Royal Canadian Mounted Police External Review Committee

Occupational Health and Safety -

An Employer Perspective

DISCUSSION PAPER 9

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An Employer Perspective

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The Committee publishes a series of discussion papers to elicit public comment to assist the Committee in the formulation of recommendations pursuant to the *Royal Canadian Mounted Police Act* (1986). The views expressed In this paper are not necessarily the views of the Committee.

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Royal Canadian Mounted Police
External Review Committee

Discussion Paper Series

Number 9: Occupational Health and Safety

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FOREWORD

This discussion paper is the ninth in a series produced by the Research Directorate of the RCMP External Review Committee.

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Chapter I

INTRODUCTION

The primary objective of this discussion paper is to provide informational and analytical references to assist in developing, enhancing and promoting successful policies and practices in occupational health and safety (hereafter referred to as OH&S) for police officers. The document will deal with the employers' formal and informal obligations and duties in improving OH&S without foregoing employees' rights. Strategies and guidelines will be suggested for improving various aspects of the work environment. These strategies are based on documented research and experience in police and other service sector environments.

In order to discuss the issues effectively, a comprehensive literature review was initiated. The various topics (i.e. key words) included: legal and economic considerations; environmental factors affecting occupational accidents; physical occupational diseases; psychological factors; shift work; and health and safety programs in police forces. A number of computerized data bases have been investigated, including MEDLINE; SOCSCI INDEX; PSYINFO; NIOSH; CCOHS; and the Quebec *Commission de la santé de la sécurité du travail* (CSST) information data bank. Supringsly, only a limited number of rigorous and scientifically sound documents are available on the topic.[1]

As is evident from the Bibliography, the vast majority of articles published could be classified as editorial, or opinion papers. They are addressed to the lay population, and the research on which they are based is tenuous or non-existent.

In order to augment the available information base, various specialists in the health and safety domain were approached, within and outside the law enforcement sector. These interviews provided an extremely rich source upon which to position and interpret the data gathered from the literature. It became apparent that a number of research projects are underway. A considerable effort is being made in the province of Quebec, specifically with regard to the safety of police. Some preliminary reports were made available, and the reader will note that a few sections of this paper are heavily influenced by them.

Chapter II

OCCUPATIONAL HEALTH AND SAFETY: AN OVERVIEW

2.1 What is Occupational Health and Safety?

> Occupational health and safety refers to the physiological/physical and socio-psychological conditions of an organization's workforce, resulting from the work environment.[2]

It encompasses varied responses to a number of compelling influences, the most basic of which is a sense of social and humanitarian responsibility. As suggested by French (1990):

> Today, health and safety management is a complex activity requiring the expertise of specialists from many disciplines, such as industrial hygiene, occupational medicine, ecology, psychology, and safety engineering, to name only a few. Moreover, concerns in health and safety management now reach beyond physical conditions in the workplace to embrace a regard for workers' mental and emotional well-being, and a commitment to protecting the surrounding community from pollution and exposure to toxic substances.[3]

Common occupational maladies, both physiological and physical, that are traditionally studied include cardiovascular diseases, various forms of cancer, emphysema, sterility, white-lung disease, physical injuries, and actual loss of life. More recently, infections such as hepatitis and AIDS have also been considered as occupational diseases. Socio-psychological conditions that influence the quality of work life include stress, burnout, dissatisfaction, withdrawal, procrastination, apathy, alcohol and drug abuse, and other forms of employee escapist behaviour.

2.2 The Growing Importance of OH&S

At this time a number of factors are focussing attention on OH&S, and may take it in new directions. They include new definitions of social responsibility, the influence of labour unions, and a change of emphasis from compensation to prevention.[4]

The working environment has to be considered in the management of day-to-day operations because it affects workers both as employees and as members of society as a whole. Safe, healthy and environmentally-sound working conditions must be a priority for socially-responsible employers. They are part of an organization's public image, contribute to positive public relations, and should be reflected in a commitment to employee health and safety that extends beyond economic benefits to long-term consequences for workers and their families.[5]

Historically, labour unions in North America have been active in urging organizations to improve physical working conditions. They tend to bargain for OH&S provisions in labour contracts, and increasingly request participation in OH&S committees.[6] The labour movement is also an important force behind the initiation of practical research in this area.

During a national symposium held in 1985, the American National Institute for Occupational

Safety and Health (NIOSH) and the Association of Schools of Public Health introduced a new concept suggesting that "unsafe working conditions are no longer tolerable and that clear and understandable steps be taken to prevent the leading occupational diseases and injuries".[7]

Traditionally, an employer's responsibility was to help employees when they were sick and injured. To this end organizations provided periodic physical examinations, hired nurses to treat injuries at the worksite, paid an employee's salary during short illnesses and, in some cases, secured hospitalization benefits.

It is now becoming more and more apparent that helping employees to stay healthy can not only prevent unnecessary hardships to employees, but also benefit the organization.[8] It is becoming generally more apparent that prevention is better than cure.

Some of the major developments predicted by the International Labour Organization over the next decade include: increased awareness and support of OH&S on the part of government, workers and employers, significant improvement in the control of chemical hazards and improved programs of injury prevention.[9]

2.3 Basic Figures about Health and Safety

2.3.1 Costs and Benefits

The enormous costs that result from inadequate health and safety conditions, both in monetary and human terms, are enough to justify workplace improvement programs.[10] Between 1975 and 1985, an average of 1000 Canadian workers died each year as a result of workplace accidents. In 1978 approximately 12.3 million work days were lost due to occupational injury.[11]

In 1982 direct costs of compensation payments to injured workers totalled $1.5 billion and the total grew to approximately $3 billion in 1987. It is estimated that indirect costs increase that figure to between $10 and $15 billion.

Furthermore, statistics indicate the number of industrial accidents is increasing. In 1986, for instance, 586,718 Canadians were injured in work-related accidents that resulted in lost time. In 1987, this number grew to 602,531, and in 1988 to 617,997. Recent reports by Statistics Canada show that the total number of days lost each year due to work-related injuries and illnesses outnumber the days lost because of labour disputes.[12]

The additional costs associated with occupational stress and a low quality of work life are immense. As an example, alcoholism - often an attempt to cope with job stress - has been estimated to cost organizations and Canadian society more than $21 million per day.[13]

When organizations reduce the rate and severity of occupational accidents and improve the quality of work life for their employees, the following benefits normally occur:

(1) productivity is higher because fewer work days are lost;

(2) employees become more efficient due to increased involvement with their jobs;

(3) medical and insurance costs are reduced due to fewer claims;

(4) worker compensation rates and direct payments are also lowered;

(5) the workforce is more flexible and adaptable as a result of increased participation and a feeling of ownership;

(6) the organization is more attractive as a place to work; and

(7) there are fewer deaths.

Organizations are spending more time, energy and resources in promoting health and safety in the work place not only because of the alarming costs of inadequate occupational health and safety, but also because safe conditions are legally required, and constitute sound management practice.

2.3.2 General Accident Profile

In order to provide a better understanding of the accident risks and types of injuries and illnesses, a profile has been developed from available data. In Canada, male workers, particularly those between the ages of 20 and 29, have four times more accidents than women. This could be due in part to the fact that most hazardous jobs are still held by men. Back injuries constitute 52 percent of all accidents, and work surfaces represent the most important contributing factor to overexertion in the etiology of these back injuries. The job sectors in which most accidents happen are, in order of frequency: manufacturing, followed closely by service occupations (including police) and construction.[14]

Chapter III

LEGAL CONSIDERATIONS

3.1 A Historical Note

The first worker compensation program was created by Bismarck in the 19th century in an effort to turn aside the progressive reformist movement in Germany with the introduction of a social insurance scheme.[15]

Prior to the enactment of worker compensation legislation in Canada, the only remedy available to workers who were injured on the job was to bring a tort action based on the negligence of the employer. Under the common law, the employer had a duty to provide reasonably safe conditions of work, but injured workers were often discouraged from bringing suit and so were left without income or the means of obtaining adequate medical care.

In the mid to late 1800s, those who did sue were mostly unsuccessful in their attempts to prove their employer's liability and to recover damages. The perceived unfairness of this situation led to reform.

The first act protecting Canadian workers was legislated in 1885. The United States introduced occupational health and safety legislation in 1908 to protect government employees. Six years later, Ontario created the first Workers' Compensation Board, while Quebec established its Workers' Compensation Commission in 1928.

Today, OH&S in Canada and its various provinces have made great advances. Canada has some of the most socially-sensitive OH&S legislation in the world, as can be seen in the next section.

3.2 The Canadian Framework

What differentiates Canadian OH&S legislation from that of most other countries is the emphasis it gives to the rights of workers. This legislation allows them to refuse dangerous work, to be informed about hazardous materials or dangerous conditions in the workplace, and to participate in worksite OH&S committees. These are often referred to as the basic rights of occupational health and safety.

Because of Canada's constitutional framework, there are thirteen somewhat different approaches to the legal considerations of OH&S: those of the federal government, ten provinces and two territories. The Canadian Constitution determines the parameters of federal and provincial jurisdiction over the workplace. The federal government's power to legislate is limited to federal government employees and industries coming under federal jurisdiction. These include interprovincial railways, communications, pipelines, canals, ferries, shipping, air transport, banks, grain elevators, uranium mines and atomic energy.

Each province has wide regulatory powers over matters within its boundaries relating to the working environment and the employer/employee relationship in the workplace. Although there are common themes and trends, each province has its own OH&S legislation with its own unique features. Since federal government employees, including the RCMP, are not subject to provincial statutes, this paper will deal only with relevant federal legislation.

3.2.1 Highlights of Federal OH&S Legislation

There are four federal acts pertinent to occupational health and safety: the *Hazardous Products Act*[16], the *Transportation of Dangerous Goods Act*[17], the Act underlying the establishment of the Canadian Centre for Occupational Health and Safety[18], and an act pertaining to federal government employees, the *Canada Labour Code*[19], Part II.

The Hazardous Products Act, passed in 1969, has wide application to industry across Canada. It affects industry in two was:

(1) it prohibits the sale or importation of certain specific products; and
(2) it establishes standards for the identification and labelling of hazardous products.

The Transportation of Dangerous Goods Act, passed in 1981, establishes a single legislative authority (Transport Canada) to deal with the handling and movement of hazardous materials by all federally-regulated modes of transport in Canada.

The Canadian Centre for Occupational Health and Safety Act was passed in 1978. The first objective of the Centre is to promote information-sharing. It has set up an elaborate computer-based information system accessible to organizations and governments and all those concerned with OH&S. The Centre promotes the concept of a safe working environment and coordinates research and advisory services.

The Canada Labour Code Part II deals in particular with the federal government's employee safety regulations in the workplace and the duties of both employers and employees towards the promotion of health and safety. Under this statute, "Every employer shall ensure that the safety and health at work of every person employed is protected".[20]

This includes, among other things, the following[21]:

...that all buildings and structures meet prescribed[22] standards;

...investigation, recording and reporting of all accidents, occupational diseases, and other hazardous events;

...posting policies concerning health and safety;

...provision of first aid and other health services;

...ensuring that all equipment (fixed and mobile) meets prescribed standards;

...providing safety materials, equipment, devices and proper clothing;

...ensuring proper maintenance of all equipment;

...ensuring that ventilation, lighting, temperature, humidity, sound, and vibration meet prescribed standards;

...providing instruction, training, and supervision in occupational health and safety;

...ensuring that employees are aware of every known or foreseeable safety hazard;

...ensuring that, in all operations, there is full compliance with the *Hazardous Materials Information Review Act*[23]

With respect to this section of the *Labour Code*, the RCMP Health Services Directorate (DHS) has recently published an administrative manual providing some general guidelines regarding an OH&S program. The manual describes employer responsibilities under the DHS umbrella, the role of safety officers pursuant to Part II of the Canada *Labour Code* and the rights of RCMP members including:

...the right to information about hazards;

...the right to participate through health and safety committees;

...the right to refuse to perform hazardous work.

In addition, the manual suggests the establishment of a National Advisory Committee and details the Committee's responsibility (more information can be found in RCMP, 1991). As the introduction and implementation of the DHS manual are in their early stages, no information is available yet about the effectiveness of the policy.

Chapter IV

CRITICAL ISSUES IN THE POLICE ENVIRONMENT

4.1 Occupational Accidents

Police officers have long been considered to be in a high risk occupation. Based on workers' compensation claims in Ohio, Hales et al. (1988) have reported recently that officers were found to be at the highest risk for occupational violent crimes, along with other workers directly involved in providing services to the public (e.g. gasoline service station attendants, real estate employees and hotel/motel employees). In Ontario, the work-related homicide rate was highest among police personnel.[24]

General statistics on work accidents are difficult to interpret. Rates are calculated differently from one study to the next, perspectives are often narrow, and comparisons with other types of occupations or the general population become close to impossible as relevant information is often lacking because of the absence of data banks. In this environment, studies often focus on a single factor, such as motor vehicle injuries[25] or fatal assaults,[26] without identifying police-related data.

In a broader perspective, a study conducted in Quebec on work-related injuries in municipal and provincial police forces revealed that the relative frequency of accidents was similar to that of the general working population.[27] However, based on work days lost, individual accidents suffered by police officers seemed to be more serious.

Two separate studies with different rates and frequencies indicate that the types of accidents most often suffered by police officers include altercations and aggressions, falls, overexertion, motor vehicle crashes, and striking or being struck by foreign objects.[28] Injuries occur most frequently to the back, the hands and fingers, the knees and the legs. Recently published statistics confirm these findings.[29]

4.2 Occupational Diseases

The risks of occupational diseases are an important part of OH&S. Although scientific reports in this area are scarce, one excellent study has been made public pertaining to both municipal and provincial law enforcement agencies in Quebec. We believe that there are sufficient grounds for the findings to be applied to other police forces. Consequently, some of the ensuing discussion is based on this study.[30]

Tremblay and Tougas have classified police health risks into five major categories: chemical, physical, biological, ergonomic and psychosocial. They also consider four more factors that they did not classify under these headings: cardiovascular risks (CHD), physical inactivity, diet and work schedules. We will discuss shift work and its strong association with nutrition is discussed in section 4.2.6. Likewise, CHD and physical fitness cannot be discussed separately, and will be considered as stress consequences in Section 4.2.5 on psychosocial risks.

4.2.1 Chemical Risks

Police officers are exposed to a number of different chemical risks in the course of their duties. These include carbon monoxide, lead, dust and dangerous chemicals. Carbon monoxide, lead and dust are ever-present in greater quantities, especially in urban areas. Although officers may be more exposed to them than the general population, under everyday conditions levels are still far below accepted government standards.

An exception must be made with regard to lead exposure in shooting ranges. Officers are more susceptible depending on the frequency and amount of time spent in practice, and this hazard applies even more so to shooting instructors.[31] Consensus exists that proper monitoring of exposure is mandatory.

Exposure to dangerous chemicals is not an everyday occurrence for the great majority of police officers. However, certain high risk situations can arise, such as accidents involving the transportation of toxic chemicals and air crashes, and law enforcement officers then find themselves in the forefront of the event.[32]

> Police procedures for dealing with emergencies are fairly standard... Basically the priorities are to save/preserve life and protect property.[33]

But proper attention to the officers' own protection may be lacking. Procedures for these situations must be well established, tried and tested. Actions should be controlled and monitored. Detailed planning must be carried out in conjunction with every group involved in the operation. Work is being done in the RCMP and the Sûreté du Québec (hereafter SO) for selecting and improving protective equipment.[34]

Moreover, depending on local provincial regulations, some police agencies have set up comprehensive information data sheets on every type of hazardous substance including health effects, proper handling and accident prevention, as well as the treatment of after-effects. Special mention must be made of the exposure to toxic substances experienced by investigation technicians at crime scenes. In certain agencies laboratory analysts became aware of dangers and initiated protective working habits. These have resulted in safety regulations for crime scene investigators.[35]

4.2.2 Physical Risks

Physical risks include noise, heat and low temperatures. Noise is the most pervasive. In Quebec, for example, regulations state that workers should not be exposed to more than 90dB in an 8 hour day to protect their hearing. Tremblay and Tougas (1989a) found that even though a car siren can reach maximum levels of 110dB, everyday exposure rarely exceeds 85dB. One RCMP specialist stated that consideration is being given to relocating police car sirens from the roof to the front hood in order to reduce the occupants' exposure to noise.[36]

Cold and heat are hazards that may be experienced by police officers to the same extent as other outdoor workers. Adequate protective clothing is required. In recent years an increasing number of patrol cars are air-conditioned, particularly in urban areas.

4.2.3 Biological Risks

Police officers in everyday contact with the public are more likely to encounter individuals with highrisk infections such as AIDS and hepatitis-B viruses. In assisting impaired and injured citizens they may come in contact with biological fluids. Yet no study to date has revealed that they suffer from infectious diseases more frequently than the general population. However there is a growing debate about extending general vaccination for hepatitis-B to police forces.[37]

It is essential that adequate information be provided to all personnel. Publicity concerning hazards is widespread, and police officers may be ill-informed and anxious. Simple preventive measures have been shown to be quite effective.[38] In Montreal, the mere announcement that the 1989 International AIDS Convention would be held there produced an "anxiety attack" among municipal police forces. It led to an extended prevention program developed with the help of local community health services.[39]

4.2.4 Ergonomic risks

As mentioned in Section 4.1, back injuries are the type most frequently experienced by law enforcement officers. One study revealed that officers, police chiefs and municipal police authorities were unanimous in considering patrol car seats to be the most prevalent back-related OH&S risk, and giving it the highest priority for correction.[40] This study provided the impetus for an ergonomic-related investigation conducted by the Quebec OH&S Research Institute (IRSST). The researchers examined possible links between patrol car design and low back pain.[41] They then carried out a comprehensive ergonomic study with the object of redesigning the patrol car. Emphasis was placed primarily on seats, dashboard and equipment installation.[42] As a result of the positive findings of these studies, municipal and provincial police agencies in Quebec are at present considering the installation of new ergonomically-designed seats in patrol cars.

Research has also been carried out in parallel to determine the impact on the vertebral column of the improperly distributed weight of equipment such as the gun, night-stick and radio that officers carry on their belts.[43]

4.2.5 Psychosocial Risks

Psychosocial risks experienced by law enforcement personnel have been studied extensively under the general theme of occupational stress. Although it is not the purpose of this paper to elaborate on stress, a brief summary of the research in this area is included. This synopsis is based primarily on two comprehensive reports dealing directly with various aspects of police stress.

The first, theoretical in nature, is a state-of-the-art review of stress within law enforcement occupations.[44] The second, an empirical survey among a sample group of Quebec police officers, chiefs of police and municipal authorities, examines the frequency, seriousness and need for OH&S intervention in a number of previously-identified stress factors.[45]

Literature on police stress is abundant. It should, however, be interpreted with caution because the vast majority of research is based on case-studies, which makes generalizations difficult. Authors identify stressors from personal experiences or from non-representative samples. Few studies are empirical, and methodological biases are numerous. Moreover it is important to distinguish the actual causes (or sources of stress) from individual and organizational reactions (or consequences to occupational stressors).

Sources of police stress could be classffied into three general categories: external stressors, internal stressors and task-related stressors.

External stressors include factors related to the judicial system and relationships with the public. Among them are court appearances, cross-examinations, lengthy judicial decisions, lack of encouragement from the public, relations with minority groups and the general mass-media image attributed to police.

Internal stressors pertain to police organization and structure. A number of difficulties emerge from administrative policies and management practices. Among them are lack of participation in work organization, communication problems, insufficient support from superiors and excessive bureaucracy. Stressors related to an officer's career profile (such as training, performance evaluation, salary, promotion) and inadequate human and material resources are also part of this picture.

Task-related stressors include quantitative work overload alternating with periods of inactivity, role conflicts and ambiguities, perception of danger, task complexity, lack of autonomy, ambiguous feelings and the responsibility of facing misery, pain and death. In the Quebec survey, Arsenault et al. (1987) identified the leading ten stressors of the 104 that were studied. The ranking was based on a consensus among all police personnel. The most important sources and consequences of police stress included inadequate patrol car seats, excessive paper work and bureaucratic inefficiencies, outdated communications equipment, overweight, decreased work motivation, perception of danger, lack of physical fitness, work dissatisfaction, stress due to armed robbery and low back pain.

Other factors that may be linked to an officer's work have been considered by some researchers as belonging to the stressor category. Some years ago, Kroes (1985) reported that family problems, alcoholism, drug abuse, ill health, divorce and suicide ran abnormally high among police officers. Such factors may exert some influence on work performance and the individual perception of stress, but the vast majority of stress researchers agree that these should be considered as stress consequences, although some research looks at physical, mental, social and organizational health indicators as "stress".

Among the predominant **physical health** problems are cardiovascular diseases, diabetes, gastric ulcers, cirrhosis and back pain. Some comparative studies have shown that police officers are less physically fit, tend to be overweight, have higher cholesterol[46] and higher blood pressure levels[47] and are at greater risk of death from cirrhosis and cardiovascular diseases.[48]

A number of physical fitness and high blood pressure monitoring programs have been set up in the United States and show promising results. However, thorough controlled evaluation of the impact of these measures is not available.[49]

Mental health symptoms most often studied in police agencies include depression, burnout and suicide. In recent years burnout has been one of the most-studied stress consequences among the so-called helping/caring professions, which include police officers.[50] In the Quebec survey,[51] participants agreed that burnout is an emerging concern, although it ranked only among the top 20 percent of the 104 problems included in the study. Burnout means that police officers become emotionally drained after a day's work, that they begin to develop a detachment from the public they serve (e.g. sentiments of depersonalization), and that they will not take new initiatives at work. High levels of burnout, when it becomes chronic, lead to a number of physical and psychological ailments.[52]

It has been said that the rate of suicide among police officers is higher than that of the general population. However the reliability of this statement is questionable. Samples are small, and some studies show opposite results.[53] Despite these conflicting results, suicide may be an underrated problem primarily because of the strong desire among police officers to maintain the traditional stoic image.

Officers may find their job a major source of stress for their family and friends, and thus their **social health** may be impaired. Studies have reported that alcoholism, family problems and divorce may be higher for police officers. Higher suicide and cardiovascular mortality risks are debatable because of strong methodological biases in available data. Nonetheless, social problems such as those listed can be associated with the isolation due to such factors as one-man patrol cars, varied work schedules and the psychological difficulties of sharing the strong emotions experienced in dealing with pain, death and other human crises.

A final note on **organizational health** consequences. Studies in some police departments have shown a relationship between stressors and such negative results as reductions in productivity, increases in reaction time and judgement errors, work dissatisfaction, the desire to quit, absenteeism and accidents. Stress at work is not cheap, and is reflected invariably in direct and indirect costs both for the individual and the organization.

4.2.6 Work Schedules

Shift work and irregular schedules are normal for many workers around the world and have been widely studied.[54] Because the human species is essentially diurnal (active by day), a number of difficulties are associated with shift work. Any disruption in regular biological rhythmic activities such as sleep, digestion, body temperature, blood pressure and pulse will result in physical and psychological manifestations that will become evident at work, and also in the family and social environment.[55]

Varied work schedules can be classified into four main categories: permanent regular evening or night-time work (night-time security guard); rapidly rotating schedules where the employee does not have the same hours more than twice in a row (two nights, two evenings, two days, rest, etc.); slow rotating schedules which are most frequent in North America, and where the employee works one to four weeks on the same shift and, finally, prolonged states of vigilance (10 or 12 hour days; 24 hour duty for interns and residents).[56]

The major problems associated with shift work are sleep disruptions, decreased performance and cognitive abilities, poor nutrition and abnormal family and social life. Sleep will be particularly affected both in duration and quality. Shift workers have more difficulty failing asleep. They sleep and dream for shorter periods of time and also sleep less profoundly.[57] The sympathetic nervous system is overstimulated. Fatigue and psychosomatic distress set in.[58]

A sleep debt accumulates after a number of days of shift work. Vigilance, reaction time and performance are greatly diminished, especially in situations where mental and physical activity vary widely, alternating between overload and underload.[59] It takes from 7 to 12 days for biological rhythms to return to normal after even a few night shifts.[60]

Documentation of the effects on physical performance and cognitive reactions of shift work, prolonged hours and lack of sleep is vast, yet often contradictory.[61] Cognitive abilities decrease and the capacity to execute simple, routine tasks deteriorates progressively, especially in terms of reaction time. Physical performance seems less affected. Such disruptions appear to result after even one night's loss of regular sleep, and become serious in as little as 48 hours.

Irregular eating habits follow closely any disruption in working schedules. Meals are irregular, often taken alone. Fast foods are often the most convenient on evening and night shifts. Snacking is more prevalent, involving foods that are often sweeter and richer in fats than a normal diet. Home-cooked meals with the family become rare occasions. Finally, caffeine consumption increases dramatically.[62] The combination of irregular hours, poor quality food and the loss of a social atmosphere around meals may result in an increased incidence of gastrointestinal and cardiovascular diseases among shift workers.[63]

A third important difficulty associated with irregular working hours can be classified as disruption in social and family life.[64] Shift workers can easily become isolated from their social environment. Most of society operates on a daytime schedule, and shift workers miss out on family

meals, sports, socializing with friends who work regular hours or on other shifts and weekend activities. Stability, a necessary element for a satisfactory family life, no longer exists. Other family members must reorganize their schedules and activities around the shift worker. Children are told to keep quiet when the shift-working parent is sleeping. Days off and holidays may be hard to plan and are almost never an occasion for a family outing.

Correlations have been discovered between working weekends and family conflicts.[65] Finally, Staines and Pleck (1984) have shown that shift workers spend less time in family and social roles with a resulting decrease in the quality of family life.

Chapter V

STRATEGIES AND GUIDELINES FOR IMPROVEMENT

5.1 General Health and Safety Improvement

5.1.1 Changing how Police Personnel Perceive Improvement

Police officers learn that their principal goal is to protect citizens, but they must also be aware of their rights and the need to protect themselves. The two objectives are not incompatible. For instance, an officer cannot refuse an order to pursue a criminal, but could refuse to drive an inadequate or unsafe vehicle to make that pursuit.

Police officers and their employers need to assist each other in achieving common objectives. One way of doing this is by looking on occpational health and safety as part of the administrative services included in the training for all police operations.[66] It should become second nature to police personnel that, as they learn the hows and whys of police duties, they also assimilate the rudimentary steps of basic OH&S. Ideally, this safety training should start at the police academy, and be included with every regulation and police operation procedure.[67]

Some people may have a negative perception of OH&S because it can mean performing an everyday task with cumbersome equipment (for example, heavy, ugly, hot, ill-fitting goggles), or replacing a simple, procedure with a more complex one. In order to change perceptions towards prevention, a program could start with a simple, low-cost, easily-implemented improvement (e.g. basic information on the importance of systematic hand washing to protect against infectious diseases, followed by the distribution of disposable gloves), even if this may not be first on the priority list.[68]

5.1.2 Proactive Promotion of OH&S

The following guidelines are some which could be usefully incorporated into OH&S programs within police services.

1. Top administrators should assume the leadership role. If top administration pays only lip service to OH&S, others will follow their lead and regard the policies as being unimportant.

2. Regional and/or unit responsibility should be clearly assigned to ensure that the activities will be accomplished.

3. All causes for accidents and occupational illnesses should be identified, and eliminated or controlled in order to prevent a recurrence.

4. An essential part of any OH&S program is a good, carefully designed training program.

5. Police officers at all levels should use an accident/illness record system to identify patterns of accidents or health problems that could otherwise be overlooked. This could be extended to include rate and frequency of exposure of officers during high-risk situations (especially ones involving hazardous chemicals).

6. The organization should stress on-the-job awareness and acceptance of safety responsibilities on the part of all employees.

5.1.3 The Key Role of Participation

In the development and the on-going process of promoting occupational health and safety, initial commitment and motivation must be demonstrated first by management.[69] No program, ideal as it may be, will ever work if supervisors or management personnel do not believe in it.[70] They must be the driving force behind any action aimed at accident prevention, integrating program objectives and achieving OH&S improvements as part of the organization's goals.

Furthermore, it is imperative that all levels of management and workers participate in the development and structure of any health and safety program. The identification of risks, events that are potentially hazardous and the actual daily activities of the work location (as distinct from how they should be done according to regulations) require the insight of rank and file personnel.

Moreover, when specialists in health and safety propose modifications in procedures they must assess their feasibility, acceptance and real chance of implementation by field officers before they are established and implemented as departmental policies.[71] Research indicates that new techniques and procedures, which may seem ideal on paper or in the lab, will never achieve their objectives if they are not used because they are cumbersome, unrealistic or unpopular.[72]

5.2 Accident Prevention

No documented scientific research has been found on specific prevention programs for fatal accidents, car crashes or even less serious accidents. There is one exception: the Quebec Joint Union Management OH&S Association for Municipal Affairs (Association paritaire pour la santé et la sécurité du travail, secteur affaires municipales, APSAM) is now preparing a prevention program comprising a series of lectures and situation-specific exercises aimed at municipal and provincial police officers.[73] Other police forces may be interested in following this example and evaluating its potential for accident prevention.

5.2.1 Protective Equipment

There is an ongoing debate about the wearing of protective equipment by police officers.[74] Some of the questions being considered are: Should all police officers have bullet-proof vests? Should they be worn all the time? What is the best type of equipment? Guides on the assessment, selection and application of body armour have been published.[75] Both the RCMP and the SQ OH&S specialists are at present researching the pros and cons of different protective armour (such as

equipment for riot/tactical squad and complete body armour that would be flame-retardant, liquid-proof).[76]

On the subject of motor vehicle accident prevention, a debate is also taking place on the use of seat belts, shoulder harnesses and air bags.[77]

One reason why the use of protective equipment is being debated appears to be the complex task of setting official standards for police equipment of all kinds.[78] The bureaucracy and red tape behind this task seem almost insurmountable, according to a number of experts who have been interviewed. For example, Damos (1988) advocates the systematic testing of firearms by specialists before officers put them to use. Apparently there have been a number of unfortunate and avoidable accidents with new weapons not tested in this manner.

5.2.2 Training

A number of publications urge the provision of adequate information and formal training to deal with high-risk situations.[79] Perceptions of danger on the part of law enforcement officers can have paradoxical results. On one hand, they may be quite functional and lead to enhanced vigilance. On the other hand, they may cause violence to become an integral part of the police role, and to be viewed as routine by some.[80] In any case, carelessness and complacency are deadly enemies that police officers must avoid. As Boylen and Little (1990) advise, the "human error factor should be trained out".[81]

A review of cases of fatal assaults on United States law enforcement officers[82] and evaluation of high-risk narcotics-related warrant service[83] suggest a set of guidelines for training. These include both recruit and veteran officers being provided with information on a regular basis and trained in tactical developments to counter the variety of assaults they face.

Officer survival programs are also important, planned and structured around situations which statistics show have a high probability for fatal and non-fatal assaults. Planning and briefing about specific locations and tactics during operations reduce confusion and accidents. Response tactics recommended are those which avoid permitting subjects to get too close (most homicides are committed at distances of less than four feet).

Recommended criteria include the avoidance of too many subsequent operations by the same officers; concluding any high-risk operation with an after-the-fact evaluation and critique, involving all members of the team; and including in police recruit and in-service training regular sessions on officer survival, basic patrol procedures, proper weapons handling, self-defence and defensive driving.

5.3 Specific Health Risk Prevention

5.3.1 Reducing Risks due to Lead and Toxic Chemicals

It is important that attention be given to instructors of shooting ranges and the possibility of overexposure to lead, that periodic quantitative evaluation of exposure be made, and that proper medical prevention procedures be established and followed.[84]

The same steps are applicable to crime scene investigators and officers involved in raids of illegal drug laboratories. They are also in danger of exposure to toxic chemicals. It is important that adequate information on all hazardous materials be provided, and that there be training on proper handling and safety procedures.

In a number of police agencies, manuals and safety data sheets of all hazardous substances are being prepared. Important elements to be included are general and specific risks, safe handling procedures, and proper storage and disposal.[85]

Information and training are often provided through a system whereby members of OH&S committees are first approached, and then they, in turn, extend the training through OH&S representatives to all personnel directly involved. Environment Canada has published a guidebook that includes data sheets for numerous hazardous substances. For each chemical, one can find detailed description and properties, information on risks to health, fire and reactivity hazard, emergency intervention, protective gear, first aid, transportation precautions, environmental protection and proper disposal.[86]

The Canadian Chemists Association has published a handbook that contains safety procedures, information on proper handling of equipment and toxic and dangerous substances and emergency procedures followed by workers in laboratories that may be useful to police officers in specific situations.[87] In addition, suggestions have been made that logbooks and records be kept on police officers' rate and frequency of exposure as an equally important prevention measure.

In the event of an environmental catastrophe, an explosion, a major toxic chemical spill, an airline crash or other accident involving hazardous substances, police officers are often the first on the scene. Yet no specific literature on police procedures and officer protection were found, with the exception of a brief summary of a British police agency's guidelines for initial and basic action in such situations.[88] However, documentation exists on the general topic of emergency procedures and chemical spills, and a number of guide books and a few articles have been published.[89]

In both Canada and the United States there are governmental services specialising in this field that are involved in a number of projects on substance detection and identification, development of standard safety procedures, individual protection and decontamination.[90]

Both Canada and the United States are now studying portable instrumentation for immediate, on-site identification and analysis of toxic substances in water, soil and air.[91] Moreover, the Environmental Emergency Technology Division of Environment Canada has developed a remote control analytical system to assist in the response to spills of highly toxic and volatile chemicals without endangering the lives of the personnel involved.[92]

A number of guides have been published that contain information and instructions on the development of standard operating safety procedures. These include, among other things: setting up a work plan, preparing for action; describing hazards and evaluating risks; describing requirements for surveillance program (key resources); delineating work areas and ascribing specific functions; choosing appropriate protective equipment; controlling access; setting up decontamination and emergency medical care and training procedures.[93] Specialized personnel resources may include local police forces, emergency management services, public health, public works, hazardous material coordinator, industry specialists and public and private groups.[94]

As mentioned in Section 4.2.1, protective equipment is the subject of a number of studies[95], yet remains controversial. Specialists in emergency procedures specify equipment required according to the various hazards, and also describe the setting up of different working zones around the area, starting from the central spill or exclusion zone and extending to the outermost clean zone. Protective equipment and decontamination procedures vary depending on the zone in which one is working.[96]

5.3.2 Reducing Risks due to AIDS and Hepatitis-B

As previously mentioned, there is an on-going debate on the need to extend general vaccination for hepatitis-B to all workers whose duties bring them in contact with high-risk populations. Costs for such an operation are staggering and for this reason a number of researchers do not recommend it. This does not exclude post-exposure vaccination for police officers after specific high-risk incidents.

One easy and inexpensive way to protect against biological health risks is to develop mandatory training programs for police officers that include clear, appropriate and thorough information on contamination risks and protection procedures. Adequate and simple prevention procedures are most effective. Proper and careful handling of biological samples, thorough hand-washing and the wearing of disposable gloves are among the most effective measures against infectious diseases.[97] It is not the purpose of this document to enter into the debate over AIDS detection in the working population. Emphasis should be placed on prevention and education.

An on-going prevention program provided with the help of local health community services has been successful in providing proper information and relieving anxiety among police of the greater Montreal area, and could serve as an example of an efficient prevention program.[98] Two physicians, specialists in health and safety prevention, visited each police station. Through a series of conferences they informed everyone on contamination risks and taught them proper protection procedures.

The prevention program being set up in Montreal for police officers by the local union-management occupational health and safety association for municipal affairs also includes a module on biological risks.[99]

5.3.3 Lowering Frequency of Back Injuries

As indicated by accident statistics among police officers and empirical research data,[100] back pain is the most significant ergonomic factor requiring attention. Motor vehicle driving, wounds or bruises,[101] overexertion in moving heavy objects, vibration and sitting in uncomfortable positions for long periods seem to be the most frequent causes of back injuries.[102] A police officer's work contains a number of these elements.

There are two approaches to the prevention of back pain: individual and organizational. The first and more conventional one is directed at improving physical fitness. Exercise that leads to stronger and more flexible back muscles results in fewer injuries. Research indicates that police officers understand the need to improve their physical condition. Many believe it to be imperative.[103] But after their initial training, when their fitness levels are high, their physical condition tends to deteriorate with age.[104]

A number of physical fitness programs have been initiated in police agencies aimed primarily at reducing cardiovascular risks, but also resulting in improved muscular performance that may have a beneficial impact on back injuries.[105] Moreover, some studies have shown that physical fitness may also have an effect in reducing absenteeism.[106] Thus physical fitness can have a direct impact on reducing an organization's costs.

An organizational approach towards reducing back pain and injuries involves thorough examination of the work environment. An increasing number of studies show that improving ergonomic factors at work decreases low back pain significantly.[107]

A most impressive study in this area involved the redesign of police patrol cars.[108] This research is interesting for a number of reasons:

- objectives included not only redesign of the seat for better ergonomic positioning of the back, but also a complete analysis of body motions within the vehicle in accordance with the varied tasks to be performed;

- a participative approach included ergonomists, engineers, driving instructors, car manufacturers, health and safety specialists, police administrators and officers with and without back injuries;

- analysis was made of both driver and passenger seating arrangements, communications systems, administrative tasks, and proper layout of portable (stick, walkie-talkie, firearms, flashlight), fixed (radio, emergency equipment, protective screen, computer) and wearable equipment (clothes, bulletproof vest, all equipment worn at the waist).

Consensus was reached on the necessity of comfort, safety, space management and prevention of injury. The seat had to be comfortable, of adequate height and provide good support for the back, sides and head. It had to be adjustable and adaptable to the height and weight of the driver. It also had to be firm and durable, and not lose its shape. Finally, it had to accommodate the equipment worn by officers on their belts. Efforts were required to make the patrol car more effective and safe when it serves as an office. This involved proper lighting, convenient writing surfaces and adequate storage space. Space management was necessary to prevent obstructing the driver, reduce clutter and eliminate projections that could cause bruises.

This is only one example of an evaluation of a work environment frequently experienced by police the motor vehicle. Similar analyses could be made with regard to the safety, weight and ergonomic aspects of the equipment worn by officers on foot patrols.[109]

Changes in the psychosocial work environment can sometimes be instrumental in reducing the frequency of back injuries as well. There are indications that psychosocial factors related to work organization and job satisfaction are correlated to low back pain.[110] Ebeltoft (1985) has reported correlations between worker participation, latitude in decision-making and autonomy and frequency of back pain. The psychological factors of the work environment are examined more fully in the next section.

5.3.4 Managing and Reducing Stress at Work

A review of present and future tendencies in stress management programs was completed recently by Arsenault and van Ameringen (1991). The authors examined a number of occupational categories, but emphasis was placed on the health care professions. They concluded that controlled studies regarding prevention or actual modification of the sources of stress are extremely rare, even though most researchers agree on their absolute necessity. The vast majority of studies concentrated instead on the mechanisms of individual or collective tolerance to stress.

There seem to be four major tendencies associated with stress management. A number of studies investigated individual coping styles and behaviours. Participants were asked to describe how they reacted during certain specific stress situations. Replies included strategies such as finding a compromise, making a plan of action, taking action to get rid of the problem, playing racquetball to get rid of anger, reading a book, thinking about something else, eating and drinking.[111]

In the law enforcement sector, two studies demonstrate the variability of coping strategies used by police officers in stressful situations. When officers were asked to review their thoughts, emotions and actions with regard to five recent acute and time-limited stressful job events, they said they felt more challenged than threatened, appraised the situation as solvable (it is their job and they have to accept it) and used considerably more problem-focussed forms of coping.[112]

Both age and organizational position had a significant effect on the type of coping selected. Previous experience of similar situations may be of great value and stress inoculation can probably

be enhanced by training. New police recruits would benefit in the process by being systematically matched with older, more experienced officers. In comparison, another study using field observations of police-citizen encounters revealed that officers used more passive avoidance strategies, such as verbal denial of danger and playful pranks among officers.[113]

The second research area associated with stress management includes programs oriented towards developing and strengthening personal resources.[114] Two types of approach are employed, behavioural and cognitive. The behavioural programs are the most numerous, and include physical fitness, biofeedback and relaxation techniques. Methodological biases do not permit a valid assessment of these programs.

In law enforcement agencies, physical fitness programs were aimed exclusively at reducing cardiovascular risk (see Section 5.3.2). Documented cognitive approaches are rare. Information provided is ill defined. Training sessions with individuals or groups usually include such topics as priority restructuring, goal-setting, self-worth development and time management.

The study of social support and its role in buffering the consequences of stress represents the third orientation in stress management.[115] Programs that focus on the development of personal communicating skills often provide unique occasions for individuals to create a social support network. Police officers, because of the special isolation that their work imposes upon them, may be in particular need of such support from colleagues and family.[116]

Also worthy of mention is the fact that in some organizations Employee Assistance Programs (EAP) are often responsible for providing this type of stress management. At this time, however, EAPs are more often developed for treatment after the fact, helping workers with psychological problems, alcoholism and recovery from traumatic events.[117]

The final, more recent and more innovative trend in stress management involves programs centred on changing the stressor at its source. A recent United States private sector study revealed that 27% of all organizations with more than 50 employees offered stress management programs, 81% of which had some concerns with modifying the work organization.[118]

There has been little published information to date on such programs since Hackman and Oldham (1980) wrote their manual on work redesign a decade ago. Karasek (1989) recommends increased job decision latitude and diminished mental workload for a number of professions as a measure directed against occupational stress. In 1981 Wall and Clegg reported significant improvements in workers' emotional health, together with better work attitudes and motivation, following a program designed to increase autonomy among work teams.

An example taken from a hospital environment showed that increased participation in decision making yielded significant decreases in role conflict and ambiguities and the tendency to quit.[119] It has also been found that an increase in communication and participation leads to greater satisfaction and a reduction in medical errors.[120] Only one example of a program for a police-related organization was found. The author describes Quality Circle programs in detail and mentions that

the main benefits include:

> increased employee involvement in work activities; improved quality of work; improved communication between workers and management; development of problem solving experience in workers; improved morale; development of team building skills; employee development; development of manager/work force interaction and increased job satisfaction.[121]

5.3.5 Improving Work Schedules

A number of principles can be deduced from a review of literature on irregular work schedules. It is impossible to eliminate shift schedules from police work, but studies on human adaptation to disturbances in biological rhythms yield interesting suggestions for improving the work situation.

The shorter the shift work period (two to three days), the better the body adapts. Ideally, work schedules should be designed with a maximum of three consecutive night shifts, or at least a longer rest period immediately after night shifts in order to decrease the ensuing sleep debt.[122] Moreover, studies have shown that the duration of shift work has an impact on rhythmic bodily functions.[123] It is much easier to rest and adapt following a day-evening-night rotation than one in the reverse direction: night-evening-day. Work schedule planning could easily take these principles into account.

Studies have been made of the negative impact of shift work on diet and health. With the guidance of a nutritionist, a program promoting better eating habits could be initiated. Stones (1987) proposes a number of easily applicable guidelines for shift workers: plan daily meals in order to balance nutrition; take the main meal in the middle of the day, not in the middle of the shift; reduce caloric intake during the evening and night; increase water and fibre consumption; reduce fats, sugar and caffeine; and include daily relaxation periods to help digestion and promote sleep.

Physical fitness has been mentioned previously, but it also plays a part in the management of shift work. Exercise facilities should be available to officers during their off-duty hours.

In summary, employers can play a major role in improving the quality of life of shift workers by modifying work schedules, providing better eating facilities during irregular hours and setting up information and training programs on solutions to the negative aspects of shift work.

Chapter VI

THE EMPLOYER PERSPECTIVE: EMERGING APPROACHES

6.1 Health and Safety at the Organizational Level

The discussion thus far reveals that health and safety activities are still in their infancy even though legal incentives have been there for more than a decade and researchers and practitioners have expressed their opinions on the urgency and importance of health and safety programs on numerous occasions.[124]

A number of specialists argue in favour of concentrating occupational health and safety improvement efforts at the organizational level. In 1989, Johnson and Johansson introduced a special edition of the International Journal of Health Services dedicated to work organization, democratization and health. In it the authors discussed the urgent need to change work structures and organization in order to increase employee participation and control in decision-making.

In the past four years the United States National Institute for Occupational Safety and Health (NIOSH) proposed a number of national strategies for the prevention of the ten leading work-related diseases and injuries.[125] Among these ten are musculoskeletal injuries, severe occupational traumatic injuries, occupational cardiovascular diseases and psychological disorders.

In each strategy emphasis was placed on job design, surveillance of risk factors and health disorders, the need for information, education and training for all levels of employees and the continuing need for scientific research.

On a more political note, a number of articles in the Journal for Mind-Body Health Advances (1989) presented classical confrontations between union and management over respective responsibilities in the promotion of health and safety in the workplace.[126]

Handy (1988) suggests that practitioners as well as researchers must now begin to pay as much attention to the functions and structures of organizations and society as has been given lately to individual resources:

> ... individually or interpersonally based treatment programs ... may be the simplest to implement as they do not disrupt organizational functioning or challenge organization power holders. However, if individually focused analyses are given undue emphasis they have the major disadvantage of diverting attention away from organizational dysfunctions and toward individual faults.[127]

Landsbergis (1988), Frone and McFadin (1989) and Schilling (1989) endorse this approach and encourage organizations to assume their responsibilities in controlling risk exposure. Cullen and Sandberg (1987) add that promotion of employee health and safety means not only looking for causes of accidents and illnesses and repairing damage, but also must include prevention by changing work organization and helping employers to anticipate rather than react to hazards.[128] Moreover, Kavianian et al. (1989) and Sass (1989) invite management to take an active part in

health and safety promotion at work. Traditionally,

> ... management's resistance to increased worker participation in decision-making was based upon economic considerations, primarily the values associated with efficiency. Additionally, worker rights in health and safety are seen both as irrelevant to the reduction of the frequency and severity of accident rates and the incidence of industrial disease, and as an infringement upon management rights and prerogatives.[129]

Contrary to the above, the literature indicates strong correlation between productivity and worker involvement, adding that joint management-worker cooperation has strong positive effects on health and safety records.[130] "Employee empowerment" is a new fashionable term in work organization, but it is up to management to take the initiative and provide the opportunities for the development of occupational health and safety programs where employees have more input.[131]

6.2 Assessing OH&S Programs

The effectiveness of OH&S programs run by organizations can be assessed by using the outcome data associated with health and safety as depicted in Section 6.3. However, assessing the improvement achieved by strategies targeted at reducing accidents differs slightly from the evaluation of strategies targeted at preventing and treating occupational diseases. Assessment strategies oriented towards the physical work environment differ from those targeted at the socio-psychological work environment.

Section 6.3, the prototype model and corresponding remedies of OH&S in police, provides an overview for Risks-Conditions-Remedies-Outcomes scenarios. One should bear in mind that examples of typical variables were identified in each category. The remedies displayed in the chart are not necessarily mutually exclusive, and the outcomes might be linked to all environmental risks. Nonetheless, it provides a synoptic picture for this discussion paper.

The effectiveness of these strategies is often measured by the effects of a specific strategy on employee absenteeism and turnover, medical claims and workers compensation rates and costs and performance and overall efficiency (Outcomes in Section 6-3). The effects of these strategies can also be seen in a change in the rates of accidents, or the incidence of specific diseases.

The relative effectiveness of these strategies can be measured by determining the cost of the program and its relative benefits. For example, it is suggested that the cost of improving ergonomic factors (e.g. seats and comfort levels in police cars) will be easily offset by the resulting benefits. Since ergonomic changes are largely within the direct control of the employer, ergonomics may be the most effective strategy to use in remedying many environmental risks. Similarly, costs of training prevention programs and publicity campaigns can be monitored and measured against outcomes within a specified time frame.

6.3 Prototype Model and Corresponding Remedies for OH&S in Police Environment

Environmental Risks	Conditions	Remedies	Outcomes
Accidents	Loss of limb Back Injuries Death	Ergonomics Safety Committee Training Monitoring/assessing Protective gear	Turnover/absenteeism Satisfaction
Disease			Medical costs
* Chemical origins	Hearing impairment Vision problems Skin conditions	Genetic Screening Monitoring exposure Assistnace programs	
* Biological origins	Hepatitis B AIDS Contagious conditions	Monitoring exposure Assistance programs	Workers Compensation costs
* Physical origins	Heart conditions Ulcers Hearing impairment	Ergonomics	Involvement
* Organizational origins	Back injuries Burnout Fatigue	Altering policies Improving work schedules Ergonomics	 Performance
* Psychological origins	Burnout Suicide	Stress Management	

Chapter VII

CONCLUSIONS

The health and safety of employees in their occupational environment is becoming increasingly important. Employers are becoming more aware of the cost of ill health and the benefits of having a healthy workforce. Federal and provincial governments, through a complex web of laws, are making it more necessary for employers to be concerned with employee health and safety.

The current concern is primarily with occupational accidents and diseases caused by the physical environment (including biological and chemical hazards), but organizations can choose to guard employee health by improving the workers' socio-psychological environment as well. It pays organizations to be concerned with all aspects of the work environment since it reduces their costs and increases the respective performance of their employees.

An organizational image of concern for occupational health and safety is also a positive factor in attracting new employees. To sum up, effective programs for the improvement of both environments can enhance significantly both employee health and the effectiveness of the organization.

When the adoption of programs for improvement is being considered, it is important to involve employees. As with many other programs being implemented in organizations, employee involvement in improving health and safety is not only a good idea on its own merits. It is also likely to be desired by the employees.

Various police forces are currently experimenting with schemes for joint employer-employee participation either in the form of union-management committees or by direct participation in health and safety committees. The bottom line from an employer perspective is that these programs can reduce costs in the form of workers' claims, workers' compensation, litigation and productivity loss due to disability, accidents, absenteeism, turnover and fatalities.

This paper provides an overview of practices and policies aimed at enhancing OH&S for police forces. Although the published literature on the subject was scant, attempts were made to gather sufficient information to identify current and future trends. The first step towards devising any OH&S program is to have a better understanding of the phenomenon. It is hoped that this paper has made progress in this direction.

ENDNOTES

1. Broadly speaking, local and private initiatives in health and safety prevention rarely become the object of accessible publication: The exception to this is the abundant information available on psychological factors, overall as well as in the law enforcement sector, and it refers most specifically to occupational stress.

2. Dolan and Schuler, 1987, p. 443.

3. French, 1990, p. 620.

4. Matthias et al., 1989.

5. French, 1990.

6. French, 1990.

7. Millar, 1988, p. 224.

8. Jacobson et al., 1990.

9. Matthias et al., 1989.

10. Dolan and Schuler, 1987.

11. Nash,1983.

12. Statistics Canada, 1989.

13. Dolan and Schuler, 1987.

14. Commission de la santé et de la sécurité au travail, 1989.

15. The section on the legal considerations is taken from chapter 14 of Dolan and Schuler, 1992. This book is in its final preparation phase and will be published as: Dolan, S.L. and R.S. Schuler Human Resource Management in Canada, second edition, Toronto: Nelson Canada, 1992.

16. R.S.C., 1985, c. H-3

17. R.S.C., 1985, c. T.19.

18. *Canadian Centre for Occupational Health & Safety Act*, R. S.C., 1985, c. C-1 3.

19. R.S.C., 1985, c. L-2.

20. *Canada Labour Code, ibid*., s. 124, as am. R.S.C., 1985, c.9 (1st Supp.), s.4.

21. See *Canada Labour Code*, s. 124, *ibid*.; s. 125.1, s. 125.2, added by R.S.C., 1985, c.24 (3d Supp.)

22. Note that this list is an abridged version of section 125.

23. R.S.C., 1985, c.24 (3d Supp.) Part III (ss. 9-15).

24. Liss and Craig, 1988.

25. Harbaugh, 1987; Runyan and Baker, 1988.

26. Boylen and Little, 1990.

27. Gervais and Hébert, 1986.

28. Gervais and Hébert, 1986; Sullivan and Shimizu, 1988.

29. Commission de la santé et de la sécurité au travail, 1991.

30. Tremblay and Tougas, 1989a, 1989b.

31. Tripathi et al, 1990.

32. English et al, 1989.

33. Herbert, 1990, p. 16.

34. Bigras, 1991; Shafer, 1991.

35. Bigras, 1991.

36. Shafer, 1991.

37. Smith, 1986; Richards, 1987; Welch et al., 1988; Tremblay, 1989.

38. Kennedy, 1989; Meeks and Brodsley, 1989; Gates and Lady, 1991.

39. Tremblay, 1991.

40. Arsenault et al., 1986; 1987.

41. Coté et al., 1989.

42. Coté et al., 1990.

43. Dalzell, 1988.

44. Arsenault et al., 1986.

45. Arsenault et al., 1987.

46. Leonard et al., 1978; Williams et al, 1987.

47. Webb, 1977.

48. Feuer and Rosenman, 1986; Vena et al., 1986; Dubrow et al., 1988.

49. Leonard et al., 1978; Scheer et al., 1986; Williams et al., 1987; Collingwood, 1988.

50. Lavallée et al., 1988; Burke and Deszca, 1986; Oligny, 1990; Arsenault and van Ameringen, 1991.

51. Arsenault et al., 1987.

52. Dolan and van Ameringen, 1989.

53. Terry, 1981; Arsenault et al., 1986; Tremblay and Tougas, 1989b.

54. For a review see: van Ameringen, 1988; van Ameringen and Trottier, 1989.

55. Colquhoun and Rutenfranz, 1980; Stones, 1987.

56. Monk and Folkard, 1983.

57. Monk and Folkard, 1983.

58. Rutenfranz et al., 1977; Hak and Kampman, 1980.

59. Branton, 1984.

60. Rutenfranz et al., 1977.

61. See review, van Ameringen and Tronier, 1989.

62. Stones, 1987.

63. Jamal and Jamal, 1982; Cullen et al., 1984; Akerstedt et al., 1985; Stones, 1987.

64. Shamir, 1982; Monk and Folkard, 1983; Athanassenas, 1984; Staines and Pleck, 1984.

65. Shamir, 1982.

66. Delcourt, 1988.

67. Bigras 1991; Pinchaud, 1991.

68. Tremblay and Tougas, 1989a, 1989b; Tremblay, 1991.

69. King, 1990.

70. Pardy, 1990.

71. Kroeker and McCoy, 1988.

72. Dugas, 1991.

73. Devost, 1991.

74. Kolender and Leitner, 1987; Armbruster, 1989; McEwen, 1989.

75. Frank and Shubin, 1989.

76. Bigras, 1991; Shafer, 1991.

77. Bruestle and Rutherford, 1987; Harbaugh, 1987; Steed, 1987; Runyan and Baker, 1988; Walsh, 1988; Moore, 1990.

78. Gallagher, 1990.

79. Damos, 1988; Boyien and Little, 1990; Gallagher, 1990; McCarthy, 1990; Nielsen, 1990.

80. Cullen et al., 1983; Jermier et al., 1989.

81. Boylen and Little, 1990, p.70.

82. Boylen and Little, 1990.

83. McCarthy, 1990.

84. Tremblay and Tougas, 1989b.

85. Bigras, 1991.

86. Environment Canada, 1985.

87. Chemical Institute of Canada, 1987.

88. Herbert, 1990.

89. U.S. Environmental Protection Agency, 1984, 1985a, 1985b; Environment Canada, 1985; Raphael, 1986; Belore, 1988; Buttner et al, 1988; Goldthorp, 1988; Robins and Scott, 1988; Streutker, 1988; Swick, 1988; Denis, 1989; Lesak, 1989; U.S. Department of Transportation, 1990.

90. In the United States there are the Center for Environmental Research at Argonne National Laboratory in Illinois and the Office of Emergency and Remedial Response, Hazardous Substance Support Division of the Environmental Protection Agency, Washington DC. In Canada, there are the Environmental Emergencies Technology Division, the Environmental Protection Service and Emergency Preparedness Canada. Emergency Preparedness Canada maintains a situation centre to collect data and interpret emergencies (Swick, 1988) using a process called Emergency Site Management whereby one tries to change a dangerous or potentially dangerous uncontrolled accident into a safe and controlled environment (Robins and Scott, 1988).

91. Buttner et al., 1988; Goldthorp, 1988; Streutker, 1988.

92. Belore, 1988.

93. Environment Canada 1985; U.S. Environmental Protection Agency 1984, 1985a, 1985b.

94. Lesak,1989.

95. Bigras, 1991; Shafer, 1991.

96. Environment Canada 1985; U.S. Environmental Protection Agency 1984, 1985a, 1985b.

97. Tremblay and Tougas, 1989a, b.

98. Tremblay, 1991.

99. Devost, 1991.

100. Arsenault et al., 1987; Coté et al., 1989.

101. Heliovaara, 1988.

102. Frymoyer et al., 1983; Troup, 1984; Tremblay and Tougas, 1989a, 1989b.

103. Arsenault et al., 1987.

104. Leonard et al, 1978; Williams et al, 1987; Tremblay and Tougas, 1989a, 1989b.

105. Bahrke, 1982; Rogers, 1984; Serra, 1984; Williams et al., 1987; Collingwood, 1988; Superko et al., 1988.

106. Superko et al., 1988; Tremblay and Tougas, 1989.

107. Snook, 1988.

108. Coté et al., 1990.

109. Dalzell, 1988.

110. Frymoyer et al., 1985.

111. Osipow and Davis, 1988; Srivastava and Singh, 1988; Israel et al., 1989a; Puffer and Brakefield, 1989; Parkes, 1990.

112. Larsson et al., 1988.

113. Moyer, 1986.

114. Arsenault and van Ameringen, 1991.

115. House, 1981.

116. Kaufmann and Beehr, 1989.

117. See RCMP External Review Committee discussion paper 5, 1990.

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