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WORKPLACE HEALTH Changes and Challenges

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INTRODUCTION

Overall improvement in workplace health is often attributed to some combination of legislative, industrial, demographic and organizational factors (CCOHS 2007). Occupational health and safety is a matter of public policy. Every jurisdiction in Canada has developed legislation to prevent and compensate work-related injuries and illnesses. This study begins with a comparative review of the legislation in the three Western provinces: Saskatchewan, Alberta and British Columbia. Each province has taken a somewhat different legislative path in addressing workplace health. Based on this review, this paper will explore two central issues of workplace health: 1) the impact of public policy versus economic change on phenomena such as workplace health; and 2) the effect of insufficient and unreliable workers' compensation claim data on analyzing occupational health and safety.

Occupational health and safety (OHS) remains a significant social and economic issue. Each year at least 1,000 Canadian workers die from trying to make a living; and over 300,000 workers incur injuries or illnesses serious enough to interrupt, limit or end careers (AWCBC 2007a). A third of these injuries and fatalities occur in the three Western provinces

(see Table 1 on page 17), and these administratively based numbers significantly under-represent the problem, especially in cases of chronic injury or illness (ILO 2005). These figures also exclude most of the high-hazard agricultural sector, which is largely uncovered by workers' compensation (CAISP 2007; Maltais 2007).

Notwithstanding under-reporting factors, it is widely agreed that work-related injury and fatality rates have decreased over the last 35 years. Canadian statistics show a 48 percent decline in workplace fatalities and a 51 percent decline in workplace injuries per million workers between 1970 and 2005 (CCOHS 2007). However, Frank and Cullen observe that, "after several decades of concentrated efforts by researchers, policy-makers and employers, the decline in rates of workplace injuries is decelerating and long absences from work persist after injury" (2003, p. 1).

In addition to under-reporting, any analysis of workplace health faces another major challenge – that of insufficient evaluative data. Workplace health policies continue to be as much faith-based as evidence-based, despite expressed commitment to the new public management (NPM) paradigm of performance-based and outcomes-oriented initiatives (Glor 2001;

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Yeates 2000). Accountability is required using valid evaluative frameworks with reliable indicators (Thomas 2004; Mintzberg 1996). With flawed models and compromised data, public policy may be unduly criticized or credited for change – or a lack thereof.

In order to address the two issues of relative impact and insufficient evaluative frameworks, this paper begins with the problem of measuring changes in workplace health over time and among jurisdictions. The next section examines the three jurisdictions' workplace health initiatives within the context of the internal responsibility system (IRS), a partial self-regulation model that has shaped modern Canadian prevention policies (CCOHS 2008). Four IRS elements are examined: joint worker-employer workplace committees, regulations and inspections, sanctions for non-compliance, and voluntary or incentive programs.

The next section examines workplace evolution, linkages between the workplace and health systems, and evaluative frameworks. Workplace health challenges posed by the changing nature and structure of work, and the implications of under-reporting injuries (especially illnesses) are reviewed. This leads to a discussion of the emerging role of population health and work-related health data in determining workplace health. The section concludes by outlining promising frameworks that incorporate socio-economic and organizational factors in planning and evaluating work-related health policies.

Information on the three provinces' policies and programs is based on reports from their respective public agencies that deal with prevention and compensation. Although the paper includes some comparative references, much of the discussion centres on the Saskatchewan experience.

The paper raises concerns about using administrative data to define problems and evaluate initiatives. The comprehensive labour force surveys, and especially the new population health surveys, provide a wealth of information to augment the planning and evaluation of workplace health initiatives. A broader perspective on workplace health has implications for the traditional, tripartite (business, labour, government), industrial model of prevention and compensation. However, more broadly defined problems require more comprehensive solutions.

DEFINING AND MEASURING THE PROBLEM

Drawing from Bardach's (2005) eightfold path for policy analysis, the initial problem is often redefined in the course of examining evidence, alternatives and outcomes. Such is the case in Saskatchewan where the problem appears to be both the high incidence and valid measurement of workplace illness and injury.

The nature of work itself is a major factor in predicting injury rates. Canada's economy has significantly shifted from goods producing to service providing.

Central to the initial problem is the large number of workplace accidents. As shown by the most commonly used indicator, accepted lost-time injury rate per 100 hundred workers, in 2005, Saskatchewan (at 3.95) ranked as one of the most dangerous places in Canada to work; the same statistics suggested that Alberta (2.23) and British Columbia (3.09) were two of the safer jurisdictions (see Table 1). To what extent is this due to the industrial mix of the different jurisdictions, workforce demographics, or public policies?

The nature of work itself is a major factor in predicting injury rates. Canada's economy has significantly shifted from goods producing to service providing. Sectors involving less manually intensive work report lower injury and fatality rates (Ostry 2000; Smith and Mustard 2004; Breslin 2007). There is evidence that young workers (Breslin et al. 2003) and especially less-experienced workers (Breslin and Smith 2006) have higher injury rates. The reported injury decline also reflects a shift from the type of work and injuries traditionally covered by workers' compensation systems to work where injuries and illnesses are less likely to be reported (Gunderson and Hyatt 2000; Chung, Cole and Clark 2000).

The industrial and demographic mix among the three provinces does not differ to the same degree as the reported injury data (SK Institute of Chartered Accountants 2007). However, the Saskatchewan workforce does have a relatively high percentage of workers in categories generally associated with higher injury rates, including working in smaller workplaces (Fenn and Ashb 2004), work that requires lower education levels (Smitha et al. 2001), and "blue collar" occupations (Wilkins and Mackenzie 2007). Population health surveys indicate that

in 2001 Saskatchewan's work injury rates among young workers (15-24 years) were 50 percent higher than those in BC or Alberta (see Table 1). As well, Saskatchewan has three times the percentage of Aboriginal people than Alberta or BC, a population that experiences an overall injury rate almost twice that of other Canadians (Tjepkema 2005).

Labour force survey data gathered by Statistics Canada provide inter-jurisdictional data that are an alternative to the more commonly used workers' compensation board (WCB) data. According to this alternative data source, compensation and prevention programs can serve to increase or decrease injury reporting. Injury statistics based on self-reporting from employers under voluntary prevention programs are subject to under-reporting (Conway and Swenson 1998). Shannon and Lowe (2002) found that 40 percent of eligible worker claims are not filed with WCB. Workplaces with joint employer-employee committees can provide a more effective incident monitoring process than workplaces without such supportive mechanisms (Sass 1997; Strahlendorf 2007). As will be discussed later, Saskatchewan has focused on establishing mandated joint committees, while Alberta has focused on creating voluntary programs, and BC has used both models to lesser degrees.

Labour force data show Saskatchewan workers are off work more days than either Alberta or BC workers. In 2006, self-reported days lost to workers' own illness or disability were 8.7, 6.6 and 7.6 respectively. Similarly, a Statistics Canada 2004 survey found that Saskatchewan workers were about 25 percent more likely to indicate an activity-limiting work injury than either Alberta or BC workers (see Table 1). However, the variation is not as pronounced with the WCB data and is more in-line with the noted jurisdictional demographic and organizational differences.

Workplace fatality rates are generally considered more reliable than injury rates in making inter-jurisdictional comparisons (Osberg and Sharpe 2003). In 2005, Saskatchewan had a lower fatality rate per 100,000 than either Alberta or BC at 5.6, 8.0 and 8.9 respectively (see Table 1). Hence, the three different data sources – WCB injury claims data, Statistics Canada survey data and WCB fatality data – provide quite different jurisdictional comparisons.

Perhaps more importantly, the labour force survey data also indicate that the self-reported work days lost from injury and illness are about three times the compensable

days recorded through the provinces' workers' compensation systems (which is discussed further under the section "Linking with health"). Work-related illnesses and chronic injuries in particular are subject to WCB under-reporting; only 5 to 8 percent of musculoskeletal disorders (MSDs), the most common workplace injury, are reported (Morse et al. 2005).

Most program research relies on the administrative-driven WCB data. All three provinces use WCB-derived lost-time injury rates as a key performance indicator of the effectiveness of compensation and prevention programs (SK Labour 2007a; AB HRE 2006; WorkSafeBC 2007a). Each jurisdiction's occupational health and safety programs are either funded by their respective WCBs (Alberta, Saskatchewan), or administered directly (BC). Consequently, the workplace health interests of labour, business and government under the traditional tri-partite model have focused on influencing WCB coverage.

Hence, workplace health is largely defined and addressed in terms of "compensable" rather than "actual" work-related injuries and illnesses. The large difference between self-reported versus compensable injury rates raises two major policy implications. First, the relative magnitude of the problem may be underestimated, causing subsequent under resourcing of preventative measures. Second, trend and jurisdictional comparisons may be skewed, leading to incorrect conclusions.

Given these measurement caveats, the following discussion focuses on how workplace health policies have been shaped and evaluated. Many of the research and intervention programs referenced in this paper are within the paradigm of compensable injuries. Implications arising from indicator issues will be revisited throughout the paper.

THE INTERNAL RESPONSIBILITY SYSTEM (IRS) AND SELF-REGULATION¹

In general, business prefers voluntary and flexible initiatives to maintaining healthy workplaces; labour prefers mandated and prescriptive initiatives (SK Chamber of Commerce 2001; SK SFL 2004). Since the 1970s, most jurisdictions try to bridge this "regulatory gap" with variations of the internal responsibility system (IRS). Attributed to the 1970s seminal British Roben's Commission, prevention policies have moved away from a command and control model to systems of monitored self-regulation (Feng 1996; Gunningham and Johnstone

2003). The IRS approach, first coined by the Ontario Ham Commission in 1974, has become the underlying philosophy of current occupational health and safety legislation and programs in all Canadian jurisdictions (CCOHS 2008).

The IRS is, in part, a response to the practicality of having government agencies regularly inspect all workplace conditions, processes and records. It is a philosophy that considers employers and workers themselves, with appropriate external supports, to be in the best position to identify and eliminate hazards specific to their workplaces (CCOHS 2008). The IRS is built on a cooperative approach between employers and workers and three basic workers' rights: to know about hazards, to participate in hazard control and to refuse unusually dangerous work (O'Grady 2000). These workers' rights along with employers' general duty to provide safe working conditions, as much as is "reasonably practicable", are now legislated in all Canadian jurisdictions. However, only Nova Scotia's legislation specifically references the IRS (NS 2007).

The IRS is attractive from an organizational-culture perspective. Effective organizations develop and internalize their own vision, mission, goals and practices (Senge 1990). Stewart (2002) identifies management commitment, line ownership and worker involvement as the prime drivers of workplace safety. At best, IRS approaches can empower and reward organizations to exceed regulatory standards (Gunningham and Sinclair 1999). The IRS provides worker participation and employer flexibility that is in keeping with European Union directives on health and safety (Walters 2001).

The evolution of the IRS in the 1970s and 1980s can be seen as a response to more effectively addressing workplace injuries within the emerging NPM paradigm where government should "steer", not "row" the boat (Osborne and Gaebler 1992). Despite whether the initiatives are mandated or voluntary, there is mixed evidence as to what effect government interventions have on injury rates. The efficacy of different policies is invariably qualified by the context and quality of the initiative. Generally, workplaces that have mandated and functioning joint management and worker committees tend to have lower injury rates (Reilly, Paci and Holl 1995; Lewchuk, Robb and Walters 1996; Eaton and Nocerino 2000). Workers with more control over their work tend to be healthier (Shannon 2000). A frequent qualifier is that there must be support by the management, workers and government in order for

this participatory mechanism to be effective (Bryce and Manga 1985).

There is less empirical evidence that voluntary compliance programs actually contribute to safer and healthier work environments, which is further complicated by the problem of sorting out causation from correlation. Stewart (2002) contends good companies have good safety practices; a poor safety record is only one of many ailments of badly run companies. Even though the federal Occupational Safety and Health Administration (OSHA) and state jurisdictions have supported voluntary compliance programs since the early 1980s, the United States Government Accounting Office can only conclude that they hold promise for improving workplace safety (GAO 2002; GAO 2004; GAO 2006). Limitations with internal reporting and external monitoring functions compromise evaluations.

Despite the limited availability of empirical evidence to support voluntary or incentive programs, these NPM elements are popular with governments as well as business. Government support is puzzling in light of its increasing commitment to performance-based management as part of the new public management paradigm, although McArthur (2007) argues that there is more rhetoric than rigour with NPM.

The government's unsubstantiated support could be caused by a confusion of causation with correlation. Accepted injury rates are generally going down. Enforcement initiatives have not increased appreciatively. Employers express commitment to safety. According to conventional wisdom, the decreased injury rates must be related to something the companies are doing. This is an attractive conclusion for governments who can feel vindicated for funding what labour views as insufficient enforcement (Davis 2004).

Levitt and Dubner (2006) document the dangers of using conventional wisdom, including mixing causation with correlation, to explain phenomena. In the book *Freakonomics*, the authors demonstrate that the significant decrease in the American crime rate was due to demographics and not as a result of any lauded prevention or enforcement initiatives. Similarly, it may be the changing nature of work and compensation practices that are driving down the injury rate rather than public policies or business practices.

What follows is a further discussion of four elements of

the internal responsibility system used in the three Western provinces: joint committees, regulations and inspections, sanctions, and voluntary programs. All three jurisdictions have adopted a measured outcomes approach in recent years and rely on injury data provided by workers' compensation systems to evaluate their occupational health and safety systems. Challenges to effective evaluation are noted with each element.

Joint committees

The International Labour Organization (ILO), a tripartite organization affiliated with the United Nations, makes it clear that “decent work is safe work” in its principles and conventions (ILO 2003). European Union directives recognize workers' rights to safe and healthy work and require active worker participation (James and Walters 2002). In Canada, occupational health and safety is largely a provincial responsibility. In the early 1970s, Saskatchewan was a leader in enshrining workers' rights to create safer work environments (Lewchuk, Robb and Walters 1996). How these rights are actually supported varies from jurisdiction to jurisdiction.²

Worker participation as “market actor” or “industrial citizen” is central to the issue of voluntary versus mandated committees. Employer interests align with the “market agent” perspective, while labour supports the “citizen” perspective (Tucker 2007). There has been a decided shift to mandating employer-worker joint committees. Saskatchewan was the first jurisdiction to do so in 1972 for companies with a threshold of 10 or more workers (Sass 1997). Alberta remains the only Canadian jurisdiction not to mandate joint committees (O'Grady 2000). Since the late 1970s, British Columbia has mandated committees and reduced the threshold for establishing committees from 50 to 20 employees, following recommendations from a Royal Commission on Workers' Compensation (BC 1999). Aside from provincial legislation, collective agreements usually include joint committees, as OHS is the most common non-wage bargaining issue in Canada (Akyeampong 2005).

These jurisdictions appear to have undertaken limited empirical research on joint committee effectiveness, at best relying on studies from other jurisdictions such as Ontario (SPR Associates 1994). In Saskatchewan, the only published evaluation of joint committees was a review of the 2,500 Saskatchewan committees and the 70 Alberta committees in operation in the early 1980s (Bryce and Manga 1985). The study focused more on how the

committees were able to carry out their functions than on injury and illness outcomes. The Saskatchewan Provincial Auditor (2003) conducted a limited administrative review of 100 joint committees to assess communication between the committees and Saskatchewan Labour. A recent BC study found that training was effective in helping joint committees carry out their functions in the health sector, but did not link committee activities with injury data (Ostry and Yassi 2004).

The support for mandated joint committees seems to be based more on principle or potential rather than evidence.³ There is more administrative monitoring of activities than formal evaluations of impact. For instance, as part of its performance planning, Saskatchewan Labour (2007a) tracks the number of committees, the estimated percentage of workers covered and the number of committee members receiving training in its annual reports. In 2006, the 4,800 established committees covered nearly 90 percent of the workers where such a committee (10 or more workers) is required (see Table 1).

Why are public agencies prepared to spend millions on programs but cannot find thousands to conduct formative or summative evaluations?

This begs the question, why are public agencies prepared to spend millions on programs but cannot find thousands to conduct formative or summative evaluations? The case of joint committees may shed light on why there is limited support for program evaluation, even within performance-based models. With workplace health, there are three primary stakeholders: labour, business and government. What incentive would government have to verify that its programs are under-resourced? What incentive would businesses have to strengthen worker rights? And why would labour support an evaluation of fundamental rights? These may not be insurmountable barriers if program evaluations employ the less threatening formative and participatory evaluation models.⁴

Regulations and inspections⁵

IRS or partial self-regulation systems require jurisdictional standards and some degree of external inspection to monitor compliance (Gunningham and Rees 1997). Canada followed the United States in setting new standards in the 1970s (Lanoie 1992). The actual impacts that new standards and inspections have had on reducing workplace

injuries and illnesses are difficult to sort out from other changes in the workforce. Based on WCB claims data, work-related fatalities and injuries have generally declined since the 1970s, after having generally risen in the 1950s and 1960s (Ostry 2000). The 1970s also saw a significant shift in work from the more hazardous goods-producing sector to less dangerous service industries, at least in terms of reported traumatic injuries.

The implementation of OSHA in 1970 generated studies to determine what impact the new regulations and their enforcement had on American injury rates. Viscusi (1979) concluded that OSHA had little impact on injuries in the early 1970s, which was likely attributable to weak financial incentives combined with an ill-conceived inspection strategy. In later studies, Viscusi (1986) found that the OSHA had a modest impact on injuries when before and after inspection data were used with specific firms.

Later studies by Gray and Mendeloff (2005) found that targeted inspections with follow up such as penalties were effective, reducing injuries by as much as one-fifth between 1970 and 1985, but less so in later years. Gray and Sholz (1993) concluded that inspections with penalties worked better at reducing injuries because such action got management's attention. Furthermore, Loomis et al. (2004) found that American deinstitutionalization only explains a small part of the 45 percent decline in injuries from 1980 to 1996; without a structural change in employment, the decline would have been 38 percent. Sholz and Gray (1990) calculated that a 10 percent increase in enforcement activities could reduce injuries by about 1 percent in large, frequently inspected firms.

A 1 percent saving in accident costs would far exceed the 10 percent increase in inspection costs. For example, the Saskatchewan Labour's Occupational Health and Safety Division (OHSD) budget for 2006-2007 was about \$6 million, and in that year about 4,000 inspections were conducted (SK Labour 2007a). Since the OHSD provides services other than inspections, expenditures of about \$4 million would represent a cost of roughly \$1,000 per inspection. The Saskatchewan Workers' Compensation Board (2006) reports annual claim costs of \$241 million, or about \$17,500 per lost-time injury. A 1 percent reduction in accidents would save about \$2.4 million dollars annually. A 10 percent increase in inspection would cost about \$0.4 million, providing a return of six to one. These are ballpark estimates, but they should be close enough for the purposes of this paper.⁶

Since the 1970s, inspections have not kept pace with labour force growth (SK 2007b; WorkSafeBC 2007b). This divergence could reflect the limited evaluation of the impact of inspections and/or the lack of confidence that inspections make much of a difference. However, jurisdictions are making greater use of targeted inspections (SK Labour 2007a; AB HRE 2006; WorkSafeBC 2007a). The premise is simple: with limited resources, inspectorates must prioritize their activities; and with more timely automated data systems, it is now easier to pinpoint workplaces with more injuries.

In the early 1990s, Maine was the first American jurisdiction to formalize the method of targeting inspections through its *Maine 200* program (Gunningham 1998). This program focused workplace inspections on firms with the most reported injuries. Inspectors found that larger firms had a disproportionate number of injuries. Maine's injury rate declined and with President Clinton's endorsement the program was implemented nationwide (Reinvention Express 1995). Formalized targeted inspections quickly became popular at a time when the OSHA and other regulatory bodies were under attack for being expensive, intrusive and ineffective (Bardach and Kagan 2002). The program's focus on results fit well within the NPM "reinventing government" movement.

In Canada, all three Western provinces utilize some form of targeting.⁷ As part of WorkSafe Saskatchewan, a collaborative initiative of Saskatchewan Labour and the WCB, the 10 Saskatchewan firms with the most reported injuries were targeted for increased inspections and consultations (SK 2006). Over the next two years, their collective injury rate declined by 20 percent, double the provincial rate of decline. For many of these top 10 employers, their injury rates were not particularly high compared to the provincial average or even within their particular rate code. They were targeted because they were large and had the organizational capacity to take corrective action. Hopkins (1998) suggests that many employers need a jolt to get their attention; exceptional costs or interventions can alter a firm's operating equilibrium. Otherwise, workplace injuries are routinely handled and do not get CEO or boardroom attention.

The short-term results are impressive. Unfortunately, there is little longitudinal evaluation of such inspection programs to determine if they generate sustainable change. Selecting the best and worse cases and then measuring them again brings into play the "regression to the mean"

effect (Ruser 1995): the worst are not as bad; the best are not as good. The use of reported injuries as the basis for selecting firms to target also produces problematic results. Without an objective, effective monitoring system in place, any evaluative data will be suspect. A third limitation with targeted inspection programs is that they tend to work best with large, stable workplaces. In Saskatchewan, only 60 out of 40,000 employers have 500 or more workers (Sask Trends Monitor 2004).

Sanctions

In addition to joint committees and inspections, the IRS includes a third element: external sanctions for non-compliance. All jurisdictions have a set of penalties for non-compliance with either prevention or compensation legislation (SK 2007a; AB HRE 2006; WorkSafeBC 2007a). They employ work cessation orders until unsafe procedures or conditions are corrected. In addition, British Columbia uses administrative fines as a more expeditious sanction for contraventions (WorkSafeBC 2007a).

All regulatory systems must have some sanctions, but understanding the relative effectiveness of different deterrence strategies is hampered by good evaluative research (Tomba, Trevithick and McLeod 2004). This lack of evidence and/or confidence may contribute to jurisdictions' limited use of prosecution relative to the number of workplace injuries and fatalities. Although Saskatchewan has recently quadrupled its number of annual prosecution cases to about 30 with the introduction of a dedicated prosecutor, this still represents about a quarter of 1 percent of the 14,000 lost-time injuries each year. Similarly, in Alberta, there were 10 prosecution cases and over 36,000 lost-time injuries; in British Columbia, there were 73 prosecutions or penalties and over 60,000 lost-time injuries. However, the average BC fine was considerably less than the cost of Alberta's prosecutions, as both totalled approximately \$1.5 million (see Table 1).

While the frequency of prosecutions continues to be low, the maximum penalties have increased significantly in recent years, with Saskatchewan at \$300,000 (SK OHS Act 1993), Alberta at \$1,000,000 (AB OHS Act 2000), and BC at \$538,000 (WorkSafeBC 2008a). The 2004 amendments to the *Criminal Code of Canada* under Bill C-45 are intended to facilitate prosecution of corporate officials whose actions contribute to workplace injuries (Bittle and Snider 2006). To date, there has been only one

criminal prosecution in Canada (Melnitzer 2008). Focusing on severity rather than frequency would run counter to Scholz and Gray's contention that increasing the frequency of penalties for non-compliance has a greater effect on reducing injuries than increasing the severity of penalties (1990).

The amount of the fine has to be significant enough, and the likelihood of getting caught high enough, to truly serve as a deterrent.

Pyramid strategies of responsive regulation illustrate the importance of escalating interventions and sanctions (Ayres and Braithwaite 1992). At the base of the sanctions pyramid is persuasion and/or warning notices, escalating in severity to civil then criminal penalties and ultimately to license revocation. A complementary escalating pyramid of enforcement strategies starts with self-regulation and peaks at non-discretionary punishment. The authors contend there have to be clear, measured and consistent sanctions based on the seriousness of the violation. Sanctions take on a symbolic value, demonstrating how seriously society considers workplace health and safety violations. Although summary fines are attractive to regulators for their perceived immediacy and administrative efficiency, this may also defeat their intended purpose. The amount of the fine has to be significant enough, and the likelihood of getting caught high enough, to truly serve as a deterrent (Dorman 1996). Otherwise, sanctions simply apply an irritant cost to safety violations, which can diminish the importance of workplace health.

The sanction pyramids in each province appear to be quite flat. Holding corporations accountable for safe work environments in the courts is not as easy: far more corrective than punitive sanctions are used. For instance, in Saskatchewan, there were approximately 4,000 inspections and 4,500 contraventions noted for standard violations; stepping up the sanction pyramid, there were about 200 stop work orders compared to 30 prosecutions (SK Labour 2007a). Although under-reporting injuries is a serious and widespread problem, the Saskatchewan Committee of Review on WCB noted that of the 6,500 infractions involving late injury reporting over a decade, only two firms were charged under WCB legislation (SK 2006).

Another pyramid commonly used in workplace health and safety is Bird's *1-10-30-600* accident ratio (Bird & Germain 1996). Based on an extensive analysis of American industrial incidents, the study concluded that

for every 600 recorded incidents with no visible injury or damage, there were 30 incidents of property damage, 10 minor injuries and one serious or major injury. Applying this ratio to Saskatchewan's 13,000 lost-time injuries in 2006, there may have been 130,000 minor injuries and over 8 million "near misses".

How many of these "near misses" and injuries involve violations of health and safety standards? Joe Dear, Head of OSHA during the Clinton administration, speculated that most modern industrial injuries did not result from non-compliance with any specific standard (Sparrow 2000). This observation contributed to OSHA's shift from enforcing specific standards to promoting voluntary prevention programs to encourage employers to provide safer work environments.

A regulatory paradox is that the more specific the standard, the easier it is to enforce and, if necessary, successfully prosecute (Mendeleoff and Gray 2005). However, the true preventative value of such specificity may be quite limited. Scholz (1997) contends that legal institutions have the broader goal of channelling corporate behaviour. According to a recent Ontario study, if firms could be held accountable to meet best practices within their respective sectors, this alone would reduce the injury rate by 42 percent (Shannon and Vidmar 2004). However, firms can effectively use the due diligence defence to mitigate possible penalties for non-compliance with standards by demonstrating they took reasonable steps to reduce hazards (Wilson and McCutcheon 2003).

Bardach and Kagan (2002) provide numerous examples where enforcement of well-intentioned standards makes little sense in particular circumstances. These critiques are levelled not just at OSHA, but at all regulatory systems. On the other hand, there are numerous examples where American companies have not only ignored standards that cause illness, injury and even death, but are rarely fully punished when discovered. The *New York Times* comprehensive review of OSHA records revealed that out of 1,200 workplace fatality cases where OSHA itself recommended prosecution, prosecutions were pursued in only 7 percent (Barstow 2003).

Other forms of sanction are incentive and disincentive programs under workers' compensation systems. Workers' compensation systems grew out of the historical compromise or trade-off whereby in return for a no-fault compensation, workers relinquish their right to sue an employer for workplace accidents (Elgie 1994). As a result,

employers must pay annual premiums based on the compensation costs of injuries and illnesses. Premiums can vary considerably depending on the compensation costs of different sectors. Jurisdictions use various incentive programs so that the accident history of a particular firm can lower or raise its particular premiums. Experience rating programs are used to some degree by all three. It is in the employers' interests – individually, within sectors, and overall – to lower compensation costs and premiums.

Hopkins (1998) argues that workers' compensation boards, under pressure by employer stakeholders, are motivated to keep compensation costs down, and the most effective way to do this is through claims management, not injury prevention. While workers' compensation boards support prevention initiatives, there are more immediate and tangible results from various forms of claims management, such as return-to-work and modified work programs (Thomason and Pozzebon 2002).

This brief discussion of sanctions raises two issues. First, jurisdictions do not sufficiently evaluate the intended and unintended consequences of different interventions. There is little research at the establishment or jurisdictional level as to what sanctions help create safer and healthier workplaces. Positions appear more principle-based than evidence-based. Labour favours more enforcement and prosecution for infractions (Davis 2004). Prosecutions symbolize that a healthy and safe work environment is a right that is not to be violated without serious consequences. Employers favour a more voluntary approach, with the qualifier that the truly bad actors should be inspected, charged and prosecuted to demonstrate the integrity of the overall system (Thornton, Gunningham and Kagan 2005).

A second issue is the value of effective, on-site monitoring systems. The need for mechanisms such as workplace joint committees is supported by the tremendous number of unsafe incidents relative to the number of reported injuries (the accident ratio) as well as the infrequency of external inspections and resultant sanctions. Valid evaluation requires reliable monitoring.

Voluntary programs, partnerships and the systems approach

A fourth IRS element is voluntary compliance, which complements the systems approach to safety at both the firm and jurisdictional level. The OECD (2005) cites voluntary approaches as a key alternative to regulations. Although they are often labelled as voluntary (e.g., the

American Voluntary Prevention Program), these approaches are more aptly referred to as partnership programs (e.g., Alberta's *Partnership in Injury Prevention Program* (AB HRE 2006)). These programs are not strictly voluntary as they are designed to meet general duty clauses rather than specific prescriptive regulations. Proponents of voluntary or partnership programs contend that such approaches encourage firms to meet or exceed what are in essence the minimum standards specified in regulations (Gunningham, Kagan and Thornton 2004).

A central theme of Kellman's (1981) comparison of American and Swedish approaches to workplace health is the importance of involving stakeholders in the development of acceptable standards, rather than imposing rigorous standards that employers are loathe to comply with and that government is either incapable of or reluctant to enforce. Sweden uses a more collaborative and accommodating model to develop regulations that meet worker needs and are acceptable to employers. The ILO (2003) credits Sweden's long-term policies on worker involvement and well-functioning tri-partite mechanism for the country's high safety standards and results. The more adversarial American model may result in more rigorous standards but with compromised enforcement.

Understanding a firm's motivation and capacity is one way to address the specificity/process versus flexibility/results impasse. Gunningham and Johnstone (2003) recommend a regulatory system based on a two-track model whereby adjustments are made to education and enforcement interventions according to an enterprise's capacity and intent to provide a safe work environment. One track would be used for firms requiring more traditional external inspections and compliance measures; the other track would be used with firms that have implemented a comprehensive safety system where results are monitored. This is similar to the *Maine 200*-style programs where firms were essentially invited to choose their OSHA (Conway and Swenson 1998). Similarly, Sparrow proposes a problem-solving or risk-management framework "to address the more intractable problems of regulatory practice: how to manage discretion, how to report performance, how to structure and organize regulatory work and how to balance customer service with mission accomplishment" (2000, p. 312).

Notwithstanding ideological positions around employer and worker rights, there are practical reasons jurisdictions have adopted various forms of voluntary compliance. In Saskatchewan, the 4,000 annual workplace inspections are

spread over approximately 40,000 employers for a ratio of about 1:10 (SK WCB 2006). Therefore, the average workplace would be inspected once every 10 years. Even these ratios are generous as in larger workplaces an inspection would cover only some work processes at one point in time.

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In recognition of these limitations, Saskatchewan and BC legislate larger workplaces, or workplaces deemed more hazardous, to implement health and safety programs (SK Labour 2000; WorkSafeBC 2008b). Therefore, the inspectorate can focus on whether or not the employer has implemented a comprehensive safety system rather than inspect particular work processes. Alberta promotes the *Certificate of Recognition* (COR) whereby companies are certified by third parties to have implemented a safety system (AB EII 2008; Tucker 2003). This voluntary certification process has been a cornerstone of Alberta's prevention programming since 1989 (Jenkins 2005). As a result, firms are eligible for lower workers' compensation premiums. BC is expanding its *Focus Firm* program to implement partnerships programs similar to the Alberta COR model (WorkSafeBC 2007a). Saskatchewan is also exploring similar programs, starting with high-hazard industries such as construction and energy (SK WCB 2006).

The safety systems approach represents the third wave of occupational health and safety approaches. The first wave focused on technical factors, the second on human factors, and now the third on the integration of work processes and organizational culture (Hale and Hovden 1998). At the firm level, the safety systems approach has been well documented in British and American safety standard models, and most recently in the Canadian Safety Association (CSA 2006) Occupational Health and Safety Management Z1000-06 standard developed in collaboration with the Canadian Association of Administrators of Labour Legislation – Occupational Safety and Health (CAALL-OSH). The Canadian model is consistent with ILO (2001) guidelines for management systems at the firm level, and complements the ILO (2006) prevention framework at the jurisdictional level.

Ayres and Braithwaite (1992, p. 158) in examining the trend toward “regulatory delegation that is underwritten by escalating (and increasingly undelegated) forms of government intervention” caution that such systems require effective monitoring and accountability. If companies break the public trust to maintain a safe environment, they should be subjected to increasingly stiffer penalties: the more a jurisdiction moves to delegate responsibility for workplace safety, the more it must escalate the penalties for breaking that public trust. Otherwise, self-regulation can slip into deregulation, which is a major concern of labour (SK SFL 2004).

Partnership or voluntary models appear to hold considerable promise for creating safer and healthier work environments. In this sense, they are similar to the more collaborative approach adopted by OSHA (Scholz 1991) and the European Union (James & Walters 2002). As part of its performance planning, Alberta (AB EII 2007) tracks the number companies with the COR designation and the number of employees covered, and references the lower injury rate demonstrated by COR companies versus non-COR companies.

A problem with the Alberta data is linking causation to correlation. Companies with good safety programs tend to be well-run companies in general (Stewart 2000). To what extent do COR programs create or just recognize good safety records? Without stringent quality assurances, some companies may focus on meeting minimum COR requirements without a genuine, on-going commitment to safety. The partnership program has expanded rapidly to cover over 6,200 firms employing over 40 percent of Alberta workers. Although fines for non-compliance have increased, the number of prosecutions has not: there were only 10 in 2006 (see Table 1). This could mean that either there is no increased need to impose such sanctions or that the jurisdictions have not yet implemented the safeguards advocated by Ayres and Braithwaite.

Occupational health and safety management systems (OHSMS) approach to safety depends on firms taking initiative to integrate safer work processes to meet or exceed provincial standards. Unfortunately, Robson et al. (2005) found the research literature to be inconclusive on the effectiveness of OHSMSs.

In addition to population surveys, there are essentially four ways to monitor a workplace’s health and safety environment, including employer self-reporting, worker injury/illness claims, external inspections and joint

worker-management committees. Each has its noted limitations, particularly in regard to under-reporting or under-resourcing. The monitoring potential of the extensive number of joint committees in Saskatchewan could facilitate the implementation of effective partnership models used in other provinces. Similarly, the Alberta partnership programs may benefit from mandating joint committees.

CHANGE, LINKAGES AND FRAMEWORKS

Having briefly reviewed four key elements of the IRS system that have been utilized in the three Western provinces since the early 1970s, this paper now turns to a discussion of the challenges and opportunities that arise in addressing emerging workplace health issues. This includes an overview of the changing nature and structure of work, the need for stronger linkages with the health system, and the development of evaluative frameworks.

The changing workplace

Challenges to Canada’s prevention and compensation systems are well documented in Sullivan’s (2000) collection *Injury and the New World of Work*. These challenges are also addressed in the most recent British Columbia Royal Commission on Workers’ Compensation (BC 1999) and in the recent report by the Saskatchewan Committee of Review on the WCB (SK 2006).⁸

Since their inception nearly a century ago, Canada’s workers’ compensation systems have struggled to meet the Meredith inclusiveness principles in the face of an ever-changing economy and expectations for safe and healthy work environments (SK WCB 1997). Issues centre on what employment to cover, what work-related impairments to include and what constitutes reasonable compensation and/or rehabilitation. With respect to physical, especially traumatic injuries, compensation systems have evolved into a fairly inclusive, no-fault insurance program that no longer uses worker culpability to limit coverage and benefits.

Compensation systems are not as inclusive in regard to occupational diseases, chronic illnesses, mental health, MSDs, repetitive strain injuries, or psychosocial causation factors such as pace of work, stress, and anxiety (Frank and Maetzel 2000; Gnam 2000; Kerr 2000). In these cases, preconditions and non-work contributing factors continue to determine compensation. Due to a shift from

goods-producing to service-providing work and a better understanding of work process and health, workers' compensation systems are slow to respond to changing needs. Noreau (1996) found that with work-related absences of two or more weeks, WCBs covered 50 percent of work-related accidents, but only 4 percent of work-related illnesses.

Whether they are housed in different agencies (as is the case in Alberta and Saskatchewan), or primarily under one agency (as in BC), prevention and compensation functions are not discrete entities. Compensation systems embody forms of prevention, whether they are intended or not, and effective or not. For instance, "experience rating" programs may not only generate more rigorous claims management than safer work practices, such systems are also designed for traumatic injuries, and are not suited for illnesses or diseases with extensive lag times (Hopkins 1998; Leigh 1998). The generosity and efficiency of different compensation regimes (e.g., waiting times, compensation levels) are also potential factors in reported injury rates (Smitha et al. 2001).

Compensation costs are based on the claims accepted. Current legislated compensation and prevention models are premised on a well-defined employer-employee relationship (Tucker 2007). The models are structured based on permanent, regular, full-time, long-term workers sharing a well-defined physical space (preferably in large numbers). However, just over half of Canadians are now working under these "standard employment" conditions (Lowe, Schellenberg and Davidman 1999). Unionization, a reflection of clearly defined employer-employee relationships, and support for participatory mechanisms such as joint committees have stagnated at 30-35 percent in Saskatchewan and BC, and at about 22 percent in Alberta (Akyeampong 2004).

Connecting conventional prevention and compensation models to the changing structure of work and the changing nature of injuries and illnesses becomes increasingly difficult (Sullivan and Frank 2000). In BC, WCB data from 1950 to 1996 show that accepted traumatic injuries declined, while chronic injuries, such as back strains and repetitive injury rates, did not (Ostry 2000). Saskatchewan data indicate that WCB-accepted chronic injury or illness cases have risen nearly 20 percent over the last decade, while overall accepted injuries were levelling off during this same period (SK 2006). It is difficult to assess the extent to which these changes in reported injuries reflect actual injury and illness patterns or reporting and administrative factors. Mayhew and

Quinlan (2001) note that workers in more precarious jobs are less likely to report injuries because they may be uncertain of their coverage or fear the consequences of speaking out.

A problem with the Alberta data is linking causation to correlation. Companies with good safety programs tend to be well-run companies in general.

Reporting injuries or illnesses is a normative process (Kelman 1981; Dorman 1996). People are strongly influenced by the cultural norms within which they live and work. This is another reason why injury trends have to be used with caution. If it is the norm to "grin and bear" minor injuries in construction work, then most construction workers will be reluctant to report an injury. Likewise, if it is the norm to accept being bullied or harassed at work, workers will refrain from reporting such incidents, regardless of company policies and/or legislation. Azaroff, Levenstein and Wegman (2002) cite a number of perception, circumstance and administrative "filters" that serve to limit injury claims being submitted. For instance, Lippel (1999) found that there is systemic bias against accepting women's stress claims. An Ipsos-Reid (2003) survey found that 27 percent of employees say they know their employer under-reports injuries.

Unions resist programs that appear to blame the worker, preferring a hazard-based rather than a behaviour-based approach to safer work (Frederick and Lessin 2000; PSAC 2007). Wagenaar (1998) summarizes this distinction with the title of the article "people make accidents but organizations cause them". Current prevention theorists and practitioners have largely debunked the worker-at-fault perspective (Petersen 1998). Feyer, Williamson and Cairns (1997) concluded from a detailed study of Australian accident data that it is myopic to believe human error is the actual cause. It may be true that in many serious incidents a worker error turned the more common near miss into an accident. Upon investigation, it becomes apparent that in most cases the accident actually resulted from a combination of one or more factors controlled by management, such as lack of training, supervision, equipment, or time pressures which then created an unsafe environment. The systems approach, which recognizes root causes and the importance of eliminating hazards through better design, equipment, training, and supervision, now drives current health and safety management models.

However, a systems perspective on accident causation does not seem to be shared by most employers. A Canadian survey found that 76 percent of employers believed that workers' actions caused accidents (Iverson and Barling 2005). Van Fleet (1999) contends that such accident myths persist because of an association of the final and most visible act, usually by the worker, with the cause. Underlying causes, such as poor processes, training, and long shifts are often less visible and hence less attributable. A CCOHS review concluded that, "despite all these mitigating results, a genuine preoccupation remains about the contribution of unsafe behaviour to accidents" (1998, p. 11).

Frank and Cullen surmised that there is now a consensus from leading OHS researchers that "workplace injuries are related to a complex set of risk factors, including physical-ergonomic, psychosocial and work-organizational factors" (2003, p. 1). In principle, jurisdictions have adopted an inclusive, no-fault compensation system for all work-related injuries and illnesses. In principle, jurisdictions have also adopted prevention legislation that promotes a systems approach based on hazard elimination. Everyone, especially the employer who has the greater authority, is responsible for providing safe work environments. However, compensation systems have been slow to adapt to the complex nature and causes of chronic injury and illness in today's workforce. Since compensation systems deliver or fund most OHS prevention programs, these programs in turn have largely focused on compensable injuries and their perceived causes.

Linking with the health system

The challenges posed to compensation and prevention systems by non-standard or precarious work are exacerbated when the full range of health and safety issues are examined. By 1930, about a decade after BC and Alberta, Saskatchewan legislated a comprehensive workers' compensation system (SK WCB 1997). In effect, the compensation system emerged as one of the first widespread safety nets (SRDC 1998). Employer arguments to hold workers at least partially accountable for physical or on-the-job injuries and resultant costs have fallen away (SK WCB 1997). However, acceptance of work-related causation and hence compensation are complicated in regard to chronic injury, illness and mental health.

The gap between prevention (OHS) legislation and compensation practices is most significant with mental health issues. Of the three provinces, Saskatchewan has the only prevention legislation that specifically defines OHS

and references physical, mental and social well-being based on the 1950 joint ILO/WHO definition of occupational health (SK 1993 OHS Act).⁹ Currently, only the WCBs in Saskatchewan, Quebec and the territories recognize work-related non-traumatic stress (CBC 2007). Lippel insists Canadians need to recognize that work-related mental health issues are increasing and significant (Research Perspectives 2008). However, mental health cases constitute less than 1 percent of WCB accepted compensation claims (SK 2006).

Workforce surveys indicate that mental health issues are far more prevalent than compensation figures reflect. Gilmour and Scott (2007) note that world-wide, depression is the leading cause of disability; in 2002, about 3 percent of Canadian workers had symptoms that interfered with their ability to work and averaged 35 days off work. Work was identified by 43 percent of Canadian workers as the most common contributor to their stress (Ipsos-Reid 2002). Work stress is most commonly related to excessive work demands (Williams 2003). A recent Canadian survey found that 2 percent of Canadian workers have been diagnosed with clinical depressions caused by working too hard (Ipsos-Reid 2007). Workers with high strain work are over twice as likely to develop depression as those with low strain work (Shields 2006). Work-related MSDs are the most common compensable injury, accounting for half of WCB claims and costs (Kerr 2000). Work causes an estimated 55 percent of repetitive strain injuries (Tjepkma 2003). MSDs are linked to high job insecurity (Cole et al 2001). Workplace stress as well as violence from residents is an increasingly recognized workplace issue in the health field (Shields and Wilkins 2006; Wilkins 2007). Growing recognition of work-related injuries and illnesses from stress, depression and violence in the service sectors is offsetting reductions in traumatic physical injuries in the goods-producing sectors (Gunderson and Hyatt 2000; Breslin et al. 2006b).

In the case of occupational diseases, there is increasing evidence linking work and diseases such as asbestosis and various forms of cancer (Brophy, Keith and Schieman 2007). Unfortunately, there is often a time lag before an occupational disease is recognized as work-related and is therefore compensable, unless there are presumptive clauses (e.g. fire fighters). In Saskatchewan, occupational disease claims still composed less than 10 percent of accepted claims in 2005, but have increased by 50 percent since 1997 compared to an overall claims increase of 4 percent during this period (SK 2006).

For various reasons, workplace illness and disease are under-reported in all WCB systems. The ILO (2005) estimates that the actual annual mortality rate from all work-related diseases is about 10 times the number of fatalities (1,000) compensated each year by Canadian WCBs. These illnesses and deaths are often the result of long-term exposure to unsafe working conditions. A 1991 survey found that 34 percent of Canadian workers reported being exposed to dust and fibres, 22 percent to poor air quality, and 18 percent to dangerous chemicals (Grayson 1994). Nationally, deaths from occupational diseases, in particular asbestos-related deaths, are increasing and now make up half of the WCB-accepted fatalities in 2005 (Sharpe and Hardt 2006).¹⁰

Mental well-being in the workplace garners the most public and media attention on the issue of harassment. A comprehensive survey of European Union countries found that on average one in twenty workers experienced harassment the previous year and those harassed were four times more likely to report psychosocial symptoms (European Foundation 2007). In 1996, Saskatchewan was one of the first, and remains one of the few, jurisdictions to specifically address harassment in legislation, requiring all workplaces of 10 or more workers to implement a program to prevent harassment. At the time, however, Saskatchewan legislation did not include personal harassment but restricted complaints to prohibited grounds similar to Human Rights legislation. In 2003, Quebec became the first jurisdiction in North America to legislate personal harassment, followed by Saskatchewan in May 2007 (Portail Quebec 2007; SK Labour 2007b).¹¹

The premise for today's legislated safety systems approach (the IRS) is hazard identification and reduction through a cooperative employee-employer relationship. Under general duty requirements, employers have the responsibility to maintain a safe work environment. The more stress-related ailments are attributable to the workplace, the more compensable these illnesses become.

To some extent, under-reporting of work-related illness and injury is offset by workers drawing on sick leave and other health plans that involve less paper work than workers' compensation claims. An Aventis Pharma (2001) survey found that 66 percent of Canadians with employer-sponsored health insurance felt the plan met their needs. Statistics Canada (2004) found that 57 percent of Canadian workers had disability insurance, but this figure drops to 41 percent for production workers and to 34 percent in workplaces with under 20 employees.

The compensation gap is evident in the contrast between work-absence survey data and compensation data. Saskatchewan, Alberta, and BC show lost-time injury rates of roughly 4, 3 and 2 percent, respectively. These figures have to be qualified as they are based on different administrative practices. For instance, Alberta has recently started publishing a "disability rate" that includes modified work, which raises the combined rate closer to 4 percent. As well, the average assessment rate or premium (just under 2 percent of payroll) is similar for all provinces, indicating that Saskatchewan workers tend to report injuries of shorter duration (see Table 1).

The Saskatchewan WCB (2006) reported a lost-time injury rate of 4 percent and an average absence of 21 days for injuries accepted in that year (short-term). This means that for every 100 workers, about 84 lost workdays are compensated. Results from the 2006 Labour Force survey indicate that the Saskatchewan working population averaged 8.7 days off work as a result of illness or disability (Marshall 2006). For every 100 workers, this totals approximately 870 days off work. Since about 30 percent of injuries are considered work-related, this totals about 260 days (Mustard et al. 2003) or three times the number of lost workdays for which workers' compensation is paid. This is similar to findings by Rosenman et al. who used American data in estimating that "the number of work-related injuries and illnesses is three times greater than the official estimate derived from the BLS (Bureau of Labor Statistics) annual survey" (2006, p. 360).

This brief discussion of health survey data and WCB data indicates workplace health is a more serious problem than commonly reported. In large part, the compensation systems and related prevention agencies have tended to define the parameters of workplace health.

Similar to the gap between legislation and compensation practices for mental health issues, there appears to be a significant lag in applying the IRS model to mental health and related issues. It was not until the advent of the IRS in the 1970s that prevention functions were relocated from WCBs, health departments and other agencies to their respective Labour departments in Saskatchewan (SK WCB 1997) and Alberta (AB 1977). The rationale for restructuring at the time was to give prevention of workplace injuries and illnesses greater focus through a single window of services.

Although worker health is a public health issue as well as an economic matter, it is a small component within the

overall public health arena. In Saskatchewan, WCB-paid medical costs constitute less than 2 percent of publicly funded health care costs (Marchildon and O'Fee 2007). Workplace health plays a relatively minor role in population health strategies (SK Health 2004). This is likely a reflection that OHS is largely viewed as a Labour or WCB issue.

Developing responsive workplace health policies through the traditional industrial-based, tri-partite model has its challenges. Significant groups (e.g., small enterprises) and major health issues (e.g., mental health) are not afforded the attention they warrant. Despite these challenges, the employer-employee contractual relationship still provides a valuable platform from which to improve workplace health and safety (Langille 2002). Further, O'Grady (2000) contends that it is in the often-contentious arena of joint committees where real health issues are debated and improvements made.

Towards an evaluative framework

Improving workplace health is a complex matter involving more than the contractual relationship between employers and employees. A more encompassing definition of health coupled with the growing importance of non-standard work supports a systems approach at the societal level. The recent ILO (2006) convention on a *Promotional Framework for Occupational Health and Safety* is an international response to these challenges.

The ILO framework provides a comprehensive approach at the jurisdictional level, outlining occupational health and safety objectives, principles, policies, systems and programs. The framework reflects a hazard-based system that promotes the rights of workers to safe and healthy work environments. It is consistent with the internal responsibility system, including mechanisms for employer-worker cooperation, setting standards, conducting inspections and providing sanctions. The framework emphasizes the need for the collection and analysis of quality data to support objectives, targets and indicators of progress. In this regard, the ILO is consistent with the OECD (2005) *Guiding Principles for Regulatory Quality and Performance* that calls for clear objectives, implementation of frameworks, impact assessments of regulation, and linkage with other policy initiatives.

In addition to incorporating the program elements in the ILO framework, all three Western provinces have adopted a performance-management approach to assessing policy

and program initiatives, such as workplace health. As noted earlier, each province has set targets based on WCB injury rates. The similarity of approaches is consistent with the view that despite differing political backgrounds, there has been a convergence of provincial public services toward NPM systems (Rasmussen 2001b).

The use of a systems approach in designing and evaluating workplace health at the jurisdictional level is evolving. Over the past 30 years, there has been a notable shift from recording inputs to indicating outcomes. For instance, from 1972-1973 to 1986-1987, Saskatchewan Labour annual reports list the number of staff and activities, but not the WCB injury rate. Since 2003-2004, the annual reports cite the injury rate as a target and list activities but not inputs (SK Labour 1972-1973 to 2006-2007).

In building an accountability model, it is important to assess the inputs and activities as well as the context and the outcomes. The Kennedy School of Government has structured a three-part test of good public policy that forms a strategic triangle (Moore 2005). Not only should a policy be substantively valuable, it should also be politically sustainable and administratively feasible. The effectiveness of different strategies under the IRS (joint committees, regulations and inspections, sanctions, and partnerships) can only be properly gauged or compared with appropriate data on funding, staffing, etc. Unfortunately, consistent and comprehensive information on IRS elements is not available for the three provinces, with the exception of British Columbia which has not only tracked this information but has posted on its website administrative data from 1972 to 2002 (WorkSafeBC 2007b).¹²

Other weaknesses of evaluative models include the validity and reliability of outcome indicators; in addition, business performance models do not readily transfer into complex public policy and programs (Thomas 2004). As well, there needs to be a clear delineation of the continuum, or impact, of elements on the intended outcomes. It is important to factor in the socio-economic and political context, the inputs (e.g., funds), the processes or activities (e.g., inspections) on the product, the outcomes and the impact.

WorkSafeBC's (McCloskey 2007) recent initiative *A Canadian Approach to Measuring the Effectiveness of Broad-based Prevention Initiatives* outlines a promising planning model that addresses the context and measurement of issues. The BC model links four levels of participants, activities and measurements. Such a framework helps advance the understanding of prevention initiatives

beyond the more descriptive “best practices” assessments. For instance, the report *Influencing Attitudes Toward Workplace Illnesses and Injuries* does a good job of articulating a range of prevention initiatives and illustrates why there is no single solution to a complex problem (CCOHS 1998). However, a more dynamic framework that goes beyond confirming a range of possible education or enforcement initiatives and provides an analysis of relationships and the relative impact of different measures would produce a more powerful resource allocation model. The BC model helps address concerns identified by Grabosky (1995) that rigorous policy analysis is needed to sort out context, planning and resource issues.

The study found that all interventions except the targeted inspection programs ... were associated with lower injury rates.

Smitha et al. (2001) provide a notable example of a quantitative approach to sorting out the relative impact of different public policy interventions and socio-economic conditions on injury rates. The study factored in the reported injury rate over a five-year period in 42 different states with socio-economic conditions (e.g. unemployment rates and education level) that previous studies suggest influence injury rates. Likewise, other potential influences such as firm size and unionization were factored in. OSHA interventions included inspections and fines. WCB factors included wait periods and benefit levels. The dependent variables included mandatory joint committees and safety programs, targeted inspections and voluntary incentive programs.

The study found that all interventions except the targeted inspection programs were associated with lower injury rates. This is not unexpected as these programs were skewed to workplaces with higher injury rates. The study also confirmed the importance of factoring in intervening socio-economic and organizational variables. Unfortunately, as Dorman (1996) and others have noted, employer-provided injury data has to be used with caution.

Sharpe observed that “in recent years there has been an explosion of interest in indexes of economic and social well being at all levels ... and this trend is continuing and even intensifying” (1999, p. 50). With noted caution about the validity and reliability of indices, Sharpe sees such developments as a promising way to further attract public attention and link public policy with social and

economic trends. In Sharpe and Smith’s (2005) review of international and Canadian socio-economic indices, workplace health is somewhat more likely to be found in social than economic indicators.

Workplace health variables (injuries and fatalities) are featured most prominently in the Centre for the Study of Living Standard’s *Index of Labour Market Well Being* under the “risk of health from employment category” (Osberg & Sharpe 2004). However, workplace health is not one of the 32 indicators used in the Treasury Board of Canada’s (2007) annual report on Canada’s performance. The Conference Board of Canada (2007) includes various indicators of health status, but not specifically workplace injury or fatality data. Of the 51 Alberta Genuine Progress Indicators only one (premature mortality) involves workplace health (Pembina Institute 2007). The Saskatchewan Institute of Chartered Accountants’ (2007) annual report card does not include workplace health as one of the 22 indicators under its “to live, to work and to invest” indicators.

Although the European Union socio-economic index does not include injury rates, it does include self-defined health status as one of the 10 primary indicators and notes that “from a social inclusive perspective, the impact that illness and disability have on ability to participate fully in the life of society is critical” (Atkinson, Marlier and Nolan 2004, p. 62). The OECD extensive social index includes workplace health factors such as short-term and long-term disabilities, fatalities, injuries and exposure to harmful environments (Sharpe 1999).

Workplace health’s general lack of prominence in most social, and especially economic, indicators could be in part due to systemic under-reporting which downplays its economic impact. In addition, the multiplier effect of workplace injuries prominent in health and safety practice (e.g., accident ratio) may have little subscription beyond this field. There is, however, increasing interest and inclusion of workplace safety and health in developing health indicators, such as the Canadian Institute for Health Information and Statistics Canada (2007b) partnership. The likelihood of workplace health becoming a more prominent economic indicator would appear to be dependent on the extent to which the full range of work-related illnesses become compensable and costs are internalized.

CONCLUSION

This study began with the issue of sorting out the relative impact of public policies and socio-economic environments on workplace health. In this case, the journey was more rewarding than the destination. Rather than providing answers to what is still a valid and important question, this paper demonstrates that more evidence-based program evaluation is needed.

First, the available outcomes data are just too unreliable to conclude with any certainty how safe and healthy workplaces really are. Workers' compensation data significantly understate traumatic injuries and grossly under-represent chronic injury and illness. This is less a critique of the WCBs and their data and more a reflection that systems intended to track administrative practices do not necessarily monitor workplace health. It would be ill advised to put too much stock in such data when making historical or inter-jurisdictional comparisons.

Second, there is promise that this measurement weakness can be alleviated through greater use of population health and labour force surveys (Macaskill and Driscoll 1998). There is renewed interest in developing indices, including health indicators. Health survey data suggests that there are about three times as many lost workdays from injury and illness than recorded by workers' compensation systems. What proportion of these days should be compensated? Such a gap in coverage would suggest serious problems with a system based on the Meredith principles of universality and inclusiveness.

Third, evaluating the effectiveness of public policies is hampered by access to reliable input data. Policies are only as good as their implementation. In this study, with the exception of British Columbia, there is a paucity of available, consistent implementation data. Only limited information on expenditures on health and safety initiatives, numbers of inspections, contraventions, and so forth can be gleaned from annual reports.

And fourth, workplace health and safety from the 1970s to the present is characterized by the internal responsibility system (IRS) based on legislated standards and self-regulation. The complexity of work processes and the potential of internally driven change make a powerful case for outcomes-focused public policies. However, without effective monitoring, there can be no assurance that reliance on self-regulation at the firm or jurisdictional level is meeting its intended purposes.

For these reasons, it is premature to draw conclusions as to the relative influence of a province's mix of prevention and compensation programs compared to sister jurisdictions. At first glance, WCB injury rates suggest that Alberta and British Columbia's emphasis on incentive programs may be working better than Saskatchewan's emphasis on mandated joint committees. On the other hand, compared to Alberta, Saskatchewan has a lower worker fatality rate, which is generally considered a more reliable safety indicator. Moreover, work-absence surveys do not show the same degree of difference among the provinces as do WCB injury rates. The affects of sector and demographic influences along with limited information on program inputs severely limit any evidence-based conclusions on the relative impact of different prevention policies.

In examining workplace health, this paper has explored the different policy approaches that the three Western provinces have taken under the general philosophy of the IRS. Looking at four IRS elements, this paper has suggested ways that experiences in other jurisdictions could be used to strengthen each province's policy and program initiatives. The joint workplace committees, a cornerstone of Saskatchewan's approach and to a lesser degree in BC, could strengthen the industry partnership and voluntary incentive programs prominent in Alberta and increasingly so in BC. As a corollary, Saskatchewan's extensive joint committees could provide a strong support and monitoring mechanism for the incentive programs used by its sister provinces. The provinces' increased use of focused inspections is supported by the literature as an effective intervention, and it would likely be cost-effective to increase them. Similarly, the sanctions pyramid in each province may be too flat (there are too few prosecutions or penalties) to be an effective deterrent or motivator of corporate practices.

Notwithstanding data limitations, work today is generally safer than in our parents' and grandparents' eras. To what extent is this due to safer work, or work safety? This is open to debate and, ideally, a discourse that increasingly will be based on shared understandings.

Table 1: Jurisdictional Comparisons of OHS, WCB and Health Factors

OHS, WCB and Health Factors	Sask	Alberta	BC	Canada
2005 Accepted lost-time claims ¹	14,170	36,305	60,340	337,930
2005 Accepted lost-time injury rate/100 insured workers ²	3.95	2.23	3.09	2.57
2006 Disability rate/100 insured workers ³		4.02		
2005 Estimated % of workers covered by WCB ⁴	74%	87%	92%	81%
2005 Workplace fatalities/100,000 workers in labour force ⁵	5.6	8.0	8.9	6.8
2005 Actual average assessment rate \$100 payroll ⁶	1.99	1.83	1.99	2.14
2006 Penalties imposed/prosecutions ⁷	30	10	73	
2006 Total fines (\$ million) ⁸		1.5345	1.5	
2006 Workplace inspections ⁹	3,621		25,920	
2006 Occupational health committees ¹⁰	4,808			
2006 Firms with Certificate of Recognition (COR) ¹¹		6,232		
2006 % of eligible workers covered by SK joint committees ¹² or Alberta COR program ¹³	88 %	41%		
2004 OHS costs per \$100 WCB assessable payroll ¹⁴	0.11	0.03	0.08	0.11
2006 Days lost per worker due to illness or disability ¹⁵	8.7	6.6	7.6	7.6
2004 % Full-time employees off work for illness/disability ¹⁶	6.6	5.5	5.5	
2003 % Persons aged 18-75 years with work-related, activity-limiting injuries ¹⁷	4.8	3.9	3.8	3.8
2001 % Workers 15-24 years injured on the job ¹⁸	9.41	6.09	6.12	5.95
1990-2000 Work-related agricultural fatalities/100,000 ¹⁹	11.8	7.9	10.8	11.6

1. Source: AWCBC 2007b. Based on AWCBC National Injury and Disease Statistics.

2. Source: AWCBC 2007b.

3. Source: Alberta AEII 2007. Combines lost-time claims and modified work claims.

4. Source: AWCBC 2007b.

5. Source: Sharpe and Hardt 2006. Based on AWCBC and Statistics Canada Labour Force data.

6. Source: AWCBC 2007b.

7. Source: SK Labour 2007a; Alberta EII 2007; WorkSafeBC 2007a.

8. Source: Alberta EII 2007; WorkSafeBC 2007b.

9. Source: SK Labour 2007; WorkSafeBC 2007b.

10. Source: SK Labour 2007a.

11. Source: Alberta EII 2007.

12. Source: SK Labour 2007a.

13. Source: Alberta EII 2007.

14. Source: AWCBC 2007a. Alberta's lower percentage reflects funding of OHS prevention awareness activities from provincial general revenue rather than WCB (DNI Group 2005).

15. Source: Statistics Canada 2007. (Full-time employees, excludes maternity leave.)

16. Source: IBID. (Percentage of full-time employees reporting some absence in the reference week.)

17. Source: Wilkins and Mackenzie 2007. (Based on 2003 Canadian Community Health Survey)

18. Source: Breslin et al. 2006a. (Based on 2001 Canadian Community Health Survey).

20. Source: CAISP 2000. (Based on annual average for the period 1990-2000 divided by farm population; actual fatality numbers include Sask = 189, AB = 163, BC = 82, and Canada = 1,086).

ENDNOTES

1. The internal responsibility system (IRS) is similar in the three provinces and most jurisdictions, with some variation on how the three rights and the general duty clauses are structured. Labour representatives have expressed reservations about the IRS that without strong external inspections and sanctions it becomes a system of deregulation. After its 2000 review, the Saskatchewan Occupational Health and Safety Council (SK 2000) renamed the approach the “workplace responsibility system”, with the qualifier that those with greater authority have greater responsibility. Strahlendorf (2007) contends that the IRS was discovered, not created, by the Ontario Ham Commission in the 1970s and is grounded in accident theory that holds that just as everyone can cause accidents, everyone can prevent them. At issue is whether the IRS manifests itself in a more individualistic or collectivist form with the latter putting more emphasis on the active role of joint committees or other intermediaries rather than on individual workers, supervisors and managers.

2. The three provinces have different political histories. With respect to mandating joint committees, they can be arranged on a market actor/citizen continuum with Alberta at one end (market actor) and Saskatchewan at the other end (citizen), and British Columbia in the middle. This arrangement reflects the different levels of support that labour interests have received in each province. Using the election of the New Democratic Party (NDP) as a rough proxy of labour-friendly legislatures, between 1970 and 2007, the NDP held office in Saskatchewan 73% of the time, in British Columbia 37%, and never in Alberta.

The Canadian Co-operative Federation Party and the Canadian Labour Congress formed the NDP in 1961. Further discussion of the political environments can be found in chapters on each province in *The Provincial State in Canada: Politics in the Provinces and Territories*, eds. K. Brownsey and M. Howlett 2001. Wiseman (1996) emphasizes the importance of understanding the different jurisdictions’ ideological histories; for instance Alberta tended to support a voluntary wheat pool, while Saskatchewan favoured a compulsory one. Johnson (2006) notes that the more conservative than liberal or social democratic a jurisdiction’s government, the less state involvement and regulation. All three provinces moved towards performance management systems in the 1990s. Smith (2001) outlines how the Alberta government began to use performance indicators as part of market model

transformation from citizens to customers. Rasmussen (2001) notes how the Saskatchewan government moved to streamlining regulations in the 1990s. Howlett and Brownsey (2001) describe how BC business interests supported deregulation.

3. The Saskatchewan (SK 1972) Legislature passed new occupational health and safety legislation, including mandated joint committees. The government referenced similar legislation under the new *Occupational Safety and Health Act* (OSHA in the United States (Sass 1997)). Blakeney, premier at the time, notes that some of the legislative changes were based on experiences in Sweden (Blakeney & Borin 1998).

4. See Worthen, Sanders and Fitzpatrick (1997) for further discussion of the various alternative evaluation models. The performance-based planning models largely employ objectives-oriented and management-oriented evaluations that can unduly limit the factors considered and stakeholder participation. Johnsen (2005) concludes that performance measurement has implicitly been informed by a hierarchist culture where it is assumed that the principles know best.

5. This paper focuses on the differences between the provinces from a systems perspective, in particular the IRS. Specific changes in health and safety standards over the 35 years, or the differences in technical standards between the provinces are not explored. No doubt, more rigorous standards have played a significant part in improving work practices and environments. Inter-jurisdictional comparisons would also be affected by the integration of the national Workplace Hazard Material Information System (WHMIS) with all provincial regulations in the 1980s (Saari et al. 1993).

6. The 1:10 ratio should be used with caution as the Scholz and Gray (1990) model was based on firms that are larger than normally found in Saskatchewan. The \$17,500 per lost-time injury only accounts for the insured medical and compensation costs (SK WCB 2006). In a widely used textbook on loss management, Bird and Germain (1996) conclude that for every \$1 spent on insured costs, each accident costs an average of \$5 to \$50 of uninsured property costs and \$1 to \$3 of uninsured miscellaneous costs, such as investigation and supervisory costs. Gunderson and Hyatt (2001) estimated that the cost of a Canadian workplace injury was \$19,000, while fatal injury cost nearly \$13 million.

7. The opportunities to learn about initiatives in other provinces through forums such as the Association of Workers' Compensation Boards of Canada (AWCBC) and the Canadian Association of Administrators of Labour Legislation (CAALL-OSH) are invaluable. Sharing information on targeting experiences is an example of the value of these networks.

8. For a history of the WCB systems see *A Saskatchewan History of WCB* (1997), the Alberta (1975) Gale Commission and the WorkSafeBC website. It should also be noted that not all workers are covered: 74% of Saskatchewan, 87% of Alberta and 92% of BC workers are covered according to AWCBC (2007b).

9. The full 1950 ILO/WHO definition is referenced in the Saskatchewan (1972) OHS legislation and is also referenced in the Alberta (1975, p. 96) Gale Commission on OHS. The 1975 Commission's recommendation that Alberta expand the use of joint committees similar to Saskatchewan was not implemented.

10. For further information on provincial, national and international fatality rates, see Sharpe and Hardt's (2006) report *Five Deaths a Day: Workplace Fatalities in Canada 1993-2005*. The analysis is largely based on statistics from the National Work Injury Statistics Program administered by the Association of Workers' Compensation Boards of Canada (AWCBC). For further information on Saskatchewan WCB claim trends, see the report of the Saskatchewan Committee of Review (SK 2006).

11. Quebec chose to address personal harassment under its employment legislation and not through the provincial agency that enforces workplace safety legislation and compensation (Portail Quebec 2007). In May 2007, Saskatchewan became the second province to include personal harassment, using language similar to the Quebec legislation. And, like Quebec, the province has indicated it will focus first on education and then on enforcement (SK Labour 2007). See O'Brien (2006) for a recent magazine article on mobbing and harassment phenomena in BC. The WCB "historical compromise" is based on workers' relinquishing the right to sue their employers in return for health and safety protection and compensation. Inadequate protection opens the door to tort action. In 2006, a worker in BC successfully sued her employer for damages and costs totalling \$975,000 for not protecting her health from workplace harassment (SK 2006).

12. WorkSafeBC's (2007b) website www.worksafebc.com provides an excellent portal to WCB and OHS program and research. This includes a large number of discussion papers prepared for the 1999 Royal Commission on the WCB and an extensive program and outcomes database for the years 1972-2002.

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This paper explores workplace health issues in Saskatchewan, including comparative analysis with Alberta and British Columbia. The paper was initiated by an interest in determining the influence of public policies and programs relative to the impact of broader socio-economic changes on work-related injuries, illnesses and fatalities. Occupational health and safety is largely a provincial responsibility, and each province presents a different socio-economic and policy environment, providing the potential for comparative analysis. Comparing the commonly used lost-time injury rates among the provinces, Saskatchewan appears to be the most dangerous place to work and Alberta the safest. Of the three provinces, Saskatchewan has an industrial and demographic profile most associated with higher injury rates. Saskatchewan injury prevention policies have focused more on worker participation and less on industry partnerships than its sister provinces. However, determining the relative impact of policies and environment on workplace health is complicated by a number of factors.

Workers' compensation claims data do not provide sufficiently reliable or valid outcome indicators. These data shortcomings compromise both trend and jurisdictional analysis. Although the provinces have embraced performance management systems, there is little systematic analysis of policy and program initiatives that link context, inputs, outputs and outcomes. Given these data and evaluation limitations, it is premature to conclude the relative impact of public policies and environmental factors on workplace health. A better understanding of work-related health issues and stronger linkages with population health initiatives should help workers, employers and governments better address the health and safety needs of today's workforce.

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