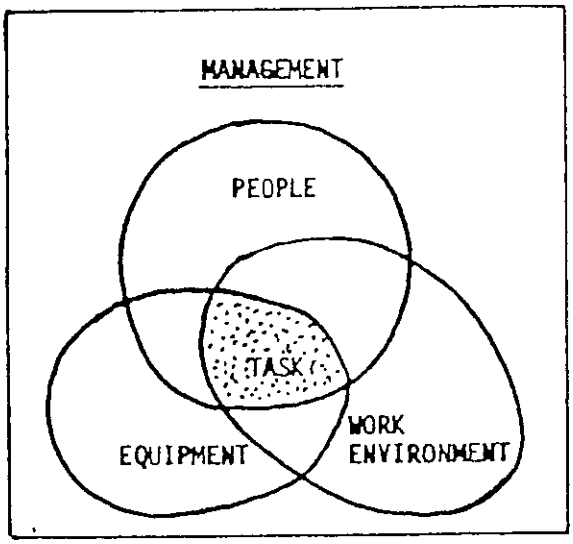


FIGURE 2: A basic system in which people, equipment, and work environment are managed to accomplish a task.

The accident investigation method should focus on three key tasks.

The first is identification of the causal factors that resulted in the accident.

The second is identification of the preventive actions that will minimize the likelihood of a similar accident and also will minimize the severity or adverse consequences of a similar accident if it should occur.

The third task is selection of the preventive actions that have the best chance of reducing the risk.

Identifying Causal Factors

The causal factor identification procedure in the Guide can be applied to any workplace accident. It is based on a simple YES or NO response to a series of questions. The Guide is divided into four parts: Equipment, Work Environment, People, and Management. Each part has one or two basic questions. Your answers to the basic questions determine how you will proceed through the other questions in that part.

For example, the first basic question in PART I, EQUIPMENT, is "Was hazardous equipment a contributing factor?" If the answer is YES, answer the remaining questions under "Causal Factors". If the answer is NO, proceed to the next part of the Guide.

Answer all questions by placing an X in the "Y" circle or square for YES or in the "N" circle or square for NO.

Marks in the squares will signify that the corresponding items are not causal factors.

Marks in the circles will signify that the items are causal factors.

Since accidents rarely have a single cause, this process usually yields more than one causal factor for each accident.

Use the "Comment" column to the right of the "Causal Factors" questions to record specifics about the accident under investigation.

Provide a comment for each item identified as a causal factor; that is, items for which X's appear in circles.

Identifying Preventive Actions

A preventive action is a response to eliminate a deficiency of some kind. The Guide lists several "Possible Preventive Actions" for each causal factor. These suggested actions are stated in general terms. They guide the investigators in identifying specific preventive actions that relate to the accident they are investigating.

The "Possible Preventive Actions" are intended to strengthen the overall safety programs and eliminate or minimize such management system defects as oversights, omissions, or lack of control. Of course the list of actions in the Guide cannot cover every imaginable contingency. Investigators, therefore, also should consider other preventive actions.

In the "Recommended Preventive Actions" column, list specific preventive actions that can be taken to minimize or eliminate the causal factors that resulted in the accident. The list should include remedies to eliminate defects that have been identified in the management system. Each recommended preventive action should be considered a possibility for implementation. For each Recommended Preventive Action indicate where you see the responsibility for implementing the action. i.e. Personal (name), Local Management or Departmental responsibility?

Selecting Preventive Actions

Most investigations will suggest several recommended preventive actions. Usually more than one preventive action from this list of possibilities will be chosen for implementation. Some are bound to be more effective than others. And some are bound to be more costly than others. Factors that usually influence the selection include:

- Effectiveness
- Cost
- Feasibility
- Effect on productivity
- Time required to implement
- Extent of supervision required
- Acceptance by employees
- Acceptance by management

Preventive actions that best fulfill these criteria offer optimum possibilities for reducing risk.

4. THE PERSONAL INJURY ACCIDENT INVESTIGATION REPORT

The preceding sections described general principles and procedures that apply to any accident investigation. Three key documents are presented in this manual to assist with accident investigation. The first key document, the **Guide for Identifying Causal Factors and preventive Actions**, was described in this preceding section. This section tells how to complete the second key document, the **Personal Injury Accident Investigation Report**, a form that serves as an investigation guide and as a record of the facts obtained (see pages 11-12). The third key document, the **Summary of Causal Factors**, helps investigators to compile and analyze data from many accidents.

When used together, the Report and the Guide tell investigators what questions to ask, what factors to investigate, and what other information to document as part of the permanent record of the accident and its aftermath. They also help investigators to identify causal factors and preventive actions.

The Report is designed primarily for investigation of accidents involving injuries, but also can be used to investigate occupational illnesses arising from a single exposure (for example, dermatitis caused by a splashed solvent or a respiratory condition caused by the release of a toxic chemical or gas).

All questions on this form should be answered. If no answer is available, or the question does not apply, the investigator should so indicate. Answers should be complete and specific. Supplementary sheets can be used for other information, such as drawings and sketches, and should be attached to the Report. **A separate form should be completed for each employee who is injured in a multipe-injury accident.**

The individual entries in the Report form are explained below:

REGION, DISTRICT, BRANCH - Enter the region, district and/or branch or other local identification of the work area to which the injured is assigned (for example, maintenance workshop or laboratory). In some cases, this may not be the area in which the accident occurred.

1. NAME OF INJURED - Record the last name, first name (and middle initial if known).
2. SEX
3. AGE - Record the age bracket of the injured.
4. DATE OF ACCIDENT - State date of accident or initial diagnosis of illness and date accident reported.
5. PERSONS USUAL OCCUPATION - Give the occupation to which the person is normally assigned (for example, Ranger, typist, ...).
6. TASK AT TIME OF ACCIDENT - Indicate the task on which the injured was working at the time of the accident. In some cases, this may not be the employee's usual occupation.
7. EXPERIENCE IN TASK AT TIME OF ACCIDENT - Tick one square to show the experience the injured person had on the task indicated in Item 6.
8. EMPLOYMENT CATEGORY - Indicate injured's employment category at the time of the accident.
9. LENGTH OF EMPLOYMENT - Tick the appropriate square to indicate how long the person has worked for CALM.

10. PIECEWORKER - Tick the appropriate square.
11. PART OF BODY INJURED (Tick one square only) - Tick one square to show part of body injured. For multiple injuries tick square 10.
12. NATURE OF INJURY (Tick one square only) - Tick one square to show the kind of injury or injuries resulting from the accident.
13. NAMES OF OTHERS INJURED IN SAME ACCIDENT (if any) - Enter names of other persons injured in the accident and indicate whether they were CALM employees or not.
14. TIME OF ACCIDENT
15. DAY OF WEEK OF ACCIDENT
16. NAME AND ADDRESS OF DOCTOR OR NURSE who treated injured persons.
17. DATE FIRST ATTENDED - Enter date injured person first attended doctor or nurse.
18. RETURN TO WORK - Indicate whether injured person returned to normal duties, was given alternate work or was declared unfit for work. Also see medical certificate for guidance.
19. NAME AND ADDRESS OF HOSPITAL
20. SPECIFIC LOCATION OF ACCIDENT - Tick one square only. Use space to specify location if different from those listed. Attach a diagram or map if it would help to identify location.
21. SEVERITY OF INJURY - Check the highest degree of severity of injury. The options are listed in increasing order of severity.

22(a) WAS A CHAINSAW INVOLVED IN ACCIDENT - If a chainsaw was involved in any way in the accident please indicate. Details of the part played by the chainsaw in the accident should be entered in Box 26.

22(b) DID ACCIDENT OCCUR DURING FIRE CONTROL - if yes, explain details in Box 25.

23. INJURED PERSON WAS WORKING ALONE/ WITH OTHER WORKERS - "Working with Others" means that the injured person was directly assisting other persons when the accident occurred.
24. SUPERVISION AT TIME OF ACCIDENT - Indicate in the appropriate square whether, at the time of the accident, the injured employee was directly supervised, indirectly supervised, or whether direct supervision was not practicable at the time.
25. DESCRIBE HOW THE ACCIDENT OCCURRED - Provide a complete, specific description of what happened. Tell what the injured and others involved in the accident were doing prior to the accident; what relevant events preceded the accident; what objects or substances were involved; how the injury occurred and the specific object or substance that inflicted the injury; and what, if anything, happened after the accident. Include only facts obtained in the investigation. Do not record opinions or place blame.
26. CAUSAL FACTORS - Record the causal factors (events and conditions that contributed to the accident) that were identified by use of the Guide for Identifying Causal Factors and Preventive Actions. Remember Causal Factors are identified by the CIRCLES marked in the Guide to Identifying Causal Factors and Preventive Action. It is important to list the guide question no's in the Report.
27. PREVENTIVE ACTIONS - Describe the preventive actions taken immediately after the accident to prevent a recurrence, including the temporary or interim actions and the permanent actions. Record other recommended preventive actions selected from the Guide for Identifying Causal Factors and preventive Actions. Include any other preventive actions as requested. In each case nominate the person responsible for action and the date action to be completed by.
28. SIGNATURES - Do not delay sending the report form pending signature of injured person. Report form must be sent to Head Office within ten days of accident occurring.

CLM 6

PERSONAL INJURY ACCIDENT INVESTIGATION REPORT

ACCIDENT SERIAL NO.

(Complete the Guide for Identifying Causal Factors and Preventive Actions before completing this form. Please send this form to SOHS within 10 days)

REGION _____ BRANCH _____

DISTRICT _____

1 NAME of INJURED	2 SEX M ☐ F ☐	3 AGE ☐ Under 20 ☐ 20–29 ☐ 30–39 ☐ 40–49 ☐ 50–59 ☐ Over 59

4 (a) DATE of ACCIDENT (b) DATE ACCIDENT REPORTED	5 PERSONS USUAL OCCUPATION	6 TASK at TIME of ACCIDENT (also see 7)	7 EXPERIENCE in TASK at TIME of ACCIDENT ☐ None ☐ Average ☐ A little ☐ Very Experienced

8 EMPLOYMENT CATEGORY ☐ Full Time ☐ Unemployment Relief ☐ Part-time ☐ Seasonal	9 LENGTH of EMPLOYMENT ☐ Less than 3mo ☐ 3 mos to 1 yr ☐ 1-5 years ☐ More than 5yrs	10 PIECEWORKER Yes ☐ No ☐

11 PART of BODY INJURED (Tick one box only)

Head	☐ 01	Arm	☐ 04	Trunk/back	☐ 08
Eyes	☐ 02	Hand	☐ 05	Trunk/other	☐ 09
Neck	☐ 03	Leg	☐ 06	Multiple	☐ 10
		Foot	☐ 07	Other	☐ 11

12 NATURE of INJURY (Tick one box only)

Fracture	☐ 01	Amputation	☐ 05	Shock, Heart Attack	☐ 10
Dislocation	☐ 02	Laceration, other open wound	☐ 06	Bite (snake; insect, animal)	☐ 11
Sprain, strain	☐ 03	Contusion, crushing	☐ 07	Multiple	☐ 12
Concussion, other internal	☐ 04	Burn, scald	☐ 08	Other	☐ 13
		Inhalation of gas	☐ 09	Harmful Contacts	☐ 14

13 NAMES of OTHERS INJURED in SAME ACCIDENT (if any) CALM Employee(s) ☐ Yes ☐ No (please tick)	14 TIME of ACCIDENT AM PM	15 DAY of WEEK

16 NAME and ADDRESS of DOCTOR or NURSE (if applicable)	17 DATE FIRST ATTENDED	18 RETURN TO WORK ☐ Returned to normal duties ☐ Given alternative work ☐ Unfit for work

19 NAME and ADDRESS of HOSPITAL (if applicable)	20 SPECIFIC LOCATION of ACCIDENT ☐ Field ☐ Office ☐ Workshop ☐ Laboratory ☐ Other (specify)

21 SEVERITY of INJURY

☐ Near hit or first aid with potential for serious injury

☐ MTA ☐ LTA ☐ Fatality

22 (a) WAS A CHAINSAW INVOLVED in ACCIDENT?

☐ Yes ☐ No

(b) DID ACCIDENT OCCUR DURING FIRE CONTROL?

☐ Yes ☐ No

23 PERSON WAS WORKING

☐ Alone

☐ With other workers

24 SUPERVISION at TIME of ACCIDENT

☐ Directly Supervised

☐ Indirectly Supervised

☐ Direct Supervision not practicable

25 DESCRIBE HOW the ACCIDENT OCCURRED

26 CAUSAL FACTORS. Events and conditions that contributed to the accident. Include those identified by use of the Guide for Identifying Causal Factors and Preventive Actions. i.e. where circles are marked. Remember to indicate guide question no. in this report.

Guide Q.No.	

27 PREVENTIVE ACTIONS. Those that have been, or will be, taken to prevent recurrence. Include those identified by use of the Guide for Identifying Causal Factors and Preventive Actions.

	Responsibility for Preventive Action (see Guide)	Date action to be completed by

28 SIGNATURES: (Do not delay sending this form pending signature of injured person)

Injured Person (if possible).....Date despatched to SOHO.....

Overseer or Job OIC .....Date despatched to Region.....

Regional/District Safety Officer .....

Regional/District/Branch OIC .....

5. CASE STUDY

CASE STUDY: INJURY ACCIDENT INVOLVING LIGHT PATROL VEHICLE (LPV) AND USE OF LADDER IN NARROW PASSAGE-WAY.

INJURED: An employee with 14 years experience.

ACCIDENT DESCRIPTION: About 9 a.m. on July 14, the employee climbed a 4 metre straight ladder to repair a damaged gutter on a District office building located in a narrow laneway between buildings. The laneway was used by vehicles on rare occasions. After the employee climbed the ladder, he attempted to straighten the gutter. A glance at the gutter revealed he would need a soldering iron. He told his assistant, who had been holding the ladder, to go to the store and get the soldering iron. A moment after the assistant left, and while the employee was in the process of cleaning the gutter, a light patrol vehicle (LPV) loaded with 450l of water, suddenly rounded the corner of the building, into the laneway and struck the ladder, knocking the employee and the ladder to the ground.

INJURIES: Broken arm, fractured ribs, and multiple contusions.

OTHER INFORMATION: The driver of the vehicle claimed he could not stop in time to avoid hitting the ladder because of faulty brakes. A later examination confirmed worn brakes, but no other defect in the braking system. The driver stated he thought he could have stopped in time to avoid hitting the ladder if the brakes had been in good working order. He said he experienced some brake problems earlier in the week, but did not report the problems because he felt they were not serious enough to constitute a hazardous condition. He did, however, know the reporting procedure. Although there were procedures for inspection of light patrol vehicles (LPV) by the workshop, there had been frequent reports of difficult braking on LPV's in the past when they are loaded with water.

The repair of the gutter was a non-recurring task. There was no written job procedure, but the established job procedure was known by the employee and by the supervisor. The supervisor did not discuss or review the potential hazards associated with the job, or the job procedure, with the employees before they started the job. The job procedure did not call for barricades, warning signs, or signals to be placed around the ladder or at the end of the laneway to warn any traffic of the obstruction. Both employees were wearing safety helmets. The supervisor had experienced earlier problems in recognizing or anticipating hazardous conditions during maintenance work.

Case Study

This section shows how to complete the Guide and the Report in an actual accident investigation. The step-by-step explanations show how this accident investigation method identifies causal factors. They also show how this method guides the investigators toward a number of possible preventive actions from which they can select those most likely to satisfy the criteria listed on page 8.

The Case Study on page 13 describes a possible accident. Pages 14 through 21 show how the investigators would use the **Guide for Identifying Causal Factors and Preventive Actions** to analyze the Case Study. A completed Guide for this case is on pages 22 through 31.

The completed Guide yields a list of causal factors and possible preventive actions. To complete the investigation, the investigators would record the causal factors identified in Box 26 of the **Accident Investigation Report.** They would record the preventive actions selected for implementation in Box 27.

Pages 32 and 33 show a completed **Accident Investigation Report** for this accident. Note how carefully the investigators have discriminated between the accident event and the injury event and how many causal factors and corrective actions they have listed.

How to Use the Guide for Identifying Causal Factors and Preventive Actions

The following example shows how the **Guide for Identifying Causal Factors and Corrective Actions** would be used for the Case Study on page 13.

REMINDER: An X in a circle identifies a causal factor. An X in a square indicates that the item is not a causal factor.

PART 1 - EQUIPMENT	
(X) Y ☐ N	1.0 WAS HAZARDOUS EQUIPMENT A CONTRIBUTING FACTOR?
	CAUSAL FACTORS
(X) Y ☐ N	1.1 Did any defect(s) in equipment, tools or material create a hazard?

An equipment hazard existed. The answer to question 1.0 is an X in the YES circle. The LPV's brakes were defective. The answer to question 1.1, an X in the YES circle, identifies a causal factor.

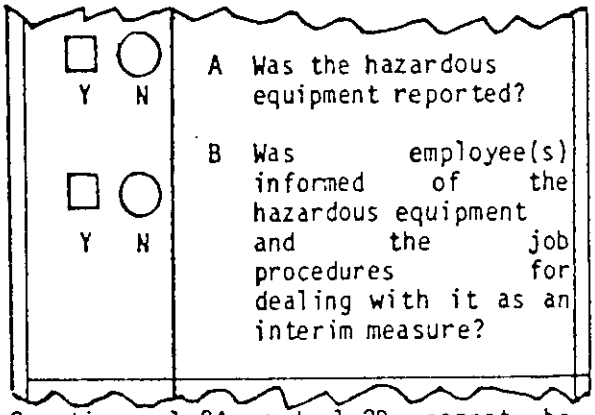
RECOMMENDED PREVENTIVE ACTION: Remove the LPV from service and repair the faulty brakes. To avoid faulty brakes on this and other similar LPVs in the future, review the procedures for inspecting and maintaining brakes on all such LPVs and implement changes to improve these procedures.

☐ Y (X) N	1.2 Was the hazardous equipment recognized?

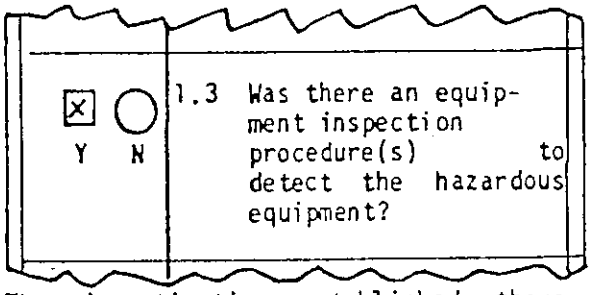
The hazardous equipment was not recognized. The driver did not consider the faulty brakes a hazard. An X in the NO circle identifies another causal factor.

RECOMMENDED PREVENTIVE ACTION: Improve the ability of all drivers to identify defects and hazards with respect to their equipment. Ensure that Fault Report Form is available in all vehicles. Require all drivers to report faulty brakes immediately to workshop.

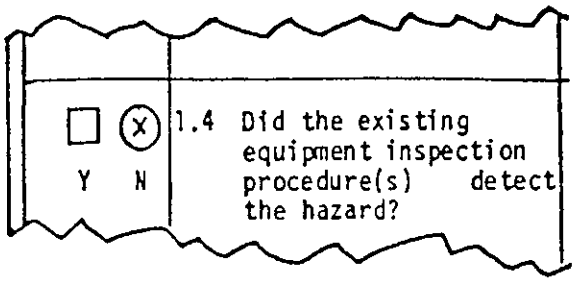
(Note that this preventive action goes beyond the one driver who was involved in the accident. The preventive action is applied to all LPV drivers because other defects on other such LPVs should be identified to avoid future accidents.)



Questions 1.2A and 1.2B cannot be answered because the hazardous condition was not recognized.

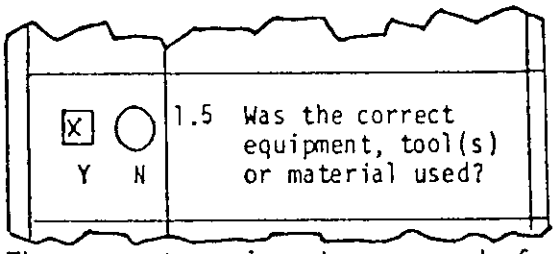


The investigation established there were inspection procedures in effect for LPVs that were carried out by the workshop staff only. The YES square is marked.

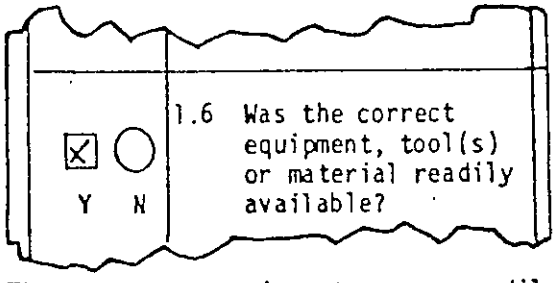


The routine inspection procedures failed to detect faulty brakes on the LPV. Also, the investigation revealed that there had been frequent reports of faulty brake problems on these vehicles in the past. This indicates there may be something wrong with the workshop's existing maintenance procedures for detecting this kind of defect. An X in the NO circle identifies another causal factor.

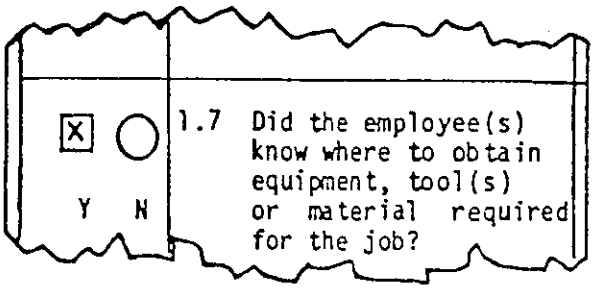
RECOMMENDED PREVENTIVE ACTION: Review the frequency and procedures for inspection and maintenance of brakes by the workshop staff that services LPVs. Implement changes to remove any deficiencies.



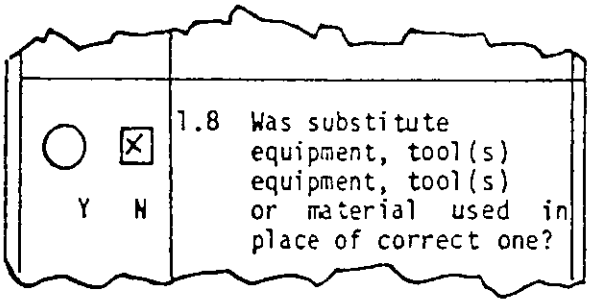
The correct equipment was used for this job. The YES square is marked.



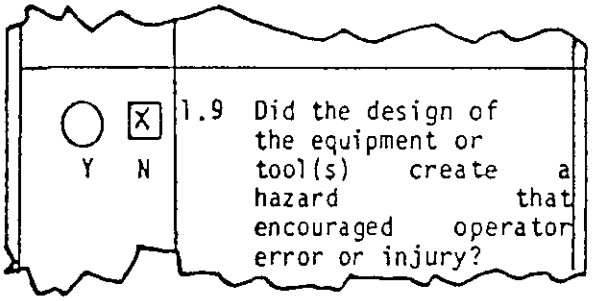
The correct equipment was readily available. The YES square is marked.



Both employees knew where to obtain the equipment and tools necessary to do this job. The YES square is marked.



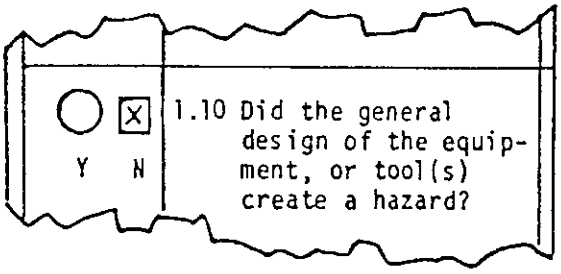
Substitute equipment or tool was not used. The NO square is marked.



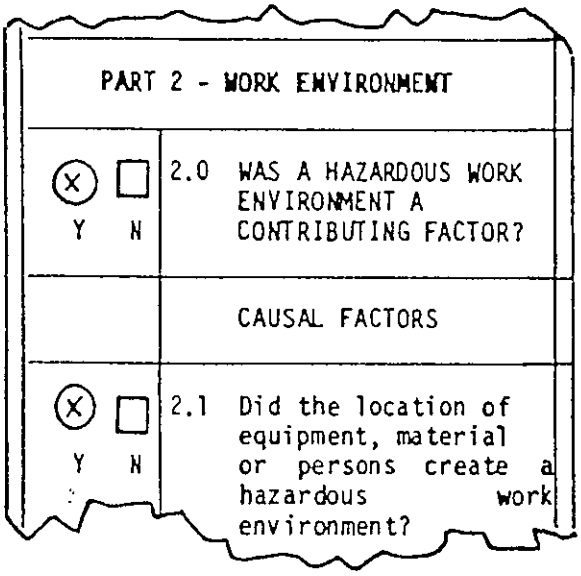
This question should examine if design encouraged operator error. Poor equipment design can encourage an operator error. For example, rotating a water control clockwise will normally cause something to decrease. An anticlockwise rotation normally will cause water flow to increase. If the design of the equipment required an operator to increase flow by rotating a control clockwise, this would encourage an operator error, especially in an emergency situation.

The investigation should not ignore how the design of equipment might contribute to operator error.

The design of the equipment in this case did not encourage operator error. The NO square is marked.

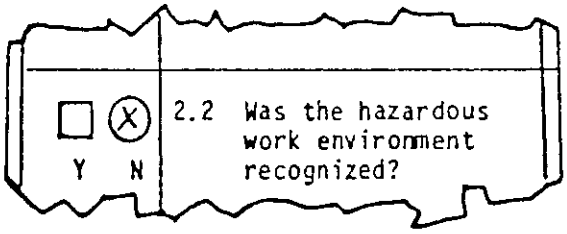


An examination of the braking system revealed only worn brakes, no other defects. Therefore the brake design was not a causal factor. The NO square is marked.



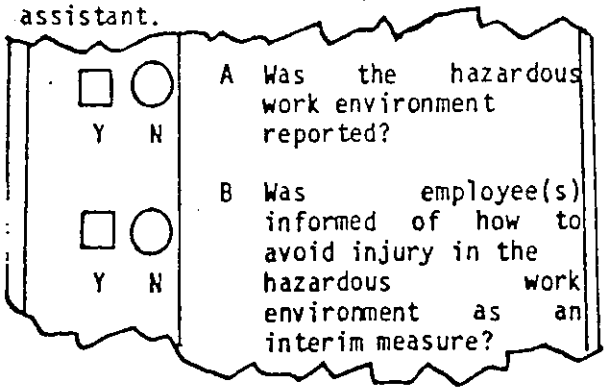
An X in the YES circle for 2.0 shows the ladder's location was a contributing factor. Placing a ladder, without perimenter warnings, in a laneway used by vehicles created a hazard. An X in the YES circle for 2.1 identifies a causal factor.

RECOMMENDED PREVENTIVE ACTION: A review of the job procedures revealed that overhead work performed from ladders and scaffolds did not require perimeter barriers or warnings of any kind. The preventive action is to change the job procedures for all overhead work involving ladders and scaffolds to require barricades, warning lights, or similar devices to protect the work area when there is a possibility of pedestrian or vehicular traffic.

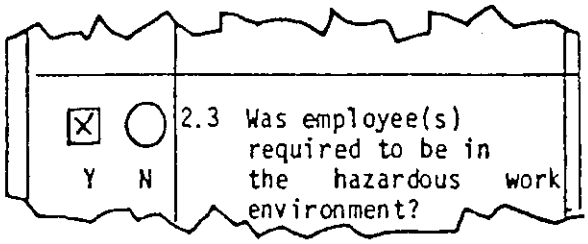


Neither the injured employee nor his assistant realized that a hazardous work environment had been created by placing the ladder in the laneway used by vehicles. The NO circle is marked to identify another causal factor.

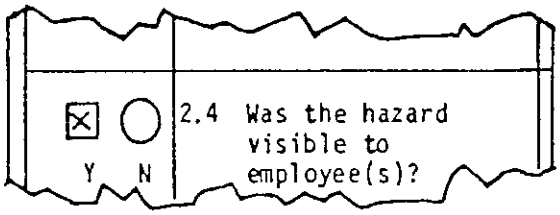
RECOMMENDED PREVENTIVE ACTION: All employees, especially maintenance personnel, should possess some skills that enable them to recognize existing or potential hazardous work environments. The preventive action is to improve the ability of all maintenance employees to recognize existing or potential hazardous work environments created by the location or position of equipment or material. Note that the preventive action applies to all maintenance employees, not just the injured person and his assistant.



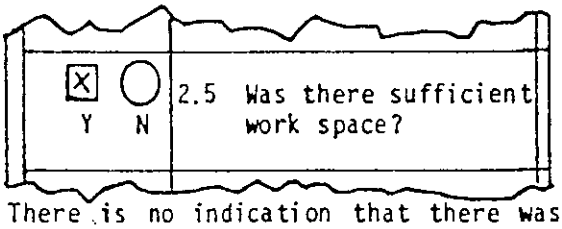
In accordance with the instructions, questions 2.2A and 2.2B cannot be answered because the placement of the ladder was not recognized as one that created a hazardous work environment.



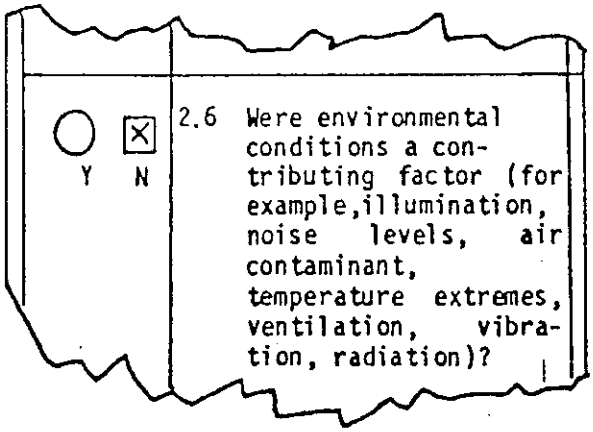
In order to repair the gutter, the injured employee was required to be on a ladder in the laneway where the accident occurred. The YES square is marked.



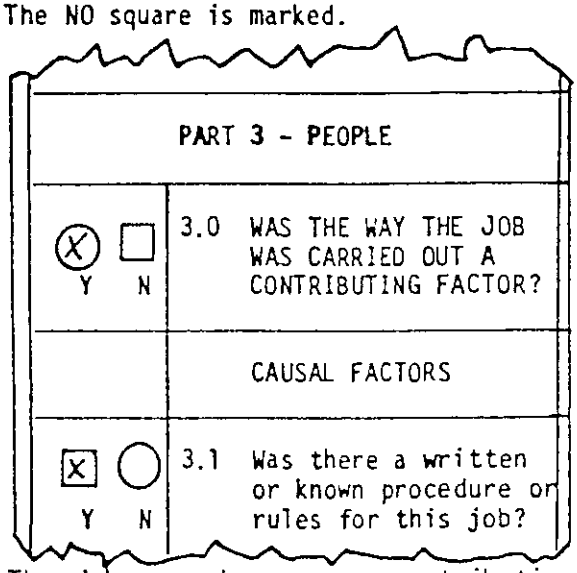
The hazard created by the ladder in the laneway was seen by the driver but, because of faulty brakes, not in time to avoid hitting the ladder. The YES square is marked.



There is no indication that there was insufficient workspace to repair the gutter. The YES square is marked.

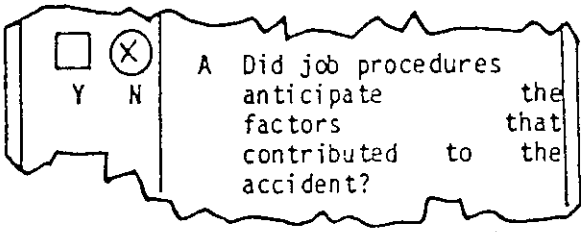


No adverse environmental conditions were revealed in the investigation. The NO square is marked.



		PART 3 - PEOPLE
Y (X)	N ( )	3.0 WAS THE WAY THE JOB WAS CARRIED OUT A CONTRIBUTING FACTOR?
		CAUSAL FACTORS
Y (X)	N ( )	3.1 Was there a written or known procedure or rules for this job?

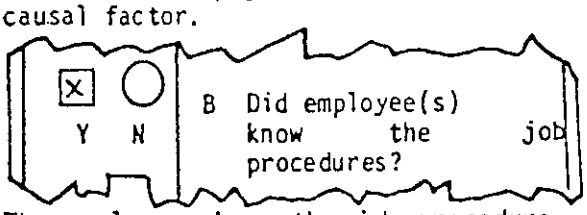
The job procedure was a contributing factor. Investigation showed the supervisor and injured employee knew the procedure for repair of roofs, gutters etc. The YES squares are marked for 3.0 and 3.1.



Y ( )	N (X)	A Did job procedures anticipate the factors that contributed to the accident?

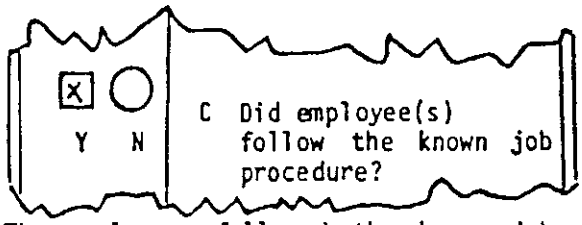
The job procedures did not anticipate vehicular traffic in the laneway where the ladder was placed. The job procedures were deficient. An X in the NO circle identifies another causal factor.

RECOMMENDED PREVENTIVE ACTION: The preventive action recommended for Item 2.1 (see page 17) addresses this causal factor.



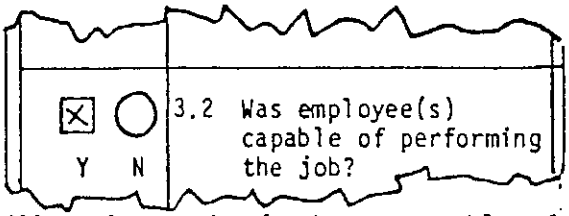
Y (X)	N ( )	B Did employee(s) know the job procedures?

The employees knew the job procedure, but did not know the procedure was defective. The YES square is marked.



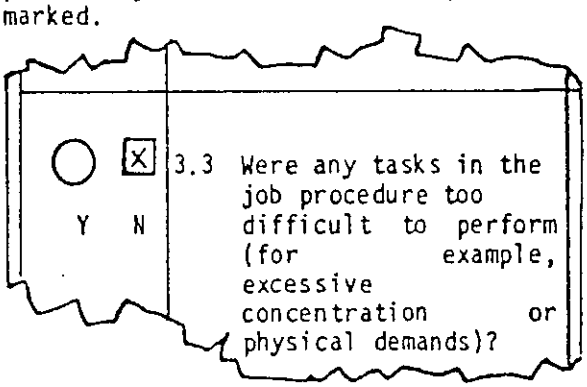
Y (X)	N ( )	C Did employee(s) follow the known job procedure?

The employees followed the known job procedure. The YES square is marked.



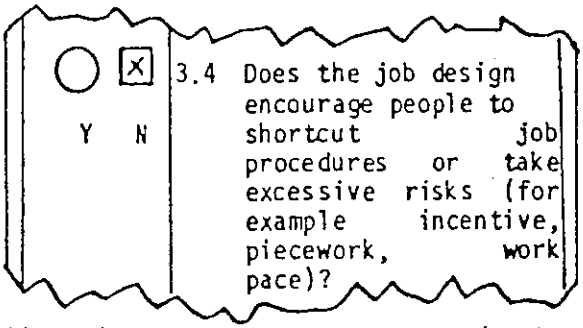
Y (X)	N ( )	3.2 Was employee(s) capable of performing the job?

All employees involved were capable of performing the job. The YES square is marked.



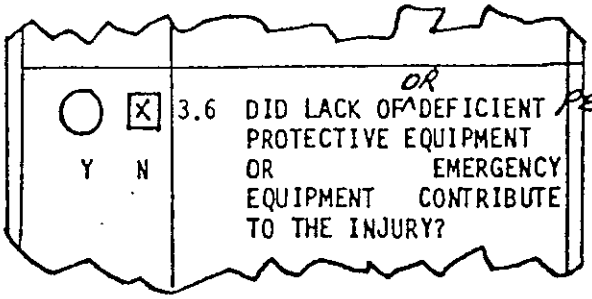
Y ( )	N (X)	3.3 Were any tasks in the job procedure too difficult to perform (for example, excessive concentration or physical demands)?

There were no excessive tasks involved in this job. The NO square is marked.



Y ( )	N (X)	3.4 Does the job design encourage people to shortcut job procedures or take excessive risks (for example incentive, piecework, work pace)?

The job was not structured to encourage deviation from the job procedures. The NO square is marked.



Y ( )	N (X)	3.6 DID LACK OF OR DEFICIENT PROTECTIVE EQUIPMENT OR EMERGENCY EQUIPMENT CONTRIBUTE TO THE INJURY?

PERSON

Lack of personal protective equipment or emergency equipment was not a contributing factor in the injury. The NO square is marked.

If the answer were YES, the ten questions in this set would require answers. Since the answer was NO, we go directly to PART 4.

PART 4 - MANAGEMENT	
Y ⊗ N ☐	4.0 WERE DEPARTMENTAL OR LOCAL MANAGEMENT PRACTICES A CONTRIBUTING FACTOR?
	CAUSAL FACTORS
Y ⊗ N ☐	4.1 Could Departmental or local management procedures to detect or report hazards be improved?

A management system defect was a contributing factor. The answer to 4.0 is an X in the YES circle. The supervisor did not anticipate that placing a ladder in this laneway used by vehicles would create a hazardous work environment. An X in the YES circle for 4.1 identifies a causal factor.

RECOMMENDED PREVENTIVE ACTION: Supervisory skills in hazard recognition need to be upgraded. The preventive action recommended is to improve the ability of supervisors to recognize and anticipate hazardous conditions.

Y ○ N ☒	4.2 Could local management procedures to detect or correct deviations from job procedure be improved?

There was no failure to detect or correct deviations from the job procedure. The NO square is marked.

Y ⊗ N ☐	4.3 Was this an infrequently performed task?

If YES, Answer A. If NO, proceed to 4.4

Y ☐ N ⊗	A Did the supervisor review hazards and job procedures with the employee?

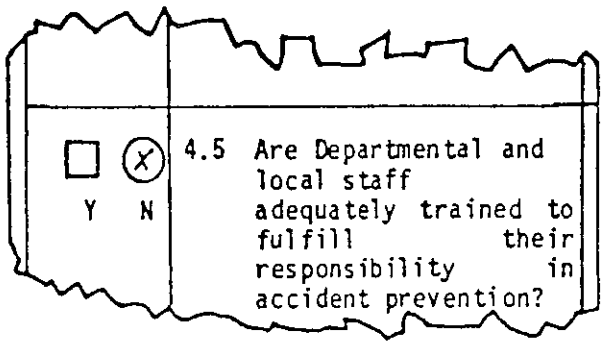
The answer to 4.3 is an X in the YES square.

The supervisor did not review existing or potential hazards or the job procedures with the two employees before they started the repair job. An X in the NO circle identifies another causal factor.

RECOMMENDED PREVENTIVE ACTION: Establish a procedure that requires all supervisors to review hazard potential and job procedures on tasks that are performed infrequently.

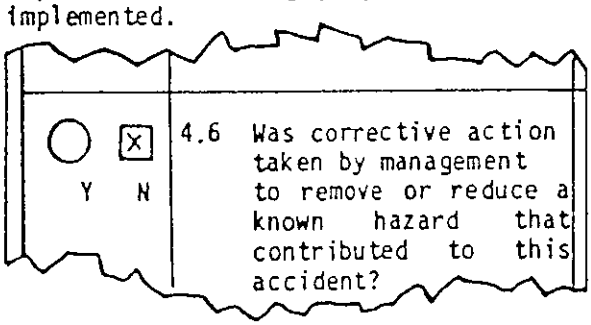
Y ☒ N ○	4.4 Did Departmental and local staff know what was expected of them to prevent this accident?

The investigation established that the supervisor fully understood what was expected of him to prevent this accident. The YES square is marked.



The investigation revealed that the supervisor had previous problems in recognizing or anticipating hazards. This would indicate that his training in this area was inadequate. An X in the NO circle identifies another causal factor.

RECOMMENDED PREVENTIVE ACTION: In addition to the preventive action recommended in Item 4.1, above, there should be a review of the supervisor training program concerning hazard recognition. The changes necessary to improve the training program should be implemented.



There was no failure to initiate corrective action for known hazards that contributed to this accident. The NO square is marked.

The exercise in identifying causal factors and preventive actions, using the Guide for this Case Study is now completed.

The Findings

The process identified nine causal factors that contributed to the accident. These causal factors are recorded in Box 26 of the **Accident Investigation Report**. (See the completed Report for this case on pages 32 to 33.)

This process normally suggests a number of recommended preventive actions. The next task is to select those preventive actions that best fulfull the criteria listed on page 8. With the help of the Guide, many recommended preventive actions were identified - at least one for each causal factor. Based on a hard look at the recommended preventive actions, the actions listed below were selected for implementation. The selection was based primarily on the **effectiveness** of the preventive actions in reducing the probability of a similar accident. Those selected for implementation were:

1. Repair the faulty brakes on the LPV.
2. Improve the ability of all LPV drivers to identify defects and hazards concerning their equipment. Ensure that the Fault Report Form is available in all vehicles. Require drivers to report all defects or hazards to the workshop personnel.
3. Change job procedures for all overhead work involving ladders and scaffolds to require barricades or warning devices to protect the work area from pedestrian or vehicular traffic.
4. Improve the ability of all supervisors to recognize and anticipate hazards.
5. Establish a procedure for supervisors that requires a review of hazards and job procedures (preventive actions) for tasks performed infrequently.

Note that the investigators did not select the preventive action of reviewing the workshop's procedures for inspection and maintenance of LPVs.

This was not considered as effective as preventive action 2, above. Similarly, the investigators did not select the preventive action of reviewing supervisor training in hazard recognition because it was not considered as effective as corrective action 4, above.

The preventive actions selected are recorded in Box 27 of the **Accident Investigation Report.** The investigation report now contains all the essential information needed to identify the causal factors and the selected preventive actions.

IMPORTANT: Implement, as soon as practicable, preventive actions that will eliminate or minimize causal factors that have contributed to a specific accident. **Also implement similar actions elsewhere where similar causal factors may exist.** This approach prevents accidents and changes the management system so that the causal factors already identified are less likely to contribute to a potential accident.

Answer questions by placing an X
In the "Y" circle or square for YES or
In the "N" circle or square for NO .

GUIDE FOR IDENTIFYING
CAUSAL FACTORS AND PREVENTIVE ACTIONS

Accident Serial Number TR 7

PART 1 - EQUIPMENT Wherever X is placed in Circle 'Comment' and 'Recommended Preventive Actions' Columns need to be completed

Y	N		CAUSAL FACTORS	COMMENT	POSSIBLE PREVENTIVE ACTIONS	RECOMMENDED PREVENTIVE ACTIONS	Personal (name) Local Management or Departmental Responsibility
⊗	☐	1.0	WAS HAZARDOUS EQUIPMENT A CONTRIBUTING FACTOR? If yes, answer the following. If no, proceed to Part 2.				
⊗	☐	1.1	Did any defect(s) in equipment, tools or material create a hazard?	Faulty brakes on light patrol vehicle (LPV) Reg No. QYS-222.	Review existing procedure or prepare new procedure for inspecting, reporting, maintaining, replacing, or recalling defective equipment, tool(s) or material used.	Repair brakes. Review procedures for LPVs inspection and maintenance.	Workshop O.I.C.
☐	⊗	1.2	Was the hazardous equipment recognized? If yes anser A and B. If no proceed to 1.3.	LPV driver did not consider faulty brakes a hazard.	Perform job safety analysis. Improve employee ability to recognize existing or potential hazardous conditions. Provide test equipment, as required, to detect hazard. Review any change or modification of equipment, tools(s) or material. Train employees in reporting procedures. Stress individual acceptance of responsibility. Review job procedures for hazard avoidance. Review supervisory responsibility. Improve supervisor-employee communications. Take action to remove or minimize hazard.	Improve ability of all LPV drivers to identify defects and hazards in their equipment. Ensure that Fault Report Form is available in all vehicles. Require all drivers to report faulty brakes immediately to workshop.	District Driving Instructor.
☐	○	A	Was the hazardous equipment reported?				Workshop O.I.C.
☐	○	B	Was employee(s) informed of the hazardous equipment and the job procedures for dealing with it as an interim measure?				

	CAUSAL FACTORS	COMMENT	POSSIBLE PREVENTIVE ACTIONS	RECOMMENDED PREVENTIVE ACTIONS	Personal (name) Local Management or Departmental Responsibility
☒ Y ○ N	1.3 Was there an equipment inspection procedure(s) to detect the hazardous equipment?		Develop and adopt procedures (for example, an inspection system) to detect hazardous equipment. Conduct test.		
☐ Y ⊗ N	1.4 Did the existing equipment inspection procedure(s) detect the hazard?	Workshop inspection procedures did not detect faulty brakes on LPV. There were frequent reports of faulty brakes on other LPVs.	Review procedures. Change frequency or comprehensiveness. Provide test equipment as required. Improve employee ability to detect defects and hazardous equipment. Change job procedures as required.	Review the frequency and procedures for inspection and maintenance of brakes by the workshop staff that services LPVs. Implement changes to remove deficiencies.	Workshop O.I.C.
☒ Y ○ N	1.5 Was the correct equipment, tool(s) or material used?		Specify correct equipment, tool(s) or material in job procedures.		
☒ Y ○ N	1.6 Was the correct equipment, tool(s) or material readily available?		Provide correct equipment, tool(s) or material. Review purchasing specifications and procedures. Anticipate future requirements. Specify immediate requirements.		
☒ Y ○ N	1.7 Did employee(s) know where to obtain equipment, tool(s) or material required for the job?		Review procedures for storage, access, delivery, or distribution. Review job procedures for obtaining equipment, tool(s) or material.		

	CAUSAL FACTORS	COMMENT	POSSIBLE PREVENTIVE ACTIONS	RECOMMENDED PREVENTIVE ACTIONS	Personal (name) Local Management or Departmental Responsibility
○ Y ☒ N	1.8 Was substitute equipment, tool(s) or material used in place of correct one?		Provide correct equipment, tool(s) or material. Warn against use of substitutes in job procedures and in job instruction.		
○ Y ☒ N	1.9 Did the design of the equipment or tool(s) create a hazard that encouraged operator error or injury?		Alter equipment or tool(s) to make it less likely to cause injury. Review purchasing procedures and specifications. Check out new equipment and job procedures involving new equipment before putting into service. encourage employees to report potential hazardous conditions created by equipment design.		
○ Y ☒ N	1.10 Did the general design or quality of the equipment or tool(s) create a hazard?		Review standards or specifications. Recommend changes in equipment to standards association, manufacturer or Branch Manager.		
○	1.11 List other causal factors in "Comment" column.				

PART 2 - WORK ENVIRONMENT Wherever X is placed in Circle 'Comment' and 'Recommended Preventive Actions' Columns need to be completed

(X) Y ☐ N — 2.0 WAS A HAZARDOUS WORK ENVIRONMENT A CONTRIBUTING FACTOR?
If yes, answer the following. If no, proceed to Part 3.

CAUSAL FACTORS	COMMENT	POSSIBLE PREVENTIVE ACTIONS	RECOMMENDED PREVENTIVE ACTIONS	Personal (name) Local Management or Departmental Responsibility
(X) Y ☐ N — 2.1 Did the location of equipment, material or persons create a hazardous work environment.	Placing ladder in laneway used by forklift created a hazard.	Perform job safety analysis. Review job procedures. Change the location, position, or layout of the equipment. Change position of persons. Provide guardrails, barricades, barriers, warning lights, signs, or signals.	Change job procedures for all overhead work involving ladders, scaffolding etc. to require barricades or warning devices to protect the work environment from people or vehicle traffic.	District Manager
☐ Y (X) N — 2.2 Was the hazardous work environment recognized? If yes, answer A and B. If no, proceed to 2.3.	Neither the injured employee nor his assistant recognized the hazard.	Perform job safety analysis. Improve employee ability to recognise existing or potential hazardous work environment. Provide test equipment, as required, to detect hazard. Check if change to the work environment has occurred.	Improve ability of all maintenance employees to recognise existing or potential hazards created by location or positions of equipment or material.	District Manager
☐ Y ○ N — A Was the hazardous work environment reported?		Train employees in reporting procedures. Stress individual acceptance of responsibility.		
☐ Y ○ N — B Was the employee(s) informed of how to avoid injury in the hazardous work environment, as an interim measure?		Review job procedures for hazard avoidance. Review supervisory responsibility. Take action to remove or minimize hazard or train employees.		

	CAUSAL FACTORS	COMMENT	POSSIBLE PREVENTIVE ACTIONS	RECOMMENDED PREVENTIVE ACTIONS	Personal (name) Local Management or Departmental Responsibility
☒ Y ○ N	2.3 Was employee(s) required to be in the hazardous work environment?		Review job procedures and training. Provide guardrails, barricades, barriers, warning lights, signs, or signals.		
☒ Y ○ N	2.4 Was the hazard visible to employee(s)?		Change lighting or layout to increase visibility of work area. Provide guardrails, barricades, barriers, warning lights, signs or signals, floor stripes, etc.		
☒ Y ○ N	2.5 Was there sufficient workspace?		Review workspace requirements and modify as required.		
○ Y ☒ N	2.6 Were environmental conditions a contributing factor (for example, illumination, noise levels, air contaminant, temperature extremes, ventilation, vibration, radiation)?		Check, environmental conditions as required. Check results against acceptable levels. Initiate action for those found unacceptable.		
○	2.7 List other causal factors in "Comment" column.				

PART 3 - PEOPLE	Wherever X is placed in Circle 'Comment' and 'Recommended Preventive Actions' Columns need to be completed				
(X) Y ☐ N	3.0 WAS THE WAY THE JOB WAS CARRIED OUT A CONTRIBUTING FACTOR? If yes, answer the following. If no, proceed to Part 3.6.				
	CAUSAL FACTORS	COMMENT	POSSIBLE PREVENTIVE ACTIONS	RECOMMENDED PREVENTIVE ACTIONS	Personal (name) Local Management or Departmental Responsibility
☒ Y ○ N	3.1 Was there a written or known procedure or rules for this job? If yes, answer A,B, and C. If no, proceed to 3.2.		Perform job safety analysis and develop safe job procedures.		
☐ Y (X) N	A Did job procedures anticipate the factors that contributed to the accident?	Job procedure did not anticipate vehicle traffic.	Perform job safety analysis and change job procedures.	See Item 2.1.	
☒ Y ○ N	B Did employee(s) know the job procedure?		Improve employee training in current job procedures.		
☒ Y ○ N	C Did employee(s) follow the known job procedure?		Determine why. Encourage all employees to report problems with an established procedure. Review job procedure and modify if necessary. Counsel or discipline employee. Provide closer supervision.		
☒ Y ○ N	3.2 Was employee(s) capable of performing the job?		Review employee requirements for the job. Improve employee selection. Transfer employees who are temporarily incapable of performing the job.		

	CAUSAL FACTORS	COMMENT	POSSIBLE PREVENTIVE ACTIONS	RECOMMENDED PREVENTIVE ACTIONS	Personal (name) Local Management or Departmental Responsibility
○ Y ☒ N	3.3 Were any tasks in the job procedure too difficult to perform (for example, tasks causing stress, fatigue or excessive physical demands)?		Change job design and procedures to minimise stress, fatigue or physical demands.		
○ Y ☒ N	3.4 Does the job design encourage people to shortcut job procedures or take excessive risks (for example, incentive, piecework, work pace)?		Change job design or tighten job procedures.		
○	3.5 List other causal factors in "Comment" column.				
○ Y ☒ N	3.6 DID LACK OF OR DEFICIENT PROTECTIVE EQUIPMENT OR EMERGENCY EQUIPMENT CONTRIBUTE TO THE INJURY? If yes, answer the following.. If no, proceed to Part 4. Note: The following causal factors relate to the injury.				
	CAUSAL FACTORS	COMMENT	POSSIBLE PREVENTIVE ACTIONS	RECOMMENDED PREVENTIVE ACTIONS	Personal (name) Local Management or Departmental Responsibility
☐ Y ○ N	3.7 Was the correct protective equipment specified for the job? If yes, answer A,B, and C. If no, proceed to 3.8.		Review methods of specifying protective equipment requirements.		
☐ Y ○ N	A Was the correct protective equipment available?		Provide appropriate protective equipment. Review purchasing and distribution procedures.		

	CAUSAL FACTORS	COMMENT	POSSIBLE PREVENTIVE ACTIONS	RECOMMENDED PREVENTIVE ACTIONS	Personal (name) Local Management or Departmental Responsibility
☐ Y ○ N	B Did employee(s) know that wearing specified protective equipment was required?		Review job procedures. Improve job instruction by supervisor and training of employees.		
☐ Y ○ N	C Did employee(s) know how to use and maintain the protective equipment?		Improve job instruction by supervisor and training of employees.		
☐ Y ○ N	3.8 Was any protective equipment used when the injury occurred?		Determine why and take appropriate action. Implement procedures to check and enforce use of protective equipment.		
☐ Y ○ N	3.9 Was the Protective Equipment used adequate to prevent injury?		Review protective equipment standards or specifications. Recommend changes in equipment to standards association, manufacturer or branch manager.		
☐ Y ○ N	3.10 Was emergency equipment specified for this job (for example, breathing apparatus or eyewash fountains)? If yes, answer the following. If no, proceed to Part 4.		Specify emergency equipment as required.		
☐ Y ○ N	A Was emergency equipment readily available?		Provide emergency equipment at appropriate locations.		
☐ Y ○ N	B Was emergency equipment properly used?		Incorporate correct use of emergency equipment in job procedures.		
☐ Y ○ N	C Did emergency equipment function properly?		Establish regular checking system for emergency equipment. Provide for immediate repair of defects.		
○	3.11 List other causal factors in "Comment" column.				

PART 4 – MANAGEMENT Wherever X is placed in Circle 'Comment' and 'Recommended Preventive Actions' Columns need to be completed

(X) Y ☐ N	4.0 WERE DEPARTMENTAL OR LOCAL MANAGEMENT PRACTICES A CONTRIBUTING FACTOR? If yes, answer the following. If no, STOP. Your causal factor indentification exercise is complete.

	CAUSAL FACTORS	COMMENT	POSSIBLE PREVENTIVE ACTIONS	RECOMMENDED PREVENTIVE ACTIONS	Personal (name) Local Management or Departmental Responsibility
(X) Y ☐ N	4.1 Could Departmental or Local management procedures to detect or report hazards be improved?	Yes. Supervisor did not anticipate that placing ladder in laneway used by vehicles would create a hazard.	Review procedures for identifying reporting and correcting hazards.	Improve ability of all supervisors to recognise and anticipate hazards.	District Manager
◯ Y ☒ N	4.2 Could local management procedures to detect or correct deviations from job procedure be improved?		Review job safety analysis and job procedures. Improve supervision to correct deviations from job procedures.		
(X) Y ☐ N ☐ Y (X) N	4.3 Was this an infrequently performed task? If yes answer A. If no proceed to 4.4. A Did the supervisor review hazards and job procedures with the employee?	Yes. Supervisor did not review hazards or job procedures with either employee.	Establish procedures that require a review of hazards, job procedures and preventive actions for tasks performed infrequently.	Establish a procedure that requires all supervisors to review hazards and job procedures with employees for jobs that are performed infrequently.	District Manager
☒ Y ◯ N	4.4 Did Departmental or local staff know what was expected of them to prevent this accident?		Define responsibility and accountability for Departmental and local staff in accident prevention. Test if it is understood and accepted.		

	CAUSAL FACTORS	COMMENT	POSSIBLE PREVENTIVE ACTIONS	RECOMMENDED PREVENTIVE ACTIONS	Personal (name) Local Management or Departmental Responsibility
☐ (X) Y N	4.5 Are Departmental and local staff adequately trained to fulfill their responsibility in accident prevention?	Training inadequate in recognition or anticipation of hazards.	Train staff in accident prevention. specify type of training needed.	See 4.3 above. Review supervisor training in hazard recognition. Implement changes to improve training.	District Manager
◯ ☒ Y N	4.6 Was preventive action taken by management to remove or reduce a known hazard that contributed to this accident?		Review and improve procedures to initiate and carry out corrective actions. Monitor progress of corrective actions.		
◯	4.7 List other causal factors in "Comment" column.				

CLM 6

PERSONAL INJURY ACCIDENT INVESTIGATION REPORT

ACCIDENT SERIAL NO. TR 7

(Complete the Guide for Identifying Causal Factors and Preventive Actions before completing this form. Please send this form to SOHG within 10 days)

REGION WESTERN BRANCH RESEARCH

DISTRICT TREESVILLE

1 NAME of INJURED: Smith, John

2 SEX: [X] M [ ] F

3 AGE: [ ] Under 20 [X] 30-39 [ ] 50-59 [ ] 20-29 [ ] 40-49 [ ] Over 59

4 (a) DATE of ACCIDENT: 14/7/86

(b) DATE ACCIDENT REPORTED: 14/7/86

5 PERSONS USUAL OCCUPATION: Carpenter

6 TASK at TIME of ACCIDENT (also see 7): Same Cleaning Gutter.

7 EXPERIENCE in TASK at TIME of ACCIDENT: [ ] None [ ] Average [ ] A little [X] Very Experienced

8 EMPLOYMENT CATEGORY: [X] Full Time [ ] Unemployment Relief [ ] Part-time [ ] Seasonal

9 LENGTH of EMPLOYMENT: [ ] Less than 3mo [ ] 3 mos to 1 yr [ ] 1-5 years [X] More than 5yrs

10 PIECEWORKER: [ ] Yes [X] No

11 PART of BODY INJURED (Tick one box only)

Head	[ ] 01	Arm	[ ] 04	Trunk/back	[ ] 08
Eyes	[ ] 02	Hand	[ ] 05	Trunk/other	[ ] 09
Neck	[ ] 03	Leg	[ ] 06	Multiple	[X] 10
		Foot	[ ] 07	Other	[ ] 11

12 NATURE of INJURY (Tick one box only)

Fracture	[ ] 01	Amputation	[ ] 05	Shock, Heart Attack	[ ] 10
Dislocation	[ ] 02	Laceration, other open wound	[ ] 06	Bite (snake, insect, animal)	[ ] 11
Sprain, strain	[ ] 03	Contusion, crushing	[ ] 07	Multiple	[X] 12
Concussion, other internal	[ ] 04	Burn, scald	[ ] 08	Other	[ ] 13
		Inhalation of gas	[ ] 09	Harmful Contacts	[ ] 14

13 NAMES of OTHERS INJURED in SAME ACCIDENT (if any): None

Employee(s) [X] Yes [ ] No (please tick)

14 TIME of ACCIDENT: 9.00 AM ~~PM~~

15 DAY of WEEK: Monday

16 NAME and ADDRESS of DOCTOR or NURSE (if applicable): Dr Henry Carter, 5 Park Avenue, Treesville

17 DATE FIRST ATTENDED:

18 RETURN TO WORK: [ ] Returned to normal duties [ ] Given alternative work [X] Unfit for work

19 NAME and ADDRESS of HOSPITAL (if applicable): General Hospital, First Ave & State St, Treesville

20 SPECIFIC LOCATION of ACCIDENT: [ ] Field [ ] Office [ ] Workshop [ ] Laboratory [X] Other (specify) - Between District Office Building and Store.

21 SEVERITY of INJURY

☐ Near hit or first aid with potential for serious injury

☐ MTA ☒ LTA ☐ Fatality

22 (a) WAS A CHAINSAW INVOLVED in ACCIDENT?

☐ Yes ☒ No

(b) DID ACCIDENT OCCUR DURING FIRE CONTROL?

☐ Yes ☒ No

23 PERSON WAS WORKING

☒ Alone

☐ With other workers

24 SUPERVISION at TIME of ACCIDENT

☐ Directly Supervised

☐ Indirectly Supervised

☒ Direct Supervision not practicable

25 DESCRIBE HOW the ACCIDENT OCCURRED

Smith climbed 4 metres straight ladder to repair gutter. While inspecting gutter, Smith sent his assistant, Green, who was holding the ladder, to get a soldering iron. After Green left, and while Smith continued cleaning the gutter, Jones, driving a LPV that had faulty brakes, approached and struck the ladder, knocking both the ladder and Smith to the ground.

26 CAUSAL FACTORS. Events and conditions that contributed to the accident. Include those identified by use of the Guide for Identifying Causal Factors and Preventive Actions. i.e. where circles are marked. Remember to indicate guide question no. in this report.

Guide Q.No.	
1.1	*Faulty brakes on LPV QVS-222.*
1.2	*LPV driver did not consider faulty brakes a hazardous condition.*
1.4	*Workshop inspection procedures failed to detect faulty brakes.*
2.1	*Placing ladder in laneway used by vehicles created a hazardous condition.*
2.2	*Neither Smith nor Green, his assistant, recognized the hazardous condition.*
3.1 A	*Job procedure did not anticipate vehicular traffic.*
4.1	*Supervisor did not anticipate placement of ladder in laneway used by vehicles would create a hazardous condition.*
4.3 A	*Supervisor did not review potential hazards or job procedures with either employee before they started the job.*
4.5	*Supervisor's training was inadequate in recognition or anticipation of hazardous conditions.*

27 PREVENTIVE ACTIONS. Those that have been, or will be, taken to prevent recurrence. Include those identified by use of the Guide for Identifying Causal Factors and Preventive Actions.

	Responsibility for Preventive Action (see Guide)	Date action to be completed by
	OIC Workshop	*18.7.86*
1. *Repair brakes.*		
2. *Improve ability of all LPV drivers to detect defects and hazardous conditions in their equipment. Ensure that CALM Fault Report Form is available in all vehicles. Require all drivers to report faulty brakes immediately to workshop.*	*H. Green*	*25.7.86*
3. *Change job procedures for all overhead work involving ladders and scaffolds to require barricades or warning devices to protect the area from pedestrian or vehicular traffic.*	*H. Green*	*25.7.86*
4. *Improve ability of all supervisors to recognise and anticipate hazardous conditions.*	*R. Blue*	*Ongoing*
5. *Establish a procedure for all supervisors that requires a review of hazards and job procedures (preventive action) for tasks performed infrequently.*	*R. Blue*	*29.8.86*

28 SIGNATURES: (Do not delay sending this form pending signature of injured person)

Injured Person (if possible) ..*J. Smith*..... Date despatched to SOHO...*17.7.86*.....

Overseer or Job OIC .....*P. Brown*..... Date despatched to Region..*17.7.86*.....

Regional/District Safety Officer ..*H. Green*.....

Regional/District/Branch OIC ...*A. White*.....

6. SUMMARY OF CAUSAL FACTORS

The purpose of summarizing causal factors is to identify those that have contributed most frequently to a group of accidents being analyzed. When causal factors are found repeatedly in a number of accident investigations, they generally reveal patterns that suggest changes in the management system or in the safety and health program. Repeated analyses over months or years will show long-term trends. These also can be used to evaluate the impact of changes in the management system and the impact of corrective actions taken.

The form, **Summary of Causal Factors** (pages 37 to 39), suggests a way to summarize causal factors. This form is the third key document presented in this manual. Each statement in the Summary corresponds to a question in the **Guide for Identifying Causal Factors and Preventive Actions**. The six columns of squares next to the statements are provided for tallies of the frequency of occurrence of the causal factors. Essentially a tabulation form, the Guide facilitates the tallying of causal factors by whatever general category and subcategories the analyst selects.

A two-step procedure can help identify causal factors in a given category. First the general category and subcategories are selected, and then the number of cases is recorded on the Summary. Safety personnel usually carry out this kind of analysis.

Selecting Categories

There are many different categories that can be selected for analysis. For example, an entire organisation or development can be treated as a single category. The analysis would then tell management which causal factors were identified most frequently in the accident cases that occurred throughout the organisation in a given period. This information, in turn, could suggest priorities for general changes in the management system to improve the overall safety and health performance.

It is often useful to analyze the causal factors for subcategories within a general category. For example, if the entire organisation is the general category, then departments or occupations could be the subcategories. Or if the occupation "machine operator" is the general category, then the various amounts of time in the occupation could be the subcategories. If total accidents in a specific department is the general category, subcategories can deal with such factors as occupation or job category, age of worker, number of injuries, or parts of body injured.

Many of the items included in the **Accident Investigation Report** form can be selected as categories for analysis. The general category selected should be written on the Summary form on the line provided, and all of the cases that fall into this category should be tallied in the column labelled "Category Total". If subcategories are used, they should be entered in the other columns. (Add more columns if necessary.) Cases that fall into the general category should be tallied in the "Category Total" column just as before, but the cases that also fall into one of the subcategories also should be tallied again in the appropriate subcategory column.

One advantage of the Summary is its flexibility. The analyst is encouraged to select any general category and any set of subcategories - they will all be related to causal factors.

Pages 37 to 39 illustrate a completed Summary. The general category in the illustration is the entire company and the subcategories are the departments within the company.

Creating the Summary

Once the general category and subcategories have been selected, it is a simple task to tally the causal factors identified in the Guide for each case that falls within the selected category. (Remember, an X in a circle indicates a causal factor whether the response is YES or NO.) The totals in each square in the Summary indicate the number of accident cases in which the causal factor was found. They should not be added, since there is usually more than one causal factor identified in each accident.

These summaries reveal which causal factors are commonly associated within a category of cases and how causal factors vary from one category to another. This information can suggest priorities for specific changes in the management system or in the safety and health program.

Using the Summary

The completed **Summary of Causal Factors** shown on pages 37 to 39 summarizes 28 accident cases. In this example, the entire company was selected as the general category, and its three departments were selected as the subcategories.

The Summary for the company in the "Category Total" column highlights the following:

- Hazardous equipment was a contributing factor in 26 of the 28 cases.
  In 21 of these cases, there was a defect in the equipment or tools or materials.
  In 17 of these cases, the hazards were not recognized. (This could account for the high number of defects.)
  In 13 of these cases, the existing equipment inspection procedures did not detect the hazards. (This could account for the high number of cases in which the hazardous condition was not recognized.)

- The way the job was carried out was a contributing factor in 25 of the 28 cases.
  In 13 of these cases, a job procedure existed, but did not anticipate the factors contributing to the accident.

- A management system defect was a contributing factor in 25 of the 28 cases.
  In 21 of these cases, Department or Local Management failed to detect, anticipate, or report a hazardous condition.
  In 15 of these cases, Department or Local Staff did not know what was expected of them to prevent accidents.
  In 18 of these cases, Department or Local Staff were not adequately trained to fulfill the assigned responsibility in accident prevention.

Taking Preventive Action

The findings in the completed **Summary of Causal Factors** suggest that management should implement the following changes to improve the organisations overall safety and health performance.

1. Improve employee skills in recognizing existing or potential hazards. Focus on hazards brought about by any changes or modifications, intended or unintended, that may have occurred in equipment, tools, or materials.

2. Upgrade existing equipment inspection procedures to detect defects or hazards. Consider increasing the frequency or comprehensiveness of the inspections.

3. Review existing Job Safety Analysis (JSA) to determine additional potential causal factors. Perform JSA on other jobs that are performed on a regular basis. Change job procedures as indicated by the JSA. Provide job instruction training based on the new job procedures.

4. Provide management and supervisory training to enable the supervisors to carry out their accident prevention responsibilities. The training should:

   - Emphasize the manager's and supervisors' role in accident prevention
   - Increase the manager's and supervisors' skills in detecting and anticipating hazards
   - Specifically define the manager's and supervisors' responsibility and accountability.

The implementation of the four recommended preventive actions derived from the Summary can contribute significantly to improvement in the overall safety and health performance for the entire organisation. The Summary indicates that implementation of the preventive actions should zero in on Department A, where most of the problems are apparent. A summary of the causal factors by occupation or job classification will help to establish priorities and further pinpoint where the preventive action should be implemented.

Much can be learned by looking at the causal factors that contributed to a single accident. Even more can be learned by looking at groups of accidents. The procedures suggested in this text enable the analyst to do both.

Subcategories

Loct.A	Loct.B	Loct.C	Cat.Total

SUMMARY OF CAUSAL FACTORS

General Category _____

Dates of Cases: From Jan 1, 1966 to Dec 31, 1986

Subcategories

Loct.A	Loct.B	Loct.C	Cat.Total

17	8	3	28	NUMBER of CASES	
16	7	3	26	1.0	**HAZARDOUS EQUIPMENT A CONTRIBUTING FACTOR.**
12	6	3	21	1.1	Defects(s) in equipment, tool(s) or material create a hazard.
10	4	3	17	1.2	Hazardous equipment not recognized.
2	2	0	4	A	Hazardous equipment recognized, but not reported.
4	1	0	5	B	Hazardous equipment reported, but employee(s) not informed of known hazard and job procedures for dealing with it as an interim measure.
2	1	1	4	1.3	Lack of equipment inspection procedure(s) to detect hazards.
8	3	2	13	1.4	Existing equipment inspection procedure(s) did not detect hazards.
2	1	0	3	1.5	Correct equipment, tool(s) or material not used.
0	0	0	0	1.6	Correct equipment, tool(s) or material not readily available.
0	0	0	0	1.7	Employee(s) did not know where to obtain equipment, tool(s) or material required for the job.
2	1	0	3	1.8	Substitute equipment, tool(s) or material used in place of proper one.
0	0	0	0	1.9	Equipment, tool(s) design created a hazard that encouraged operator error
0	0	0	0	1.10	General design or quality of equipment, tool(s) contributed to hazards.
0	0	0	0	1.11	Other causal factors.
2	4	0	6	2.0	**A HAZARDOUS WORK ENVIRONMENT A CONTRIBUTING FACTOR.**
2	4	0	6	2.1	Location, position of equipment, material or employee(s) contributed to hazards.
2	2	0	4	2.2	Hazardous work environment not recognized.
0	0	0	0	A	Hazardous work environment recognized, but not reported.
0	2	0	2	B	Hazardous work environment reported, but employee(s) not informed of how to avoid injury in the hazardous environment as an interim action.
1	2	0	3	2.3	Employee(s) should not have been in vicinity of hazardous work environment.
0	0	0	0	2.4	Hazards not seen by employee(s).
0	1	0	1	2.5	Workspace insufficient.
0	0	0	0	2.6	Environmental condition(s) a contributing factor.
0	0	0	0	2.7	Other causal factors.

Subcategories Loct.A	Loct.B	Loct.C	Cat.Total		
15	7	3	25	3.0	**WAY JOB WAS CARRIED OUT WAS A CONTRIBUTING FACTOR.**
4	1	0	5	3.1	No written or known job procedures.
9	2	2	13	A	Job procedures existed, but did not anticipate factors contributing to accident.
0	3	1	4	B	Job procedures existed, but employee(s) did not know them.
2	1	0	3	C	Employee(s) knew job procedures, but did not follow them.
0	0	0	0	3.2	Employee(s) not capable of performing job.
0	0	1	1	3.3	Task in job procedures too difficult to perform.
2	0	0	2	3.4	Job structured to encourage short cut from job procedures.
0	0	0	0	3.5	Other causal factors.
4	1	0	5	3.6	**DID LACK of or DEFICIENT PERSONAL PROTECTIVE EQUIPMENT or EMERGENCY EQUIPMENT CONTRIBUTE TO THE INJURY.**
2	0	0	2	3.7	Appropriate personal protective equipment (PPE) not specified.
				A	PPE specified, but not available.
				B	PPE specified, but employee(s) did not know PPE was required.
				C	PPE specified, but employee(s) did not know how to use or maintain PPE.
2	0	0	2		
				3.8	PPE not used.
0	0	0	0		
				3.9	PPE used was inadequate.
0	0	0	0		
				3.10	Emergency equipment not specified for this job.
0	0	0	0		
				A	Emergency equipment specified, but not readily available.
0	0	0	0		
				B	Emergency equipment specified, but was not used properly.
0	0	0	0		
				C	Emergency equipment specified, but did not function properly.
0	0	0	0		
				3.11	Other causal factors.
0	0	0	0		
14	8	3	25	4.0	**DEPARTMENT OR LOCAL MANAGEMENT PRACTICES A CONTRIBUTING FACTOR.**
12	6	3	21	4.1	Department or Local Management procedures to detect or report hazards inadequate.
2	1	0	3	4.2	Local Management procedures to detect or correct deviations from job procedures inadequate.
3	0	0	3	4.3	Infrequently performed task.
3	0	0	3	A	Failure to conduct supervisor/employee review of hazards and job procedures for tasks performed on infrequent basis.

Subcategories

Loct.A	Loct.B	Loct.C	Cat.Total		
10	4	1	15	4.4	Department or Local Staff did not know what was expected of them to prevent accident.
12	4	2	18	4.5	Department or Local Staff not adequately trained to fulfill assigned responsibility in accident prevention.
4	1	0	5	4.6	Failure to take preventive action on known hazards.
0	0	0	0	4.7	Other causal factors.

SUMMARY of CAUSAL FACTORS

SUBCATEGORIES | CATEGORY TOTAL

General Category _____

Dates of Cases: From _____ to _____

SUBCATEGORIES | CATEGORY TOTAL

NUMBER of CASES

1.0 **HAZARDOUS CONDITION(S) WAS A CONTRIBUTING FACTOR.**

1.1 Defects(s) in equipment/tool(s)/material contributed to a hazardous condition(s).

1.2 Hazardous condition(s) not recognized.

A. Hazardous condition(s) recognized, but not reported.

B. Hazardous condition(s) reported, but employee(s) not informed of known hazard and job procedures for hazard avoidance.

1.3 Lack of equipment inspection procedure(s) to detect hazardous condition(s).

1.4 Existing equipment inspection procedure(s) did not detect hazardous condition(s).

1.5 Correct equipment/tool(s)/material not used.

1.6 Proper equipment/tool(s)/material not readily abvailable.

1.7 Employee(s) did not know where to obtain equipment/tool(s)/material.

1.8 Substitute equipment/tool(s)/material used in place of proper one

1.9 Equipment/tool(s) design created an operator stress or encouraged operator error.

1.10 General design or quality of equipment/tool(s) contributed to hazardous condition(s).

1.11 Other causal factors.

2.0 **LOCATION/POSITION of the EQUIPMENT/MATERIAL/EMPLOYEE(S) WAS A CONTRIBUTING FACTOR.**

2.1 Location/position of equipment/material/employee(s) contributed to hazardous condition(s).

2.2 Hazardous condition(s) not recognized.

A. Hazardous condition(s) recognized, but not reported.

B. Hazardous condition(s) reported, but employee(s) not informed of job procedure for dealing with the hazardous condition as an interim action.

2.3 Employee(s) should not have been in vicinity of equipment/material.

2.4 Hazardous condition(s) not seen by employee(s).

2.5 Workspace insufficient.

2.6 Environmental condition(s) a contributing factor.

2.7 Other causal factors.

3.0 **JOB PROCEDURE USED WAS A CONTRIBUTING FACTOR.**

3.1 No written or known job procedures.

A. Job procedures existed, but did not anticipate factors contributing to accident.

B. Job procedures existed, but employee(s) did not know them.

C. Employee(s) knew job procedures, but deviated from them.

3.2 Employee(s) not capable of performing job.

3.3 Task in job procedures too difficult to perform.

3.4 Job structured to encourage deviation from job procedures

3.5 Other causal factors.

3.6 **LACK of PERSONAL PROTECTIVE EQUIPMENT or EMERGENCY EQUIPMENT WAS A CONTRIBUTING FACTOR in the INJURY.**

3.7 Appropriate personal protective equipment (PPE) not specified.

A. PPE specified, but not available.

B. PPE specified, but employee(s) did not know PPE was required.

SUBCATEGORIES	CATEGORY TOTAL

SUBCATEGORIES	CATEGORY TOTAL

C. PPE specified, but employee(s) did not know how to use or maintain PPE.

3.8 PPE not used properly.

3.9 PPE inadequate.

3.10 Emergency equipment not specified for this job.

A. Emergency equipment specified, but not readily available.

B. Emergency equipment specified, but was not used properly.

C. Emergency equipment specified, but did not function properly.

3.11 Other causal factors.

4.0 A MANAGEMENT SYSTEM DEFECT WAS A CONTRIBUTING FACTOR.

4.1 Failure by management to detect, anticipate, or report a hazardous condition.

4.2 Failure by management to detect or correct deviation from job procedure.

4.3 Failure to conduct supervisor/employee review of hazards and job procedures for tasks performed on infrequent basis.

4.4 Supervisor responsibility and accountability not defined or not understood.

4.5 Supervisor not adequately trained to fulfill assigned responsibility in accident prevention.

4.6 Failure to take a corrective action on a known hazardous condition(s).

4.7 Other causal factors.

ACCIDENT ANALYSIS REPORT

CASE NUMBER

COMPANY _____ ADDRESS _____

DEPARTMENT _____ LOCATION (if different from mailing address) _____

1. NAME of INJURED	2. WORKS NUMBER	3. SEX ☐ M ☐ F	4. AGE	5. DATE of ACCIDENT

6. HOME ADDRESS

_____

7. EMPLOYEE'S USUAL OCCUPATION

8. OCCUPATION at TIME of ACCIDENT

9. LENGTH of EMPLOYMENT
☐ Less than 1 mo. ☐ 6 mos. to 5 yrs.
☐ 1-5 mos. ☐ More than 5 yrs

10. TIME in OCCUP. at TIME of ACCIDENT
☐ Less than 1 mo. ☐ 6 mos to 5 yrs
☐ 1-5 mos ☐ More than 5 yrs

11. EMPLOYMENT CATEGORY
☐ Regular, full-time ☐ Temporary ☐ Nonemployee
☐ Regular, part-time ☐ Seasonal

12. CASE NUMBERS and NAMES of OTHERS INJURED in SAME ACCIDENT

_____ _____

_____ _____

13. NATURE of INJURY and PART of BODY

_____

14. NAME and ADDRESS of PHYSICIAN

_____

15. NAME and ADDRESS of HOSPITAL

_____

16. TIME of INJURY
A. _____ A M / P M
B. Time within shift
C. Type of shift

17. SEVERITY of INJURY
☐ Fatality
☐ Lost workdays—days away from work
☐ Lost workdays—days of restricted activity
☐ Medical treatment
☐ First aid
☐ Other, specify _____

18. SPECIFIC LOCATION of ACCIDENT

_____

ON EMPLOYER'S PREMISES? ☐ Yes ☐ No

19. PHASE OF EMPLOYEE's WORKDAY at TIME of INJURY
☐ During rest period ☐ Entering or leaving plant
☐ During meal period ☐ Performing work duties
☐ Working overtime ☐ Other _____

20. DESCRIBE HOW the ACCIDENT OCCURRED

_____

_____

_____

_____

21. ACCIDENT SEQUENCE. Describe in reverse order of occurrence events preceding the injury and accident. Starting with the injury and moving backward in time, reconstruct the sequence of events that led to the injury.

A. Injury Event _____

B. Accident Event _____

C. Preceding Event #1 _____

D. Preceding Event #2, #3, etc. _____

_____

22. TASK and ACTIVITY at TIME of ACCIDENT

A. General type of task _____

B. Specific activity _____

C. Employee was working:

☐ Alone ☐ With crew or fellow worker ☐ Other, specify _____

23. POSTURE of EMPLOYEE

_____

24. SUPERVISION at TIME of ACCIDENT

☐ Directly supervised ☐ Not supervised

☐ Indirectly supervised ☐ Supervision not feasible

25. CAUSAL FACTORS. Events and conditions that contributed to the accident. Include those identified by use of the Guide for Identifying Causal Factors and Corrective Actions.

26 CORRECTIVE ACTIONS Those that have been, or will be, taken to prevent recurrence Include those indentified by use of the Guide for Identifying Causal Factors and Corrective Actions

PREPARED BY _____

TITLE _____

DEPARTMENT _____ DATE _____

APPROVED _____

TITLE _____ DATE _____

APPROVED _____

TITLE _____ DATE _____

HAZARD INSPECTIONS

AIM

The aim of this session is to provide participants with a systematic approach to hazard inspections.

OBJECTIVES

As a result of this session, participants will be able to:

(a) describe the characteristics of hazard inspection systems;

(b) identify weaknesses in an example system;

(c) develop systematic procedures for their own organisations.

METHOD

This is a central presentation and small group discussion.

PLANNED INSPECTIONS

INTRODUCTION

Inspections are one of the best tools available to find problems and assess their risks before accidents and other losses occur.

A well managed inspection system can:

- Identify potential problems that were not anticipated during design or task analysis.
- Identify equipment deficiencies, particularly problems of wear, abuse or misuse.
- Identify sub-standard work practices.
- Complement preventative maintenance programmes.
- Identify the effect of changes in process or materials.
- Demonstrate management commitment to safety.

TYPES OF INSPECTIONS

There are a number of types of inspections available to achieve different objectives. These are:

Informal Inspections, and
Planned Inspections

INFORMAL INSPECTIONS

Informal inspections are carried out by everyone as a natural part of walking about observing what is occurring. It is purposeful awareness of people as they go about their regular activities, and the subsequent reporting system.

These inspections should be encouraged amongst all employees as the people using equipment are often the first to notice something wrong.

Informal inspections should have a reporting system. This is often in the form of a Hazard Report or Condition Report. An example is shown below:

CONDITION REPORT

To _____ Supt Date _____

Location and Conditions of Hazard

Condition discussed with_____

Signed:_____
(Person initiating the report)

Remedial Action

Conditions corrected

Signed:_____ Date _____
(Superintendent)

Signed:_____ Date _____
(Dept Head)

Prepare in Triplicate:

Copy 1 : To Safety Officer
Copy 2 : To Dept/Div Head to retain
Copy 3 : To Dept/Div Head for signature and return to safety officer

Informal inspections are a very useful tool and they can be very effective if employees are educated to identify hazards and report them immediately.

PLANNED INSPECTIONS

Planned inspections are needed to back up the informal inspection system. These inspections are:

- critical parts/items inspections
- general inspections, and
- housekeeping evaluations

CRITICAL PARTS ITEMS INSPECTIONS

Critical parts are defined as the components of machinery, equipment, materials, structures or areas more likely than other components to result in a major problem or loss associated with Safety and Production when worn, damaged abused, misused or improperly applied. If currently in use it is a critical part, if in store a critical item. For example, a grinding wheel is a critical part on a grinder, but is a critical item in the store because it requires special care.

Effective inspection programmes ensure all critical parts/items are identified, evaluated and kept in proper condition.

Critical parts/items inspection systems need to be set up by:

- Making an inventory
- Setting up inspection schedules, and
- Auditing the inspections

MAKING THE INVENTORY

The inventory is a comprehensive listing of all areas, structures, machines, equipment materials and substances for the organisation and a description of their critical parts or items. A worksheet which could be used for this task is shown at Annex A to this paper.

There are 5 steps to a Critical Parts Inventory:

1. Categorise everything the company owns, such as machinery, equipment, structures, substances, materials and areas.

2. Delineate areas of responsibility considering physical and operational arrangements and assign responsibilities within each area.

3. List all objects in each category (machines, equipment, structures, materials, etc) for each area. Use existing inventories such as accounting inventories, purchasing logs, insurance ledgers and storage and stockroom inventories.

4. Compile the list, and from it identify all critical parts/items using a team approach.

   (a) Team members might be front-line managers, operators, manufacturer's reps., loss control specialists, occupational health specialist.

   (b) Helpful tools might include loss records, maintenance records, operator's manuals, training manuals, safety publications, job procedures.

   (c) Identify the critical few parts or items that will likely result in a major problem if they fail.

5. List all parts on an appropriate record system if not already on one.

   (a) Identify the piece of equipment, structure, etc.
   (b) Identify the critical parts/items.
   (c) Indicate what to inspect.
   (d) Identify who does the inspection and at what frequency.

SETTING UP THE SCHEDULES

Once the inventory is established the next step is to prepare a Critical Parts or Items Record which will establish the inspection items, parts to inspect, conditions to inspect, how often and who is responsible for the inspection. An example of this record system is shown at Annex B to this paper.

This Record can then be used to develop safety inspection checklists which can be directed to the people responsible for the conduct of the inspections. The form should be returned to the safety officer/co-ordinator on completion. An example of a checklist is shown at Annex C to this paper.

SAFETY INSPECTIONS CHECKLIST

DEPARTMENT _____ SUB UNIT _____

INSPECTION AREA _____ PERIOD _____

CHECKING OFFICER _____

INSPECTION ITEMS & PARTS	CONDITIONS TO INSPECT FOR	INSPECTION RESULT

DEPARTMENT HEAD COMMENTS

_____

_____

_____

_____

_____ _____

(SIGNATURE) DATE

RETURN TO SAFETY OFFICER/ CO-ORDINATOR

INSPECTION CONDUCTED

_____ _____

(SIGNATURE) DATE

AUDITING THE INSPECTIONS

It is generally accepted that "what get's measured, get's done". Safety inspections are no different. Measures should be established for the number of critical parts inspections that are scheduled and completed. This produces a compliance measure. By listing the items noted and comparing this with the items corrected an effectiveness measure can be established. An example summary sheet is shown at Annex D.

Pre-Use Equipment and Checks

A particular type of critical parts/items inspection is the Pre-Use Equipment Checks. Most equipment should have checklists made out for them. They are usually used at the start of the shift with the completed form going to the supervisor. An example Pre-Use Equipment Check is shown at Annex E.

GENERAL INSPECTIONS

The General Inspection is a planned walk through of a given area. They are often made on a regular basis ranging from weekly to quarterly. Supervisors generally conduct these inspections but managers at all levels should be encouraged to participate. Teams may also be used in a General Inspection System.

Steps of Inspection

Inspections should be tailored to the needs of the organisation. The general techniques of inspection however, do not vary greatly and are applied in varying degrees according to the situation. The steps of inspection are:

- Preparation
- Conduct
- Development of Controls and
- Follow up

Preparation

Preparation involves planning, using checklist reviewing previous reports and gathering of materials and tools to aid in the inspection.

Planning - Planning involves deciding what is the desired outcome of the inspection. It involves deciding the area to be inspected, the boundaries and the inspection route. Maps, floor plans, material flow diagrams are all aids to the inspection plan. Once boundaries are set the items to be inspected should be identified and listed.

Make Checklists - Checklists need to be tailored to meet the needs of the organisation. They need to specify the items to be checked and the standards to be met. These items are drawn from the facilities, equipment, materials and processes identified in the planning stage.

Review Previous Reports - A scan through previous reports will reveal previous weaknesses or areas not previously inspected. Any of these should be added to the checklist.

Gather Tools - Appropriate personal protective equipment should be worn by those conducting inspections. Other aids and test equipment should be prepared and tested for servicability.

Conduct

There are a number of techniques that can be used to make inspections more effective. Among these are:

- Use the checklist.
- Look for off-the-floor and out of the way items.
- Take immediate temporary action if serious risk or danger is found. Isolate hazards.
- Describe and locate each item found at fault on the inspection report sheet.
- Classify hazards. This is a simple system which allows people to establish priorities for action for hazards discovered in the work environment. These classifications can be used to describe the loss potential of a condition or practice observed. The classifications are:

Class A Hazard - A condition or practice likely to cause permanent disability, loss of life or body part, and/or extensive loss of structure, equipment or material.

- Example 1 - a barrier guard missing on a large press brake for a metal shearing operation.
- Example 2 - a maintenance worker observed servicing a large sump pump in an unventilated deep pit, with the petrol engine running.

Class B Hazard - A condition or practice likely to cause serious injury or illness, resulting in temporary disability or property damage that is disruptive but not extensive.

- Example 1 - slippery oil condition observed in main aisleway.
- Example 2 - broken tread at bottom of office stairs.

Class C Hazard - A condition or practice likely to cause minor, non-disabling injury or illness, or non-disruptive property damage.

- Example 1 - a carpenter observed handling rough timber without gloves.
- Example 2 - a strong rancid odor from cutting oil circulating in the bed of a large lathe. By using this system, objective measures of hazard priority can be set.
- Determine the basic cause for the hazard by asking questions.

Development of Controls

There are a number of criteria to be considered when developing remedial actions for observed hazards. These are:

- Consider potential severity of loss
- Evaluate the probability of a loss occurrence
- Weigh various control alternatives
- Assess the likely degree of control to be achieved
- Determine the cost of control
- Justify the recommended control if major expenditures are involved

Decisions based on these guides will help ensure effective selection of control measures.

Follow Up

The person responsible for the inspection should also initiate follow up action. This is the follow up process.

- Issue work order
- Monitor the budgeting of resources
- Ensure timely actions
- Monitor activity progress
- Check the effectiveness of implemented controls
- Give ample credit where credit is due

Reporting

Once the follow up process has started a report should be written. Reports are probably done best on a form. These forms will need to be tailored to the operation but the broad criteria for report forms are:

- Identify the area or item inspected
- Prompt all the appropriate actions
  - observation of sub-standard practices and conditions
  - classification of hazards
  - remedial actions and recommendations
  - assignment of responsibility
  - follow up on action taken
  - completion and verification of controls
- Provide enough space to write the required information
- Provide for managerial review of the report

An example of an inspection report (to be used in conjunction with a checklist) is shown at Annex F).

HOUSEKEEPING EVALUATIONS

Housekeeping has an important direct bearing on the exposure to bodily injury and property damage loss (damage by five, explosion, or accidental injury). The standard of housekeeping also reflects operational managements basic attitude toward safety.

Generally many items may be included in formats measuring housekeeping performance. Specific health and safety practices or malpractices can be noted - seen, heard, smelt, or even felt from unsafe equipment or practices, lighting, noise, fumes and dust, undue temperature or humidity. The condition and use of safety devices, including fire protection equipment, sanitation and first aid facilities can also be noted.

Housekeeping evaluations provide opportunities to seek out signs of disorder such as:

- Cluttered and poorly arranged areas;
- Untidy and dangerous piling of materials;
- Items that are excess, obsolete, or no longer needed;
- Blocked aisleways;
- Material stuffed in corners, on overcrowded shelves, in overflowing bins and containers;
- Tools and equipment left in work areas instead of being returned to tool rooms, racks, cribs or chests;
- Broken containers and damaged material;
- Materials gathering dirt and rust from disuse;
- Excessive quantities of items;
- Waste, scrap and excess materials that congest work areas;
- Spills, leaks and hazardous materials creating safety and health hazards;

Annex G provides a format for housekeeping evaluations and is regarded solely as an example. Industries need to look at their own environment and make inclusion where necessary. For example critical control of wastage and environmental pollution may necessitate the inclusion of such items as drain traps or storm water basins. Generally formats need to assist in the following:

- Eliminates accidental injury and fire causes
- Prevent wasted energy
- Maintain greatest use of wasted space
- Keep stores inventory at a minimum
- Help control property damage and waste
- Guarantee of good appearance/image to clientele
- Encourage better work habits
- Minimisation of adverse enviromental impact

CRITICAL PARTS OR ITEMS INVENTORY

SPECIFIC ITEM ______________________________
(MACHINE, EQUIPMENT, SUBSTANCE, MATERIAL, STRUCTURE, AREA)

______________ DEPARTMENT ______________ LOCATION ______________ INVENTORIED BY: ______________ APPROVED BY:

COMPONENTS CONSIDERED CRITICAL	REASONS FOR CRITICAL CLASSIFICATION	CRITICAL?	
		NO	YES

ANNEX B

CRITICAL PARTS OR ITEMS RECORD

DEPARTMENT _____ SUB UNIT _____

SUPERVISOR _____ SUB UNIT SUPERVISOR _____

INSPECTION CATEGORIES: Examine each suggested category in turn. When one category is applicable to your work area complete columns 2 - 4 clearly and concisely. As each category is completed, move on to the next. Columns 5 and 6 can be completed when each area has been categorised.

1	Atmospheric Conditions ___	8	Handtools ___	15	Shafts Pits Sumps etc. ___
2	Buildings & Structures ___	9	Material Handling Equip ___	16	Storage Equip & Areas ___
3	Containers & Tanks ___	10	Personal Protect. Equip ___	17	Transportation Equipment ___
4	Electrical Equipment ___	11	Pressurised Equip ___	18	Walkways & Roadways ___
5	Elevators & Man Lifts ___	12	Production Equip ___	19	Warning & Signalling Equip ___
6	Fire Fighting Equip ___	13	Supporting Equip ___	20	Other ___
7	Hazardous Materials ___	14	Power Source Equip ___		

2 INSPECTION ITEMS	3 PARTS TO INSPECT	4 CONDITIONS TO INSPECT	5 HOW OFTEN	6 BY WHOM

SAFETY INSPECTIONS CHECKLIST

DEPARTMENT _____ SUB UNIT _____

INSPECTION AREA _____ PERIOD _____

CHECKING OFFICER _____

INSPECTION ITEMS & PARTS	CONDITIONS TO INSPECT FOR	INSPECTION RESULT

DEPARTMENT HEAD COMMENTS

_____

_____

_____

_____

_____ _____

(SIGNATURE) DATE

RETURN TO SAFETY OFFICER/ CO-ORDINATOR

INSPECTION CONDUCTED

_____ _____

(SIGNATURE) DATE

ANNEX D

CRITICAL PARTS INSPECTIONS SUMMARY

DEPARTMENT	SCHEDULED	COMPLETED	COMPLIANCE %	ITEMS NOTED	ITEMS CORRECTED	EFFECTIVE-NESS %
TOTAL						

OPERATOR'S DAILY PRE-OPERATIONAL CHECK LIST

DATE: _____ SHIFT: _____

TRUCK NUMBER: _____ OPERATOR: _____

Check applicable items and tick the box if O.K.
Indicate in "Remarks" area if items are faulty or warrant attention.

WALKAROUND CHECK:	O.K.	REMARKS
1. Tyres (Correct pressure, no cuts or damage)	( )	_____
2. Wheel Nuts (Not loose or missing)	( )	_____
3. Any visible leaks(Engine,Hydraulic or Water	( )	_____
4. Mast and lifting chain (No damage and correct tension)	( )	_____
5. Carriage and forks (No damage or Distortion)	( )	_____
6. Guards - Load back rest	( )	_____
- Overhead (Both secure)	( )	_____
7. Name/capacity plate (not damaged and readable)	( )	_____
8. Gas Cylinder (correct position & secure)	( )	_____
ENGINE CHECKS:		
9. Radiator (Water Level)	( )	_____
10. Fan belt (tension)	( )	_____
. Battery (water level)	( )	_____
12. Engine oil level	( )	_____
13. Hydraulic oil level	( )	_____
14. Transmission oil level	( )	_____
BEFORE STARTING:		
15. Brakes - Foot (pressure & tension)	( )	_____
- Hand (pressure & tension)	( )	_____
- Seat (Adjusted)	( )	_____
16. Clutch (pressure)	( )	_____
17. Warning Devices (Horn,Flashing Lights, Brake Lights Indicators, Reversing Beeper	( )	_____
18. Mirrors	( )	_____
AFTER STARTING:		
19. Unusual noises (after starting)	( )	_____
20. Gauges (Operating properly)	( )	_____
21. Hydraulic operations	( )	_____
22. Brake operation - forward/ reverse	( )	_____
23. Steering - forward/reverse	( )	_____

Drivers signature _____

Supervisors signature _____

ANNEX F

INSPECTION REPORT		DEPARTMENT
INSPECTOR(S)	AREA INSPECTED	REVIEWER
TYPE OF REPORT: INITIAL FINAL		DATE

ITEM TYPE	HAZARD CLASSIFIC-ATION	

CLASS A Likelihood of permanent disability, death or permanent/extensive loss of structure or material.
CLASS B Likelihood of serious interruptive injury.
CLASS C Likelihood of minor loss.

HOUSEKEEPING RATING FORM

RATING

AREA_____ DATE INSPECTED_____ INSPECTOR_____

INSTRUCTIONS FOR FILLING OUT:
Circle the appropriate score under the ITEM RATINGS opposite the item being evaluated. Place circled score in the score column. Add ratings for your total score.

> A place is in order when there are no unnecessary things about and when all necessary things are in their proper places.

	NO CREDIT	VERY POOR	POOR	FAIR	GOOD	EXCELLENT	SCORE
	ITEM RATINGS						
MACHINERY AND EQUIPMENT							
a. Must be clean and free of unnecessary material or hangings.	0	.5	1	1.5	2	3	
b. Must be free of unnecessary dripping of oil or grease.	0	1	2	3	4	5	
c. Must have proper guards provided and in good condition.	0	1.5	2.5	3.5	5	7	
STOCK AND MATERIAL							
a. Must be properly piled and arranged.	0	1.5	3	4.5	6	8	
b. Must be loaded safely and orderly in pans, cars and trucks.	0	1.5	2.5	3.5	5	7	
TOOLS							
a. Must be properly stored.	0	1	2	3	4.5	6	
b. Must be free of oil and grease when stored.	0	.5	1	1.5	2	3	
c. Must be in safe working condition.	0	1	2	3	4.5	6	
AISLES							
a. Must be provided to work positions, fire extinguishers, fire blankets and stretcher cases.	0	1	2	3	4.5	6	
b. Must be safe and free of obstructions.	0	1	2	3	4.5	6	
c. Must be clearly marked.	0	.5	1	1.5	2	3	
FLOORS							
a. Must have surfaces safe and suitable to work.	0	1	2	3	4.5	6	
b. Must be clean, dry and free of refuse, unnecessary material, oil and grease.	0	1	2	3	4.5	6	
c. Must have an adequate number of receptacles provided for refuse.	0	.5	1	1.5	2	3	
BUILDINGS							
a. Must have walls and windows that are reasonably clean for operations in that area and free of unnecessary hangings.	0	.5	1	1.5	2	3	
b. Must have lighting systems that are maintained in a clean and efficient manner.	0	.5	1	1.5	2	3	
c. Must have stairs that are clean, free of materials, well lighted, provided with adequate hand rails and treads in good condition.	0	1	2	3	4	5	
d. Must have platforms that are clean, free of unnecessary materials and well lighted.	0	.5	1	2	3	4	
GROUNDS							
a. Must be in good order, free of refuse and unnecessary materials.	0	2	4	6	8	10	
						TOTAL SCORE	

SAFETY TRAINING

AIM

The aim of this session is to introduce participants to Job Safety Analysis, Job Instruction Techniques, the preparation and delivery of safety talks and the role of induction training.

OBJECTIVES

As a result of this session, participants should be able to:

a. Conduct Job Analysis
b. Write Training Objectives
c. Deliver Effective Safety Talks
d. Design and conduct Job Instruction
e. Discuss the Induction Process

METHOD

This session consists of the film "You'll Soon Get The Hang Of It", a central presentation and small group discussion/exercises.

REFERENCES

VIDEO ARTS	"You'll Soon Get The Hang Of It"
LAIRD D	Approaches to Training and Development Addison-Wesley 1984
DAVIES I K	Instructional Technique McGraw Hill 1981

TOPIC	DISCUSSION NOTES
TRAINING	
Characteristics of Learning in Adults	
Induction Training	
Job Instruction Training	

TOPIC	DISCUSSION NOTES
TRAINING	
Describe the role of Safety training in an organisation	
A systems approach to training	1. 2. 3. 4. 5.
Job Analysis	
Task Analysis	
Safety Analysis	
Training Objectives	

A SYSTEMS APPROACH TO TRAINING

GENERAL

These notes contain a general description of systematic training and are intended to develop an understanding of the basic concept and operation of a training system.

THE APPROACH

A systematic approach to training involves the application of a logical, interacting series of steps from the point where a necessary task is identified to the end result, where a trained man or woman is to do that task. The application of a systems approach provides a structure for the management of training. It ensures an orderly approach to the end goal.

Most organisations acknowledge that training does not end after any particular course is completed, or at any given point in time. Training extends throughout the period an individual is connected with an organisation. A training system then must provide for the learning experience on-the-job as well as for the formal training individuals receive on courses. Formal courses should ensure the individual is provided with certain necessary skills and knowledge to perform the job. The individual's subsequent development into a competent and confident team member is the result of such training, together with the experience gained in adapting and applying it in the field or operational environment.

A training system is the framework for providing the members of an organisation with:

(a) the knowledge and skills to perform the tasks that have been proven necessary at the opening stages of their service;

(b) the necessary training experiences on-the-job during the period of service; and

(c) the necessary education and developmental experiences for individuals to move within their organisations to cater for both individual and organisational needs.

Finally, by relating all the factors concerned (personnel recruiting, job requirement, numerical requirement and equipment acquisition) to a total training system, organisations are provided with people who are trained to maximum efficiency at minimum cost.

EFFICIENCY AND EFFECTIVENESS

Efficiency

Training efficiency is a direct result of resource control. NB "Efficiency" is incapable of "concern"...Training that is efficient meets the training objectives using the minimum of resources - time, equipment, manpower. It is measured during and at the end of training.

Effectiveness

Training effectiveness is a measure of how well the training meets the needs of the trainee on the job. Effective training results in people who can perform their jobs well. It is measured after a formal training period has been completed; that is, out on the job.

Elements of the System

Quality control within a training system is based on certain related processes, each influenced by or dependent upon the other. These processes are:

[Analysis] [Design] [Conduct] [Evaluation] [Validation]

Analysis

Analysis involves the determination of all those activities essential to a course of training. It results in the production of the basic quality control documents. Initial activities include analysis of a person's job to find out what individual tasks are performed, together with a determination of the knowledge and skill levels required. Training objectives may then be precisely identified upon documenting what the individual must be able to do to perform the task, the conditions and the required standard of performance. These objectives may then be included within the context of formal and on-the-job training. Course training and on-the-job training requirements may then be written. These standards provide the basis of quality control documents.

DESIGN

(a) Course Training

Design of a particular training course is fundamentally a process of selecting and sequencing a series of learning experiences. They are intended to provide the trainee with the knowledges, skills and attitudes to perform at the levels set out in the objectives. The course training plan which states how the course is to be conducted is the quality control document for this phase. The plan lists the enabling skills and knowledge essential to the attainment of the performance objectives. It also lists training material, training method sequence of instruction, testing plans and procedures and other details necessary for the conduct of a training course.

(b) On-the-job Training

For on-the-job training the design process becomes very much a matter of planning the instructional units to meet the demands of the job environment. The job typically involves equipment and the availability of people - both trainers and trainees. Whilst the on-the-job training requirement is the trainer's quality control document, the means by which the objectives are achieved is a management responsibility.

COURSE CONDUCT

Course conduct is the procedure for carrying out training in accordance with a course plan, using whatever form of presentation of course material which best suits the purpose.

EVALUATION

The evaluation process is applied to both the trainee and the course. The achievement of each trainee is evaluated, followed in turn by an on-going assessment of the design and conduct of the course. It is an internal audit by training managers and ensures that training is efficient.

VALIDATION

Validation is the final step in the procedure. It is estimation of the validity of training objectives in relation to operational needs. It is an assessment of the value of operational units in affording the graduate the right amount of training in the knowledges and skills to permit him to do the job expected of him. The feedback obtained provides pointers towards areas of over-training, under-training or mis-training. The final step in the validation process is simply to use the feedback data to analyse and correct weaknesses in the system.

SUMMARY

These notes contain the outline of a five step training system. The system is designed to help both trainers and trainees through the design, presentation and evaluation of job-related instruction for training courses. The system ensures that training is both efficient and effective.

NOTES ON TRAINING OBJECTIVES

THE NEED FOR OBJECTIVES

Training objectives are normally derived from an analysis of jobs and tasks that people actually do. The use of objectives in training forces us to be explicit about what we teach and how we will measure that learning has taken place. If objectives are clearly stated in performance terms, and then made available to the instructors and trainees alike, everyone concerned in the learning event knows precisely what is expected for trainees to qualify in a given subject area.

If training objectives are not made crystal clear to the learner, a danger exists that he will concentrate his study on unimportant material and fail to grasp the essential matters of the subject. Equally, if they are not made crystal clear to the instructor a danger exists, that some material which really matters may be omitted or glossed over in order for instructors to pursue some personal area of interest. This leads logically to courses bearing the same title and giving the same paper qualifications, but which in practice graduate trainees with differing skill levels, and some skill deficiencies may lead to quite dangerous mishandling of casualties.

Training objectives shift the responsibility for deciding exactly what is to be taught from the individual instructor to the course designer. They also compel the instructor to be explicit about what he intends to teach and how he will measure the learners ability to master new topics.

COMPONENT

Training objectives should be used for each period of instruction and consists of the same three components.

(1) A statement of performance

(2) A statement of the conditions under which the performance will be observed, and

(3) A statement of the standard required

STATEMENTS OF PERFORMANCE

The performance component of a training objective should describe what the student must be able to do as a result of instruction. It must be expressed in terms of specific behaviour which the trainees can demonstrate and the instructor can observe. Care should be taken to ensure that this statement of performance is interpreted in exactly the same way by every instructor. For this reason terms such as "to know", or "to understand" or "have a general knowledge" or "a working knowledge" or "be familiar with" should be avoided as they do not specify what the instructor will accept as evidence that the trainee has mastered the subject.

Terms such as "to solve", "to state", "to treat", etc., indicate precisely what the trainee has to do to demonstrate he "knows" or "understands".

In writing the performance statement of training objectives the following points should be kept in mind.

(1) Is the statement a clear and unambiguous statement of what the trainee must do to demonstrate mastery of the skill?
(2) Will it be interpreted in exactly the same way by the instructor and the students?
(3) Is it attainable within the allotted period of instruction.

STATEMENTS OF CONDITIONS

Even given a precise statement of performance, misinterpretations can still occur unless the conditions under which the performance is demonstrated are specified. The trainees will need to know what materials will be available for assistance, and similarly what restrictions will be placed on them, e.g. "using improvised splits", "given an adult patient with simulated injuries", "by day and night" or "without assistance".

The conditions statement of training objectives determine more precisely what will be accepted as evidence of subject mastery. These statements also help to ensure uniformity of testing by different instructors.

STANDARDS

Having stated what the trainee is to do and specified the conditions under which it is to take place the last thing left to do is to specify how well. The standards statement should specify the minimum acceptable standard to be reached. The statement may refer to quality, quantity or time or it may specify a "fail criteria". These are illustrated in the examples listed below.

SUMMARY

To be acceptable, a training objective must state:

(a) Exactly what the Trainee must do to demonstrate that learning has taken place.
(b) The conditions under which the performance must be carried out.
(c) The standard to be reached.

EXAMPLE OBJECTIVES

To help ensure that objectives contain the essential components, the layout shown below is recommended:

SERIAL	PERFORMANCE	CONDITIONS	STANDARDS
1.	Treat a closed fracture of the lower leg	Practical Test given - 1. A narrative describing an accident 2. An adult patient with a simulated wound 3. Triangular bandages 4. Padding supplied Without Assistance	1. Injured limb bandaged to the uninjured limb 2. Padding used 3. Knees and ankles bandaged 4. Additional bandages above and below injury 5. Knots on uninjured side 6. Treat for shock 7. Test complete in ten minutes
2.	State the treatment for swallowed poisons	Oral Test Given - 1. Conscious patients a. Burning substances b. Other substances	1. Dilute poison with small drinks 2. Call ambulance 3. The student is to FAIL if the administration of emetics is prescribed 1. Induce vomiting 2. Call ambulance 3. FAIL if salt water is recommended as an emetic

SERIAL	PERFORMANCE	CONDITIONS	STANDARDS
		2. Unconscious patients	1. Place casualty in coma position 2. Resuscitate if necessary 3. FAIL if fluid given or casualty induced to vomit 4. Call ambulance

NOTES ON THE INDUCTION PROCESS

INTRODUCTION

What occurs on the first day a new employee arrives in an organisation, the manner by which they are welcomed and the way they are introduced to others may prove critical not only to future performance but to the length of their stay as well. This is so not only for new starters to an organisation but also to new starters to a different section within an organisation.

To all of us who have been through this experience and to countless others in the same situation the first days in a new job are disturbing and anxious. Whether you are new to the workforce or just new to a different area there is a problem of feeling like a stranger. New surroundings, different people, orientation to these plus a new job takes its toll. Those first few days and in particular the first one makes all the difference to how quickly they become productive, feel good about what they are doing and in some instances whether they will remain or go.

The induction process is concerned with the outlining of the job, work activities and obligations, the organisation and its functions, the section the person will work in and its relation to the overall organisation. The going through of this process is important to any new employee, anyone newly promoted and most importantly anyone demoted. The induction process is related to the contracting process and all persons responsible in the supervision field must perform both of these processes to ensure they are effective as a supervisor and that the people they are supervising have every opportunity to become effective employees as well.

The information normally conveyed in induction and orientation covers 3 areas:

1. General information

   i.e. the section involved, daily work routine, the job the individual will be doing.

2. An overview of the organisation

   (a) history
   (b) purpose/mission
   (c) products/outputs
   (d) where the job they will be doing fits in

3. Detailed information on

(a) pay
(b) conditions
(c) policies
(d) work rules
(e) employee benefits
(f) associations
(g) commencement/finish etc
(h) breaks/lunch etc
(i) leave/notification
    i) sick
    ii) recreation

JOINING AN ORGANISATION

When people decide to join an organisation or move into a new position they do so with the belief that they have something to offer, ability, aptitude, skills, experience and/or potential. Individuals also have personal goals, motives and hopes when they perceive this new job or organisation will satisfy. The employer/organisation purchases a contributor to its goals, or tasks and buys a persons knowledge and skills to assist in achieving them. What the employer buys is only that part of an individual which is required to perform those tasks. The expectations on both sides must therefore be ratified as there will be differences in perceptions and expectations and inevitably compromises will be required from the first to the last day of employment. All of us develop naive expectations about what it will be like in a new position. If very little is known about the new organisation or the people in it then an individual is likely to invent personal illusions of what to expect. The disorientation that occurs upon entering the new organisation will shatter some of these naive expectations. The anxiousness which people feel on entry to a new organisation will effect what occurs. Individuals worry about how they can and will perform in the job; they have feelings of inadequacy compared to the more experienced people, as well they are concerned as to how well they will get on with their new co-workers. For all these reasons the induction and orientation process should be aimed at reducing anxiety in new starters. Early job experiences play a critical role in the future performances of staff. During the induction and orientation process the expectations from both sides will be able to confront each other and where they are compatible, dissatisfaction will result, this dissatisfaction needs resolving to allow the two to go on in harmony. The turnover rate in staffing is almost always highest among new employees.

CHECKLIST FOR SUPERVISOR

The checklist for induction and orientation is a most useful way to ensure that the information needed is given to a new starter. Without a checklist a supervisor may well skip an important item of information needed by the new starter. Providing the checklist is used and the supervisor prepares for the interview the process will work.

AIM

To give the supervisor a step by step process to follow in inducting new staff.

OBJECTIVES

As a result of using the checklist approach a supervisor will be able to:

(a) reduce the anxiety experienced by new staff in organisations;
(b) give the new starter information on the job environment;
(c) advise them who their supervisor is and the process of direction and support;
(d) give the new starter a realistic job preview;
(e) give the individual an indication of what the consequences of good and poor performance will be;
(f) introduce the new starter to other staff;
(g) give new starter a tour of the organisation;
(h) give an overview of the organisation;
(i) impart information on organisation's policies, procedures, rules, regulations, objectives, etc;
(j) develop attitudes;
(k) answer any questions posed by the new staff member.

CHECKLIST - SAMPLE

1. Welcome the new employee

   When the new employee arrives, go to the reception area and greet the person cordially. Attempt to put the person at ease.

2. Show the workplace

   A tour of the work area where the new person will be placed. Briefly describe the group's work.

3. Introduce to co-workers

4. Tour of organisation

This can be delegated to one of your experienced staff. A tour of the organisation followed by a tour of the facilities to be used by the new starter i.e., staff room, cafeteria, restroom facility and any other facility or area which will be pertinent to the new person's job.

5. Personnel Department

Some organisations require a new starter to report to the Personnel Department first in which case they should then be escorted to their actual workplace and introduced to the Supervisor. If however, the new starter reports to the workplace first then the supervisor or their nominated representative should escort the person to the Personnel Department and introduce the new person to the staff clerk or appropriate person.

6. Explain telephone system

If the system is guided by a switchboard operator or receptionist, then take the new person along, introduce them and allow the switch operator to explain the system. This information especially on how to answer a call or make a call is essential to them on their first day, without overloading the individual on the more intricate details that can come later.

7. Important induction details

* time recording system
* start and finish times
* who the bosses are and what to call them
* what their job is
* any restrictions applied to -
  (a) behaviour
  (b) attire
* parking facilities
* lunch period and breaks i.e. tea
* rate of pay, method and time
* overtime, if applicable
* pay deductions
* what to do about errors in pay
* probation period, if applicable
* job and performance evaluation
* reporting of absences
* leave entitlements
* remind employee to come to you or your nominated representative if they have any questions or worries

Induction is easiest for all concerned on the first day of a new starter's arrival in the organisation. All new starters are anxious and insecure, at the beginning, changing behaviour (in minor ways), or establishing correct behaviour is easiest when you do it first off. By their second day, when the peer groups have told of the informal life in the organisation, you have missed the best opportunity to induct correctly.

OVERLOAD

A common problem experienced by supervisors when inducting new starters is to give them too much information on the first day. Too much information is useless because they will not remember it all and too little is potentially dangerous, not only in the safety sense, if that applies, but because too little information adds to the individuals insecurity and confusion on what is an anxious day in their life anyway.

Information overload means the person has been given too much information and detail too quickly. Try and give only the essential details the first day and follow up with further sessions spread over a period of, say, 2 weeks. This has two main advantages, firstly it stops overload on day one and allows the person to integrate gradually; secondly, it allows you as the supervisor to keep in close touch with the new person during the orientation phase of their employment and to monitor closely the quality of their induction. This monitoring process allows you to contract with the individual or re-contract if necessary. It also gives you an ideal opportunity to discuss factors like effort and achievement versus performance and rewards.

EXPECTATIONS

Many new staff become very disappointed in their first few weeks or months in a new position. Sometimes these difficulties may be due to the person's lack of information and preparation or confusion over to much, too little or conflicting information from the people in the workplace. Often unpleasant surprises result from what becomes unrealistic expectations. These expectations can arise through interviewers inflating the attractiveness of a job or by applicants themselves who may overstate their abilities or fail to research the job or the organisation prior to commencement. New employees may therefore soon learn that the initial job is not as challenging as they had expected, that the treatment they are getting is not special after all and that their ability to affect the organisation is nowhere near what they had been led to believe. This problem of inflated expectations can exist for anyone and is part of the prime reason for an effective induction and orientation programme.

An individual whoe expections become inconsistent with the realities of a new job is most unlikely to develop an effective and satisfying interpersonal or work role in the organisation.

THE REALITY SHOCK SYNDROME

The clash between high expectations and frustrating on-the-job experiences is without doubt an unpleasant and disconcerting experience for any individual. Such a disparity between initial job expectations and the hard realities of a job may come as a real shock to some people.

One particularly powerful cause of "reality shock syndrome" is the realisation that they must conform. This conforming to established procedures, practices, rules and regulations of an organisation may be far in excess of their original ideas. The socialisation process that all new starters go through involves aligning the new starter to the organisation's values, norms, behaviour patterns, dress codes, high sales quotas, performance standards, communications channels and command structure. To get ahead in an organisation, or just to fit comfortably within it, new starters soon discover they must conform to these long established patterns or norms. New starters may also learn that their ideas and suggested innovations are actively resisted. Organisations are slow to respond to change on occasions and new starters are often impatient with the process of achieving change or of being ignored altogether. Given these stark realities of conforming and non-conforming, or jobs not being as they were originally portrayed, it should hardly be surprising that many newcomers leave their jobs only a few months or years after they commence.

6 FACTORS WHICH CONTRIBUTE TO REALITY SHOCK SYNDROME

(Extracted from Douglas T. Hall, Careers in Organisations, Pacific Palisades, Calif. Goodyear 1976.)

1. Low initial challenge - Recruiters often overstate the promise and challenge of the first job in order to attract the most promising candidates. Most organisations, however, start new employees on comparatively easy projects and only gradually increase the difficulty of the projects as the recruits gain training and experience. Thus, the new employees' expectations of early job challenge are not fulfilled.

2. Low self-actualisation satisfaction - The recruiter may promise growth and self-fulfillment on the job; often however, the organisation rewards conformity to its customs and ways of doing things. Recruits who desire more independence may choose to look for another opportunity soon.

3. Lack of performance appraisal - Most organisations promise new recruits regular feedback on their performance. Most managers favour such feedback and believe that performance appraisal is necessary to motivate and train new employees. However, many managers perform the appraisal task poorly or neglect it entirely. Young recruits are left in a state of confusion about how well they are doing and what they need to do to improve.

4. Unrealistically high aspirations - New University Graduates and MBA's begin work eager to apply the modern skills and techniques that they have been taught. Many such graduates believe that they already have the ability to perform at managerial levels well above their entry position. In fact, they are generally unskilled in the practical applications of the techniques they have learned in school, and their high aspirations and "classroom theories" are often resented by others in the organisation: supervisors will generally not appreciate learning a skill they have been using is outdated. The fact that others do not rate them quite as highly as they rate themselves comes as a rude awakening to many young employees.

5. Inability to create challenge - When experienced individuals are given unchallenging jobs, they can often create challenge for themselves - by doing the job in a new and better way, or by asking for additional assignments. Recent graduates, however, accustomed to having challenging assignments presented to them, may have little or no experience in creating challenge on their own; they may therefore accept dull assignments passively.

6. Threat to supervisors - Often newcomers fresh out of college or graduate school bring more technical expertise to a job than their supervisors possess and may also be entering the organisation at a much higher salary than the supervisor initially received. For these reasons, the young recruits may be regarded as threats, and the relationship between superiors and the new employees can become somewhat strained.

SUMMARY - THE FOUR STAGES OF ON THE JOB TRAINING

The four states of on the job training are:

1. Preparation
2. Presentation
3. Try out
4. Follow up

STAGE 1

Define the purpose of the training in relation to your learning outcomes. Breakdown the tasks that the trainee has to learn into digestable chunks of information.

Prepare yourself and the materials you will need for your training, with particular attention to stationery items, time of the training and to the location to where it will be held.

NOTE: Preparation time is not wasted time.

STAGE 2

Put the trainee at ease and create interest.
Demonstrate the task. First at normal speed and then in detail slowly. Be patient, invite comments, use simple terms, give clear and complete instructions, and revise if necessary.

STAGE 3

If the trainee feels reasonably confident, let them have to go.
Check their understanding, watch closely, encourage at all times, explain any mistakes and put trainee to work on their own.

STAGE 4

Check the quality and quantity of output.
Still encourage questions and answers.
Decrease supervision gradually.
Review your training.

IF YOUR TRAINING IS TO BE AT ALL EFFECTIVE YOU MUST ADEQUATELY COVER ALL OF THE FOUR DIFFERENT STAGES.

CHECKLIST FOR ON-THE-JOB INSTRUCTION

HOW TO GET READY TO INSTRUCT

BREAK DOWN THE INSTRUCTIONS

Do the job or reherse the subject beforehand

DIVIDE INTO STAGES

SELECT THE KEY POINTS

GET EVERYTHING READY AND PROPERLY ARRANGED

Layout, materials, equipment

HOW TO INSTRUCT

STEP 1 PREPARE
Explain the purpose of the training. Check current knowledge level of trainee.
Set standards to be reached.

STEP 2 PRESENT
Tell, show, illustrate as appropriate. Stress key points. Instruct clearly at a suitable pace. Give practice examples.

STEP 3 TRY OUT
Review steps and key points. Check that trainees have understood. Have job done and correct errors as they occur. Answer any questions.

STEP 4 FOLLOW UP
If any points were not properly understood follow up with extra training. Ensure that trainees are given the opportunity to use their new skills.

SAFETY COMMITTEE

AIM

The aim of this session is to introduce participants to the techniques of forming safety committees, their functions and the general administration associated with committee work.

OBJECTIVES

As a result of this session, participants should be able to:

- describe the methods by which health and safety committees are established;
- discuss the makeup of the health and safety committees;
- discuss the function of health and safety committees;
- describe the organisation and conduct of meetings.

REFERENCES

WA GOVT	Occupational Health Safety and Welfare Act 1984 (incorporating the 1987 Amendment)
CCH	Occupational Health and Safety Committees Manual, CCH 1984
VIDEO ARTS	"Meetings Bloody Meetings", Video Arts "More Bloody Meetings", Video Arts

TYPES OF MEETINGS

FORMAL	INFORMAL
Notice of meeting given well in advance, in writing	Advance notice may only be verbal
Written agenda (order of business) prepared in formal terms	Agenda usually in informal terms; may simply be a list
Has officials - Chairman, secretary	Has discussion leader rather than chairman
Rigid procedures often in accordance with written (even printed) rules of constitution difficult to vary	Flexible procedures; reference rarely made to rules or conventions of discussion
Formal minutes recorded	Record made simply of items discussed, decisions made and further action
Matters discussed are usually of policy or general application to the whole organisation	Matters discussed are usually recent, current, specific, reviews, problems emergencies or reports - to do with the day-to-day running of the organisation or sub-section

AGENDA

- Structured - who is in the chair
- Circulated prior to meeting (with any pre-reading)
- Weightings and timings indicated
- Items should be relevant to meeting

MINUTES

- Whose taking them
- Sending them out - when!
- True record
- All attendees
- Don't forget any tabled reports and copies of handouts

WHAT GOOD MEETING LEADERS DO

DO

- Start and finish on time
- Know what you want to say
- Have your materials all ready, at hand
- Talk the audience's language
- Make your presentation simple and to the point
- Speak clearly; be confident and enthusiastic
- Use visual aids (picture/words)
- Listen to other opinions and encourage people to speak up
- Take a break if the meeting runs much over an hour
- Close up on a positive note, and make sure everyone understands what's been decided

DON'T

- Hog a meeting called to get ideas
- Let people drift off on other subjects
- Get upset when people disagree with you
- Try to be funny - when you're not
- Make fun of anyone
- Allow arguments
- Let the meeting bog down

CHAIRPERSON'S FUNCTIONS

1. Prepare or organise an agenda.
2. Ensure that all entitled to receive a notice of the meeting do so.
3. Ensure that the notice conforms to the rules.
4. Open the meeting (after ascertaining that a quorum is present).
5. Welcome guest speakers, new members/participants and other visitors.
6. Ensure the smooth passage of the business before the meeting.
7. Ensure that a quorum is present at all times.
8. Sign minutes as correct when they have been confirmed.
9. Present any reports for which she/he is responsible.
10. Introduce guest speakers and arrange votes of thanks.
11. Ensure the appointment of a Returning Officer in the case of elections, and invite him/her to declare the result at the appropriate time.
12. Ensure that debates are conducted in a correct manner (and according to the rules).
13. Give rulings on Points of Order and other questions of procedure, with explanations).
14. Prevent heckling, while being tolerant of reasonable interjections.
15. Keep discussion to the topic (and insist that at all times motions be put to the chair and that all remarks be addressed to the chair).
16. Use discretionary powers in the best interests of the meeting (e.g. in accepting or refusing to accept procedural motions).
17. Ensure that all business is properly and fully dealt with before concluding.

1. Send out notices of meeting in advance, to all entitled to attend.

2. Help Chairperson prepare the agenda.

3. Send out the agenda.

4. Arrange with Treasurer to prepare financial reports and accounts for payment.

5. Sort out and list inward and outward correspondence.

6. Ensure that the minutes of the previous meeting are complete, correct and legible.

7. Prepare the meeting room.

8. Receive apologies from members not attending.

9. Prepare a file of all relevant papers likely to be required by the meeting.

10. Prepare by becoming familiar with the meeting content.

11. Ensure a copy of the Rules and/or Constitution is available at the meeting.

12. Take minutes, separating the unimportant from the important.

13. Read correspondence to the meeting.

14. Remind members of allocated tasks at the end of the meeting.

15. Prepare the minutes.

16. Circulate the minutes.

17. Attend to correspondence.

18. Keep all correspondence and other records in accessible files.

19. Acknowledge letters which can be answered without waiting for a meeting.

20. Keep in touch with the President and Treasurer.

ROLES PEOPLE PLAY IN MEETINGS

GROUP-BLOCKING ROLES

The Agressor	Criticises and deflates status of others; disagrees with others aggressively
The blocker	Stubbornly disagrees; rejects others' views; cites unrelated personal experiences; returns to topics already resolved
The Withdrawer	Won't participate; "wood gatherer"; converses privately; self-appointed note-taker
The recognition	Boasts; excessive talking; conscious of their status
The topic jumper	Continually changes subject
The Dominator	Tries to take over; assert authority, manipulate group
The Special Interest Pleader	Uses group's time to plead their own case
The playboy	Wastes group's time showing off; story teller; nonchalant, cynical
The Self-Confessor	Talks irrelevantly about their own feelings and insights
The Devil's Advocate	More devil than advocate

GROUP-BUILDING ROLES

The Initiator	Suggests new or different ideas for discussion and approaches to problems
The Opinion Giver	States pertinent beliefs about discussion and others' suggestions
The Elaborator	Builds on suggestions of others
The Clarifier	Gives relevant examples; offers rationales; probes for meanings and understanding; restates problems
The Tester	Raises questions to "test out" whether group is ready to come to a decision
The Summariser	Reviews discussion; pulls it together

GROUP MAINTENANCE ROLES

The tension reliever	Uses humour or calls for breaks at appropriate times to draw off negative feelings
The Compromiser	Willing to yield when necessary for progress
The Harmoniser	Mediates differences; reconciles points of view
The Encourager	Praises and supports others; friendly; encouraging
The Gate-Keeper	Keeps communication open; encourages participation

LISTENING

TEN DETERRENTS TO EFFECTIVE LISTENING

1. Assuming in advance that the subject is uninteresting and unimportant

2. Avoiding technical messages

3. Getting over-stimulated when questioning or opposing an idea

4. Listening only for facts, wanting to skip details

5. Mentally criticising the speaker's delivery

6. Outlining everything

7. Over-reacting to certain words and phrases

8. Permitting the speaker to be inaudible or incomplete

9. Pretending to be attentive

10. Withdrawing attention, day-dreaming

LISTENING

EIGHT PRINCIPLES OF EFFECTIVE LISTENING

1. Comprehension
2. Concentration
3. Efficiency
4. Empathy
5. Experience
6. Objectivity
7. Self-Motivation
8. Selectivity

SIX TECHNIQUES FOR LISTENING EFFICIENCY

1. Anticipating
2. Between-Lines Listening
3. Clarifying
4. Identifying Structure
5. Mental Summarising
6. Note-Taking

ANALYSING PERFORMANCE PROBLEMS

AIM

The aim of this session is to provide participants with two practical methods of improving the performance of individuals and groups. The session will use R F Mager's Performance Problems System, D Laird's Performance Analysis Model, and T Gilbert's Human Engineering concepts.

OBJECTIVES

As a result of this session participants should be able to:

(a) discuss the techniques for analysing performance;

(b) discuss the environmental and human factors affecting human performance;

(c) improve the performance of their subordinates.

METHOD

This session consists of a central presentation followed by small group discussion.

REFERENCES

MAGER R F Analysing Performance Problems, Fearon 1970.

LAIRD D Training & Development Handbook, Addison-Wesley 1984.

GILBERT T Human Competence

DECISION TREE

ANALYSING PERFORMANCE PROBLEMS

Discovery of a performance problem

Do the poor performers know how?
- Yes → Do they get enough practice?
- No → Provide training for acquisition of knowledge and skill.

Do they get enough practice?
- Yes → Can they measure their own performance on the job?
- No → Provide drill sessions (on or off the job) or chances to perform the task frequently on the job.

Can they measure their own performance on the job?
- Yes → Are there positive consequences for proper performance?
- No → Design and install a feedback mechanism.

Are there positive consequences for proper performance?
- Yes → Is the job do-able?
- No → Add positive contingencies for proper performance and remove negative consequences, remove positive consequences for undesired behaviour.

Is the job do-able?
- Yes → Does the environment permit proper performance?
- No → Simplify the complex jobs or enrich the impoverished jobs.

Does the environment permit proper performance?
- Yes → The tests made thus far should have uncovered the cause of the problem. If they haven't done so, recheck the data. If the problem doesn't merit this further analysis, start at the top of the chart and invest your energy in solving another, more critical performance problem.
- No → Suggest organisation development. If the manager accepts, sign a contract or locate a consultant who can do so, thus launching an OD intervention.

A BEHAVIOUR MODEL FOR CREATING INCOMPETENCE

	Information	Instrumentation	Motivation
E Environmental Supports	Data 1. Don't let people know how well they are performing. 2. Give people misleading information about how well they are performing. 3. Hide from people what is expected of them. 4. Give people little or no guidance about how to perform well.	Instruments 1. Design the tools of work without ever consulting the people who use them. Keep the engineers away from people who use the tools.	Incentives 1. Make sure that poor performers get paid as well as good ones. 2. See that good performance gets punished in some way. 3. Don't make use of non-monetary incentives.
P Person's repertory of behaviour	Knowledge 1. Leave training to chance. 2. Put training in hands of supervisors who are not trained instructors. 3. Make training unnecessarily difficult. 4. Make training irrelevant to the students' purposes.	Capacity 1. Schedule performance for times when people are not at their sharpest. 2. Select people for tasks they have intrinsic difficulties in performing. 3. Do not provide response aids (eg. magnification of difficult visual stimuli).	Motives 1. Design the job so that it has no future. 2. Avoid arranging working conditions that employees would find more pleasant. 3. Give pep talks rather than incentives to promote performance in punishing situations.

THE BEHAVIOUR ENGINEERING MODEL

	Information	Instrumentation	Motivation
E Environmental Supports	Data 1. Relevant and frequent feedback about the adequacy of performance 2. Descriptions of what is expectance of performance 3. Clear and relevant guides to adequate performance	Instruments 1. Tools and materials of work designed scientifically to match human factors	Incentives 1. Adequate financial incentives made contingent upon performance 2. Non-monetary incentive made available 3. Career-development opportunities
P Person's repertory of behaviour	Knowledge 1. Scientifically designed training that matches the requirements of exemplary performance 3. Placement	Capacity 1. Flexible scheduling of performance to match peak capacity 2. Prosthesis 3. Physical Shaping 4. Adaption 5. Selection	Motives 1. Assignment of people's motives to work 2. Recruitment of people to match the realities of the situation

M.B.W.A.

AIM

The aim of this session is to introduce participants to the concepts of Managing By Walking About and its application to the safety environment.

OBJECTIVES

As a result of this session, participants should be able to:

- describe the techniques of MBWA;
- discuss the benefits of MBWA; and
- use MBWA to improve safety performance.

METHOD

This session consists of a short introduction followed by the film G.O.Y.A. and a group discussion.

REFERENCES

PETERS T.	The Excellent Challenge, Audio Tape Series No 3 "The Psychology of Small Wins".
RANK FILMS	G.O.Y.A.

- FACTORS IN SUCCESSFUL OCCUPATIONAL SAFETY PROGRAMMES -

Alexander Cohen

A review of relevant research on successful occupational safety programmes reveals a number of factors of particular consequence. Evidence of a strong management commitment to safety and of frequent, close contacts between workers, supervisors, and management on safety matters loom as the two most influential and dominant factors. Other relevant factors include workforce stability and personnel practices that promote such stability (i.e., well developed selection, job placement, and advancement procedures), stringent housekeeping and effective environmental controls, training emphasis on early indoctrination and follow-up instruction, and special adaptation of conventional safety practices to enhance their suitability to the workplaces in question. Overall, it was suggested that maximally effective safety programmes in industry will be dependent on those practices that can successfully deal with "people" variables.

What are the critical determinants of a successful industrial safety programme? Do the safety programmes of companies with consistently good safety performance reveal any unusual or distinctive features that may account for their success? A number of research efforts over the years have sought answers to these questions, and this paper will review such work. As will be shown, there are certain commonalities in the findings from these different studies that can offer insights into effective safety programming in industry.

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- RESEARCH APPROACHES AND RESULTS -

Research seeking to isolate factors in successful occupational safety programmes has taken three forms. These are: (1) Opinion polls of company safety officials or other personnel knowledgeable in job safety; (2) analysis of safety practices common to companies having outstanding safety performance; and (3) comparisons of safety programme practices in companies with high work injury experience versus those with low injury rates.

Notable studies using each of these approaches are listed in Table 1, which provides a synopsis of relevant research on the topic. The Main Findings section of this table defines by code number the more important, outstanding, or discriminable safety practices bearing on safety programme effectiveness as found in the reviewed studies. The enumeration of such practices and their grouping under certain general factor headings (management committment, hazard control, safety training) represent the author's efforts to organise the findings in a meaningful way. That liberal interpretations were required in some instances to fit the results from different studies into this classification scheme is readily admitted. The numbers have no rank order or qualitative significance but merely serve for identification purposes. Aspects of those safety practices found to be particularly significant, and thus worthy of entry in Table 1, are explained in the discussion of the various studies that follows.

Opinion polls: The literature includes two studies of this type. In one, Planek and his colleagues at the National Safety Council (NSC) (Planek, Driessen. & Vilardo, 1967) had safety officers in member companies of the industrial conference and selected NSC staff rate the importance of different occupational safety practices. Via a mail questionnaire, a total of 78 safety practices were rated in their importance as were the eight main programme elements under which they were subsumed. These main elements were: (1) Top management participation: (2) Middle management participation: (3) Supervisory participation: (4) Screening and training: (5) Engineering, inspection and maintenance: (6) Recordkeeping: (7) Motivation and education: and (8) Safety personnel coordination:

Returns received from 100 out of 145 safety officials polled in this survey gave the highest importance ratings to supervisory and top management participation in comparisons among the major programme elements. Three practices reflecting top management participation were also among the top 10 practices in rated overall importance. These were: "Top Management setting an example by behaviour in accordance with safety regulations," "Top management assigning a staff person to coordinate safety on a full or part-time basis," and "Top Management publishing a policy expressing management's attitude on safety."

Three practices related to the major element of screening and training were also listed in the top 10 practices in importance. These were: "Training new or transferred employees in safe job procedure." "Making safety a part of every new worker's orientation," and "Including safety in supervisory training courses."

Other practices rated among the top 10 in importance were supervisory enforcement of safe job procedures, both middle management and supervisory personnel setting examples of safe job behaviours, and safety staff advising management in formulating safety policies. The results shown in Table 1 for this poll include only those practices rated among the top 10 in overall importance. Because of their more general nature, eight of the coded definitions used in Table 1 were believed sufficient to encompass these 10 items.

Motivational and educational techniques, as a main programme element, was rated the least important, with a number of its underlying practices (e.g., offering prizes to employees in safety contests, departmental incentives to safety performance) rated in the bottom 10 items in this survey poll.

The findings of a later survey by Mobley (1974) supported some of the poll results of Planek et al. (1967). Mobley analysed the replies of safety officials and line managers in 43 glass and ceramics plants who were asked to rate the importance of 60 different factors to accident prevention. The factors dealt with management support of safety activities and safety training among others, and, as in Planek's poll, these factors received high importance ratings. Mobley also had the respondents judge the extent to which these different factors were descriptive of their own companies and then correlated these judgements with work injury frequency and severity rates for these establishments for 1972. These analysis showed increasing extent scale ratings for top management support and safety training factors to be associated with decreasing work injury experience, and this co-variation proved statistically significant.

The coded results for this study in Table 1 acknowledge practices presumed to best characterise the aspects of management commitment and training alluded to in Mobley's poll.

Analysis of practices in companies with outstanding safety performance: The second approach to identifying factors in successful safety performance has been to search for similarities in the safety programme practices of companies that have won awards or otherwise distinguished themselves for low work injury experience. A survey of this type was cited in the Accident Prevention Manual for Industrial Operations published by NSC in 1964. It consisted of querying 54 company winners of safety performance awards in different industrial sections of the NSC about their programme organisation and activities. The responding plants had accident frequency rates that were one fourth the average incidence for all plants in their respective industrial sections. The results revealed only a few common programme practices among the award winners. These were the active support of management in the programme including appointment of a full-time safety officer, use of pre-placement physical examinations, and the inclusion of safety news in plant publications. Types and functions of safety committees and the use of contests for promoting safety elicited more variable responses among the award-winning firms. The results from this survey in Table 1 include those safety practices or activities that were common to over 70% of the companies.

By itself, this NSC survey appears to have limited value, since few details were provided about the nature of any given practice engaged in by the respondent companies or whether they thought these practices were responsible for their success in accident control.

Using a similar approach, Davis and Stahl (1967) completed a detailed analysis of the safety programme practices of 12 coal mining companies that had won awards for their efforts in reducing the number of work-connected injuries. Each company selected for this sample had at least one mine site with no lost-time injuries for a year or longer. Interviews with the safety officials of these companies gave indications of many conventional safety practices being followed in rather thorough fashion. Common to most or all of these firms, for example, were active safety committees, well developed procedures for investigating and reporting accidents, regular updating of safety rules, reports on real accidents and "near misses," daily safety inspections, and extensive training of workers and supervisors in safe job procedures. Still other factors, however were believed influential to their safety performance. The safety officials of these companies acknowledged frequent, daily contacts between workers and supervisors on safety and other job matters as being most important to their accident control efforts. Top management's attitude toward safety was also cited as another significant factor; the safety officers in these award-winning mines had staff status and reported to the persons charged with overall mine management, that is, they were not subordinate to production personnel.

Evidence of special safety practices was also found in the mining companies studied. One was a well defined system for dealing with violators of safety rules, including supportive procedures to help such persons resolve these behavioural or other problems. Another was the use of various appeals to workers' families to enlist their assistance in promoting safe work habits. Still another was preparing posters to depict work hazards or safe job procedures exactly rather than depend on standard signs that only approximated what was desired. These extra efforts and the aforementioned other actions were considered by the authors to be revealing evidence of management's genuine concern in preventing work injuries and in doing everything possible to eliminate job hazards or unsafe acts. The entries in Table 1 for this study fully account for the observations cited.

A recent report of safety practices in low accident plants by the Accident Prevention Advisory Unit in Great Britain (1976) showed the generalisability of Davis and Stahl's findings to non-mining work establishments. The study sample consisted of 7 plants whose accidents rates for serious injuries were less than half of the average rates for their respective industries, which included electronics, oil refining, metal products, and cement making. The approach involved on-site visits in which management personnel, union representatives, and workers were interviewed, work areas inspected, and accident and medical files examined. As in the Davis and Stahl study, factors found in common in these firms were: (1) A strong management commitment to safety as reflected by their knowledge of the problems, their conviction that high safety standards were attainable, and their motivation to work toward those ends: (2) extensive formal and informal contacts between workers and management on safety issues: (3) a respected position and functions for the company safety officer; and (4) well established hazard recognition, safety training, and other conventional accident prevention practices. Some added factors found characteristic of these low accident establishments were a high level of housekeeping and compliance with regulatory standards, considerable care in employee recruitment and selection, and comparatively less labour turnover and absence. The entries in Table 1 for this study provide a fair approximation of the practices identified above.

The latest analysis of safety programme practices in award-winning companies was undertaken by the National Institute for Occupational Safety and Health (NIOSH) in 1976 (Cleveland, Cohen, Smith, & Cohen, in preparation). This work was a supplement to a main study that used yet another approach in defining aspects of successful safety programmes. The results from this research, although shown separately in Table 1, are summarised in the context of the total NIOSH project, which is discussed in the following section.

Safety programme practices in companies with high vs low work injury rates. Examining companies with outstanding safety records to uncover practices or other factors related to successful safety performance suffers from the absence of control data on the practices or conditions of companies with average or poor safety records. Without the latter, one cannot gauge whether factors shared by most or all of the award winners are truly distinctive and in what way. A third approach takes account of this deficiency. It involves comparisons of safety programme practices and related factors in pairs of companies where the members of each pair differ greatly in accident experience but are matched on other variables such as type of industry, company size, and geographic area.

Two studies have employed this plan in attempting to define factors responsible for differential safety performance. In the first investigation, Shafai-Sahrai (1971) studied 11 pairs of companies representing 11 different manufacturing industries in the state of Michigan. The companies comprising each pair were approximately equal in size and engaged in similar work but differed by 3 to 1 in accident frequency rates for 1969. The research procedure involved structured interviews with company management and walk-through surveys of the work areas. The focus of the evaluation was on aspects of management's concern for plant safety, make-up of the workforce, safety promotions, safety features of production machinery, physical workplace conditions, existence of safety committees, and the nature of safety rules.

Comparisons between the paired high and low accident firms in this study confirmed certain observations from the studies previously mentioned. Regarding top management's interest in safety, Shafai-Sahrai found plant managers of the low accident plants more inclined to conduct personal safety audits, include safety figures on agendas of company meetings, and otherwise actively participate in the implementation of safety plants. A smaller span of supervision (fewer workers per foreman) was also found in the low accident plants. This could afford greater frequency of contacts between individual workers and their supervisors, which was previously noted as a major factor in the safety performance of the award-winning mining companies (Davis & Stahl, 1967), and observed again in the British study of low accident establishments (1976). As in the British investigation, Shafai-Sahrai also found cleaner work places and better lighting, ventilation, and noise control in the plants with low accident records.

TABLE 1
SYNOPSIS OF MAJOR RESEARCH DEFINING FACTORS IN SUCCESSFUL SAFETY PROGRAMS AND SAFETY PERFORMANCE

TYPE OF APPROACH	AUTHORS	STUDY PLAN AND DATA SAMPLE	MAIN FINDINGS*							
			MGM	HAZ	TRG	MOT	EMP	INS	REC	WKF	SAF
Opinion poll	Planek, Driessen, & Vilardo (1967)	Via mail-out questionnaire, ratings made of importance of 78 operational practices, grouped under 8 major safety programme elements (top management participation, selection and training, motivation, and education). Returns from 100 safety officials in companies belonging to the National Safety Council provided the data base.	1 2 4		1 2 3			2			3
	Mobley (1974)	Via mail-out questionnaire, safety/management officials of 43 glass and ceramics plants rated the importance of 60 factors to accident prevention and judged the extent to which these factors were descriptive of their companies. The latter judgements were correlated with work injury rates for the respondent plants.	2 4		1						
Analysis of factors common to companies having outstanding safety performance	National Safety Council (1964)	Inquiries into safety practices of companies receiving outstanding safety performance awards. The data base was responses from 54 companies whose lost time injuries were 1/4 the average reported in their respective industrial categories.	1 2		1	 3	1				
	Davis & Stahl (1967)	Interview with safety officials in 12 coal mining companies which had achieved significant reductions in lost-time injuries. Information sought on programme practices and outstanding activities relative to safety.	1		2	1 2 3	1 2	1 2	1 2 3	2	1 2

TYPE OF APPROACH	AUTHORS	STUDY PLAN AND DATA SAMPLE	MAIN FINDINGS*								
			MGM	HAZ	TRG	MOT	EMP	INS	REC	WKF	SAF
	Accident prevention unit, Factory inspectorate, United Kingdom (1976)	Site visits, interviews, workplace inspections, records review to analyse safety programme practices and related factors in 7 plants whose accident rate was half of the average rates reported for their respective categories.	1 2 4	1	1 2		1	1 2 4		4	
	Cleveland, Cohen, Smith, & Cohen (in preparation)	Mail questionnaires, site visit interviews, and walk-through surveys in 5 plants holding best no lost-time injury records which were still ongoing. (This work was supplement to major project described below by same authors).	1 2 3 4	1 2 3	1 2	1 2 3	1 2 3	1 2 4	1 2 3	1 2 3 4	1 2 3
Comparison of safety programme practices in companies with high vs. low work injury rates.	Shafai-Sahrai (1971)	On-site interviews with plant officials and walk through surveys of work areas in 11 pairs of plants in onr state (Michigan, USA). Members of each pair were matched in industrial operation and company size but differed by more than 3 to 1 in injury incidence. Focus of study on aspects of management interest, workplace conditions, safety promotions, workforce characteristics, and safety devices on equipment.	2 3	1 3			3	3	1	1 2 3	

TYPE OF APPROACH	AUTHORS	STUDY PLAN AND DATA SAMPLE	MAIN FINDINGS*								
			MGM	HAZ	TRG	MOT	EMP	INS	REC	WKF	SAF
	Cohen, Smith, & Cohen (1975); Smith, Cohen, Cohen, & Cleveland (1975)	In initial mail questionnaire phase, returns received from 42 pairs of plants in one state (Wisconsin, USA). Members of each pair differed by more than 2 to 1 in injury incidence for 1972-1973 but were otherwise matched in industrial operation, workforce size, and location. Questionnaires sought data on top management involvement in safety, hazard control, training, safety motivation, accident investigation and recordkeeping methods, and makeup of workforce. A second phase involved on-site interviews and walk-through surveys of a subsample of 7 pairs of questionnaire respondents to amplify data on management practices and workplace conditions.	1 2	1 3	1 2 4	1	1 2 3	1 4		1 2 3 4	3

* The numbers in each column of the table refer to the most important, outstanding, or discriminable practices bearing on successful safety performance as found in the research cited. These practices are grouped into general factor areas and defined by number below:

General Factor	Safety practice definitions by code number
Management commitment (MGM)	1 Safety officer holds high staff rank. 2 Top officials are personally involved in safety activities; eg. they make personal plant safety tours and give personal attention to accidental injury reports. 3 High priority is given to safety in company meetings and in decisions on work operations. 4 Management sets clear safety policy and goals.
Hazard control (HAZ)	1 There is a high level of housekeeping 2 There is orderly design/layout of work processes. 3 There are good environmental qualities (ventilation, lighting, noise control). 4 There is a greater number and variety of safety devices on operating machinery

General Factor		Safety practice definitions by code number
Safety training (TRG)	1	Safety is included in new worker orientation.
	2	Workers are given initial and follow-up training in safe job procedures.
	3	Supervisors are given special safety training.
	4	A variety of safety training techniques (lectures, films, group discussions, simulations) are used.
Safety motivation (MOT)	1	A humanistic approach is used in disciplining safety violators (eg. provisions for employee counseling).
	2	Worker families are enlisted in safety promotions.
	3	Specially designed posters/displays are used for hazard recognition.
	4	Individual praise, recognition are given for safe job performance.
Employee support (EMP)	1	There are well established procedures for job placement and advancement.
	2	There are personal counseling services.
	3	There are recreational facilities and programmes for off-job hours.
Inspection and communications (INS)	1	There are daily worker-supervisor contacts on safety or other job matters.
	2	Formal inspections are made at regular, frequent intervals.
	3	There is a smaller span of supervisory control.
	4	There are numerous informal contacts between workers and top officials.
Accident investigations and recordkeeping (REC)	1	Investigations and records are kept both on disabling (lost-time) injuries and nondisabling ones.
	2	Investigations are made of property accidents and "near misses."
	3	There is regular use of reports for prompting hazard control measures.
Make-up of workforce (WKF)	1	Workers are generally older.
	2	Workers generally have longer experience in their jobs.
	3	There are more married workers.
	4	There is less turnover and absenteeism in the workforce.
Safety committee and safety rules (SAF)	1	The safety committee holds regular, frequent meetings.
	2	Safety rules are regularly reviewed and updated in light of accident experience.
	3	There is evidence of management and staff compliance with rules.

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	2	Investigations are made of property accidents and "near misses."
	3	There is regular use of reports for prompting hazard control measures.
Make-up of workforce (WKF)	1	Workers are generally older.
	2	Workers generally have longer experience in their jobs.
	3	There are more married workers.
	4	There is less turnover and absenteeism in the workforce.
Safety committee and safety rules (SAF)	1	The safety committee holds regular, frequent meetings.
	2	Safety rules are regularly reviewed and updated in light of accident experience.
	3	There is evidence of management and staff compliance with rules.

Other factors associated more with low than high accident companies in Shafai-Sahrai's results were: (1) More complete accident recordkeeping systems; (2) greater availability of company recreational programmes and facilities; (3) a greater number of married, older workers with greater lengths of job service; and (4) more and better safety devices on operating machinery. Existence of safety committees, quantity and quality of work safety rules, age of company, and production machinery did not prove to be differential factors in comparing the high and low accident companies. Table 1 takes into account only those practices that gave discriminating results between the paired high and low accident companies in Shafai-Sahrai's study.

A NIOSH project, begun in 1974, sought to verify and expand upon the work of Shafai-Sahrai (Cleveland et al, in preparation; Cohen, Smith & Cohen, 1975; Smith, Cohen, Cohen & Cleveland. 1975). In the first phase, questionnaire returns were analysed from 42 pairs of companies in Wisconsin (Cohen et al, 1975). The members of each pair were matched in industrial operation, workforce size, and geographic sector within the state but differed by at least 2 to 1 in work injury incidence as reported for 1972 and 1973. The questionnaire inquired into aspects of management interest in safety, safety motivation, training, hazard control, accident investigation and reporting, inspections, and workforce characteristics.

In a second phase, on-site discussions were held with management and worker representatives in seven pairs of companies responding to the mail questionnaire in phase 1 (Smith et al, 1976). These site visits were intended to clarify answers to the questionnaire items and gain added information on related management practices. Walk-through surveys were also made of the work areas to gather first-hand observations of plant conditions. The last phase of the NIOSH project involved supplemental data being collected by the same questionnaire and site visit methods at five US plants recognised as having the best ongoing no lost-time injury records (Cleveland et al., in preparation). At the time of this supplemental study, the five plants had logged from 17 to 60 million man-hours of work without a disabling lost-time injury.

The NIOSH data proved consistent with many of Shafai-Sahrai's results and further corroborated some findings from the studies using other approaches already cited in this review. Specifically, the NIOSH project found the following factors to be more evident in the low accident companies than in their high accident partners, and to be particularly prominent in the record-holding establishments:

1. Greater management concern and involvement in safety matters exist, as reflected by the rank and stature of the company safety officer, regular inclusion of safety issues in plant meeting agenda, and personal inspections of work areas by a top plant official, in some instances on a near daily basis.

2. There are more open, informal communications between workers and management and frequent everyday contacts between workers and supervisors on both safety and other job matters.

3. There are tidier work areas with more orderly plant operations, better ventilation and lighting, and lower noise levels.

4. The workforce has more older, married workers with longer job service and less absenteeism and turnover.

5. There is more regard for the use and effectiveness of measures other than suspensions and dismissals in disciplining violators of safety rules, eg. provisions for personal counseling in such matters.

6. There is greater availability of recreational facilities for worker use during off-job hours.

7. Greater efforts are made to involve worker families in campaigns for promoting safety consciousness both on and off the job.

8. There are well defined selection, placement, and job advancement procedures with opportunities for training in developing new skills.

All of the aforementioned practices found to be more characteristic of low accident companies than their high accident partners are duly noted in Table 1.

Somewhat greater interest in safety inspections and safety training activities were displayed in the low accident companies than in their high accident cohorts, but the techniques in use for both sets of companies were informal and not systematically undertaken.

Well established and functioning safety committees and sophisticated accident investigation and reporting schemes were found in the record-holding firms, but these did not prove to be differentiating factors between the high and low accident companies in the larger NIOSH study sample where such activities were carried on in less elaborate fashion. Interestingly, the low accident companies and record-holding plants attached little importance to prizes and contests for motivating job safety. A number of high accident plants appeared to be preoccupied with these ideas. The high accident plants also tended to stress engineering approaches for controlling hazards in operating machinery and work processes. This may have been a reaction to their greater problems in this area due to the many new federal regulations requiring such physical control measures (Occupational Safety and Health Standards, 1974).

- DISCUSSION -

Despite differences in approach, certain factors repeatedly emerge in the course of this review, emphasising their strong connection with successful safety performance. Some seem more independent, controlling factors, others more interdependent and supportive ones. This will be discussed in greater detail in the following sections.

Management commitment. Management commitment to safety, that is, its overt concern and support for safety activities, represents a dominant factor in successful safety experience in industry. As shown in Table 1, frequent and varied expressions of this factor occur in almost all of the cited studies, regardless of the approach used. The importance and respect for the safety officer's position on staff, the personal involvement of top management officials in everyday safety activities, the regular inclusion of safety in plant operational decisions are all indicative of management's genuine interest in accident prevention. Perhaps most exemplary in this regard was top management's attitude in several record-holding plants included in the NIOSH study, presumably representing the most successful of all safety programmes (Cleveland et al, in preparation). Interviews with top management in these firms suggested that they placed the same emphasis on safety as on the quality and quantity of their production and sales.

It has long been maintained that management commitment may be a significant determinant to an effective safety programme. The collective evidence presented here of actions marking that commitment and of its association with better or outstanding safety records gives added meaning to this factor.

Existence of strong management commitment to safety is probably responsible for other factors shown to be linked with successful safety performance. Indeed, one cannot envision high levels of housekeeping, well designed plant operations, good environmental qualities, and concerted safety activities of all types without strong and continuing management support.

Management/supervisor/worker interactions. Frequent, informal visits by top management officials to work areas and daily contacts between supervisors and line workers were found to be another characteristic of companies with outstanding safety records or low work injury rates. The apparent value of such contacts is seen in observations and analyses reported by Davis and Stahl (1967), the Accident Prevention Unit (1976), and NIOSH (Cleveland et al., in preparation; Smith et al., 1975). These visits provided increased opportunities for early recognition of workplace hazards or improper job practices that could lead to corrective actions. They fostered closer ties between workers, supervisors, and management so that individual worker problems on safety or other aspects of work performance could be more easily handled. In addition, they allowed for a freer exchange of ideas on work place and job improvements, including refinements in hazard control and safety procedures. This supplemented the safety committee's function which provided still other opportunities for workers to participate in matters affecting their job safety.

By comparison, management contacts with workers in plants with poorer safety records were more formal and infrequent. Moreover, safety committee meetings seemed to offer the only means for management to hear about worker views or problems regarding job safety in these establishments.

These results suggest that more attention be given to increasing communication between workers, supervisors, and management officials for meeting improved safety as well as other needs. The value of two-way communications for such purposes seems apparent.

Workforce stability and industrial relations. The workforces in the companies with better safety performance had a number of characteristics that could have a positive influence on their safety record. There was less employee turnover, which would mean less risk of job accidents due to new worker inexperience. A greater core of married, older workers with longer job service was also found in these firms. The presence of such persons could infuse the total workforce with more mature and responsible attitudes about following safe job procedures. These more stable attributes of the workforces in companies with better safety performance were undoubtedly aided by their industrial relations efforts showing more comprehensive personnel selection and development practices and employee support services. Evidently, management was concerned not only for the well being of its employees but also for their becoming more productive workers and gaining a rewarding job experience.

Housekeeping and environmental control. Better housekeeping, more orderly plant operations, and more adequate environmental qualities were expected in companies with successful safety experience. What is not so obvious is whether these conditions can also motivate safe worker behaviour or instill greater safety consciousness. At least one safety expert holds the view that since hazards cannot be eliminated completely, there may be a tendency for persons to lower their defense and operate more carelessly when no danger seems apparent (Jones, 1973).

Training. The essential training feature in effective safety programs appears to be early indoctrination of new workers in safe job procedures with follow-up instruction to reinforce such measures. This literature review found these practices to be most frequently associated with successful safety performance. The availability of varied instructional techniques and specialty courses were less notable considerations.

Conventional safety practices. Many commonly prescribed safety practices relating to safety committees, safety rules, accident investigation and reporting, and safety promotion were evident in companies with good safety performance as well as in those with poorer safety records. These factors therefore are not differentiating ones. Closer examination, however, showed that some of these activities in the more successful companies included special or added features. For example, their safety promotions were more personalized (including appeals to worker families) and tailored in other ways to increase their relevance and significance to accident prevention efforts.

There accident investigations also included non-injury mishaps and near-miss events as a means of obtaining more information about potential workplace hazards. One must remember too that, when accompanied by a strong management commitment to safety, open communications between workers and management, and other positive factors alluded to in this discussion, even common safety practices would take on more significance with correspondingly greater results.

Overall, this review would suggest that the more distinguishable elements of successful safety performance rest largely on psychological or human factor considerations. Management commitment, aspects of interpersonal communications and interaction, early safety indoctrination and follow-up training, workforce stability, and personnel development and support programmes all fall in the psychological domain. While not belittling the importance of engineering approaches to accident prevention, the evidence here would argue for increased emphasis on non-engineering measures. The results of one survey have in fact shown the limitations of dependence on engineering controls and related enforcement measures to bring industrial injury rates down to acceptable levels (Jones, 1973). The survey results suggested that, for maximum effectiveness, safety programmes should concentrate more on those practices that can successfully deal with "people" variables.

Several other summary observations should be made before closing this discussion. While seeking out factors and specific practices of consequence to successful safety programmes, the data evaluated here can supply no blueprint for the make-up of such programmes. It discloses instead some core ideas and examples of related practices that, on an empirical basis, seem able to improve safety programme effectiveness.

Also, the emergent factors and practices shown to be especially important to successful safety programmes in this review offer no revelations. Rather, they touch on fundamental principles found in the management and industrial relations literature that apply equally to other aspects of company performance such as production output and product quality (Petersen, 1973, 1975). A management that shows active leadership in company operations and engages in practices enabling close coordination and effective development and control of its resources, both personnel and material, lays the foundation for positive results in safety as well as productivity.

- SUMMARY -

This review has summarised research seeking to identify distinguishing characteristics of successful safety programmes and safety performance in industry. Several such factors were found based on analysing the results from studies using a variety of approaches. These include:

1. Strong management commitment to safety as defined by various actions reflecting management's support and involvement in safety activities.

2. Close contact and interaction between workers, supervisors, and management enabling open communications on safety as well as other job-related matters.

3. A workforce subject to less turnover, including a large core of married, older workers with significant lengths of service in their jobs.

4. A high level of housekeeping, orderly workplace conditions, and effective environmental quality control.

5. Well developed selection, job placement, and advancement procedures plus other employee support services.

6. Training practices emphasising early indoctrination and follow-up instruction in job safety procedures.

7. Evidence of added features of variations in conventional safety practices serving to enhance their effectiveness.

Management commitment to safety was believed a major, controlling influence in attaining success in industrial accident prevention efforts. Open communication between workers, supervisors, and management was also considered of great significance. Overall, the nature of these distinguishing factors suggested that maximally effective safety programmes in industry will be dependent on practices that can successfully deal with "people" variables.