

## Asbestos Exposure and Attitudes Toward Occupational Health

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Résumé de l'article

Les syndicats, les employeurs et les gouvernements recherchent les moyens de diminuer les risques de maladie chez les personnes qui manipulent des substances dangereuses. La façon la meilleure de mettre en vigueur des mesures réglementaires efficaces repose sur la compréhension des attitudes des travailleurs à l'endroit de l'hygiène industrielle.

En 1981, le gouvernement de l'Ontario institua une commission royale d'enquête sur les questions de santé et de sécurité se rapportant à l'utilisation de l'amiante. Une des études de recherche portait sur un relevé des attitudes des travailleurs. Le présent article est une nouvelle analyse des données de cette étude.

Les principales hypothèses considérées ne sont pas étrangères à l'âge des travailleurs et aux facteurs de durée que l'âge représente. En matière d'hygiène industrielle rattachée aux substances dangereuses comme l'amiante, le temps est un facteur important. Des conditions de travail améliorées qui assurent des normes d'exposition plus sécuritaires ne signifient pas nécessairement un meilleur bilan de santé chez les travailleurs. Les maladies reliées à l'amiante se contractent après nombre d'années d'exposition. En conséquence, les travailleurs âgés peuvent ne pas être aussi intéressés à l'amélioration des conditions d'hygiène industrielle que les employés plus jeunes.

L'âge indique à la fois la durée de l'exposition et le temps qui reste à un travailleur pour tirer avantage de meilleures conditions de travail. Aussi, nous pouvons admettre comme hypothèse que les travailleurs âgés se montreront satisfaits du régime actuel de santé et de sécurité et ne seront pas enclins à sacrifier leurs revenus et la sécurité d'emploi pour bénéficier d'une exposition moindre à l'amiante.

C'est par des entrevues personnelles que l'on a pu vérifier le comportement des employés de trois fabriques de coussinets de freins en Ontario. La plupart des répondants étaient satisfaits du régime mixte actuel de responsabilité et des parties qui y participaient (syndicats, gouvernements et employeurs). Une minorité des travailleurs désiraient renoncer à une part de salaire pour obtenir de meilleures conditions d'hygiène et de sécurité.

Ces hypothèses ont reçu un certain appui dans les analyses de régression corrélatives et multiples. L'âge était corrélatif avec les indices mis au point concernant les questions se rapportant à la satisfaction du régime actuel et au désir de nouvelles mesures: les travailleurs âgés étaient davantage satisfaits du régime actuel et moins désireux de sacrifier certains avantages pour obtenir une exposition moindre à l'amiante dans l'avenir. L'expérience personnelle concernant le danger de l'amiante a une influence marquée sur les comportements, ce qui entraîne moins de satisfaction pour la responsabilité mixte et un plus grand désir de payer le prix qu'il faut afin d'être moins exposé aux dangers de la fibre.

Les analyses de régression révélaient des relations similaires entre les deux indices. Cependant, le résultat n'était pas aussi apparent dans l'indice de substitution. L'ensemble de l'enquête démontre que l'âge peut être un facteur important sur la perception que les employés ont du régime de responsabilité mixte et de l'empressement qu'ils mettent à renoncer à certains gains pour décrocher de meilleures conditions d'hygiène. Si l'hygiène industrielle était délaissée à la négociation collective, la présence des travailleurs âgés à des postes d'influence dans les syndicats aurait pour conséquence de donner moins de priorité aux questions d'hygiène industrielle.

# *Asbestos Exposure and Attitudes Toward Occupational Health*

Gene Swimmer  
and  
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*This paper is concerned with the factors affecting the attitudes of workers who manufacture Asbestos products toward occupational health issues.*

Public concern about occupational health issues is growing. Because of this concern, labour unions, employers, and governments are seeking ways to reduce health risks to workers who handle hazardous substances. Key to designing effective regulatory systems is an understanding of workers' attitudes toward occupational health issues. This paper is concerned with the factors affecting the attitudes of workers who manufacture asbestos products. In particular, the age of workers is examined for its effect on attitudes toward the regulatory system and toward the priorities attached to occupational health.

As a hazardous substance, asbestos has few equals in terms of public attention. In modern times, there have been two phases of attention. In earlier years, the focus was mainly on the hazards of mining asbestos. The «horror stories» of health and safety problems in asbestos mining led to royal commissions in both Québec (Beaudry) and Ontario (Ham)<sup>1</sup>. Both commissions had a major impact on legislation and public policy. The Ham Commission recommendations became the basis of Ontario's *Occupational Health and Safety Act*. Beaudry's condemnation of the asbestos mining and refining operations was part of the rationale for Québec's takeover of the Asbestos Corporation.

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<sup>1</sup> For description and analysis of Asbestos mining regulation in Ontario and Québec, see G. Bruce DOERN, «The Political Economy of Regulating Occupational Health: The Ham and Beaudry Reports», *Canadian Public Administration*, Vol. 20, No. 1, Spring 1978, pp. 1-35; and Lloyd TATARYN, *Dying For a Living*, Ottawa, Deneau and Greenberg, 1979, pp. 16-60.

More recently, public concern about asbestos hazards has shifted. The focus is on the health of workers who manufacture asbestos products and on the health of the public (e.g., the hazards of exposure to crumbling asbestos insulation in schools and other public buildings). The government of Ontario, in response to media attention and numerous questions from the opposition on such issues, appointed a second royal commission in 1981 to «investigate matters of health and safety arising from the use of asbestos»<sup>2</sup>. An attitude survey of workers in asbestos manufacturing was one of the studies commissioned<sup>3</sup>. In this paper we re-analyse the data collected in that study with attention to factors associated with workers' attitudes. One factor that is emphasized is workers' age. Age is both a proxy for length of exposure to hazardous substances and a measure of the time a worker has left to reap any benefits of improved working conditions.

Time is a very important aspect of our analysis of age effects. The time factor most clearly distinguishes the issue of occupational health from safety. If workers have been exposed to a safety hazard such as unsafe equipment for a period of years and through care or good fortune have not been harmed, then their risk of harm ceases once the faulty equipment is repaired or replaced to a very safe standard. Such is not the case for a worker exposed to hazardous substances: better ventilation, improved handling procedures or some other technological fix that limits exposure does not leave a previously exposed person with a clean bill of health.

Asbestos exposure is a case in point. People who inhale asbestos fibres may contract asbestosis (a lung deterioration not unlike emphysema) and/or several types of cancer after a long and variable gestation period<sup>4</sup>. The probability of contracting disease increases on average as exposure increases, although the exact form of the relationship is still a subject of debate. Although exposure limits for asbestos are set in health standards legislation, it is impossible to determine a truly safe exposure level. Some

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2 It could be argued that the Royal Commission was set up to remove the asbestos issue from the political agenda. An analysis of media coverage found that following the announcement of the Commission, the number of articles in Ontario newspapers concerning Asbestos in schools dropped dramatically (from 40 to less than 10 per month). See. G. Bruce DOERN, *The Politics of Risk: The Identification of Toxic and Other Hazardous Substances in Canada*, Toronto, Royal Commission on Asbestos (RCA), 1982, pp. 2.10-2.15.

3 For details of the original study see Sally LUCE and Gene SWIMMER, *Worker Attitudes About Health and Safety in Three Asbestos Brake Manufacturing Plants*, Toronto, RCA, 1982. Another Commission study of particular relevance is Morley GUNDERSON and Katherine SWINTON, *Collective Bargaining and Asbestos Dangers in the Workplace*, Toronto, RCA, 1981.

4 For an excellent discussion of the medical evidence associating asbestos and various diseases see Ontario Federation of Labour, written submission to the Royal Commission on Asbestos No. 35, January 1981, pp. 5-45.

workers who have spent their entire lives working with asbestos have not contracted asbestos-related diseases, just as all smokers do not contract lung cancer or heart disease.

How might this temporal aspect of occupational health affect workers' attitudes? This paper deals with two attitudinal dimensions: satisfaction with the current joint-responsibility system for safety and health, and the perception of a tradeoff between that future asbestos exposure and income/job security. Age, as already noted, has two components: length of exposure and amount of time left to benefit from improved standards. In terms of attitudes toward the system, we believe that workers with greater previous exposure will be more satisfied with the current system than those with less exposure. This is because older workers can honestly observe that conditions have greatly improved since «the bad old days». Their longer perspective on improvements over the years may lead them to believe that further reductions in exposure are not worth the additional cost, especially if they are nearing retirement and seeking to maximize their financial position. In terms of tradeoffs, we expect older workers to be less willing to consider trading off compensation for reduced exposure. This is because older workers are tempted to presume that if they are susceptible to asbestos-related diseases, the damage has already been done.

Further reductions of exposure levels would presumably have little effect on improving one's health outlook.

The existence of such relationships between age and attitudes is important for the regulation of health matters. If occupational health were principally regulated through collective bargaining, rather than a legislated standard, these relationships could profoundly affect bargaining outcomes. Bargaining over occupational health implies that this issue, like any other in the process, can be traded off. If older workers have little concern for reduced *future* exposure, they will pressure union negotiators not to trade wages, benefits and/or job security for this issue. When older workers are over-represented in the leadership of the union local, this problem could be exacerbated.

Before testing these hypotheses, there will be a brief discussion of the sample and research methodology. Following this, average responses to questions concerning the joint responsibility system and exposure/income tradeoffs are presented. Composite indices of these two attitudinal components are constructed and specific individual characteristics in addition to age are identified to «explain» these two indices. Hypotheses are then tested using correlation and regression analyses.

## METHODOLOGY AND SAMPLE

The data in this study were based on interviews with workers in three friction material manufacturing plants. Friction material, containing a large amount of asbestos, is used mainly to make brake linings. Before discussing the specific establishments selected, the manufacturing process is briefly described<sup>5</sup>.

In the manufacture of brake linings, various materials are first mixed according to strict recipes in a compounding area. About half of a typical mixture is asbestos fibre. It often includes other hazardous substances such as lead and formaldehyde. Compounding is the most risky part of the process because workers handle raw asbestos fibres. The compounded mixture is pressed into soft briquettes. At this stage, the material is crumbly, and there is still the potential for high levels of airborne asbestos fibres. These briquettes are subsequently compressed and baked to a ceramic consistency. The brake linings are thus finished using sanders and drill presses. This generates a considerable amount of dust, most of which is drawn up by the ventilation systems. Finally, workers bind the linings to metal brake drums or disk brakes.

Health risks aside, work in a brake manufacturing plant is not appealing. Strong chemical odours, constant noise and excessive heat in summer all contribute to an unpleasant atmosphere. By and large, the work is monotonous, requiring little or no skill. Because many jobs involve machine tending and heavy material handling, the risk of accident is always present. Despite these risk factors, wages are low. Most jobs paid between \$6.50 and \$7.50 per hour in August 1981<sup>6</sup>.

Three brake plants were selected as the interview sites. One was located in a small town, one in a medium-sized labour market (both in central Ontario), and one was located in Metropolitan Toronto. Workers in all three plants were represented by the same union. In the smaller labour markets, the brake plant was a major employer, and one of the few firms hiring. Although the Toronto plant was not a major employer in terms of the overall labour market, it was an important employer of recent immigrants. Only 3 per cent of the firm's workforce spoke English as their native tongue, and the overwhelming majority of employees spoke little French or English. It would be fair to say that workers at all three sites had limited job mobility.

<sup>5</sup> For a detailed description of the specific plants toured and the local unions involved in the survey see LUCE and SWIMMER, *op. cit.*, pp. 2.1-2.17.

<sup>6</sup> Similar jobs in the metropolitan Toronto manufacturing sector were paid 5-15% more, based on an October 1981 comparison. See LUCE and SWIMMER, *op. cit.*, p. 2.6 and Labour Canada, *Wages, Salaries and Hours of Labour — Toronto, October 81*, Hull, Minister of Supply and Services Canada, 1982, Table A.

Together, the central Ontario plants employed 275 workers. A 50 per cent random sample was taken, but with many workers on summer holidays, only 106 could be contacted. Of these, 85 per cent were interviewed.

The Toronto plant was newer, more automated and employed about twice as many production workers as the other work sites. In this plant the linguistic diversity of employees, the transience of the work force and natural suspicions of the immigrant workers played havoc with our sampling. In the end, we were able to conduct only 26 interviews (10 English, 13 in Spanish and 3 in Italian) despite contacting 115 workers. Because of the resulting sample flaws, statistical procedures generally exclude these observations.

Interviews were conducted outside of working hours, generally in the employee's home. The average interview took one hour<sup>7</sup>.

The *Ontario Occupational Health and Safety Act* states that management, unions, individual workers and government all share the responsibility to ensure a healthy and safe workplace. This concept is operationalized by requiring a joint labour (union) — management committee to oversee the system. Workers are given the right — indeed have the responsibility — to refuse dangerous work without risk of penalties. The joint committee conducts scheduled plant inspections, meets regularly to discuss problems and investigates industrial accidents and dangerous work complaints<sup>8</sup>.

Table 1 summarizes responses to eight statements about the parties to the joint responsibility system. The proportion of workers in agreement with a specific positive statement is presented by plant<sup>9</sup>. Overall, workers at the two Central Ontario plants (1, 2) were quite satisfied with the performance of the parties (between 65 and 100 per cent agreed that the various groups did a good job). By comparison, only half of the workers at the Toronto plant were satisfied with the parties. Regardless of the work site, the union, the joint committee and other workers generally received higher ratings than did management and government inspectors. Nonetheless,

<sup>7</sup> For a copy of the entire list of questions asked during the interview, see LUCE and SWIMMER, *op. cit.*, Appendix B.

<sup>8</sup> For an evaluation of the Ontario legislation and arbitration cases arising from refusals to work, see GUNDERSON and SWINTON, *op. cit.*, pp. 8.1-8.23, 9.1-9.20.

<sup>9</sup> Workers were originally asked to respond to these statements using a five-point scale (from 1 = strongly agree, to 5 = strongly disagree). Tables 1 and 2 present the proportion of respondents who strongly or mildly agree. Aside from being easier to interpret, these proportions may eliminate cultural differences in respondents. In particular, Latin-American respondents were much more likely to select strongly agree or strongly disagree than other respondents.

workers generally viewed the management more positively vis-à-vis health and safety than in its other roles. For instance, only about half of the workers at each site felt that management ran the plant well or provided good working conditions, compared to about a two-thirds approval rating for management's health and safety role<sup>10</sup>.

As noted at the outset, this paper is concerned with the possible tradeoffs of health and safety for other bargaining items. Table 2 summarizes responses to statements regarding tradeoffs: two related to collective bargaining, and two related to legislation. Again substantial differences exist among the plants. Only 30 per cent of Toronto workers felt that tougher health regulations in the asbestos industry (i.e., cutting the acceptable airborne asbestos level in half) would result in job losses. By contrast, a majority of central Ontario employees believed regulations would create unemployment. Presumably, fewer workers in these two plants would support tougher regulations.

A minority of workers would give up any wages to reduce future asbestos dangers from their plants (only 26 per cent, 41 per cent and 32 per cent respectively agreed to this). It is noteworthy, however, that 40 per cent of respondents who would not trade off wages for more safety volunteered that they simply could not afford it. In a similar vein, only about half of the respondents even mentioned health and safety as an important bargaining issue when the current contract expired.

The most controversial question of the interview asked whether workers agreed with the Ontario Federation of Labour proposal to ban the use of asbestos in Ontario by 1985, given that asbestos-free brake linings would cost at least 20 per cent more to produce<sup>11</sup>. A strong majority of workers across the plants (65 per cent, 56 per cent and 96 per cent respectively) believed the policy was a good idea.

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<sup>10</sup> LUCE and SWIMMER, *op. cit.*, p. 4.9.

<sup>11</sup> The 20% figure was taken from G. JACKO, Charles M. BRUNHOFER and F. William ALDRICH, «Non-Asbestos Frictional Materials», (Paper presented at the EPA/CPSC National Workshop on Substitutes for Asbestos, Arlington, Virginia, July 14, 1980), pp. 13-14. Nonetheless, the unions felt the percentage was too high while the employers felt it was too low or rejected the idea that asbestos-free substitutes were less dangerous substances. The Toronto firm insisted that the sentence concerning substitutes be removed from the questionnaire if they were to cooperate with the study by providing employee names and addresses. We were forced to accept their terms. As a result, the .96 proportion of Toronto workers in favour of the O.F.L. plan would undoubtedly have been lower, if workers were to read the entire question (as shown in Table 2).

## RESEARCH HYPOTHESES

The hypotheses to be examined relate the length of exposure to satisfaction with the system and to the types of tradeoffs described above. In examining these relationships, satisfaction and tradeoff indices have been defined. These indices are the average scores on the respective statements listed in Tables 1 and 2<sup>12</sup>.

In considering these indices, it should not be surprising that workers who are more satisfied with the joint responsibility system tend to be less willing to trade income and/or job security for reduced asbestos exposure. There is a statistically significant inverse correlation between these two indices ( $r = -.25$ ), although the exact cause of the relationship is unclear. Satisfaction may reduce the need to make further tradeoffs because the system is seen as adequately protecting workers. It is nevertheless possible that an unwillingness (or inability) to trade income for exposure may lead workers to rationalize — not necessarily correctly — that the current joint responsibility system works well.

The two indices of satisfaction and tradeoff will serve as the dependent variables to be «explained» by a set of individual characteristics. As stated previously, the major hypothesis concerns the temporal nature of asbestos exposure. We expect the older workers, who have generally been exposed to asbestos for a longer time, who have fewer working years ahead of them, and who have seen improvements in working conditions through the years, will be *less* prepared to trade remuneration for reduced exposure and *more* satisfied with the current joint responsibility system.

Presumably, the willingness to trade income/security for reduced future exposure also depends on one's financial responsibilities. Therefore, workers with lower wages, with larger families to support, and who are the major source of the family's income should be less prepared to trade other items for lower asbestos exposure. It seems likely, given their limited options, that these respondents might also view the joint responsibility system more positively.

Another set of factors which should affect attitudes involve the health of respondents and their co-workers. Other things being equal, workers who believe they have been ill because of the dust at work, who rate their health as poor, and who know other workers who have contracted asbestos-related diseases, ought to be less satisfied with the current system and more willing to reduce future exposure, even with a concomitant reduction in compensation.

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12 If not all questions were answered by a respondent, the average was determined on that subset of questions answered. However, to be included in the sample, the respondent must have answered at least 3 questions per index.



Because jobs in a brake plant are not equally hazardous, workers who perceive their jobs as particularly dangerous should be more concerned about occupational health. In particular, compounding room workers (where raw asbestos is handled and dust levels are generally high), night shift workers (there are never spot checks by government inspectors after 5 p.m.), and respondents who faced a dangerous situation at work in the previous year are presumed to have lower satisfaction scores and higher tradeoff scores.

Three additional characteristics have been used in the analysis. The respondent's sex and whether he/she has held union office may affect attitudes although the nature of the impact is unclear. Lastly, the number of cigarettes smoked daily has been included. Heavy smokers are at greater risk in contracting asbestos-related diseases<sup>13</sup>. It could be argued, on the one hand, that smokers would be more concerned about asbestos exposure. On the other hand, all heavy smokers implicitly reveal a preference for risk (i.e., they consume cigarettes despite the known risks of tobacco-related diseases). The preference for risk revealed by smoking could «spill over» to the risk of asbestos exposure as well. Therefore smokers could be more satisfied with the status quo. The net effect of these conflicting arguments cannot be predicted.

There are thirteen individual characteristics (independent variables) that have just been reviewed. With only 90 random observations (from Plants 1 and 2), the power for achieving statistical significance is low. Therefore, the following procedure has been adopted: simple correlations between the independent variables and the two indices are estimated first and only those individual characteristics that are significantly correlated with a dependent variable will be included in the regression for that index. Regressions will be estimated twice, excluding and including responses from the Toronto plant (Plant No. 3)<sup>14</sup>.

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<sup>13</sup> Although there is no unanimity, most studies point to a synergistic effect between asbestos and smoking. For instance, one study of 12,000 asbestos insulation workers found that the lung cancer rate for smokers exposed to asbestos was 5 times that of non-smokers exposed to asbestos and 53 times that of non-smokers who were not exposed to asbestos. See Ontario Federation of Labour, *op. cit.*, pp. 32-35.

<sup>14</sup> Reducing the number of independent variables included in each regression should mitigate the problem of multicollinearity. Plant site dichotomous variables are also included in all regression equations.

## CORRELATION AND REGRESSION ESTIMATES

Table 3 summarizes the correlations. As expected, both correlations with the indices are statistically significant for age<sup>15</sup>. Older workers are more satisfied with the current system and less willing to trade for reduced future exposure. Variables measuring financial responsibility perform poorly. Size of household and the proportion of household income provided by the respondent are not related to either index. Contrary to our predictions, *higher* paid employees are more satisfied with the current system and less willing to trade for reduced future exposure (though the latter result is insignificant).

As expected, personal experience with asbestos danger has a powerful impact on attitudes. Workers who have been sick because of dust and/or have faced a dangerous situation at work give the joint responsibility system significantly lower grades and are more prepared to buy reduced asbestos exposure.

Based on the size of their correlations, the following additional variables were included in one or more of the regressions: sex and number of cigarettes smoked, for both attitude indices; working in the compounding room and knowing co-workers with asbestos diseases, for the satisfaction index only. Self-reported health, working the night shift and holding a union office were not significantly correlated with either attitude index and hence dropped from further analysis.

Table 4 presents the regression estimates for the joint responsibility and tradeoff indices. Overall, the set of independent variables «explain» about one-third of variance in the dependent variables ( $R^2 = .32$  to  $.40$ ).

The results for the temporal hypothesis are mixed. Holding other variables constant, older workers are definitely more satisfied with the current joint responsibility system. Although older workers tend to be less willing to trade remuneration for reduced asbestos exposure, the coefficient reaches significance only when the respondents from Plant 3 are included as observations.

Workers who have been sick because of the dust are significantly less pleased with the present system than those who have not been sick and more willing to pay for tradeoffs.

<sup>15</sup> Age was used as the proxy for exposure instead of service. Age and service, however, are highly correlated. The simple correlation coefficient between age and service is positive and statistically significant ( $r = .65$ ,  $p < .05$ ). Regressions for service show similar patterns as those for age. The service coefficient is positive and statistically significant for the satisfaction regressions ( $p < .05$ ), and is negative, though not statistically significant for the tradeoff regression.

The remaining variables are only significantly associated with one of the indices. Other things being equal, the number of sick co-workers known and the wage rate are both related to the satisfaction index.

Again, high wage employees are *more* (not less) satisfied with the current system. This may reflect a «halo» effect, i.e., workers' relatively greater satisfaction with pay may affect ratings of satisfaction with the system in general.

Finally, males and heavy smokers are significantly less willing to consider trading other items for reduced exposure, despite the fact that heavy smokers face a substantially greater probability of contracting asbestos-related diseases.

In conclusion, these results are at least suggestive of «inter-temporal» effects on workers' attitudes toward asbestos exposure. Aside from the age factor, other individual characteristics, including smoking behaviour and first-hand knowledge of asbestos danger, clearly affect workers' attitudes. If occupational health regulations were left to the parties through the collective bargaining process, it would appear that a union would have more difficulty developing a consensus among the membership regarding occupational health than safety, let alone wages or job security. Under these circumstances, occupational health would likely receive a low priority in negotiations. If the health issue were dropped during negotiations, a union could be portrayed as accepting the remaining workplace dangers. Any such result would be socially unacceptable to most Canadians and unfairly jeopardize the health of many workers. It certainly supports the case for continued workplace regulation from government.

In this regard, it is particularly discouraging that the Ontario Royal Commission on Asbestos took over three years to issue a final report. The Ontario Ministry of Labour has issued less than a dozen workplace exposure guidelines for hazardous substances, despite the fact that thousands of such substances exist and many workers are exposed to them on a daily basis.

**TABLE 1**  
**Proportion of Respondents Agreeing with**  
**Statements About the Parties to the Joint**  
**Responsibility System for Health and Safety**

<i>Statement</i> <sup>1</sup>	<i>Plant</i>		
	<i>1</i>	<i>2</i>	<i>3</i>
1. <i>Union</i>			
(a) Gets mgmt. to follow health and safety regulations	.88	1.00	.50
(b) Keeps dust down at work	.75	.98	.48
2. <i>Management</i>			
(a) Cares about workers' health and safety	.64	.67	.40
(b) Keeps dust down at work	.67	.85	.52
3. <i>Joint Committee</i>			
(a) Does a good job	.76	.91	.45
(b) Keeps dust down at work	.85	.93	.50
4. <i>Inspectors</i>			
(a) Enforce health and safety regulations	.62	.68	.50
5. <i>Workers</i>			
(a) Keeps dust down at work	.68	.80	.71
Satisfaction with joint responsibility system index	.73	.85	.50
Maximum sample size	45	46	26

<sup>1</sup> Statement has been abbreviated for the table, for the complete statements see Luce and Swimmer, Appendix B, *op. cit.*

**TABLE 2**  
**Proportion of Respondents Agreeing with**  
**Statements Concerning the Tradeoff Between**  
**Asbestos Risk and Income/Job Security**

<i>Statement</i>	<i>Plant</i>		
	<i>1</i>	<i>2</i>	<i>3</i>
1. Tougher health regulations in the asbestos industry will cause some workers to lose their jobs.	.50	.58	.29
2. I would give up some of my wages if the plant could be made <i>completely</i> safe from asbestos danger.	.26	.41	.32
3. Some studies show that asbestos affects peoples' health. The Ontario Federation of Labour has therefore said that there should be a law stopping the making and selling of asbestos products by 1985. Substitutes for asbestos exist, but they would raise the costs of brake linings by at least 20%. Do you think such a law is a good idea?	.65 <sup>2</sup>	.56 <sup>2</sup>	.96 <sup>2,3</sup>
4. When the contract is up, what will be an important issue? Proportion who mention health and safety.	.51	.39	.58
Tradeoff index <sup>1</sup>	.46	.45	.62
Maximum sample size	41	43	25

<sup>1</sup> In constructing the index, question 1 was scored in reverse.

<sup>2</sup> Proportion who answered yes.

<sup>3</sup> The sentence about substitutes had to be deleted when interviewing at Plant 3, in order to get management to cooperate with the study.

**TABLE 3**  
**Correlation Coefficients Between Individual**  
**Characteristics and Dependent Variable Indices**

<i>Individual Characteristic</i>	<i>Joint Responsibility Satisfaction Index</i>	<i>Tradeoff Index</i>
Sex (1 = Male)	-.20 **	-.20 **
Age	.23 **	-.22 **
Size of Household	-.10	-.05
Number of Cigarettes Smoked	.23 **	-.40 ***
Wage	.24 **	-.11
Proportion of Family Income Provided	.01	-.03
Union Officer (1 = Yes)	-.07	-.01
Compounding Room Worker (1 = Yes)	-.18 **	.05
Nightshift Worker (1 = Yes)	-.10	.09
Faced Danger at Work During Last Year? (1 = Yes)	-.25 ***	.28 ***
Ever Been Sick Because of Dust? (1 = Yes)	-.35 ***	.28 ***
Number of Other Workers Known Who Are Sick Because of Dust	-.16 *	-.06
Self-Reported Health (1 = Poor; 5 = Excellent)	-.04	.05
Maximum Sample Size	91	84

\* Significant for a one-tail test at .10;

\*\* Significant at .05;

\*\*\* Significant at .01.

**TABLE 4**  
**Standardized Regression Coefficient**  
**Estimates for the Joint Responsibility**  
**Satisfaction and Tradeoff Indices**

<i>Individual Characteristic</i>	<i>Dependent Variable</i>			
	<i>Joint Responsibility Satisfaction Index</i>		<i>Tradeoff Index</i>	
	<i>Excluding Plant 3</i>	<i>All Cases</i>	<i>Excluding Plant 3</i>	<i>All Cases</i>
Sex (1 = Male)	-.03 (-.28)	-.11 (-1.09)	-.25 (-2.41)**	-.17 (-1.92)*
Age	.47 (3.95)***	.44 (4.10)***	-.11 (-1.10)	-.17 (-1.97)*
Number of Cigarettes Smoked	.05 (.49)	.08 (.82)	-.29 (-2.93)***	-.29 (-3.35)
Wage	.48 (1.76)*	-.31 (-1.20)	—	—
Compounding Room Worker (1 = Yes)	-.17 (-1.60)	-.14 (-1.33)	—	—
Faced Danger at Work During Last Year? (1 = Yes)	-.02 (-.21)	.04 (.51)	.22 (2.05)**	.16 (1.71)*
Ever Been Sick Because of Dust? (1 = Yes)	-.20 (-2.06)**	-.15 (-1.53)	.17 (1.72)*	.19 (2.15)**
Number of Other Workers Known Who Are Sick Because of Dust? (1 = Yes)	-.38 (-3.38)***	-.31 (-2.86)***	—	—
Plant 2 (1 = Yes)	.86 (3.01)***	.62 <sup>1</sup> (-)**	-.16 (-1.53)	-.13 <sup>1</sup> (-)**
Plant 3 (1 = Yes)	—	-.06 <sup>1</sup> (-)**	—	.15 <sup>1</sup> (-)**
R <sup>2</sup>	.40	.36	.32	.34
Sample Size	80	88	82	102

T-statistic in parentheses.

\* Significant for a two-tail test at .10;

\*\* Significant at .05;

\*\*\* Significant at .01.

<sup>1</sup> F-Statistic is used for test of significance.

## *Le comportement des travailleurs exposés à l'amiante à l'endroit de la santé industrielle*

Les syndicats, les employeurs et les gouvernements recherchent les moyens de diminuer les risques de maladie chez les personnes qui manipulent des substances dangereuses. La façon la meilleure de mettre en vigueur des mesures réglementaires efficaces repose sur la compréhension des attitudes des travailleurs à l'endroit de l'hygiène industrielle.

En 1981, le gouvernement de l'Ontario institua une commission royale d'enquête sur les questions de santé et de sécurité se rapportant à l'utilisation de l'amiante. Une des études de recherche portait sur un relevé des attitudes des travailleurs. Le présent article est une nouvelle analyse des données de cette étude.

Les principales hypothèses considérées ne sont pas étrangères à l'âge des travailleurs et aux facteurs de durée que l'âge représente. En matière d'hygiène industrielle rattachée aux substances dangereuses comme l'amiante, le temps est un facteur important. Des conditions de travail améliorées qui assurent des normes d'exposition plus sécuritaires ne signifient pas nécessairement un meilleur bilan de santé chez les travailleurs. Les maladies reliées à l'amiante se contractent après nombre d'années d'exposition. En conséquence, les travailleurs âgés peuvent ne pas être aussi intéressés à l'amélioration des conditions d'hygiène industrielle que les employés plus jeunes.

L'âge indique à la fois la durée de l'exposition et le temps qui reste à un travailleur pour tirer avantage de meilleures conditions de travail. Aussi, nous pouvons admettre comme hypothèse que les travailleurs âgés se montreront satisfaits du régime actuel de santé et de sécurité et ne seront pas enclins à sacrifier leurs revenus et la sécurité d'emploi pour bénéficier d'une exposition moindre à l'amiante.

C'est par des entrevues personnelles que l'on a pu vérifier le comportement des employés de trois fabriques de coussinets de freins en Ontario. La plupart des répondants étaient satisfaits du régime mixte actuel de responsabilité et des parties qui y participaient (syndicats, gouvernements et employeurs). Une minorité des travailleurs désiraient renoncer à une part de salaire pour obtenir de meilleures conditions d'hygiène et de sécurité.

Ces hypothèses ont reçu un certain appui dans les analyses de régression corrélatives et multiples. L'âge était corrélatif avec les indices mis au point concernant les questions se rapportant à la satisfaction du régime actuel et au désir de nouvelles mesures: les travailleurs âgés étaient davantage satisfaits du régime actuel et moins désireux de sacrifier certains avantages pour obtenir une exposition moindre à l'amiante dans l'avenir. L'expérience personnelle concernant le danger de l'amiante a une influence marquée sur les comportements, ce qui entraîne moins de satisfaction pour la responsabilité mixte et un plus grand désir de payer le prix qu'il faut afin d'être moins exposé aux dangers de la fibre.



Les analyses de régression révélaient des relations similaires entre les deux indices. Cependant, le résultat n'était pas aussi apparent dans l'indice de substitutalité.

L'ensemble de l'enquête démontre que l'âge peut être un facteur important sur la perception que les employés ont du régime de responsabilité mixte et de l'empresement qu'ils mettent à renoncer à certains gains pour décrocher de meilleures conditions d'hygiène. Si l'hygiène industrielle était délaissée à la négociation collective, la présence des travailleurs âgés à des postes d'influence dans les syndicats aurait pour conséquence de donner moins de priorité aux questions d'hygiène industrielle.



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