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a management guide to occupational health programmes in the oil industry

Prepared on behalf of CONCAWE's Health Management Group by the Special Task Force on Occupational Health Guidelines (H/STF-18).

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ABSTRACT

This report, based on the experience of occupational health professionals in CONCAWE member companies, outlines management responsibilities and the scope, objectives and benefits of comprehensive and broadly-based occupational health programmes in oil refining, distribution and marketing operations. The need for a multi-disciplinary approach is emphasized and the roles of various occupational health specialists are outlined. The activities which should be covered, including auditing of programmes, research and record-keeping are described. Specific elements which may need to be included in an overall occupational health programme are also indicated.

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PREFACE

It is not precisely clear why, at this point in time, several organizations such as OSHA, the EC and individual companies, independently of each other, are addressing the philosophy and principles of occupational health with the aim to further improve the actual practice.

Some people would say that "the time is ripe". Whatever the reason for the timing, CONCAWE has reviewed the philosophy and principles of occupational health in the context of the downstream petroleum industry. The particular objective has been to prepare a document which would brief management not only on the scope, objectives and benefits of occupational health but also, most importantly, on management's role.

The promotion and maintenance of good occupational health should be a business objective, on par with other business objectives such as the quality of products and services, and long-term continuity. Management is in most countries legally responsible for good occupational health. This is logical as in a company only management can allocate the necessary funds to finance its occupational health service and the measures necessary to improve or maintain occupational health. Also, only management can arrange for the necessary organizational infrastructure and only management can demand a certain behaviour of its employees.

As with any other activity in a company, it is necessary to set up or improve the organizational framework, to identify who is responsible for what, to draw up programmes, to set targets and to check if the targets are being met.

We realize that occupational health as an activity is different from most other company activities and that managements may feel somewhat insecure about managing occupational health, leaving it rather to the occupational health professionals. This report has been prepared to assist managers to grasp the essence and scope of occupational health and to become more familiar with the tasks and the roles of the various health professionals. The Health Management Group of CONCAWE recommends that this document is studied and discussed by line managers and occupational health professionals within the various CONCAWE member companies.

Local circumstances will dictate the extent of the occupational health programmes and the personnel establishment of occupational health services, but the basic philosophy and principles are common to all.

Dr. W.F. Tordoir
Chairman, Health Management Group

2. SCOPE OF OCCUPATIONAL HEALTH

"Occupational Health" can be defined as a pro-active and preventive activity which, by a multi-disciplinary approach, aims to promote and maintain:

- Working environments and practices which protect workers from risks to health arising from their occupation.
- The highest practicable degree of physical, mental and social well-being of workers in all occupations.
- The placement and maintenance of the worker in an occupational environment adapted as far as practicable to his/her psychological and physiological capacity.

This recognizes that the working environment can influence health and well-being of employees and that an employee's health can affect his working efficiency.

In most working environments there is the potential for occupational health problems. Their prevention is a challenge which faces both line management and occupational health professionals. Forward looking occupational health programmes can achieve real benefits in employee health and efficiency. Such programmes include reviewing the design of new processes and plant, assessing hazards of new products and evaluating working environments, including those of potential new acquisitions, to identify improvements which are necessary or would be beneficial. To consider that occupational health only begins to assume importance when there are problems of ill health or employee complaints is to ignore the real benefits (see Section 4.2).

Occupational health has a much broader scope than the practice of clinical medicine; it requires inputs from a multi-disciplinary team of the following specialists whose roles are outlined in Appendix 1:

Occupational Health Physicians
Occupational Health Nurses
Occupational Hygienists
Occupational Hygiene Technicians
Toxicologists
Ergonomists
Epidemiologists

1. INTRODUCTION

Within CONCAWE's Health Management Group and its Industrial Hygiene, Medical and Toxicology Subgroups, experience has shown that broadly-based occupational health programmes produce positive business as well as human benefits. A pro-active and preventive team approach by experienced professionals in the component disciplines of occupational health can ensure early identification of potential problems for management, employees, customers and the general public and define the actions required to prevent their occurrence.

Increasing awareness of potential occupational and environmental health risks associated with the manufacture, distribution, use and disposal of petroleum products and the development of additional legislation, all emphasise the need to consider the impact of these issues on oil refining and marketing operations.

This briefing paper has therefore been prepared on behalf of CONCAWE's Health Management Group to outline the broad nature and benefits of successful multi-disciplinary occupational health programmes.

The programmes identified in this paper should be seen as guidelines. The appropriate elements should be selected by CONCAWE member companies and will depend on the nature and scope of their operations.

Additionally, input is essential from others such as:

Safety Engineers
Environmental Scientists and Engineers
Process Engineers
Operating and Maintenance Specialists
Product Specialists
Analytical Chemists
Personnel/Employee Relations Advisers
Psychologists.
Research Workers

3. MANAGEMENT RESPONSIBILITIES FOR OCCUPATIONAL HEALTH

There is a growing emphasis worldwide on the responsibility and accountability of management for safeguarding the health, safety and welfare of employees as well as the community at large. This is reflected in increasing regulatory controls, employee and public interest, and a recognition that the promotion and maintenance of good occupational health standards benefits industry, its employees and the environment generally.

To demonstrate management commitment, occupational health must be an integral part of a company's Health, Safety and Environment Policy statement which must be made known to all employees.

To fulfil its responsibilities, management must ensure that there are adequate resources, expertise and financial support available to identify, evaluate and control potential health risks associated with the company's operations and products.

4. OBJECTIVES AND BENEFITS OF OCCUPATIONAL HEALTH PROGRAMMES

4.1 OBJECTIVES

The objectives of occupational health programmes are 1) to promote and maintain the highest practicable degree of physical and mental health and well-being of employees and 2) to ensure that potential health risks to customers and the general public from industry products and operations are minimized.

4.2 BENEFITS

Achievement of these objectives will not only minimize losses but also increase productivity and cost-effectiveness of the whole operation by, for example:

i) Reducing employee-related costs by minimizing the incidence of occupational injury and illness and so decreasing employee absence.

ii) Improving employee morale and industrial relations.

iii) Contributing to a company image of a responsible employer and good neighbour in the local community.

iv) Reviewing design and installation of new plant and acquisitions to ensure that occupational and environmental risks are minimized and that expensive modifications are not required after the plant is brought into use.

v) Assessing and advising on potential occupational and environmental health problems from plant decomissioning or disinvestment to minimize risk of future liabilities.

vi) Minimizing the likelihood of unexpected crises which deflect management from more productive activities.

vii) Reviewing product formulations and characteristics to ensure that health hazards are minimized as far as possible.

viii) Ensuring that marketers can provide customers with all the necessary hazard, safe handling and disposal information on products.

ix) Assuring management of compliance with legal requirements, company standards and recognized good practices for safeguarding the health of employees, customers and the general public.

x) Minimizing the possibilities of product, employee or public liability litigation.

xi) Contributing to identification and control of fugitive and other emissions to reduce employee exposures, environmental contamination and product losses.

5. OCCUPATIONAL HEALTH PROGRAMME ACTIVITIES

The specific activities which should be included in an occupational health programme to achieve the benefits listed in Section 4 will depend on the nature, scope and size of the company operations. For oil refining and marketing companies they are likely to include:

i) Identification and assessment of risks from all factors which may affect employees' health and working efficiency. Factors of importance in the oil industry include noise, vibration (ships, road trucks etc.), hydrocarbons (including benzene), high boiling aromatic oils, H_2S, chemical additives, catalysts, asbestos and man-made mineral fibres, ventilation, lighting, and use of visual display units (VDUs) in offices, computer rooms and control rooms.

ii) The control of health risks through the development, installation, maintenance, checking and suitable training in the use of effective and appropriate engineering controls, protective equipment and working practices. Examples in the oil industry include reduction of equipment noise, catalyst and additive handling procedures, use of suitable hearing and other protective equipment, and correct installation of VDUs to ensure that ergonomic requirements are satisfied.

iii) Reviewing and advising on occupational health aspects of new plant and working practices at all stages of design, construction and commissioning to ensure health risks are considered at an early stage. This will include, for example, review and selection of engineering hardware such as pumps, valves, sampling systems and in-line filters to minimize or eliminate exposures to specific hazards.

iv) Reviewing and advising on new product formulations so that potential hazards are minimized as far as possible. This requires the acquisition and review of toxicological data on petroleum base stocks and additives (including supplier information).

v) Reviewing product formulations to assess potential hazards and safe handling advice so that marketers can provide appropriate information to customers through correct labelling, safety data sheets etc. For petroleum products this will include evaluation of carcinogenicity, flammability, skin and eye irritation, and sensitization, and determining hazard classifications and labelling requirements against the criteria of EC directives on dangerous substances and preparations.

vi) Ensuring that management and employees are provided with adequate information, education and training regarding occupational health hazards and safe systems of work.

vii) A medical resource to:

a) Undertake pre-employment health assessments to ensure that the health status of new employees is appropriate for the work they will be required to do and to provide a baseline against which future health assessments can be compared.

b) Monitor the health and well-being of employees by periodic health assessments appropriate to the nature of the work and potential hazards involved.

c) Provide specific information and guidance on workplace hazards to individual employees during periodic medical consultations.

d) Provide confidential medical advice to individual employees and advise/counsel on social problems.

e) Provide general health and hygiene information and education for employees, including general health promotion programmes.

f) Ensure that adequate first-aid and primary care facilities are available to deal with accidental injuries and unexpected illnesses including major emergency response situations.

g) Participate in the adaptation of jobs for employees who are disabled or undergoing rehabilitation.

viii) Maintaining appropriate records on for example, health status, sickness absence, exposure data, work history, (for use in the identification of possible work-related effects).

ix) Participating in audits of overall company and operating unit occupational health programmes to assess for senior management whether these are effective.

x) Assessing and advising on the need to conduct or participate in occupational health research within the company or in cooperation with other organizations. Studies may include the assessment of skin irritation or carcinogenic properties of basic types of petroleum products. Provided that proprietary information would not be compromised, results should be published to contribute to improved general standards of occupational health protection.

xi) Interacting with legislators, industry associations etc. to assist in the development of soundly-based and effective regulations through provision of good scientific and technical data.

6. REQUIREMENTS FOR EFFECTIVE PROGRAMMES

For an occupational health programme to be effective in providing the benefits listed in Section 4.2, senior management commitment is necessary to ensure that the following requirements are fulfilled:

i) Appointment of appropriately qualified and experienced occupational health specialists with provision for their continuing professional and career development.

ii) Programme development and coordination designated to an appropriate individual who has direct access to senior management.

iii) Provision of the necessary financial support for the equipment required, the studies which need to be carried out and the implementation of necessary control measures and improvements.

iv) Arrangements for members of the occupational health "team" to have free access to all areas of all workplaces and to information concerning processes, plant specification/ design, raw materials, intermediates, products, by-products and wastes.

v) Consideration of occupational health aspects of new products, plant, processes in the design stage and for acquisitions/disinvestments.

vi) Authorization to conduct (or, where necessary, commission third parties to do so) surveys to assess, monitor or investigate potential hazards in the workplace.

vii) Active participation in committees and working groups of industry organizations.

viii) Contacts with regulatory or advisory bodies;

ix) Observance of complete confidentiality of both personal and company proprietary information, subject to any exceptions required by legislation

x) Development of a structured programme comprising an analysis of trends and definition of objectives and action plans agreed with, supported by and periodically stewarded to the business management.

7. OCCUPATIONAL HEALTH RESOURCES

The size and nature of the operation (total manpower, number and and geographical location of sites and types of activity) and regulatory requirements will determine the optimum resources allocated to occupational health programmes. Although the detailed organization will vary from company to company, effective coordination of all relevant functions is required with appropriate reporting to senior management.

Large companies are likely to have the resources to operate occupational health programmes with full-time professional staff of, for example, physicians, nurses, occupational hygienists and toxicologists. (The roles of the various specialist occupational health disciplines are given in Appendix 1). Small companies who cannot justify employing full-time professional staff may consider it necessary to appoint a health and safety manager or coordinator to run an occupational health programme with the assistance of outside consultants as necessary.

In some European countries the appointment of a site doctor is a specific legal requirement, depending on the number of employees. The qualifications required for such appointments may also be specified as well as the minimum scope of the occupational health programme to be implemented. It is important to emphasize that such regulatory requirements do not necessarily fulfil the objectives nor provide the benefits described in Section 4.

8. OCCUPATIONAL HEALTH RECORDS

An occupational health programme should include the establishment and maintenance of appropriate record-keeping systems which will:

i) Satisfy the requirements of relevant national legislation.

ii) Demonstrate that employee exposures have been properly assessed and appropriate actions implemented (CONCAWE Report No. 87/57 (1) provides guidance on strategies and should be consulted).

iii) Track the job histories of individual employees and their associated exposures to potentially hazardous agents.

iv) Monitor the health surveillance of individual employees.

v) Allow statistical analyses to identify health trends and problem areas.

vi) Allow occupational injury and disease data to be summarized;

vii) Provide data for epidemiological studies of possible work-related health effects.

viii) Demonstrate that the occupational health programme is effective.

Because medical confidentiality must be maintained between patient and doctor, individual medical data must be recorded separately and treated according to the normal ethics of professional medical practice. Separate provision should be made for statistical analysis of group trends and for cross-referencing between health and exposure records without prejudicing any individual's right to confidentiality.

Other records which may be required include:

- Occupational hygiene survey conclusions, recommendations made and their implementation.
- Maintenance and checking of control measures.
- Hazard assessments of products for classification and labelling and completion of safety data sheets.
- Audits carried out with conclusions, recommendations made and their implementation.

Occupational health records will also contain proprietary information which will be subject to normal company rules regarding confidentiality.

9. RESEARCH

When information is inadequate for assessing the nature of a health risk or the effectiveness of control measures, research programmes may need to be established in-house or in cooperation with other companies, for example, through an industry organization such as CONCAWE. Research may be needed to:

i) Assess the health hazards of new products and processes.

ii) Determine appropriate control measures for new processes.

iii) Determine the effectiveness of personal protective equipment.

iv) Develop techniques for measuring exposure, including air and biological monitoring.

v) Establish appropriate exposure limits for new products/substances or where new information suggests a need to modify current standards.

vi) Determine the health experience of specific groups of workers by epidemiological studies.

Cooperative research can be cost-effective where products are common to the industry (such as basic petroleum refinery streams) or where occupational health problems are more effectively addressed by pooling information, for example, to review exposures or to carry out epidemiological studies.

10. AUDITING

A periodic formal audit is part of an effective occupational health programme. It should be conducted by an appropriately qualified team including members from another part of the company or from outside the company using identified criteria. The frequency of such audits will depend on the nature and size of the operation, but is likely to be every 3-5 years.

Auditing can be conducted by a variety of methods. However, in principle they all necessitate a systematic appraisal of all the component programme elements that are required to ensure health protection. More specific objectives include:

- To demonstrate compliance with legislation and company policy.
- To review policy, organization, staffing, procedures, responsibilities and commitment to health protection.
- To assess capability for the recognition, evaluation and control of health hazards.
- To review effectiveness of assessing and providing information on the health hazards and safe handling of products.
- To assess the effectiveness of medical and first aid services.
- To confirm that required records are kept appropriately.
- To identify management and technical strengths and weaknesses.
- To recommend improvements and changes where necessary.

An audit should cover both the management of occupational health (such as policy, objectives, responsibilities, communications, resources, etc.) as well as the essential individual elements of occupational health programmes (see Appendix 2).

11. SOURCES OF SPECIALIST ADVICE

In implementing the occupational health programme specialist advice may be required. Sources of such advice include:-

- Company specialists.
- Consultant occupational health specialists or services.
- Occupational health professionals in other companies.
- Independent scientific institutions, for example, university departments.
- Industry associations.
- Occupational health text books and journals.
- Government departments.
- Government publications.
- Computer databases (national and international).

12. REFERENCE

1. CONCAWE (1987) Review of strategies for the evaluation of employee exposures to substances hazardous to health. Report No. 87/57. The Hague: CONCAWE

APPENDIX 1 - ROLES OF OCCUPATIONAL HEALTH SPECIALISTS

The qualifications required of specialists who may be members of the occupational health team are variable. For example, legislation may lay down the minimum standards and individual countries may have recognized training programmes and/or qualifications covering certain specialities. Specialist accreditations may also be awarded on an EC basis for physicians.

THE OCCUPATIONAL HYGIENIST

The occupational hygienist should be capable of devising and implementing programmes to identify, evaluate and control health hazards in the work environment. Duties may include the formulation of policy, monitoring the progress and effectiveness of hygiene programmes, conducting assessments, supervising other hygiene staff (including personnel from other disciplines who have been trained to carry out specific exposure monitoring programmes on a part-time basis) and maintaining professional standards. He must be able to communicate effectively with other health and safety specialists, management and employees.

THE OCCUPATIONAL HYGIENE TECHNICIAN

The hygiene technician assists the occupational hygienist in undertaking the practical aspects of hygiene programmes. He requires sufficient training to enable him to conduct the required laboratory and field work e.g. sampling and analysis of airborne contaminants.

THE TOXICOLOGIST

The toxicologist develops and assesses toxicological data, and provides advice to other occupational health specialists.

This requires the ability to place the available data into perspective and summarize the toxicological properties of a substance/material so that, in conjunction with an occupational physician and occupational hygienist, appropriate precautions and safe working practices may be devised.

In many instances, adequate toxicological information will not exist on materials under consideration. Therefore the toxicologist must be able to assess the relevance of data available for similar products and, when necessary, design appropriate studies which will provide the required information.

THE OCCUPATIONAL PHYSICIAN

The occupational physician is a qualified medical practitioner specialized in the field of occupational medicine, with training, experience and qualification in that particular field. Unlike many other doctors who are concerned primarily with the health of an individual, the occupational physician is concerned with the health aspects of the whole business, as well as of its employees.

The role of the physician is to provide specialist advice to management or employees on any aspect of health as it affects or can be affected by work. The prime responsibilities are to promote health and identify/prevent adverse health effects at the earliest possible stage.

The occupational physician provides professional support to management and individual employees in order to help promote the highest possible level of health. To succeed, the physician needs to be in close touch with management, other professionals and the work force.

THE OCCUPATIONAL HEALTH NURSE

The occupational nurse has specialized in the occupational health field and has appropriate training, experience and qualification. The role of the doctor and nurse are complementary, with the nurse often being the first point of contact with employees. The occupational nurse may also be trained to carry out specific exposure monitoring programmes on a part-time basis.

THE OCCUPATIONAL EPIDEMIOLOGIST

Epidemiology is the study of disease patterns (or epidemics) in human populations. The occupational epidemiologist uses statistical data to compare the incidence of possible work-related diseases amongst groups of workers with that occurring in the general population or in a non-exposed control group with comparable characteristics such as age, sex, ethnic origin, socio-economic status and residence. A major objective is to identify possible causes for any observed increased incidence and to decide whether this is related to, or caused by, work. The epidemiologist should have a good knowledge of the potential effects of working environments on health. Although he may be qualified as a medical practitioner and occupational physician, this is not an essential requirement.

THE ERGONOMIST

The ergonomist has been trained to assess the working environment and identify changes needed to improve compatibility with the characteristics and capabilities of workers. Ergonomics focuses on the design of machinery, equipment etc. to minimize physical and/or mental stress on the worker and thereby reduce the potential for adverse health effects, increase efficiency, and decrease the possibility of incorrect action being taken in emergency situations.

APPENDIX 2 - ELEMENTS OF OCCUPATIONAL HEALTH PROGRAMMES

- Chemical Inventory (raw materials, intermediates, products and other materials).
- Hazard information for management, employees and customers including Material Safety Data Sheets.
- Workplace risk assessments.
- Routine exposure monitoring (personal/area/biological).
- Quality control/assurance of sample analyses.
- Routine monitoring of and advising on effectiveness of control measures.
- Process/plant design reviews.
- Process/plant modification assessments.
- Acquisition/disinvestment/decommisioning reviews.
- Guidelines/procedures/rules covering operations and maintenance.
- Respiratory protection requirements and training.
- Protective clothing requirements.
- Hearing conservation.
- Asbestos management.
- Medical surveillance (including medical examinations appropriate to the nature of hazards) and review of results to assess effectiveness of other programme elements.
- Pre-employment and routine medical assessments.
- First aid provisions.
- Accident/incident investigations.
- Record-keeping, data storage and analysis.
- Product hazard assessment.
- Product classification and labelling.
- Adverse effects reporting on products.
- Application of company occupational health programmes to contractors.
- Training (specialists, management, employees).
- Emergency response plans and procedures.
- Workplace inspections.
- Reviews and audits.
- Assessment and management of research needs.
- Monitoring legislation/scientific developments and advising on implications.