

FEB - 2 1998

NON-CIRCULATING



**McMASTER**

• U N I V E R S I T Y •

MICHAEL G. DeGROOTE  
SCHOOL OF BUSINESS

INNIS LIBRARY

**RESEARCH AND  
WORKING PAPER  
SERIES**

**WORKPLACE SUBSTANCE TESTING  
- AN EXPLORATORY STUDY**

*By*

**Harish C. Jain, Michael Piczak, Işik Urla Zeytinoglu<sup>1</sup>**

Human Resources Area  
Michael G. DeGroote School of Business  
McMaster University,  
Hamilton, Ontario, Canada

**Working Paper # 424**

November, 1997

Innis

HB

74.5

.R47

no.424

McMASTER UNIVERSITY

1280 Main Street West

Hamilton, Ontario, Canada L8S 4M4

Phone (416) 525-9140

~~NON-CIRCULATING~~

INNIS LIBRARY



## **WORKPLACE SUBSTANCE TESTING – AN EXPLORATORY STUDY**

*By*

**Harish C. Jain, Michael Piczak, Işık Urla Zeytinoglu<sup>1</sup>**

Human Resources Area  
Michael G. DeGroote School of Business  
McMaster University,  
Hamilton, Ontario, Canada

**Working Paper # 424**

November, 1997

<sup>1</sup> The first and third authors are members of the Human Resources Area at the Michael G. DeGroote School of Business, McMaster University, Hamilton, Ontario. The second author is a Ph.D. Candidate in Human Resources at the same school. Contributions to this paper are equal. This research was funded by the Arts Research Board of McMaster University. Forthcoming, in March 1998, in *Employee Rights and Responsibilities Journal*.

---

**Research Note**

---

**Workplace Substance Testing - An Exploratory Study****Abstract**

This study, using 1993 survey data taken from large Ontario, Canada, headquartered organizations (n=127), compares workplace substance testing versus non-testing organizations based on a number of external and internal factors. Results showed that few Canadian organizations conduct workplace substance testing. Variables such as sector, location of operations, risk sensitivity and organizational structure appear to be not related to the workplace substance testing decision. Partial support was found for age and size of organization (measured in sales volume) as differentiating workplace substance testing organizations from non-testers. Public policy implications based on these findings are provided.

**Key Words:** Workplace substance testing, empirical study, policy implications

---

## Research Note

---

### Workplace Substance Testing - An Exploratory Study

#### INTRODUCTION

Workplace substance testing is a contentious issue in labour/management relations in North America (Jain and Muthudichambaram, 1991; Gomez-Mejia and Balkin, 1987). Employees and their representatives express concern about organizations delving into individuals' private activities while organizations attempt to decrease the possibility of accidents through workplace substance testing. There appear to be factors associated with whether an organization will proceed with testing employees for substances. Guthrie and Olian (1991) indicate that little attention has been given to understanding the contextual and organizational factors when adopting various forms of workplace substance testing programs. The purpose of this exploratory study is to compare workplace substance testing versus non-testing organizations based on a number of external and internal factors. Data are from our 1993 survey of 127 organizations headquartered in Ontario, Canada.

This study is of significance to the extent that it fills a gap in our understanding of factors related to the workplace substance testing decision. The study is also one of the first empirical studies on workplace substance testing in Canada. Studies reveal that a relatively small proportion of organizations subject employees to substance testing, although the propensity to test appears to be greater in the United States than in Canada (MacDonald and Wells, 1994; Alvi, 1992a; Alvi, 1992b; Karren, 1989; Greenberg, 1988; Masi, 1987; Gomez-

Mejia and Balkin, 1987). Finally, this study contributes to the literature by identifying a further point of divergence between U.S. and Canadian human resource management and labour relations practices. U.S. and Canadian practices reflect sharply different legal frameworks, differences in interest for co-operative workplace governance mechanisms (e.g. self managing work teams), differences in union membership as well as employer differences toward union resistance (Adams, 1995; Gilson and Wagar, 1995; Strauss, 1995; Chaison and Rose, 1991; Chaykowski and Verma, 1992).

## **LITERATURE REVIEW, CONCEPTUAL MODEL AND RESEARCH QUESTIONS**

The most striking aspect of workplace substance testing is the small number of Canadian organizations that engage in testing. As presented in Table I, previous research shows that between 19% and 48% of U.S. organizations surveyed tested employees for substances, compared to 4% to 14% of Canadian organizations.

-----Table I About Here-----

Given the research cited above and the paucity of legal cases that would encourage workplace substance testing in Canada at the time this study was conducted, we anticipate that the propensity to test in Ontario would be low, and well below the U.S. experience. Figure 1 sets out the conceptual model of the study. The dependent variable is the workplace substance testing decision; i.e. whether the organization is willing to test or not test employees for substances. In this study, substances include alcohol, marijuana, cocaine, amphetamines, benzodiazepines, barbiturates, phencyclidine, and opiates. Factors influencing the substance testing decision, that is independent variables, are sector, location of

operations, risk sensitivity, age of organization, size of organization, and organizational structure.

### Sector

Gomez-Mejia and Balkin (1987) found that in the U.S., manufacturing organizations were almost three times as likely to have a workplace substance testing program than service businesses. Other studies found that the U.S. explosives industry (Baker, 1989) and Canadian oil refineries made use of testing (Jain and Muthudichambaram, 1991).<sup>1</sup> Studies of non-manufacturing sectors reveal that workplace substance testing exists in these sectors as well. For example, Jain and Muthudichambaram (1991) report that a large Canadian chartered bank represents a test case in regard to workplace substance testing.<sup>2</sup> Other organizations and institutions that use workplace substance testing are concentrated in sectors such as transportation (MacDonald and Dooley, 1991). These include Air Canada, Canadian National and Canadian Pacific (Alvi, 1992a; 1992b; Jain and Muthudichambaram, 1991). In addition, Canadian federal government departments such as the Canadian Forces and Correctional Service Canada use workplace substance testing (Gibb-Clark, 1994). Alvi (1992a; 1992b) found that organizations in the transportation sector in Canada are much more likely to test employees. Guthrie and Olian (1991) did find, however, that in the U.S., non-manufacturing organizations tested less frequently.

Overall, the research evidence is ambiguous on how the sector variable relates to the workplace substance testing decision. Given this, we anticipate that there would be no

---

<sup>1</sup> The substance abuse policy of Imperial Oil Company in Canada was recently (June, 1995) declared to be illegal by an Ontario Board of Inquiry. The decision is the first under a provincial human rights code (EEO legislation) to include alcoholism in its definition of disability, and also the first to find a corporate policy on substance abuse to be illegal (Fine, 1995).

<sup>2</sup> The Toronto Dominion Bank was recently permitted by a Canadian Human Rights Tribunal to drug test new employees only. Within 48 hours of receiving a job offer, new employees must submit to urine tests which will be screened for cannabis, cocaine, or opiates such as codeine and heroin (Gibb-Clark, 1994).

difference between organizations in non-manufacturing and manufacturing sectors in the testing decision.

#### Location of Operations

Substance abuse has been found to be more of an urban phenomenon than a rural one (Newcomb and Bentler, 1986; Martin, Blum and Roman, 1992). Thus, we expect to find that operations situated in primarily in urban areas will be more inclined to proceed with testing than would rural operations.

#### Risk Sensitivity

Guthrie and Olian (1991) speculate that if exposure or hazard potential are driving the adoption of testing programs, then the risk sensitivity inherent to an industry or organization will be associated with workplace substance testing frequency. In a review of U.S. arbitration awards Gramm and Greenfield (1990) reveal arbitrators' support for management's use of workplace substance testing in an effort to provide a safe work environment. Mensch and Kandel (1988) found that several correlates of on-the-job substance use including high hazardous exposure. Accordingly, we expect to find that risk and safety sensitive organizations will be more inclined to test relative to non-risk and non-safety sensitive organizations.

#### Age of Organization

Gomez-Mejia and Balkin (1987) report that testing organizations had been established nearly twice as long as non-testing organizations. Unfortunately, their study does not provide a theoretical or ex-post explanation for why this might be the case. It may be that long

established organizations have had considerable periods of time over which to develop a spectrum of human resource policies and practices including workplace substance testing. To the extent that long established organizations have managed to introduce policies in other areas affecting employees' organizational lives, we can anticipate that such organizations are more likely to have workplace substance testing policies.

A further argument mitigating in the direction of less testing by newer organizations derives from the so-called new human resources management. Organizations adopting progressive human resource practices predicated on trust and commitment would regard testing as inconsistent with their positive approach to dealing with people (Guest, 1987). Thus, we expect long established organizations to test employees for substances more so than newer organizations.

#### Size of Organization

Size of the organization has been found to be associated with the tendency to test employees. Guthrie and Olian (1991), Greenberg (1988) and Gomez-Mejia and Balkin (1987) found that large organizations (as measured by volume of sales and number of employees) were more likely to subject employees to workplace substance testing than smaller organizations. Although neither a theoretical rationale nor an ex-post explanation is provided in support of such a finding, an argument for a size effect derives from larger organizations' demonstrated reliance on work rules as a mechanism of managerial control (Mintzberg, 1978). As organizations increase in size, one can expect a proliferation of rules, regulations and customs in an effort to exert control. Workplace substance testing would be viewed as an extension of such control mechanisms. Thus, we expect that large organizations will be more likely to introduce workplace substance testing policies than small organizations.



### Organizational Structure

Chandler (1962) argued that organizations must evolve into manageable business units as they become larger. Functional organizational structures give way to decentralized structures as they become larger. Functional arrangements, in an effort to exert control, employ policies which are impersonal and bureaucratic. Where headquarters draft policies in the name of co-ordination, equity and control over operations in distant locales, it can be anticipated that testing policies will be found. Conversely, where organizations are arranged in a decentralized structure and local management is given greater control to develop policy, one can expect policies to be less mechanistic. The matrix organizational structure would have the same effect as the decentralized structure since it implies more personal dealings than the functional arrangement, and as such would decrease the likelihood of workplace substance testing. In view of this, we anticipate that organizations with a functional structure would be more likely to test employees than organizations with decentralized or matrix approaches to organizational structure.

### Types of Testing

The decision of workplace substance testing is not a simple "test/no test" decision. The literature indicates that substance testing occurs under differential circumstances (MacDonald and Wells, 1994; Alvi, 1992a, 1992b; Greenberg, 1988; Masi, 1987). The most controversial form of testing is random (MacDonald and Wells, 1994; Decresce et al, 1989). The concern with random testing relates to the lack of individualized suspicion and philosophical foundations which require the vast majority of non-substance users to establish their innocence in the search for the guilty minority (Christopher, 1991; Greenfield, 1989; Finney, 1988). The U.S. constitutionality of such an employee search remains in question (Pinsonneault, 1994; Zigarelli, 1992; Dwyer, 1989). Post-incident testing and for-cause

testing are believed to be circumstances that could trigger testing as part of a post incident investigation (Christopher, 1991). Return-to-duty testing is a practice whereby individuals having completed some form of rehabilitation (possibly through employee assistance programs) would be required to demonstrate substance free status for a specified period of time (Miner, Nykodym and Samerkyke-Traband, 1987). Pre-assignment testing is popular in the U.S. for customs and border duty to ensure that candidates are able to resist financial temptation or bribes from the criminal element (Christopher, 1991; Carrell and Heavrin, 1990).

Which employee group should be tested is also of concern. Identifiable groups for substance testing purposes include prospective employees, all current employees, designated occupations or job categories, employees below a given level in the organization, non-union employees only or unionized employees only. Prospective employees are prime candidates for testing as they may be inclined to complain less and be more eager to assume employment. There appears to be broad acceptance that individuals not attached to the organization by way of employment enjoy fewer rights and privileges and as such, may be targets for workplace substance testing (Gramm and Greenfield, 1990). Testing all current employees would be controversial to the extent that such a policy would sweep in employees from the CEO on down. Where subjecting all employees to testing may not be politically palatable or desirable, it may be that only employees below a given level could be included in the testing program. Requiring particular categories of employees to submit to testing contains a logical element to the extent that only unique positions may expose the organization, employee, fellow workers or the public to risk or danger (Zigarelli, 1992). Finally, it may be possible to subject either all union or non-union employees to testing. Thus, as discussed above, workplace substance testing is not simply a "test/no-test" proposition. There exist various shades of workplace substance testing.

## DATA AND METHODOLOGY

### Variables and Measurement

The dependent variable in this study is whether organizations test or do not test employees for substances (see Table II for the measurement questions). Data for the dependent variable were obtained by asking respondents to check whether workplace substance testing was part of their policies in regard to alcohol use, drug use or the use of other substances.

The decision to test was believed to be a function of a number of independent variables identified as factors external to the organization and internal to the organization. The decision to test was specified as follows:

$$\text{WORKPLACE SUBSTANCE TESTING} = f(\text{sector, location of operations, risk sensitivity, age of organization, size of organization, organizational structure})$$

External factors include sector and location of operations while internal factors capture risk sensitivity, age of organization, size of organization, and organizational structure.

### External Factors

*(a) Sector.* This variable attempted to distinguish across broad industrial categories beginning with a manufacturing versus non-manufacturing sector dichotomy. The literature indicates ambiguity as far as this variable to the extent that while there may be a priori reasons to expect manufacturing organizations to have workplace substance testing programs in place due to the nature of their operations, it is quite possible that non-manufacturing organizations might require workplace substance testing to control operations. The survey instrument split organizations into manufacturing and non-manufacturing categories. Further, because such a dichotomy may mask industry variation, we examined differential testing propensities across

industries. These variables were measured by inviting respondents to check off industry categories using a 1980 Standard SIC classification scheme as compiled by Statistics Canada.

*(b) Location of operations.* As noted in the literature review, substance use and abuse is believed to be more of an urban rather than rural phenomenon, although there are exceptions.

Accordingly, we speculated that companies with most of their operations in urban areas would be inclined to proceed with workplace substance testing programs. This variable was measured by offering respondents a dichotomized urban/rural choice (see Table II).

### Internal Factors

*(a) Risk Sensitivity.* We assumed that in risk sensitive organizations, employers would be more inclined to do testing. It was felt that organizations could perceive risk sensitivity in two ways - risk sensitive (in general terms) and safety sensitive. Organizations in the service sector and specifically in insurance, finance and banking were felt to be risk sensitive but not in the same way as organizations perhaps in manufacturing or transportation. Exposure to risk in the financial industries stemmed from access to client funds and the temptation to convert such funds to one's own use. On the other hand, manufacturing and transportation organizations might perceive considerable risk due to the consequences associated with an accident where employee and public safety were at stake. Thus, the construct of risk sensitivity had two related but distinct elements. Respondent organizations were asked to indicate the proportion of employees in either of the risk sensitivity categories. Then, these risk sensitivity and safety sensitivity responses were collapsed to form a single risk sensitivity variable.

*(b) Age of organization.* Respondents were asked to indicate the approximate year of establishment or incorporation. It was expected that longer established organizations would be more inclined to proceed with workplace substance testing programs relative to newer

organizations. The variable was coded by subtracting the year of establishment from the survey date (1993).

*(c) Size of organization.* Two measures were used to assess size of organization. Respondents were asked to provide their sales volume for all of Canada in the year 1992 along with an employee profile which included data on the number of employees in both Canada and Ontario. We used employee figures for Ontario because respondents appeared to have difficulty in providing national employment figures (as witnessed by the amount of missing data).

*(d) Organizational structure.* This variable was believed to be related to the workplace substance testing decision to the extent that organizations structured in a functional arrangement would be more inclined to test employees in an effort to exert control. The structure variable was trichotomized and coded as 1=functional, 2=decentralized and 3=matrix arrangement. While an "other" category was offered, there were no respondents who indicated some other structural form.

### Types of Testing

While non-testing organizations were invited to respond to a few other questions (not reported here), testing organizations proceeded to another part of the survey instrument which probed various other issues associated with workplace substance testing including the types of testing conducted (pre-employment, pre-assignment, for-cause, post-incident, periodic, on return-to-duty and random) across various groups of employees (prospective employees, all current employees, designated occupations or job categories, employees below a given level in the organization, non-union employees only and unionized employees only). Respondents were asked to check the type of testing conducted and check the group of employees who were subjected to that form of testing.

## Data

Data for this study were collected from a sample consisting of 450 Ontario headquartered organizations listed in the *Financial Post 500* (1992 edition) and *Globe and Mail 1000* (July 1992). Also, a selection of 45 organizations believed to be testers on the basis of newspaper accounts and communications with consultants in the field was included in the sample. All told, the sample was 495 organizations.

A package including a letter describing the research, a self completion questionnaire and a self-addressed/stamped return envelope was sent to the 495 companies.<sup>3</sup> The survey was directed to the senior human resource or labour relations officer in the targeted organizations. Each organization's targeted individual was called prior to the distribution of the package of survey materials to verify their title and address. In this way, a letter and survey instrument were sent directly to the senior human resource or labour relations officer in the organization. It must be noted, however, that we have no assurance as to the true identity of the responding individual. The letter invited the receiver of the survey package either to answer personally or direct the survey to the organization's resident "expert" on substance policy or testing. Brief definitions were provided to assist respondents. A phone call followup was conducted two weeks after the mailing to ensure receipt of the survey instrument. For organizations that could not locate a mailed survey, another was sent out.

The response to the 495 mailed surveys was 127 fully completed questionnaires. Thus, the response rate was 25.6%. Of the 127 respondents, 13 companies identified themselves as workplace substance testing.

---

<sup>3</sup> The authors wish to acknowledge the following individuals for graciously providing survey instruments used in previous studies: Shadid Alvi, The Conference Board of Canada; Eric Rolfe Greenberg, American Management Association; Judy Olian, University of Maryland; and David Balkin, University of Colorado. Individuals interested in obtaining a copy of the instrument used in the study should contact the second author.

Two published and verifiable statistics were used as a measure of the degree of response base representativeness relative to the sampling frame. A statistical analysis using standard t tests was conducted to assess the degree to which the sampling frame approximated the population of organizations in Ontario as measured by the size of organizations reported in the *Financial Post 500* (1992 edition) and *Globe and Mail 1000* (July 1992). A difference of means test across the organization size variable (as measured by both dollar sales and number of employees) revealed no statistical difference (statistics are available from the second author). As such, findings should be generalizable to the population of larger sized organizations headquartered in Ontario.

## ANALYSES AND RESULTS

Given that 114 organizations were found to be non-testers and only 13 testing organizations were found, our analyses for comparing non-testers to testers are limited to the use of descriptive statistics and univariate analysis. Accordingly, we resort to percentages, means and standard deviations.

As presented in Table III, about 10% of our sample was found to be testing organizations. This roughly 10% figure is broadly consistent with previous studies and well within the range observed in previous Canadian studies (MacDonald and Wells, 1994; Alvi, 1992a, 1992b).

-----Table III About Here-----

In comparison to non-testers, workplace substance testing organizations were more evenly distributed between manufacturing and non-manufacturing sectors. As anticipated, within workplace substance testing organizations, we found that there was no difference

across manufacturing and non-manufacturing sectors.

It was expected that organizations in urban areas would be more inclined to test relative to organizations situated in rural areas. We found that testers were almost 6 times more likely to be in urban areas. While we expected employee substance testing to be an urban phenomenon, we found that non-testers were as likely to be in urban areas. Our findings as shown in Table III reveal that 85% of testers and 91% of non-testers are in urban areas.

For the risk sensitivity variable, our results suggest that the percentage of employees identified as holding risk sensitive positions was not different across testing and non-testing organizations. As shown in Table III, approximately one half of our respondents, however, did not provide information. Considerable variation was observed across these variables along with high levels of missing data. Comments provided by respondents indicated that this was a very difficult variable to estimate.

The continuous variable probing organizational age yielded considerable variation ranging from the early 1990s to the mid 17th century. The literature suggested that testing organizations would be in existence nearly twice as long as non-testing organizations. Our results, however, showed the opposite for the age of organization variable. Workplace substance testing organizations were younger ( $\bar{x} = 49$  years of age) than non-testing organizations in our sample ( $\bar{x} = 53$  years).

Although the literature showed that larger organizations test employees for substances, we found (as shown in Table III) that, when number of employees was used as a measure, size of organization did not distinguish testers from non-testers. The results show, however, that organization size as operationalized by dollar sales was different across workplace substance testing and non-testing organizations. Testers in our sample were larger in dollar



sales than non-testers. Such a finding is consistent with previous research (Gomez-Mejia and Balkin, 1987; Guthrie and Olian, 1991).

Our study expected that functionally structured organizations would be more inclined to test. However, testing appeared to be unrelated to organizational structure. Testers were equally likely to be functionally organized ( $n=5$  organizations) and decentralized ( $n=5$  organizations). Proportionally, organizations using a matrix structure appear to be more inclined to test.

In the 13 testing organizations, testing appears to be limited to for-cause circumstances ( $n=4$ ), post incident ( $n=4$ ), and pre-employment screening ( $n=3$ ). The balance of the categories offered (pre-assignment, periodic, return to duty and random) recorded a frequency of one organization each. The most common group of employees to be tested was designated occupations or job categories ( $n=7$ ), all current employees ( $n=6$ ) and prospective employees ( $n=2$ ).<sup>4</sup> No organizations reporting testing for employees below a given level in the organization, for non-union employees only or for unionized employees only.

## LIMITATIONS OF THE SAMPLE

Among the 127 respondents to our survey, only 13 organizations identified themselves as testing organizations. Our finding that only about 10% of organizations test employees for substances is consistent with previous studies in Canada (MacDonald and Wells, 1994; Alvi, 1992a, 1992b) and much lower than the U.S. experience (Guthrie and Olian, 1991; Karren, 1989; Greenberg, 1988; Masi, 1987; Gomez-Mejia and Balkin, 1987) where the number of testers ranged from 10 to 48%. Notwithstanding this conditional consistency with previous

---

<sup>4</sup> Note that the 'n' in this discussion does not add up to 13 because respondents could check more than one category.

studies, such a small sample among the testing organizations makes it difficult to undertake particular types of statistical analysis and interpret accordingly. In addition, as a result of focusing on larger organizations, there is an underrepresentation of smaller organizations as measured by sales or number of employees. Thus, caution must be exercised in drawing conclusions from this sample.

## **DISCUSSION AND POLICY IMPLICATIONS**

This study attempted to extend previous research which sought to define the characteristics and conditions under which organizations are inclined to engage in workplace substance testing. The main finding is that among the Canadian organizations in our sample, few report using workplace substance testing. The identification of universal conditions under which organizations are more likely to test appears to be non-existent at this time. Variables such as sector, location of operations, risk sensitivity, and organizational structure would not appear to be related to the workplace substance testing decision. Partial support was found for the age and size of organization variable (as measured by sales volume) as differentiating workplace substance testing organizations from non-testers. Part of the difficulty in locating stable predictors for the workplace substance testing decision is due to the relatively small number of organizations in this study reporting that they do test.

Based on the sample in this study, and the literature in general, there is little support for the notion of widespread workplace substance testing in Ontario, Canada headquartered organizations. While American organizations demonstrate a propensity to test, Canadian organizations have not followed suit.

The literature identifies the existence of an increasing divergence in human resource management and labour relations approaches and practices when comparing Canada and the

United States (Adams, 1995; Gilson and Wagar, 1995; Strauss, 1995; Chaison and Rose, 1991; Chaykowski and Verma, 1992). U.S. deunionization, employer differences toward unions, sharply different legal frameworks and a lack of interest in co-operative mechanisms by Canadian unions are cited as evidence of an increasing gulf between two industrial relations systems which not many decades shared much in common. Attitudes towards employee substance testing appears to be another point of divergence between the two countries.

It would appear that issues of privacy, morale, impact on recruitment, selection and promotion and the potential for human rights legislation violations outweigh the need to identify and deal with substance users/abusers in a manner as intrusive as workplace substance testing. It is our sense that only a few employers are willing to go public with their testing practices and, as such, our findings may understate the true level of testing in Ontario and Canada. Testers are not well known and are not willing to have their identities revealed. It is questionable as to whether organizations would have participated in this survey without the assurance of complete anonymity. Indeed, we received feedback from a number of organizations who explicitly excused themselves from our study pointing to the controversy surrounding the issue of workplace substance testing. From a public policy perspective, human rights laws seem to be having some impact on employers' willingness to institute testing. The finding that testing is limited to organizations with large sales figures suggests that other organizations can be expected to test in the future as they grow in size but that testing will largely be an isolated activity.

Pending legal challenges may also be serving to keep organizations on the sidelines when it comes to employee testing. Oil companies and financial institutions have assumed a leadership position when it comes to employee testing and are undertaking the legal costs of persisting with such practices. Recent legal decisions appear to be far from conclusive.

If decisions favouring or endorsing testing go in the negative direction, one can expect organizations to be discouraged from testing employees.

Our research showed that many organizations were not able to estimate the proportion of employees involved with risk or safety sensitive positions. Organizations interested in proceeding with workplace substance testing in the name of risk sensitivity (of either type) should be able to estimate the numbers of employees exposed to safety and other risks.

The Ontario Law Commission (Jain and Muthudichambaram, 1991) recommended that the Ontario Provincial government promulgate legislation related to drug and alcohol testing in the workplace and that legislation should ban the testing of bodily fluids by employers for all current and prospective employees. Where impairment could pose risks to the employee, co-workers or the public, performance testing may be justified. However, such testing would be limited to non-intrusive forms of interrogation (i.e. aptitude testing). The Commission was not satisfied that the taking of bodily fluids could be justified under any circumstances.

With workplace substance testing remaining a practice undertaken by only a minority of organizations, standard and accepted methods of employee screening can be expected to remain in the mainstream of human resource recruitment and selection. These methods would include paper and pencil tests, selection interviews, employee testing of a variety of sorts (e.g. aptitude, psychomotor, etc.) and medical examinations. It is our view that such practices shall be continued until the courts and Human Rights Tribunals provide additional guidance on how to proceed with workplace substance testing.

With only two Canadian studies (MacDonald and Wells, 1994; Alvi, 1992a, 1992b) undertaken previous to the immediate study, clearly more research is needed to find variables associated with workplace substance testing. Education is also needed before employers and the public can feel confident that workplace substance testing can be satisfactorily structured

to safeguard and balance the needs of the interested and affected parties.

TABLE I: PROPORTION TESTERS FOUND IN PREVIOUS STUDIES

RESEARCHER	SAMPLE SIZE	TESTERS FOUND	% TESTERS	COUNTRY
Gomez-Mejia & Balkin, 1987	190	42	22%	U.S.
Masi, 1987	1090	234	21%	U.S.
Greenberg, 1988	995	277	27%	U.S.
Karren, 1989	31	6	19%	U.S.
Guthrie and Olian, 1991	383	187	48%	U.S.
Alvi, 1992a, 1992b	97	14	14%	Canada
MacDonald & Wells, 1994	646	26	4%	Canada

**Figure 1: Workplace Substance Testing Decision Making Model**

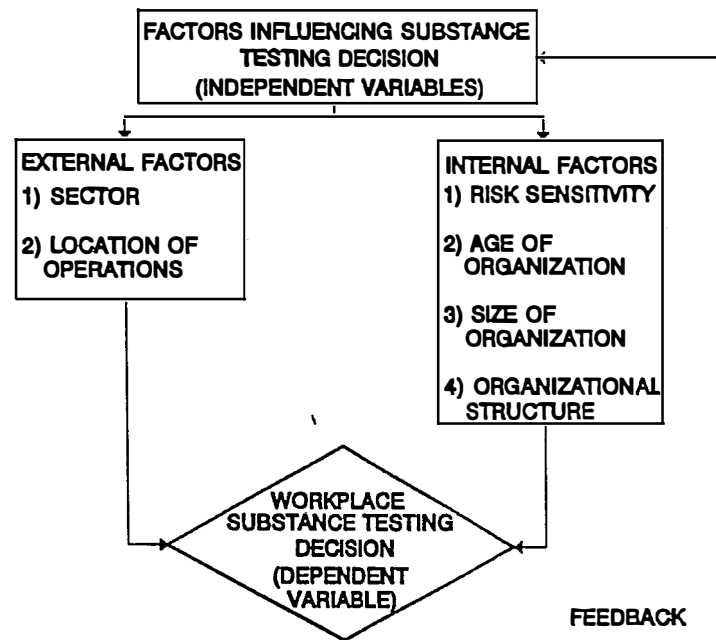


TABLE II - DEPENDENT AND INDEPENDENT VARIABLES

	VARIABLES	MEASURE	SURVEY INSTRUMENT QUESTION	CODING
<b>D E P E N D E N T</b>	<b>WORKPLACE SUBSTANCE TESTING DECISION</b>	self identification that workplace substance testing is conducted	Does employee testing form part of your policies in regard to: alcohol use/abuse; drug use/abuse; other substances? (please specify)	yes = 1; no = 0
<b>I N D E P E N D E N T  V A R I A B L E S</b>	<b>SECTOR</b>	manufacturing versus non-manufacturing and self identification of industry	Which industry classification best describes your organization? (please check ✓)	manufacturing = 1; non-manufacturing = 0
	<b>LOCATION OF OPERATIONS</b>	dichotomized variable	Location of most of the organization's operations is urban; rural (Please check ✓)	urban = 1; rural = 0
	<b>RISK SENSITIVITY</b>	proportion employees in risk or safety sensitive positions	Indicate the proportion of your workforce in: risk sensitive positions; safety sensitive positions.	estimated percentage employees in risk &/or safety sensitive positions (%)
	<b>AGE OF ORGANIZATION</b>	year of incorporation	Indicate year of incorporation/establishment in Canada (approx).	year
	<b>SIZE OF ORGANIZATION</b>	sales, number of employees	Size of organization (entire organization in Canada) in 1992 as measured by sales volume; Employee profile - number of employees in Ontario 1992.	\$ sales volume, number of employees in Ontario
	<b>ORGANIZATIONAL STRUCTURE</b>	trichotomized variable	Our organization's set up or structure is: functional, decentralized, a matrix arrangement or other (please specify).	functional = 1; decentralized = 2; matrix arrangement = 3



TABLE III: WORKPLACE SUBSTANCE TESTING RESULTS

INDEPENDENT VARIABLES	TESTERS (n = 13)				NON-TESTERS (n = 114)			
	$\bar{x}$	$\sigma_x$	n	%	$\bar{x}$	$\sigma_x$	n	%
SECTOR <sup>1</sup>								
MANUFACTURING	-	-	6	50	-	-	40	35
NON-MANUFACTURING	-	-	6	50	-	-	73	64
LOCATION OF OPERATIONS								
URBAN	-	-	11	85	-	-	103	91
RURAL	-	-	2	15	-	-	10	9
RISK SENSITIVITY (%)	34.2	26.1	12	-	31.2	28.4	64	-
AGE OF ORGANIZATION (YEARS)	49.1	29.7	11	-	53.4	44.7	108	-
SIZE OF ORGANIZATION - SALES (\$ BILLIONS)	2.6	2.1	11	-	.99	1.3	95	-
SIZE OF ORGANIZATION - EMPLOYEES (ONTARIO) (K)	2.5	2.9	9	-	2.4	5.0	93	-
ORGANIZATIONAL STRUCTURE								
FUNCTIONAL	-	-	5	39	-	-	46	45
DECENTRALIZED	-	-	5	39	-	-	52	50
MATRIX	-	-	3	22	-	-	5	5

Note:  $\bar{x}$  refers to the sample mean,  $\sigma_x$  refers to the sample standard deviation, n is the number of respondents. Non-responses are excluded.

## REFERENCES

- Adams, R. (1995). *Industrial Relations Under Liberal Democracy*. Columbia, South Carolina: University of South Carolina Press.
- Alvi, S. (1992a). *Corporate Responses to Substance Abuse in the Workplace*. Ottawa: The Conference Board of Canada.
- Alvi, S. (1992b). A Survey of Corporate Responses. *Canadian Business Review*, Summer, 14-16.
- Baker, A. (1989). Preventing Drug Abuse at Work. *Personnel Administrator*, July, 56-59.
- Carrell, M. & Heavrin, C. (1990). Before you Drug Test.... *HR Magazine*, June, 64-68.
- Chaison, G. & Rose, J., (1991). Continental Divide: The Direction and Fate of North American Unions. In Sockell, D., Lewin, D., & Lipsky, D. (eds), *Advances in Industrial and Labor Relations*, Vol. 5, 169-206, Greenwich, Connecticut: JAI Press.
- Chandler, A. (1962). *Strategy and Structure*, Cambridge, Massachusetts: MIT Press.
- Chaykowski, R. & Verma, A. (1992). Canadian Industrial Relations in Transition. In Chaykowski, R., Verma, A. (Eds.), *Industrial Relations in Canadian Industry*, 1-38. Toronto: Dryden Press.
- Christopher, T. (1991). Employee Drug Testing: A Constitutional Perspective. *Employee Responsibilities and Rights Journal*, 4, 311-328.
- Decresce, R., Lifshitz, M., Ambre, J., Mazura, A., Tilson, J., Cochran, K. (1989). *Drug Testing in the Workplace*. Chicago, Illinois: American Society of Clinical Pathologists.
- Dwyer, D. (1989). Don't "Just Say No" to Drug Testing in the Workplace: Some Recommendations for Developing and Implementing Policy. *Employee Responsibilities and Rights Journal*, 2, 275-287.
- Fine, S. (1995). Imperial Oil Alcoholism Rule Struck Down: Policy Requiring Disclosure Called Illegal, *Globe and Mail*, June 27, B-1 and B-12.
- Finney, M. (1988). The Right to be Tested. *Personnel Administrator*, March, 74-75.
- Gibb-Clark, M. (1994). Tribunal Allows TD Drug Testing: Bank's Policy Called Intrusive. *Globe and Mail*, August 17, A1-2.
- Gilson, C. & Wagar, T. (1995). The U.S./Canada Convergence Thesis, Contrary Evidence from Nova Scotia. *Relations Industrielles*, 50, 67-84.
- Gomez-Mejia, L. & Balkin, D. (1987). Dimensions and Characteristics of Personnel Manager

- Perceptions of Effective Drug Testing Programs. *Personnel Psychology*, 40, 745-763.
- Gramm, C. & Greenfield, P. (1990). Arbitral Standards in Medical Screening Grievances. *Employee Responsibilities and Rights Journal*, 3, 169-184.
- Greenberg, R. (1988). Workplace Testing: Results of a New AMA Survey. *Personnel*, April, 36-44.
- Greenfield, P. (1989). Drug Testing and the Law. *Employee Responsibilities and Rights Journal*, 2, 11-26.
- Guest, D. (1987). Human Resource Management and Industrial Relations. *Journal of Management Studies*, 24, 503-521.
- Guthrie, J. & Olian, J. (1991). Drug and Alcohol Testing Programs: Do Firms Consider Their Operating Environment?. *HR Planning*, 14, 252-266.
- Jain H., & Muthudichambaram, S. (1991). *Alcohol and Drugs in the Workplace: Issues and Policies With Special Reference to Arbitral Jurisprudence*. Toronto: Ontario Law Reform Commission.
- Karren, R. (1989). An Analysis of the Drug Testing Decision. *Employee Rights and Responsibilities Journal*, 2, 27-37.
- MacDonald, S., & Dooley, S. (1991). The Nature and Extent of EAPs and Drug Screening Programs in Canadian Transportation Companies. *Employee Assistance Quarterly*, 6, 23-40.
- MacDonald, S. & Wells, S. (1994). The Impact and Effectiveness of Drug Testing Programs in the Workplace. In MacDonald, S. & Roman, P. (Eds.), *Drug Testing in the Workplace*, 121-142, New York: Plenum Press.
- Martin, J., Blum, T., Roman, P. (1992). Drinking to Cope and Self-Medication: Characteristics of Jobs in Relation to Workers' Drinking Behavior. *Journal of Organizational Behavior*, 13, 55-71.
- Masi, D. (1987). Company Responses to Drug Abuse From the AMA's Survey. *Personnel*, March, 40-46.
- Mensch, B. & Kandel, D. (1988). Do Job Conditions Influence the Use of Drugs?. *Journal of Health and Social Behavior*, 29, 169-184.
- Miner, I., Nykodym, N., Samerkyke-Traband, D. (1987). Put Drug Detection to the Test. *Personnel Journal*, August, 91-97.
- Mintzberg, H. (1978). *The Structuring of Organizations*, New Jersey: Prentice Hall.
- Newcomb, M. (1994). Predictors of Drug Use and Implications for the Workplace. In MacDonald, S. & Roman, P. (Eds.), *Drug Testing in the Workplace*, 33-56, New York: Plenum Press.

- Newcomb, M. & Bentler, P. (1986). Cocaine Use Among Adolescents: Longitudinal Association with Social Context, Psychopathology, and Use of Other Substances. *Addictive Behaviors*, 11, 262-273.
- Pinsonneault, M. (1994). Some Legal Aspects of Drug Testing in the Canadian Workplace. In MacDonald, S. & Roman, P. (Eds.), *Drug Testing in the Workplace*, 121-142, New York: Plenum Press.
- Strauss, G. (1995). Is the New Deal System Collapsing? With What Might it be Replaced?. *Industrial and Labour Relations Review*, 34, 329-349.
- Zigarelli, M. (1992). Random Drug Testing in the Public Sector: The Legal Parameters. *Employee Relations Labor Journal*, 17, 459-471.

Faculty of Business  
McMaster University

WORKING PAPERS - RECENT RELEASES

396. Roy Adams, "The Determination of Trade Union Representativeness in Canada and the United States", November, 1994.
397. Shouhong Wang, Norman P. Archer, "A Fuzzy Decision Making Model", December, 1994.
398. Kalyan Moy Gupta and Ali R. Montazemi, "A Methodology for Evaluating the Retrieval Performance of Case-Based Reasoning Systems", December, 1994.
399. Jiang Chen and George Steiner, "Lot Streaming with Detached Setups in Three-Machine Flow Shops", December, 1994.
400. Jiang Chen and George Steiner, "Lot Streaming with Attached Setups in Three-Machine Flow Shops", December, 1994.
401. Ali R. Montazemi and Feng Wang, "An Empirical Investigation of CAI in Support of Mastery Learning", February, 1995.
402. Kalyan Moy Gupta and Ali Reza Montazemi, "Retrieval in Case-Based Reasoning Systems with Modified Cosine Matching Function", February, 1995.
403. Kalyan Moy Gupta and Ali Reza Montazemi, "A Connectionist Approach for Similarity Assessment in Case-Based Reasoning Systems", March, 1995.
404. John W. Medcof, "Selecting Alliance and Network Partners - Strategic Issues", March 1995.
405. Jiang Chen and George Steiner, "Discrete Lot Streaming in Two-Machine Flow Shops", March, 1995.
406. Harish C. Jain and S. Muthuchidambaram, "Strike Replacement Ban in Ontario and Its Relevance to U.S. Labor Law Reform", May, 1995.
407. Ali R. Montazemi and Kalyan Moy Gupta, "A Framework for Retrieval in Case-Based Reasoning Systems", June, 1995.
408. Ali R. Montazemi and Kalyan Moy Gupta, "An Adaptive Agent for Case Description in Diagnostic CBR Systems", June, 1995.

409. Roy J. Adams, Noel Cowell and Gangaram Singh, "The Making of Industrial Relations in the Commonwealth Caribbean", June, 1995.
410. Jiang Chen and George Steiner, "Approximation Methods for Discrete Lot Streaming in Flow Shops", June, 1995.
411. Harish C. Jain and S. Muthuchidambaram, "Bill 40 Amendments to Ontario Labour Relations Act: An Overview and Evaluation", June, 1995.
412. Jiang Chan and George Steiner, "Discrete Lot Streaming in Three-Machine Flow Shops", July, 1995.
413. J. Brimberg, A. Mehrez and G.O. Wesolowsky, "Allocation of Queueing Facilities Using a Minimax Criterion", January, 1996.
414. Isik Zeytinoglu and Jeanne Norris, "Global Diversity in Employment Relationships: A Typology of Flexible Employment", March, 1996.
415. N. Archer, "Characterizing World Wide Web Search Strategies", April, 1996.
416. J. Rose, "Immediacy and Saliency in Remediating Employer Opposition to Union Organizing Campaigns", July, 1996.
417. Roy J. Adams and Parbudyal Singh, "Worker Rights Under NAFTA: Experience With the North American Agreement on Labor Cooperation", September, 1996.
418. George Steiner and Paul Stephenson, "Subset-Restricted Interchange for Dynamic Min-Max Scheduling Problems", September, 1996.
419. Robert F. Love and Halit Uster, "Comparison of the Properties and the Performance of the Criteria Used to Evaluate the Accuracy of Distance Predicting Functions", November, 1996.
420. Harish C. Jain and Simon Taggar, "The Status of Employment Equity in Canada", December, 1996.
421. Harish C. Jain and Parbudyal Singh, "Beyond The Rhetoric: An Assessment of the Political Arguments and Legal Principles on Strike Replacement Laws in North America", January, 1997.
422. Jason Schwandt, "Electronic Data Interchange: An Overview of Its Origins, Status, and Future", March, 1997.
423. Bart, Christopher K. with John C. Tabone, "Mission Statement Rationales and Organizational Alignment in the Not-for-profit Healthcare Sector", November, 1997.