

OCCUPATIONAL STRESS AND HEALTH IN THE OIL AND GAS INDUSTRY

EXECUTIVE SUMMARY

The following report offers a brief overview of the stressors and strains experienced by workers in the upstream oil and gas industry and the associated outcomes that may hinder organizational performance.

Stressors associated with oil and gas work can lead to emotional problems, which in turn can lead to higher rates of substance abuse, accidents, absenteeism, drug and disability claims, and lower levels of performance and retention. Workers who are affected by stressors and strains cannot apply their skills to the fullest. This leads to an *artificial* skills shortage that exacerbates the growing, 'real' shortage of skilled workers.

It is recommended that oil and gas employers monitor the occupational health of their workforce and search for innovative ways of re-designing jobs and organizational structures to ensure the healthiest work/life environment possible. Employers should also provide access to resources that enable workers to proactively address stress in their lives.

Specifically, prevention-focused EAPs are a recognized best practice in the oil and gas industry. Since they are also currently under-utilized, EAPs may constitute a competitive advantage for forward-thinking oil and gas employers.

The Industry

The upstream oil and gas industry includes exploring for, extracting, upgrading, and processing Canada's petroleum resources. Globally, Canada ranks ninth in crude oil production at 2.7 million barrels of oil a day. One million barrels alone are produced from the Alberta oil sands. Canada is also the third largest producer of natural gas at 6.4 trillion cubic feet per year. Approximately 80% of Canada's oil and gas industry is situated in Alberta. Much of the remaining 20% is accounted for by Newfoundland and Nova Scotia.

Demand for oil and gas is surging. Canada's current per capita energy consumption nearly equals that of the United States. The majority of energy derives from

refined petroleum products, natural gas and coal. Petroleum accounted for one-third of the increase in Canada's total energy consumption from 1990 to 2003. Natural gas accounted for half of this increase.

The Workforce

Approximately 120,030 people are directly employed in upstream oil and gas industry. Direct and indirect employment may exceed 500,000. Although gender ratios vary from job to job, the oil and gas workforce as whole is overwhelmingly male. Male/female ratios range from 79/21% for geoscientists to 96/4% for trades.

Oil and gas jobs are among the highest-skilled in the country. As demand for oil and gas increases, skill

shortages are emerging as serious impediments to Canada's global competitiveness. As a result, an increasing number of workers are being hired from other countries (e.g., Venezuela, Nigeria, South Africa). Considering that the industry is also one of the largest employers of First Nations people, the workforce appears poised to become even more multicultural.

A significant proportion of professional and trade jobs within the industry are unionized. Trades are represented by unions such as the Regional Council of Carpenters and Allied Workers and the United Association of Plumbers and Pipe Fitters. Many occupations are represented by the Natural Resources Union (NRU) and the Communications, Energy and Paperworkers Union of Canada (EP).

The Work-Life Environment

Jobs and Compensation

The oil and gas industry is complex and employs a vast array of different occupations. They range from apprentice mechanics and drilling derrickhands to engineers and geoscientists. Although education, skill, and occupational levels differ widely within the industry, compensation in the industry, as a whole, is high relative to other industries. The average weekly earnings in 'mining, oil and gas' are \$1,310.15 compared to \$732.64 for all industries (seasonally-adjusted).

Oil and Gas Work Stressors

Workers in the upstream oil and gas industry face a wide array of stressors, strains, and health outcomes associated with unnatural living conditions¹. The most salient stressor is physical and social isolation. Many workers live and work in remote areas for weeks or months at a time with little contact with family and friends. Crowding is an additional stressor, as workers often share small living quarters (e.g., offshore rigs). The combined effects of isolation and crowding can be especially volatile as well-documented in studies of incarcerated populations. There is some concern that

workplace bullying and aggression occur with significant frequency in the industry (e.g., public humiliation, offensive remarks, intimidation, social exclusion). As the workforce becomes more multicultural, in-group/out-group biases and tensions may arise despite best efforts to enforce zero tolerance policies.

Work intensification may be a stressor for some workers. According to Statistics Canada, 16% of workers in forestry, mining, oil and gas work compressed work weeks compared to 6% of all industries. Yet, only 27% of the same workers report flexible hours (versus 35% for all industries). According to one study, unsafe behaviour and accidents are believed by offshore workers to be caused by pressures for production, real or imagined. Exposure to serious accidents and other critical incidents can hamper workers' ability to perform. Feeling jumpy, moody or irritable, social dysfunction, difficulties with concentration, and difficulty returning to an accident site are typical reactions that compound the chance of subsequent accidents.

Finally, there are unique financial pressures that are faced by some oil and gas workers. For example, there is much money to be made in the Alberta oil sands. However, prosperity has driven up housing prices and wages in surrounding centres such as Fort McMurray. Thus, the cost of living has been artificially inflated. If proper care is not taken, or without proper guidance, workers can quickly find themselves in financial trouble. The availability of drugs, alcohol and gambling in some centres can exacerbate this problem.

Table 1. Top Stressors Among Offshore Oil & Gas Workers

- Career Prospects and Reward
- Safety
- Work-Life Interface
- Understimulation
- Physical Conditions
- Unpredictability of Work Patterns
- Living Conditions
- Physical Climate
- Organizational Structure
- Physical Well-being
- Work Overload
- Air Transportation

1. Occupational stress models make distinctions among *stressors* (negative features of the work environment), *strains* (acute psychological and physiological reactions to stressors; e.g., accidents, illness, depression, substance abuse) and *health outcomes* (chronic negative health states resulting from continuous exposure to stressors and strains). *Individual factors* (e.g., age, gender, personality), *non-work factors* (e.g., family/domestic demands) and buffer factors (e.g., social support, environment) can moderate these relationships. See *Figure 1*.

Oil and Gas Work Strains

Exposure to stressors can place serious strains on oil and gas workers. For example, isolation and alienation are well-known factors in clinical depression, the symptoms of which may be especially common among workers in northern climates who experience long winters and fewer hours of natural light (Seasonal Affective Disorder; SAD).

Depression can be an especially malignant problem in the oil and gas industry as it relates to additional, related problems -- accidents and addiction. The cognitive and energy deficits associated with depression can lead to less vigilance and a greater frequency of accidents. The effects of substance use on task performance and safety are also well-documented.

The Alberta Alcohol and Drug Abuse Commission (AADAC) reports that 85% of workers in the Alberta oil and gas industry used alcohol in the past year compared to 81% for all industries. For this, oil and gas ranked 6th out of 15 industries. Another Alberta study identified oil and gas as one of four industry groups with the highest rates of alcohol use. In the AADAC study, alcohol use led to greater rates of lateness, absence, and slower work place -- all of which impact costs. Statistics for residential areas that support the oil and gas industry may also signal substance abuse problems among workers. For example, incidences of impaired driving in Fort McMurray, Cold Lake, and Peace River have been ranked 3rd, 10th, and 15th out of 28 regional areas compared. For alcohol-related assaults, these centres ranked 4th, 11th, and 17th. Lottery expenditures and the rate of illicit drug offences are highest in the Fort McMurray area. The latter is more than five times the provincial rate.²

Substance abuse has been linked to higher rates of accidents and absenteeism, lower morale and productivity, higher costs associated with worker's compensation and insurance benefits, and turnover. According to the Canadian Centre on Substance

Abuse, substance abuse in Canada accounts for \$11.8 billion in productivity losses, representing 1.7% of gross domestic product (GDP) or \$414 per capita. Whether due to depression, substance use, or other factors, the injury incidence rate per 100 employers for energy & mining has been estimated at 16.56% compared to 6.3% for all industries in Canada.

Personal and Environmental Factors

The experience of job stressors does not always lead to stress and strain. Personal and environmental characteristics can 'amplify' the chance that a stressor will lead to a more serious problem. For example, younger people and males are more likely to experience substance use in the workplace. Additionally, Type A personality and neuroticism (i.e., emotional stability) are associated with greater accident frequency, job dissatisfaction, poor mental health, and higher perceived stress both at home and work among offshore oil and gas workers.

With respect to the environment, alcohol availability, alcohol-'supportive' work cultures, and lax organizational controls can lead to greater consumption, likelihood to drink on-the-job, lower productivity, and higher absenteeism. The combination of substance availability and tolerance, in particular, has been shown to impact employee health and safety, worker's compensation costs, length of sick leave, absenteeism, and productivity in northern remote work sites.

Trends And Approach To Organizational Health

The Future of Canadian Oil and Gas

The price of oil has recently approached \$70 (U.S.) per barrel. Some economists predict future prices in excess of \$100. These figures underscore the exponential growth that has occurred in global oil demand. Oil companies are struggling to produce the 84 million barrels that are required each day for global consumption and reserve. The rapidly expanding Chinese and Indian economies are highly dependent upon energy-producing industries. India, for example,

2. Higher alcohol consumption in the oil and gas industry may be partly an effect of gender. Males, who are overweighted in the industry workforce, report higher consumption rates than women in Canadian general population (Statistics Canada National Health Population Survey; NPHS).

is poised to increase its oil consumption from 2.4 billion barrels in 2004 to over 5.6 billion by 2030. Car ownership is also rapidly increasing in the developing world.

While global oil resources appear abundant, there are reasons to suggest that Canadian oil will become more attractive in the future. First, the United States is determined to decrease its reliance on foreign oil. Some analysts also believe that Saudi reserves are declining and that the kingdom will lose its status as the world's leading oil producer within 30 years. At 180 billion barrels, Canada's oil reserves are second in the world - ahead of Iraq and Iran. Canadian natural gas is also poised to become a hot commodity. Both Canada and United States are aiming to increase air quality by burning cleaner fuels. The Ontario government, in particular, has ambitious plans to eliminate coal plants by 2007. More natural gas is also required to extract viscous bitumen from the oil sands.

In response to global demand, companies are looking to invest \$87 billion in the Alberta oil sands and push output past two millions barrels per day. Offshore reserves in Newfoundland and Nova Scotia have only begun to be tapped.

The Growing Shortage of Skilled Workers

The Canadian oil and gas industry is facing a critical shortage of skilled workers to address the global demand for oil and gas. As many as 30,000 additional trades people will be needed in northern Alberta by the end of the decade. The boom in Fort McMurray will require the creation of 240,000 direct and indirect jobs. Some of the most significant shortages are occurring at the highest-skilled end of the spectrum as employers in Alberta and Nova Scotia search for engineers, technicians, and operations-related specialists. The Petroleum Human Resource Council of Canada (PHRCC) claims that 33% of engineers in the upstream industry will be eligible for retirement by 2012. Similar figures exist for geologists, geochemists and geophysicists (38%), technologists (29%) and trades (37%).

The difficulties in attracting, retaining and deploying

skilled workforces are highlighted in recent reports. In the *Deloitte 2004 Canadian Oil & Gas Industry Outlook Survey*, industry leaders reported grave difficulties in hiring and retaining skilled professionals. The PHRCC, in their voluminous 2003 report the *Strategic Human Resources Study of the Upstream Petroleum Industry: The Decade Ahead*, recognized that oil and gas employers must find more effective ways to promote upstream oil and gas careers and adopt more creative HR practices to retain workers:

As the competitive environment changes and as corporations reduce costs to improve performance, it will become increasingly difficult to attract workers with critical skills. This may be rectified, in part, by creating and sustaining a positive image of the industry as a desirable place to work (p. 4).

Positioning oil and gas work as desirable will be a challenge. Reserves are geographically-isolated from many amenities (e.g., schools, retail facilities) and spousal employment opportunities may be low.

Interestingly, neither the Deloitte nor the PHRCC report identified occupational stress and health factors as having impacts on attraction and retention. If not managed properly, stressors and strains create *artificial* skill shortages. Employers would do well to find innovative ways of re-designing jobs to limit the impact of stressors associated with oil and gas work. With many industry players present in oil and gas regions, competition for limited talent will be fierce. High skill sets are portable, both within and between industries. The promotion of less stressful work/life environments may give employers an edge in attracting and recruiting savvy workers. Artificial skill shortages also occur when oil and gas stressors and strains lead to absenteeism, short- and long-term disability, forced early retirement, turnover, and even premature death.

In short, it is a competitive advantage for upstream oil and gas employers to provide the healthiest work/life environments possible. It would also behoove them to provide access to resources that enable workers to address their occupational stress and strain issues

when conditions are less than optimal. In the Deloitte report, industry leaders expressed difficulties in hiring and retaining skilled professionals. However, they didn't predict significant salary increases for such positions in the future. This suggests a need for employers to provide 'intrinsic' rewards such as healthier work/life environments in lieu of 'extrinsic' rewards (e.g., compensation).

EAP for Oil and Gas Workers: A Natural Fit

In many ways, Employee Assistance Programs (EAPs) are ideal for oil and gas workers who seek the practical means of managing work/life difficulties. Most EAPs deliver telephone counselling, and in some cases, e-counselling. These modalities of care are essential for remote workers. Some EAPs are also positioned to deliver trauma counselling within very short periods of time following accidents or other trauma. EAPs are also confidential - a plus for a workforce that is male-dominated and less likely to seek help within regular social and work circles.

Many stressors in the oil and gas industry are associated with work/life interface. To address this, EAPs often provide work/life programs involving medical, legal, financial and family-issue counselling. These enable employees to deal with non-work crises quickly and effectively in the absence of spouses and other relatives working in the field. EAP-based financial counselling is also a benefit for families in the industry given the unique presence of high pay and high cost of living in some residential areas.

While EAPs have traditionally focused on *intervention*, some forward-thinking EAPs are working with clients to *prevent* chronic physical and psychological health problems associated with occupational stress and work/life problems. A prevention focus may also be new for some employers. For example, many oil and gas companies carry out drug and alcohol testing during the hiring process, or following accidents and poor performance. Oil and gas employers must recognize that testing in these instances are 'pre-stressor' or 'post-problem'. In other words, critical stressor-strain relationships often go undetected until

costly, preventable problems emerge. The criticality of prevention in the oil and gas industry has been acknowledged in a manual commissioned by the International Labour Organization:

...stress can only be successfully dealt with if it is considered from both a preventive and a curative perspective. While it is the responsibility of the organization and the individual to prevent stress wherever possible, not all stress can be eliminated and it is therefore also necessary to find effective ways of coping with stress when it occurs; and the prevention of stress requires the accurate identification of its source.

Studies of drug and alcohol use among Alberta workers, including those in oil and gas, found that most workers at high risk for substance abuse did not have access to EAP. This is not surprising, given that only 43% of upstream oil and gas companies have estimated to have EAPs. This is low compared to 78% for the education sector and 67% for forestry and mining (the latter of which may compete with oil and gas employers for skilled workers). EAPs may be viewed as fulfilling a best practice identified in the PHRCC's report *The Decade Ahead* when they recommended that upstream employers provide "...free, confidential resource and consulting service[s] to help employees handle personal issues."

It would appear that some oil and gas companies have not only embrace the idea of EAP, but require that their suppliers also offer EAP to their employees. The sharing of EAP among buyers and suppliers makes business sense, as it conforms to 'just in time' models of production that serve to maximize seamlessness and efficiency.

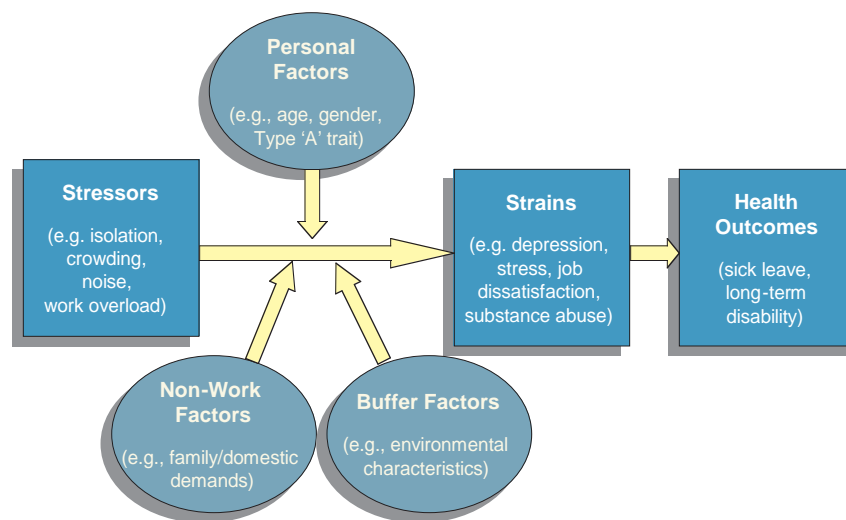
Conclusion

The Canadian oil and gas industry spends more than \$65 billion per year. It accounts for 6% of the country's gross domestic product and 48% of its merchandise trade surplus. The livelihoods of more than 500,000 Canadians are tied to the oil and gas industry. The success of oil and gas companies supports both national and regional economies. In general, oil and gas and their by-products, from

plastics and pharmaceuticals to fuels, are endemic to every aspect of our lives and fundamental to Canada's future economic prosperity. The exploitation of Canada's vast energy reserves requires an engaged and

healthy workforce. This sets an imperative for oil and gas employers to provide the healthiest work/life environment possible as well as access to resources that enable workers to proactively address stressors and strains in their lives.

Figure 1. Occupational Stress Model for Oil & Gas Workers



GENERAL REFERENCES

- Hurrell, Jr., J.J. et al. (1998). Measuring job stressors and strains: Where we have been, where we are, and where we need to go. *Journal of Occupational Health Psychology*, 3, 368-389.
- Petroleum Human Resources Council of Canada. (2003). *The strategic human resources study of the upstream petroleum industry: The decade ahead final report*. Ottawa: PHRCC.

THE WARRENSHEPELL RESEARCH GROUP

The WarrenShepell Research Group has been formed to gather, analyze and provide commentary on organizational health trends that affect our clients, their employees and families. Collecting and disseminating data about mental health issues, linking with some of the industry's highest profile research institutes and individual scholars, and drawing from our 24 years of expertise in the industry, the WarrenShepell Research Group's mandate is to help our clients and the broader business community understand the intricacies and the impact of poor mental health, work/life imbalances and related issues in our workplaces and in our communities. Some references for findings in this report have been omitted for space considerations. They are available upon request.

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