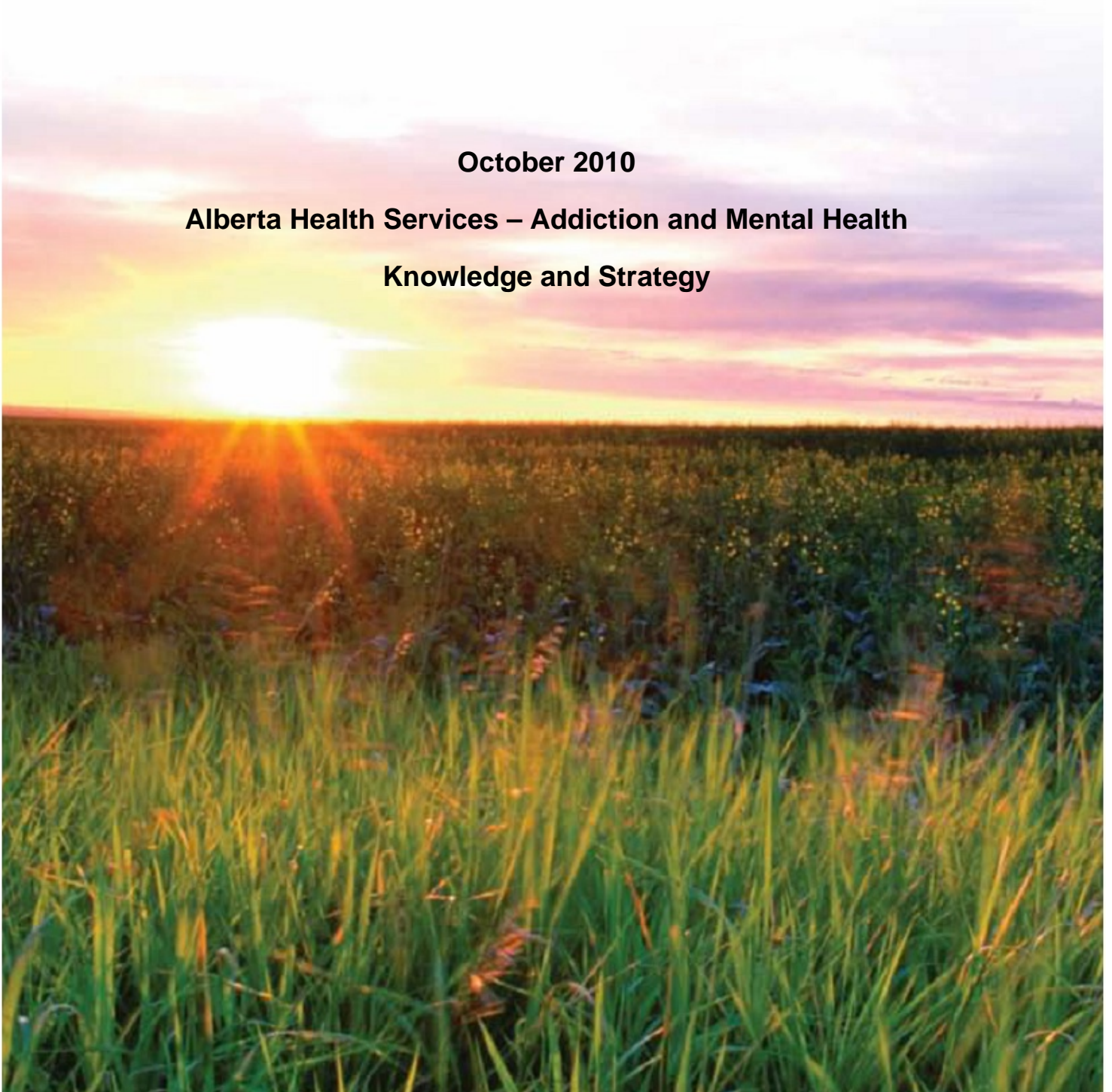


# **WORKPLACE ADDICTION AND MENTAL HEALTH IN THE CONSTRUCTION INDUSTRY: LITERATURE REVIEW**

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**Alberta Health Services – Addiction and Mental Health  
Knowledge and Strategy**



## INFORMATION REQUESTED BY

The Alberta Construction Industry Workplace Wellness Working Group

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## FOREWORD

Recognizing the importance of mental health in the workplace, the former Alberta Mental Health Board (now Alberta Health Services) formed a Steering Committee with key representatives across Alberta's construction industry to determine how to address addiction and mental illness among construction workers. A sub-committee (working group) was created to lead the first task of completing a comprehensive scan of the current state of addiction and mental health in the construction industry, which includes a review of available literature and online resources and an analysis of available human resources and benefits data. This document represents the literature review portion of the project.

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## Executive Summary

A changing economy may impart additional stress on an industry that reports higher than average rates of substance use and comprises of occupations that report “poorer mental health.” Working within the construction industry can entail working long hours, overtime, and irregular schedules, which may lead to eventual burnout and employee turnover.

Burnout has been associated with various mental health problems, including psychological distress, anxiety, depression, reduced self-esteem and substance abuse. Research suggests, however, that social support from colleagues and supervisors, as well as a workplace that supports work-life balance could lessen burnout and associated health complaints.

Workers in the construction industry also reported higher than average rates of at-risk alcohol use, illicit drug use, tobacco use, and moderate or heavy smoking. Research has indicated that those who have a substance abuse diagnosis, including those who smoked, were high users of health care services and had excess associated health care costs.

The use of drug testing in Alberta varied by industry; safety-sensitive industries, including the construction industry, were more likely to test compared to other industries. Although evidence suggests that companies that undertook drug testing showed a decrease in injury rates, the percentage of workers who abuse illicit drugs and the number of associated injury incidents was also small. It was suggested that, with nearly double the average of heavy alcohol use compared with other industries, accidents and injuries are more likely to be associated with alcohol rather than drug use. These findings suggest that although drug testing is an effective way of reducing construction site injuries, it should be only one component of a comprehensive employee program (e.g., written policy, employee drug awareness and education, supervisor training, and rehabilitation and treatment).

Construction workers are also at higher risk for disability compared to the general workforce. Studies indicate workers have an increased risk of disability caused by cancer of the oral cavity and the pharynx when compared to the general workforce, which may be reflective of the high rates of smoking and heavy drinking among construction workers. Construction workers also had the highest rates of chronic lung

disease compared to other occupations. The risk of disability also seemed to increase with age.

Construction workers may have a high proportion of workers with negative health behaviours; however, many may also be reluctant to participate in or have limited access to workplace health promotion efforts. Further, the small number of studies examining workplace mental health and/or addiction interventions in the construction industry precluded the generation of any conclusions regarding effectiveness. Company leaders will need to endorse research and evaluation activities in their workplaces and encourage workers to participate in such activities to help build the evidence base.

The recent number of precedents being set in Canada indicates that the duty of responsibility on the part of employers to provide psychologically safe workplaces is increasing. It is recommended that employers institute antidiscrimination policies and accommodate staff who have mental health issues. If appropriate, employers may also recommend contacting an EAP or seeking some other form of professional assistance.

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## Introduction

Alberta has seen dramatic economic shifts over the past few years. The sharp increases in housing costs and oil prices mid-decade resulted in labour shortages for some industries. This shift has been associated with an increase in workload and expectations of high productivity and performance from employees. For some, these shifts can contribute to increased stress, drug and alcohol abuse, weakened support systems, and employee turnover. More recently, the economic downturn has resulted in job loss and increased economic and financial uncertainty for individuals and corporations across Alberta. These issues have had a profound impact on mental well-being overall and have presented Canadians and Albertans with unprecedented challenges in sustaining a healthy population and workforce. Service delivery systems have also experienced added pressure to be responsive and efficient in the face of rapid change.

Corporations face tremendous pressures related to this cycle of prosperity and contraction. Growth in Alberta's economy can present challenges; in periods of prosperity, employers experience difficulty with recruitment and retention of employees, rising labour costs, increased work-life stressors, and employee burnout. The ability to build on and sustain economic growth depends on a strong and steady availability of healthy, productive, and committed workers.

The recent economic downturn has resulted in a dramatic reduction in construction projects. For example, housing starts have plummeted: In the month of March, 2008 Alberta housing starts totalled 47,700, which fell to only 9,600 one year later (March, 2009) (Canada Mortgage and Housing Corporation, 2009), representing an 80% drop. The decrease in construction projects has inevitably resulted in job loss across Alberta and Canada. The construction industry is among those that have experienced the largest increases in unemployment; In March 2009, the unemployment rate among construction workers rose to 12.3% from 5.1% in March 2008 (Government of Alberta, 2009). Some of those who remain employed may experience high levels of anxiety and financial worry related to fear of job loss.

A recent survey by Statistics Canada revealed that 33% of trades helpers and labourers reported poor mental health (Marchand, 2007); presumably, some employees have turned to substance use and abuse to cope with the stress. Substance abuse is associated with higher rates of accidents, absenteeism, and turnover, lower productivity and morale, and higher costs related to worker's compensation and insurance benefits (Fairlie, n.d.).

Direct and indirect costs related to mental illness, stress, and substance abuse are substantial:

- Psychological conditions, including stress, anxiety and depression, are the leading cause of both short-term and long-term disability claims (Sunlife Financial, (n.d.).
- The annual cost of work time lost to stress is \$12 billion (Marchand, 2007 )
- In 2002, productivity losses accounted for \$2.8 billion or 63% of the total estimated cost of substance abuse in Alberta (Rehm et al., 2006).
- Mental health issues account for 30-40% of disability claims in the workplace, which translates into 33 billion dollars annually in Canada (CIHR, 2005).

Leaders of private and public sector organizations, including those within the construction industry, recognize the importance of workplace mental health and are working towards solutions. Healthy workplace models are being developed and implemented, which include alcohol and drug guidelines, formal workplace wellness policies and strategies, and the availability of family and employee assistance programs to employees and their family members. The provincial government, communities, and other key stakeholders also recognize the need to continue finding solutions. Although research activity and knowledge being generated in this area is mounting, it is still insufficient to address this complex issue. This area of research is indispensable in shaping the perspectives of both academia and industry to clearly assess workplace practices and employee health as they relate to safety and productivity (Canadian Institutes of Health Research, 2007).

## Objectives

The purpose of this literature review was to determine the current state of research as it relates to workplace addiction and mental health in the construction industry. The objectives of this document are to synthesize the review's findings and discuss possible implications the literature may have as it relates to the construction industry.

## Method

### Search Strategy

A search of the medical and business literature was conducted in November 2008 and was updated in January 2010 using the databases and search terms listed below. The search covered peer-reviewed publications in English from January 1998 to January 2010. The search yielded 68 results. To ensure appropriate coverage, a second search was conducted by a librarian with the Alberta Government Library. This search yielded 17 results, a few of which were duplicates of the initial search. Additionally, all issues from January 1998 to January 2010 of the Journal of Construction Engineering and Management were searched for relevant articles. The Internet search engine, Google, was also used to locate grey literature.

Electronic databases used in the search include:

- Medline
- EMBASE
- Business Source Elite
- EconLit
- CINAHL Plus
- Petroleum Abstracts
- ABI Inform
- PsycInfo
- CLEED (Economic Evaluation Database)
- CDSR (Cochrane Database of Systematic Reviews)
- ACP Journal Club (American College of Physicians)
- DARE (Database of Abstracts of Reviews of Effects)
- CCTR (Cochrane Central Register of Controlled Trials)
- CLCMR (Cochrane Methodology Register)
- CLHTA (Health Technology Assessments)

The term "construction industry" and "construction work\*" were combined with the following terms:

- Workplace health OR
- Mental health OR
- Mental illness OR
- Disability OR
- Absenteeism OR
- Drug testing OR
- Sick time OR
- Sick leave OR
- Stress OR
- Burnout OR
- Addiction OR
- Substance abuse

## Study Selection

In total, 48 articles were selected for this review. The abstracts of all articles were read to determine their relevance to this review. Several inclusion and exclusion criteria were used to determine which articles to select for the review.

The inclusion criteria included:

- The article presented information or data specifically on the construction industry or construction workers.
- The article discussed addiction or mental health issues as it relates to prevalence, diagnosis or testing, prevention, treatment, interventions, or disability.
- The article was written in English and was available in full-text.

The exclusion criteria included:

- Letters, editorials, news articles, or conference abstracts

Further, to minimize potential differences in industry and labour practices and standards, articles were limited to studies that originated in North America, Commonwealth countries, and western European countries.

The methodological quality of the included literature is discussed where appropriate (e.g., where any issues were identified by the authors of this review). The broad scope of this review (e.g., high variability in type of studies included) prohibited the use of any formal quality assessment tools.

## Limitations

The broad scope (e.g., prevalence, diagnosis, treatment, prevention) and exploratory nature of the synthesis prohibited a rigorous, systematic review of the literature and therefore a narrative approach was used. The search indicated that there was a lack of research on the topic of addictions and mental health in the construction industry as well as a lack of Canadian research.

## Results

The literature covered several aspects of addiction and mental health in the construction industry including prevalence of mental health, substance use, and gambling problems; treatment seeking; drug testing; disability rates and absenteeism; and prevention and health promotion.

### Mental Health

#### Prevalence of poor mental health in the construction industry

Data from Statistics Canada indicates that the construction industry is comprised of several occupations that are associated with high rates of poorer mental health (Marchand, 2007). Using 2003 data from the Community Health Survey (CCHS) conducted by Statistics Canada, Marchand (2007) determined the prevalence of poorer mental health between occupations. The CCHS uses the following single-item five-point scale to measure mental health: “In general, would you say your mental health is: 1) excellent, 2) very good, 3) good, 4) fair, 5) poor.” In Marchand’s analysis of the data, respondents reporting “good”, “fair”, or “poor” mental health were coded as having “poorer mental health.” The accuracy of these findings may be limited due to the use of a self-reported measure and the investigator’s method of re-coding. For example, an individual that responded “good” to the CCHS may not have considered him/herself to have “poorer mental health” if given only two options with which to respond. As such, the re-coding may have contributed to inflated rates of “poorer mental health” than what would have been expected if respondents were asked to rate their mental health as either “excellent/very good” or “poorer”.

Despite this limitation, the study helps to highlight which occupations have the highest rates of self-reported poorer mental health. Occupations with the ten highest prevalence rates of workers reporting poorer mental health are listed below; four occupations (marked with asterisks) belong to the construction industry.

- Machine operators and related workers in fabric, fur, and leather products manufacturing (43.1%)
- Other assembly and related occupations (40.9%)
- Machine operators and related workers in textile processing (39.2%)
- Crane operators, drillers, and blasters (39.1%)\*
- Public works and other labourers (37.7%)\*
- Labourers in processing, manufacturing, and utilities (35.2%)\*

- Train crew operating occupations (33.9%)
- Logging machinery operators (33.5%)
- Cleaners (33.1%)
- Trades helpers and labourers (32.7%)\*

### Mental health problems

Several studies examined the effects of burnout on construction workers and the construction industry in general. Lingard and Sublet (2002) reference Maslach, Jackson and Leiter's (1996) definition of burnout as, "a syndrome of emotional exhaustion, depersonalization and reduced personal accomplishment" (p. 70). Maslach, Schaufeli and Leiter (2001) further state that burnout has been associated with various mental health problems, including psychological distress, anxiety, depression, reduced self-esteem and substance abuse, and as such, could be regarded as an occupational health issue. Lingard determined that although personality and job characteristics were significant predictors of burnout among civil engineers in Australia, job characteristics appeared to be an even stronger predictor. Lingard noted that it may be possible for organizations to implement strategies to prevent burnout and reduce employee turnover.

Lingard and Francis undertook several studies in Australia that examined the relationship between work-family conflict and burnout. In 2004, the researchers wanted to determine whether work-family issues were perceived to be a problem by workers in construction industry and to what extent employees' experiences differed between project- and office-based employees. Although it is stated that the work done for this study was preliminary, they found that site-base workers reported statistically higher rates work interference with the parent-child relationship, the pursuit of leisure activities, meeting home management requirements and employees' relationship with their spouse or partner than employees who worked in head or regional offices. Site-based workers were also more likely to experience emotional exhaustion compared to their office-working counterparts.

In a subsequent study, Lingard and Francis (2005) investigated the extent to which work schedule influenced burnout through work-family conflict. Greenhaus and Beutell's (1985) defined work-family conflict as "a form of interrole conflict in which role pressures from the work and family domains are mutually incompatible in some respect" (p.77). The researchers limited the study to male employees as most of the women in the sample were in support roles and men reported higher rates of burnout than the women who participated. The results indicated that work-family conflict mediated the relationship between schedule demands (i.e., both work hours and schedule irregularity)

and emotional exhaustion. The authors recommend creating a work environment that is supportive of work-family balance as a way to prevent or manage employee burnout.

In 2006, Lingard and Francis investigated the effect of supportive work environments on burnout and work-family conflict. They used exploratory research to investigate the relationship between employees' perceived organizational support (i.e., emotional and practical support from coworkers and supervisors) on work-family conflict and burnout among construction professionals (e.g., engineers, quantity surveyors and others) and managers. Results also indicated that practical support from one's supervisor (i.e., modifying hours or work responsibilities to allow for family obligations) and coworkers weakened the relationship between work-family conflict and emotional exhaustion. Emotional support from both supervisors and coworkers was shown to be insufficient in protecting employees who experience work-family conflict against burnout; however, it was shown to have a moderating effect on emotional exhaustion. The authors cite similar research undertaken by Van Dierendonck, Schaufeli, and Buunk (1998), which indicated that workplace interventions designed to reduce burnout were more effective when implemented in socially supportive work environments.

Janssen, Bakker, and de Jong (2001) used a demand-control-support (DCS) model, as described by Johnson and Hall (1988), to investigate the effects of work demands, control over work, and levels of social support on burnout. The model describes the most adverse and potentially stressful work environment to be one where there is high demand, little control and little social support. The authors hypothesized that employees working in DCS conditions would experience higher levels of burnout and a subsequent increase in health complaints. The study sample included foremen and skilled, semiskilled, and unskilled construction workers in Australia. The results of the study showed that that social support from colleagues and supervisors was negatively related to (i.e., reduced) burnout and health complaints.

Stress has been another area of interest for researchers. In 2003, Goldenhar, Hecker, Moir, and Rosecrance conducted an exploratory, ethnographic study to examine the relationship between working overtime and health and safety in the construction industry. Focus groups undertaken with 64 construction workers in the United States indicated that health and safety issues were their primary concern; however, they also raised concerns related to working overtime and the effects of working overtime. The spoke at length about a number of health- and safety-related issues that may be related to working overtime, which included sleep, injury, fatigue, and stress (i.e., stress at work and stress outside of work).

Haynes and Peter (2004) sampled 100 Australian, male project managers working in the construction industry and had them complete a questionnaire that measured coping

strategies, affect state, and potential stressors. The authors indicated that compared to other disciplines, the level of stress inducement encountered by construction project managers was significantly higher than that of managers in other industries (Khosh and Kerzner, 1984; Sutherland and Davidson, 1993; Sommerville and Langford, 1994). Sommerville and Langford noted that this may be due to the nature and characteristics of the construction industry. The greatest high pressure stressor for site managers was workload, followed by working long hours, and insufficient time spent in the family or home environment. They also found that:

- Managers who had fewer months of employment as a site manager were more likely to experience depression, anxiety and stress and were at greater risk of adjustment problems than those who were more experienced.
- Projects of a lower value were associated with higher levels of both anxiety and stress.
- Being of older age was a positive predictor of anxiety, which the authors hypothesized may be due to younger employees being more knowledgeable and adaptable than their older counterparts (Love, Haynes, & Irani, 2001, as cited in Haynes & Peter).
- Education, either a university degree or TAFE/trade qualification, predicted lower levels of stress.

The coping styles of managers were also significant predictors. For example, site managers who used a problem-focused style of coping, such as active coping, were better adjusted than those who used emotion-focused styles of coping (e.g., cognitive avoidance coping, social coping, accepting responsibility and self-controlling coping).

Goldenhar, Swanson, Hurrell, Ruder, and Deddens (1998) conducted one of the few studies that focused on women working in the construction industry. They conducted an exploratory study in the United States that tried to assess the impact of job stressors (e.g., job demands, control), gender-specific stressors (e.g., sexual harassment and discrimination), and construction-specific stressors (e.g., skills training) on job satisfaction and psychological and physical health outcomes. They also wanted to examine if there was a moderating or direct effect of supervisor-coworker support on the stressors the women experienced. Although the findings could not be generalized, the researchers found that having responsibility for the safety of others, skill under-utilization, experiencing sexual harassment and discrimination on the job, and having to overcompensate at work were significantly related to higher reported levels of psychological symptoms. Social support from supervisors and male coworkers was shown to have a positive effect on job satisfaction.

Petersen and Zwerling (1998) conducted a cohort study of older construction workers, aged 51 to 61, in the United States and compared their health outcomes to other older

blue collar and white collar occupations. Along with increased risk of musculoskeletal problems and chronic lung disease, workers in the construction blue collar group were nearly twice as likely to be diagnosed with an emotional/psychiatric disorder when compared with white collar workers. In 1999, Leino-Arjas, Liira, Mutanen, Malmivaara, and Matikainen (1999) conducted a four-year cohort study of blue-collar male construction workers aged 40 to 64. Their results further indicated that those who had diagnosed mental disorders also reported increased rates of unemployment.

## **Substance use and gambling**

### Prevalence of substance use and gambling in the construction industry

Workers in the construction industry also report higher than average rates of at-risk alcohol use, illicit drug use, tobacco use, and moderate or heavy smoking. In the prevalence study conducted by the Alberta Alcohol and Drug Abuse Commission (AADAC) (AADAC, 2002), the construction industry was indicated as a group of concern regarding rates of substance use and gambling. Lipscomb, Dement, and Li (2003) conducted a large cohort study in the United States between 1989 and 1998 and discovered that 6.6% of the workers had received a substance abuse-related diagnosis. Those who had received this diagnosis were high users of health care services and had associated excess costs (i.e., 2.6 times higher rates on an outpatient basis and 2.9 times higher for inpatient care).

### Smoking

In a study of health interview data sets (1997 to 2004) in the United States, the highest smoking rates overall were reported in the construction industry (Lee et al., 2007, as cited in Smith, 2008), with 39% of construction workers stating that they smoked. Smith (2008) also reports that, “smokers are known to have greater absences from work, more sick days per year, health care costs up to 50% higher than for comparable never-smokers” (p. 77).

Leino-Arjas et al. (1999) reported that current smoking was associated with unemployment in a follow-up study undertaken with older (i.e., aged 40 to 64) blue collar construction workers in Finland. The researchers suggested that smoking could be indicative of general risk taking behaviour. Smoking was also a factor related to moderate and longer-term sick leave in a study undertaken by Alavinia, van den Berg, Van Duivenbooden, Elders, and Burdort (2009).

## Alcohol use

In a national sample of full-time workers in the United States aged 18 to 64, workers in the construction industry had the highest rate (16%) of past-month heavy alcohol use (drinking five or more drinks on the same occasion on five or more day in the past 30 days) among workers in all industry categories (Larson, Eyerman, Foster & Gfroerer, 2007).

An ethnography that took place in the Australian province of Victoria at several construction sites over six months identified the consumption of alcohol as an important aspect of male culture in the construction industry and that there is pressure on the nondrinker to become one. (Iaccone, 2005). The literature also reveals that above average at-risk drinking was reported among workers in the construction and wholesale/retail trade industries and the construction occupation.

Data collected in 1997 in the US indicate that the percentage of heavy alcohol users among construction workers (12.4%) was double the national average for all other industries (7.6%) (Gerber & Yacoubian, 2002). Further, a 2009 survey (Cunradi, Todd, Duke, & Ames, 2009) in the US found that 17% of male construction workers surveyed could be designated as problem drinkers as well as 10% of their partners.

Similar to their findings on smoking, Leino-Arjas et al. (1999) reported in their follow-up study that heavy alcohol consumption was later associated with unemployment among blue collar construction workers in Finland. Interestingly, unemployed workers demonstrated a decrease in alcohol consumption, which researchers suspect may be due to changes in work and leisure routines.

In an analysis of 897 blue-collar couples in which one spouse or partner was a construction worker, Cunradi et al. (in press, as cited in Cunradi et al., 2009) found that approximately 21% of the couples reported male-to-female partner violence, and 24% reported female-to-male partner violence. Beyond problem drinking, the study also identified that male-to-female partner violence was higher in couples where the male was a problem drinker as compared to couples where the male was not (34% to 17%). Female-to-male partner violence was also found to be significantly higher (31% to 22%).

## Illicit drug use

In 2002, it was estimated that 1%, or 16,738 Alberta workers used drugs while at work. While there was little variation in illicit drug use by industry and occupation, above average rates of drug use were reported by workers in the construction industry and in

construction occupations (AADAC, 2002). Similarly, data collected in 1997 in the US indicated that the percentage of illicit drug users among construction workers (14.1%) was double the national average for all industries (7.7%) (Gerber, J.K., & Yacoubian, G.S., 2002).

## Gambling

The 2002 AADAC prevalence study did not reveal above average rates of gambling in the construction industry.

## **Treatment Seeking**

Employees' awareness of where to seek treatment for alcohol and illicit drug problems seems to be influenced by the type of industry and the size of an organization. Employees in upstream oil/gas and utilities industries had the highest level of awareness (95%). Fewer than three quarters of employees in construction (73%), other services (71%) and wholesale/retail (70%) reported that they knew where to seek assistance (Croteau, 2009). Fewer employees of smaller-sized companies reported that they were aware (54%) of where to seek assistance compared with employees who worked at larger companies (86%).

## **Drug Testing**

### Alberta

The use of drug testing varied by industry in Alberta. Safety-sensitive industries were more likely to have drug testing: forestry/mining (75%), upstream oil/gas (46%), transportation (33%) and construction (23%). Furthermore, a study of workplace health programs conducted in 2003 (MacDonald, Csiernik, Durand, Rylett, & Wild, 2006) revealed that drug-testing programs are significantly more prevalent in Alberta workplaces (25.4%) than in any other province (Canadian average: 10.3%), across all industries. The drug testing failure rate in Alberta was approximately 12% across all industries (D. Priebe, personal communication, November 27, 2008). Drug testing data for the construction industry alone was not available.

### Canada

In the study by MacDonald et al. (2006) 40% of the construction companies surveyed indicated that they have a drug-testing program in their workplace. According to a

representative of CannAmm Occupational Testing, the failure rate (e.g., those who tested positive for alcohol or drugs) across all industries was 6.2% in Canada for July 2009 (P. Croteau, personal communication, August 10, 2009).

## United States

A survey conducted in 1997 in the United States asked employees about drug testing for work (Minchin, Glagola, Guo, & Languell, 2006). Table 1 presents the percentage of employees (construction and all industries) who reported the various drug testing policies. Employees most often reported being drug tested following an accident (27.2%).

Table 1. Percentage of employees reporting drug testing policies or procedures

<b>Drug testing policy/procedure</b>	<b>All industries</b>	<b>Construction workers</b>
Applicants were screened for drugs	38.6 %	25.8 %
Employees subject "for-cause" testing	30.1 %	22.4 %
Employees subject to post-accident testing	28.7 %	27.2 %
Employees subject to random testing	25.4 %	25.7 %

In a 2002 study, Gerber and Yacoubian (2002) administered a questionnaire to company representatives in the construction industry. When survey participants were asked about the perceived effectiveness of drug testing in the construction industry, drug testing programs seemed to have made the most positive impact on the overall safety of the work environment, quality of job applicants, and reducing workers' compensation costs. The companies surveyed also indicated that reduction in insurance premium costs from implementing drug testing was, or would be worth starting a drug-free workplace program, a finding further corroborated by Minchin, Glagola, Guo, and Languell (2006).

Using injury incident rates as a measure of effectiveness of drug testing in reducing injuries, Gerber and Yacoubian (2002) found that the "average company that drug tests in the study sample reduced its injury incident rate by 51% within two years of implementation, from a rate of 8.9 injuries per 200,000 work-hours to 4.4 injuries per 200,000 work hours" (p. 63). Similarly, a survey of 34 American construction sites that found the percentage of accident reduction as a result of implementing drug testing was 10% to 60% and cited a national study conducted by Minchin et al. (2006) in which companies that tested for drugs experienced a 51% reduction in injuries within two years (Gerber and Yacoubian, 2002). Hinze and Gambatese (2003) also conducted a study of safety among smaller contracting firms in the United States. Most firms that

participated in the study were involved in some form of employee drug testing (i.e., random tests, tests for reasonable cause, post-accident tests, and follow-up testing). Findings from this study indicated that firms who conducted employee drug testing had statistically significant lower injury rates (n= 30; 9.94 median injury rate) compared with the firms that did not test (n = 4; 14.71 median injury rate).

Using “experience-rating modification factors”<sup>1</sup> (MOD) to determine the effectiveness of drug testing in reducing injuries, Gerber and Yacoubian found that the “average company that implemented drug testing between 1994 and 1996 experienced an 11.4 percent reduction in its MOD. During this same time period, the average company that did not drug test experienced a 1.6 percent increase in its MOD.” (p.65). Furthermore, the authors found that the effect persisted, but did not continue to grow past the first few years after the implementation of a drug testing policy (Pritchard & McCarthy, 2002). Together, these findings suggest that “drug testing is highly effective in reducing construction site injuries” (Stattin & Jarvholm, 2005, p.65) However, the authors note that drug testing “is only one component of what should be a comprehensive program that includes other key elements, such as a written policy, employee involvement and communication, employee drug awareness and education, supervisor training, and rehabilitation and treatment” (Arndt, et al., 2005, p.67).

## **Disability rates and absenteeism**

The 2005 study by Stattin and Jarvholm was conducted to investigate the work environment factors and their association with disability among construction workers in Sweden. The highest incidence rates were among rock workers, roofers, insulators, and concrete workers, and the lowest among salaried workers and foremen. Employees with high demands and low control had the highest risk of disability pension; however there was no clear association between risk of disability and social support. Since risk of disability pension increased as age increased, authors suggest that “improvements in working conditions are an important area of interventions in order to facilitate and prolong labour market participation among elderly people” (p.90).

Another study by Arndt et al. (2005) investigated the risk of occupational disability among construction workers in Germany, where 20% of all work related injuries occur in the construction industry. For this study, all-cause and cause specific incidence rates were calculated for the sample of construction workers as well as two reference groups (general work force and blue collar workers). Results indicated that 16% of the sample

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<sup>1</sup> “Experience-rating is a statutorily-mandated program designed to charge certain employers insurance premiums based on individual past loss experience. The experience is used to calculate the premium by using a formula modification, or MOD, that compares the employer’s actual loss record to the overall average for its particular business type in the state.” (p.56)

was granted a disability pension. Construction workers experience a higher risk of all-cause disability than the general work force as well as blue collar workers generally. An increased risk of disability caused by cancer of the oral cavity and the pharynx was observed for construction workers when compared to the general workforce. The authors suggest that this finding may reflect the high rates of smoking and heavy drinking among construction workers. They further found that the risk of disability strongly increased with age.

Rothenbacher et al., (1998) studied tobacco use and permanent disability in Germany. The study included 4,706 construction workers aged 40 to 59 who underwent occupational health examinations between 1986 and 1988. Participants were followed up in 1994 to determine their employment status and, more specifically, to determine if smoking was related to early retirement due to disability. Prevalence of current smoking was 52%, 20.6% were never smokers, 25.3% were ex-smokers. Crude disability rate varied between 146 per 100,000 person years for never-smokers compared with 181 per 100,000 person years for cigarette smokers. For smokers of pipes or cigars, the disability rate was 194 per 100,000 person years. Among current smokers, 23.1% of early retirement due to disability was statistically related to smoking.

Statistics cited by Pritchard and McCarthy (2002) report that in 1990, the European construction industry accounted for 15% of all occupational accidents and 30% of fatal accidents despite employing only 7% of all workers. They also cite that in Britain, construction workers are five times more likely to be killed at work and have a much greater chance of suffering disablement and illness than workers in other sectors. They further report that 9% of construction costs were attributed to occupational injuries and illness. Beyond the risk of physical injury, the industry also experiences, "high rates of dermatitis, musculoskeletal disorders, mental disorders, alcohol abuse, suicides, and ischemic heart disease all contribute to the mortality rates of laborers being double those in the lowest risk occupations" (p.541).

Petersen and Zwerling's (1998) study of older construction workers (aged 51 to 61) in the United States found that, in addition to higher rates of emotional disorders, construction workers had the highest rates of chronic lung disease (CLD) compared to other occupations. Since the rate of CLD was higher among workers who had never smoked, the researchers theorized that the prevalence may be due to dust exposure.

Pollack, Franklin, Fulton-Kehoe, and Chowdhury (1998) investigated job-related injury rates among a cohort of construction labourers in the United States. The researchers found that those workers who had received a diagnosis of substance abuse had nearly twice the risk (risk ratio = 1.93) of a serious injury compared to those who did not have

this diagnosis. The authors noted, however, that although the risk was greater for this group, the numbers of injuries were small and that the significant difference in risk was only found in the 25-34 age group. Since the majority of those diagnosed were for alcohol dependence syndrome (84.4% vs. 8.8%, non-dependent abuse of drugs; 5.3%, drug dependence; 1.2%, alcohol psychoses; and 0.5%, drug psychoses), the researchers further state that most of the injuries incurred could likely be attributed to abuse of alcohol. Another study by Chau et al. (2004) found that current smokers showed a higher frequency of major work injuries and were found to take more sick leaves compared with non-smokers.

Hanna, Menches, Sullivan, and Sargent (2005) investigated causes into absenteeism among electrical construction companies in the United States, as some reported rates of 20% to 25%. In total, 52 company managers from 25 states returned the management questionnaire and 46 union electricians from 26 states returned the electrician questionnaire. The top five reasons managers believed workers were absent from work included: personal and family illness, simply did not feel like working, doctor or dental appointments, drugs or alcohol, and lack of responsibility. Workers, however, tended to report reasons for being absent that differed from management, which included personal and family illness, injury, doctor or dental appointments, bad weather, and unsafe working conditions. Furthermore, drugs and alcohol was nearly the last cause for absenteeism that the workers reported.

## **Prevention and health promotion**

### Psychologically safe workplaces

It is generally understood that employers are legally bound to provide physically safe work environments; however, reports published by the Mental Health Commission of Canada (MHCC) indicate that employers have an increasingly legal responsibility to ensure they are also providing psychologically safe workplaces (Shain, 2009; 2010). Previously, employers were responsible only for egregious or intentional acts that resulted in psychological harm. More recently, however, courts have also awarded employees financial settlements for cases where employers were deemed to have been negligent or reckless. In addition to avoiding litigation, benefits to providing psychologically safe workplaces may include increased staff productivity, retention, and reduced costs due to disability and absenteeism (Shain, 2009). Shain (2010) recommends instituting antidiscrimination policies and accommodating staff who have mental health issues. Employers may also recommend contacting an EAP or seeking some other form of professional assistance.

## Alternative work models

Conflict between achieving a balance between work and family life has been associated with burnout, mental health problems, substance abuse, and family problems. Lingard, Brown, Bradley, Bailey, and Townsend (2007) conducted a case study that evaluated the introduction of a compressed work week into a construction project in Queensland, Australia. The researchers used semi-structured interviews to determine if the modified work schedule had an effect on employees' wellbeing, satisfaction, and work-life balance. Although an experimental design was not used and data was not collected prior to the new work schedule being introduced, a control group was used to provide baseline comparison data. Results indicated that employees' well-being and satisfaction with work-life balance were generally high and that they were reportedly happier with their work-life balance compared to site workers in the control group.

Wilkinson (2008) also looked at work-life balance among surveyors in Australia and New Zealand. The objective of the study was to provide a benchmark of good practice for work-life balance for the surveying profession. The study examined factors such as company size, the sector of operation, conditions of employment (e.g., maternity or paternity, flexibility of working), staff recruitment, retention, staff development, diversity and equality training, remuneration, staff appraisals, work life balance, policies, support of work life balance, and management of work-life balance. It found that employers often promoted a culture of long hours, few employers offered leave or pay in excess of the minimum that was required, and few employers assisted with child care support or related costs. The top three favorable conditions that workers reported were flexible and part-time working hours and time off in lieu. Policies related to work-life balance, however, were accessible and understood by only one-third of respondents, while half had no access or understanding of such policies.

## Substance abuse prevention programs

Cook, Hersch, Back, and McPherson (2004) evaluated the "Power Tools: Healthy Choices for Life" classroom program, which consisted of video segments and print materials that addressed alcohol and other drug abuse prevention within the positive context of other health-related behaviors. Substance abuse measures included analysis of urine and hair samples as well as self-report questionnaires. Lower rates of substance abuse were not demonstrated, however, the program did help workers to move further along in the 'stages of change' (Prochaska & DiClemente, 1982), which is used to indicate an individual's level of readiness to change their health behaviour. Furthermore, the workers reported that they had increased the amount of communication they had with their children about substance abuse.

## Drug-free workplace programs

Van der Molen et al. (2007) conducted a systematic review of interventions for preventing injuries in the construction industry. Of the five studies that were included in the review, one appraised a drug-free workplace program in the U.S. The intervention included a formal written substance abuse policy, payment for drug testing, a worker assistance program for referral to treatment, no termination of worker employment when they agreed to receive treatment, an annual educational program on substance abuse, and a minimum of two hours training for supervisors and managers. Non-fatal-injury rates were significantly lower in the intervention group compared to the control group (difference of -7.59 per 100 person years), however the authors determined that the methodological quality of the study was low. For this reason, the authors state that there is limited evidence for the effectiveness of a drug-free workplace program to prevent non-fatal injuries in the construction industry.

## Assessment of feasibility of workplace health promotion

It has been noted that the poor safety record of the construction industry can be attributed to its allocation of responsibility for worker safety to the individual worker and that the necessary condition for improvement is the recognition that behaviour occurs within context and that safety must be continually reinforced visually and through other methods in order to achieve better safety outcomes (Minchin et al. 2006). Improving safety on construction sites is certainly worthwhile as estimates have found that over 800 deaths and 200,000 lost time injuries could be prevented, while the U.S. Department of Labor estimates that substance abuse costs approximately \$100 billion per year, or \$740 per employee<sup>2</sup> (Minchin et al., 2006). Health promotion programs in the construction industry can be problematic, however, as workers often change job sites and consequently have limited exposure to worksite health promotion (Center for Construction Research and Training, 2009); yet, it has been demonstrated that efforts to reduce smoking among construction workers have been successful (van der Molen et al., 2007).

Partanen et al. (2002) believe that assessment of feasibility is a “necessary prerequisite of any workplace health promotion program. Three basic components need be assessed: (i) health hazards to be reduced, (ii) employees’ attitudes toward workplace health promotion (need for hazard reduction and acceptability of workplace health promotion program), and (iii) the supporting social context that can be mobilized” (p.232). The authors tested a survey designed to assess feasibility of workplace health promotion in several industries, one of which was the construction industry. Results

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<sup>2</sup> Includes substance using and non-substance using employees.

demonstrated that construction workers had the lowest proportion of workers reporting acceptance of workplace health promotion, the highest proportion of workers with negative health behaviours, and the highest proportion of workers who reported a need to change their health behaviours. The authors suggest that the following factors be the target of workplace health promotion programs for the construction workers in their study: tobacco, physical activity, diet, and occupational health hazards.

## Discussion

A changing economy may impart additional stress on an industry that reports higher than average rates of substance use and comprises of occupations that report “poorer mental health.” Working within the construction industry can entail working long hours, overtime, and irregular schedules, which may lead to eventual burnout and employee turnover.

Burnout has been associated with various mental health problems, including psychological distress, anxiety, depression, reduced self-esteem and substance abuse. Workers who have a substance abuse diagnosis, including those who smoked, tend to be high users of health care services and have excess health care costs. Working in an environment that supports work-life balance and receiving social support from colleagues and supervisors could lessen burnout and associated health complaints.

Construction workers are also at higher risk for disability (e.g., some forms of cancer and chronic lung disease) compared to other occupations. Risk of injury is also a concern for this industry, and as such, is more likely to conduct drug testing compared to other industries. Although drug testing may lessen worksite injury rates, it is recommended that it be only one component of a more comprehensive employee program (e.g., written policy, employee drug awareness and education, supervisor training, and rehabilitation and treatment).

Although the Construction industry tends to have a higher proportion of workers with negative health behaviours compared with other industries, workers in this industry may be reluctant to participate in or have limited access to workplace health promotion efforts.

### **Implications for Employers**

The information presented in this review highlights the importance of addressing addiction and mental health-related issues in the construction industry. Employers have the potential to reduce costs related to burnout, substance abuse, and disability.

The limited number of studies examining workplace addiction and mental health interventions in the construction industry is understandable due to several job-related factors. Workplaces (i.e., settings/locations) in the construction industry are constantly changing, which makes implementing interventions difficult. Pay structure may act as a disincentive to participating in interventions. For example, workers who are paid for their

productivity (e.g., upon completion of a project) may be less willing to take time out of their day to participate in a program than those who are paid by the hour. As such, employers will need to take steps to facilitate employee participation in programs and use of services.

Regarding potential legal aspects and duty of responsibility, a report released by the MHCC (Shain, 2010) suggests that employers prepare, implement and monitor policies that “ensure a psychologically safe workplace” (p. 6) and “take every reasonable precaution to avoid foreseeable harm to employee mental health” (p. 11). The website Guarding Minds @ Work (<http://www.guardingmindsatwork.ca>) is an example of a Canadian online resource that employers can use to promote psychological health and safety in their workplace.

### **Implications for Policy-Makers**

Although working long hours, overtime, and irregular schedules may be considered typical of some occupations within the construction industry, it may lead to increased rates of stress and burnout (which is subsequently related to increased rates of substance abuse), and eventual employee turnover. Encouraging supportive work environments (i.e., emotional and practical support from coworkers and supervisors) as well as endorsing a positive work-life balance could mitigate some of these negative consequences.

### **Directions for Further Research**

There are a limited number of studies that examine workplace addiction and mental health issues specific to the construction industry and fewer that have been undertaken in Canada. Although some research exists in the area of disability in general, the most frequently cited reasons for disability in the construction industry are not known. An analysis of disability claim data in Alberta would help to determine the main reasons for disability, thus indicating the types of interventions which would produce the greatest impact and ultimately reduce costs for employers. Similarly, an analysis of employee and family assistance program and drug utilization data will help to determine which issues are of greatest concern in this population.

It is clearly worthwhile to explore potential options regarding workplace health promotion programs in the construction industry. As workers in this industry may be a difficult audience to target, the research recommends that company leaders endorse research and evaluation activities in their workplaces and support their workers to participate in

such activities to help build the evidence base. This work, in addition to monitoring surveillance data, would help to build the much needed evidence base in Canada.

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