

# Women's Occupational Health and Androcentric Science

by Karen Messing

*Les règles et les normes pour la conduite de la recherche en santé au travail sont décrétées par des agences n'ayant pas connaissance des conditions des travailleuses. Ces recherches comportent des choix politiques qui tendent à sous-estimer les*

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*The elimination of women from studies of occupational cancer reinforces the notion that women's jobs are safe and that women's concerns are unfounded*

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*effets du travail sur la santé des femmes. Dans cet article, l'auteure propose qu'en impliquant les travailleuses dans la détermination des priorités la qualité de la recherche en santé au travail serait améliorée.*

Occupational health intervention and research has concentrated on men's jobs. Men are much more likely to be compensated for occupational illness, and fewer than 15 per cent of workers in Québec's priority sectors for occupational health intervention are women. I suggest that this is not because women have safer jobs, but because occupational health concepts have been derived from examination of men's jobs. I have chosen to discuss a few examples in detail rather than attempting to cover the wide range of possible examples (for further discussion see Messing *et al.* 1992a, Dumais and Messing, Messing 1991, Messing 1992, Messing and Mergler).

## **The requirement that populations be uniform or, women keep out**

It is interesting to look at the criteria which make sub-populations under study non-uniform. In cancer research, uniformity might be sought by requiring study subjects to share an urban or rural environment, some nutritional habits, or medical history. Women are, however, frequently eliminated by this criterion. For example, Block and her colleagues published a study of cancer among phosphate-exposed workers in a fertilizer plant. Among 3,400 workers, 173 women were eliminated "because females accounted for only about five per cent of the study population, they were not included in these analyses" (Block *et al.* 7298). However, the 38 male workers in the drying and shipping department were not considered too small a population for study.

Another example is a Canadian study paid for with \$2 million in public funds relating cancers to a huge number of occupational exposures. When asked why this study excluded women, the researcher replied, "It's a cost-benefit analysis; women don't get many occupational cancers." The resulting papers, published in peer-reviewed journals, make no attempt to justify the exclusion of women (Siemiatycki *et al.*).

There are, in fact, some well-identified occupational cancers among women. A study of members of the American Chemical Association shows that women members have significantly high rates of ovarian and breast cancer (Walrath *et al.*). A Canadian study also revealed that hairdressers are especially likely to get leukemia and ovarian cancer (Spinelli *et al.*). Shelia Zahm has recently published a bibliography of studies of occupational cancer among women. But information is still sadly lacking in this area. Her recent paper showed that occupational cancer researchers consistently ignored or underanalyzed studies on women workers: of 1,233 cancer studies published between 1971 and 1990 in eight major occupational health journals, only 14 per cent presented analyses of data on white women and only ten per cent on non-white women (Zahm *et al.*).

The elimination of women from studies of occupational cancer reinforces the notion that women's jobs are safe and that women's concerns about environmental influences on breast cancer (for example) are unfounded (McDuffie). It becomes justifiable to exclude women's jobs from prevention efforts.

## **The requirement for objectivity or, shutting our ears to women's voices**

What does this mean? Who is considered to be objective? In order to relate working conditions to illness, researchers refer to "experts" as in the following example, taken from the occupational health literature. In a study of 13,568 workers, experts were asked to class certain jobs as exposed or not exposed to dust. The study correlates reported symptoms of dust exposure (difficulty breathing, asthma, etc.) with experts' ratings. The study also correlated symptoms of dust exposure with the workers' own reports of dust exposure. Not surprisingly, the workers' reports were much more highly correlated with symptoms than were the experts'. For women workers and less-educated workers, however, the correlation with the experts was quite low. Did the researchers conclude that the experts' estimates were incomplete, class-biased, wrongly applied to women's jobs, out of date? Not at all:

Factors modifying the strength of the association

between two estimates of exposure [experts' vs. workers'] are potential recall determinants of exposure. This association was significantly stronger in men than in women, suggesting a better perception of exposure by men... (Hsairi *et al.* 1979).

In other words, if self-reported exposure was better related to symptoms than expert-reported exposure, the self-reports of exposures and symptoms were wrong. If educated men were closer to the experts, the men had made fewer errors than the women or the less-educated.

But, in fact, there is no reason why an "expert" who has

industry" or "occupation" or "worker" or "working women" yielded no references in French or English and one reference to a study written in Chinese relating occupational risk factors to menstrual symptoms (Qu).

Our original requests for funding for work relating working conditions to menstrual pain were refused. Researchers and students from the *Centre pour l'étude des interactions biologiques entre la santé et l'environnement* (CINBIOSE) did the research anyway, and found that women who were exposed to cold and to lifting weights had more menstrual pain (Mergler and Vézina, Messing *et al.* 1993, Messing *et al.* 1992b). When we reported our results to the collaborating physicians they called the results "cute" [*amusant*], but suggested that publicizing the results would injure the scientific credibility of the research team.

Calling this sort of willful ignorance objectivity also has repercussions for accuracy in describing occupational health in general. Back pain is an important parameter of occupational health. The prevalence of back pain has been determined in many jobs; for example, 70 per cent of hospital workers (both sexes) report back pain in cross-sectional studies. At a given time, about 18 per cent of women workers are menstruating, of whom about 60 per cent have pain at menstruation in lower back area (our figures) but almost no studies of back pain ask whether subjects are menstruating. Since we have found that dysmenorrhea is not determined in the same way as other lower back pain, there is an important source of inaccuracy in the understanding and prevention of factors leading to back pain.

A definition of objectivity centred on the perceptions of male scientists may thus prevent researchers from gaining critical knowledge of use to all workers. It may be that the emotional issue here is scientists feel that if they give credibility to workers they will lose prestige and lose control of their research project.

### **Choice of variables to study or, why am I so tired if I'm doing light work**

There is a lot of literature on the physical capability of women and men to lift weights (Courville). Although the tests used have been shown not to be well adapted to the size and shape of the average woman (Stevenson *et al.*), they have been used both to set standards and as pre-employment screens. No standards have been promulgated for the types of exertions found more often in women's traditional work.

Exertion of force is now covered by law only when a large force is exerted all at once. Most women's jobs require small forces with a high degree of repetition, which is not regulated. Sewing machine operators (Vézina, Tierney, and Messing) and laundry workers (Brabant *et al.*) (among other factory and service workers) manipulate thousands of kilograms per day, a few grams at a time. This type of job is associated with repetitive strain injury such as bursitis, epicondylitis, and carpal tunnel syndrome. Con-

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never been in a workplace is better able than a worker to describe dust exposure. And, there is every reason to suppose that the experts consistently underestimated both the women's exposures and their health problems.

The area of menstrual problems is another example. After reporting that beginning airline hostesses underwent unfavourable changes in the menstrual cycle three and one half times as often as favorable changes, researchers commented,

There is not enough information to explain the pathophysiology of dysmenorrhea. The frequent association of dysmenorrhea with other [sic] neurotic symptoms is indicative of its psychological origin (Iglesias *et al.* 519).

This seeming contempt for women's perceptions has had a very detrimental effect on women's health. Well over half of European and North American women of reproductive age now do paid work, and 30 to 90 per cent of menstruating women report lower abdominal and lower back pain associated with the menstrual periods (see Woods *et al.*, Sundel *et al.*, Pullon *et al.*). But western occupational health literature has almost never included menstrual symptoms among outcome variables. A 1975 to 1991 search of the Medline data bank for English-language studies using the key words "menstruation" or "dysmenorrhea" associated with "environment" yielded 14 references to studies where women were exposed to pain or cold at various stages of their cycles in order to determine pain threshold variation and only one which studied environmental effects on menstrual symptoms. A contemporaneous search of the Medline medical data base using as keywords "dysmenorrhea," "menstrual disorders" and "premenstrual tension" associated with "in-

certed efforts of feminist scientists (see Punnett, Stock) have resulted in increasing compensation being paid to workers with repetitive strain injury, but no standards have been promulgated to attack the problem at the source. Arthritis and rheumatism are the most prevalent diseases reported by Québec women (Guyon), yet possible occupational determinants of these diseases and of osteoporosis have not been explored.

Sewing machine operators, among the top 20 Canadian jobs for women, suffer from increased disability which is more prevalent if they are paid at piecework rates (Brisson *et al.*). Yet there is no standard forbidding piecework.

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Standing without moving the feet is a characteristic of women's jobs in factories and of most cashiers' work, one of the top five women's jobs in Canada. This type of exertion tends to interfere with blood circulation to and from the legs and results in strain on the musculo-skeletal system. This is a job which requires employees to handle more than ten articles per minute with weights up to six kilograms, exerting additional strain on the bones and joints (Vézina, Geoffrion, and Messing). Yet no regulations prevent employers from requiring employees to maintain a standing position.<sup>1</sup>

Attention of scientists and health specialists has been limited to risks found in traditional male jobs.

#### **Adjustment for relevant confounding variables or, how to hide bad working conditions<sup>2</sup>**

"Adjusting" for a variable while analyzing data means using a mathematical procedure to eliminate its effect. It is reasonable, for example, to adjust for smoking when examining the relationship of dust exposure to lung damage, because smoking is an independent determinant of lung damage and might confuse the issue if those exposed to dust smoked more or less than those not exposed. We may need to add a correction factor to the lung function of smokers before testing the relationship between dust exposure and lung damage. This procedure allows us to determine the effect of dust on the lungs while taking into account the deleterious effects of smoking.

"Overadjusting" occurs when the variable adjusted for is a synonym for the exposure. This would happen if night shift workers were both more frequent smokers because of boredom and more exposed (because the chemical is used more often on the night shift). Adjusting for the effect of smoking would then diminish the possibility of finding

an effect of the chemical exposure on lung cancer.

This procedure has been applied widely and abusively to sex differences (and racial differences). Studies which examine the health of workers often find that women workers report more symptoms of poor health or psychological distress than their male counterparts (Mergler *et al.*). The methodological approach to these differences is to "adjust" for sex. The mathematical adjustment is never justified explicitly.<sup>3</sup> It would be justified only if the poorer health of women were a result of their sex rather than by their working conditions, for example because they are weaker or because they complain more than men or if hormonal differences affected their reaction to the workplace.<sup>4</sup>

But this is not necessarily the case. In a study of men and women workers in poultry processing plants (Mergler *et al.*), women workers reported a higher prevalence of some symptoms (muscular and articular pain, stress-related disorders) than men, while other symptoms such as hearing difficulties had similar prevalences among the two sexes. In fact, noise levels were similar for men and women, but other aspects of their jobs differed. Women mainly worked standing still at the machine-paced assembly line; their work, which was carried out at very rapid speed, required swift, accurate arm and hand movements. Men's jobs allowed them more freedom of movement and were carried out at a less rapid pace. In areas of this workplace where men and women were doing similar jobs there were no differences in symptoms. Adjusting for gender in this study would have obscured the differences in working conditions and would have made it look as if the women reported more symptoms because they were complainers or weaker.

These techniques usually obscure the types of health problems women experience at their jobs, and help maintain the illusion that women are physically, mentally, and emotionally "the weaker sex,"<sup>5</sup> eventually resulting in a reduction in the amount of money allocated to prevent occupational disease in women.

#### **Statistical significance, or why hurry to clean up the workplace**

Hidden political choices made by scientists can also interfere with prevention of health hazards to women. The necessity for these choices arises from the fact that there is usually a rather long interval between the first doubts about particular working conditions and the time when the final word is in on the exact level of risk. For example, tens of thousands of women worked with video display terminals (VDTs) before the first study of VDT effects on pregnancy. Even now, no one is yet absolutely sure that VDTs do not pose a danger for pregnant women. But pregnant women have rarely stopped working with VDTs. In this and many other cases, a decision has been made to place the burden of proof on the worker rather than on the employer.

The statistical tests conventionally used exaggerate this burden of proof. In order for scientists to accept the fact that Agent X causes problems for pregnancy, a study must establish the toxic effects with 95 per cent certainty.<sup>6</sup> For scientists to be really sure, more than one study must show the same relationship. Given the small numbers of workers in most women's workplaces and the large numbers of potential hazards, it is no wonder that very few dangers for pregnancy or fertility have been established. A decision has been taken to minimize the costs of improvements rather than minimize questionable exposures. This is a political presented as a scientific decision based on "the standard level of statistical significance," neither questioned nor explained.

### How can we promote recognition of occupational health risks for women?

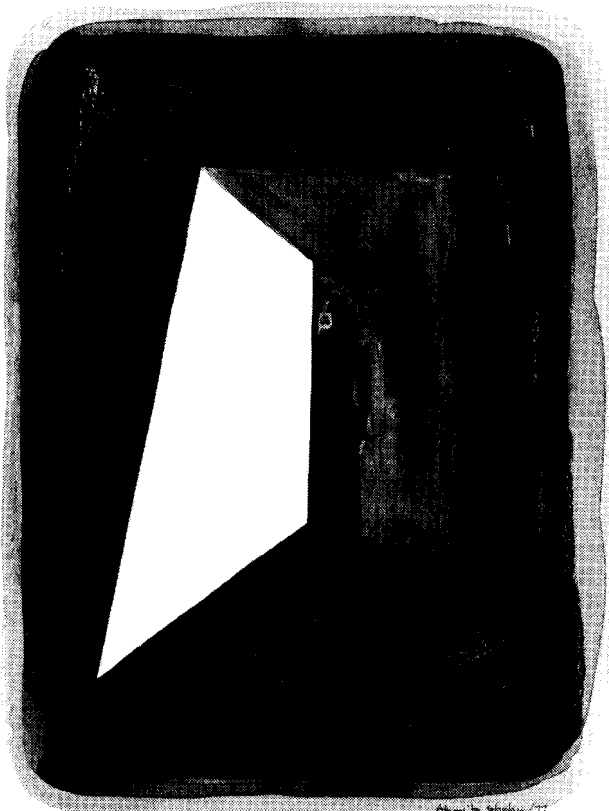
We have to move away from technology which favours men's bodies toward technology which takes into account human diversity. We have to devise tests for strength which will allow both women's and men's capacities to be shown to best advantage (Stevenson). We may have to re-design jobs or consult working women to find out new ways to do them. We may even have to consider whether, in the current economic context, it is better to ask for equal salaries for women's and men's jobs rather than insisting that all jobs be immediately redesigned.

We will not be able to take generalized theoretical views on these questions, but will have to base ourselves on

woman-based feminist research. This means that a context must be developed in order to encourage such research and to provide money for it. In particular, ways must be found to channel community insights into academic research.<sup>7</sup> Woman-based research also requires money: this will be available if granting agencies incorporate representatives from women's labour or community groups in the determination of funding.<sup>8</sup> In this way women's critiques of what scientists say about them can quickly find their way into the scientific process, and ignorance of women's working conditions will no longer lead us to believe that women's work is safe and "light."

*This article reflects conversations with many members of the Centre pour l'étude des interactions biologiques entre la santé et l'environnement (CINBIOSE), in particular Donna Mergler, Lucie Dumais, Nicole Vézina, Ana Maria Seifert, Julie Courville, and Céline Chatigny. I thank Serge Daneault, Nancy Waxler-Morrison, and Johanne Leduc for helpful comments, and the Social Science and Humanities Research Council of Canada and the Conseil québécois de la recherche sociale for research support. A preliminary version of this article was presented at the Seventh International Gender and Science and Technology Conference, University of Waterloo, Ontario, August 1-4, 1993.*

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Dita Shehu

<sup>1</sup>In Québec, a 1991 decision of the Occupational Health and Safety Commission required grocery stores with more than 50 employees to provide stools for cashiers. However, due to squabbling about the type of stool required, cashiers still stand all day.

<sup>2</sup>This section has profited from discussions with Donna Mergler.

<sup>3</sup>For example, all the studies of carpal tunnel syndrome cited by Hagberg *et al.* control for sex.

<sup>4</sup>Contrary to popular belief, it seems that men may be more inclined to complain about their health, according to Sally Macintyre: "Gender Differences in the Perceptions of Common Cold Symptoms." *Social Sciences and Medicine*. 36 (1993): 15-21.

<sup>5</sup>The appropriate procedure is to analyse the data separately for both sexes, only considering them together if the same relationships appear to be operating in both sexes (see Eichler).

<sup>6</sup>These decisions are often made by using "universal" criteria of statistical significance which, in fact, put the burden of proof on the worker and not the exposure. The usual level of significance accepted in epidemiological studies is 0.05. When a risk is accepted at the 0.05 level,

this means that the researcher has only one chance in twenty of being wrong in concluding that there is a risk. A study which shows that the researcher would have one chance in ten of being wrong in concluding that there is a risk is considered to be "negative," that is, no risk has been demonstrated. This is true even if the group being studied is so small that there is virtually no chance of demonstrating anything.

<sup>7</sup>Such mechanisms exist at the Université du Québec à Montréal (Messing 1993). Some of the complexities are described in Messing, K. and Mergler, D. (1993). Issues arising from union-university collaboration in women's occupational health. In Briskin, L. and McDermott, P. *Women and Unions*. University of Toronto Press. The Université du Québec à Montréal has signed three formal agreements with community groups, one with a consortium of women's groups "Relai-femmes," and others with the three major Québec unions. These agreements provide that the university will supply resources for teaching and research, in response to requests from the community group.

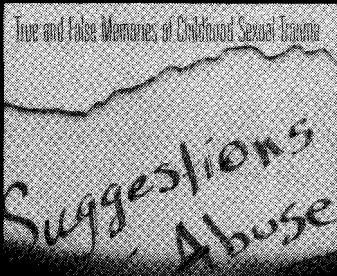
<sup>8</sup>Two of these have been initiated in Québec. The Québec Institute for Research in Occupational Health and Safety incorporates representatives from labour and management explicitly into determination of grants; the two sides explicitly and openly negotiate to fund research that they consider important. This process paradoxically appears to allow for *less* research bias in funding since the practical consequences of the projects are put on the table from the outset. The Québec Council for Social Research incorporates community representatives in its decision-making processes. They are currently funding one of our studies on of the impacts and consequences of methods used to balance family and professional responsibility, a study initiated by the FTQ union.

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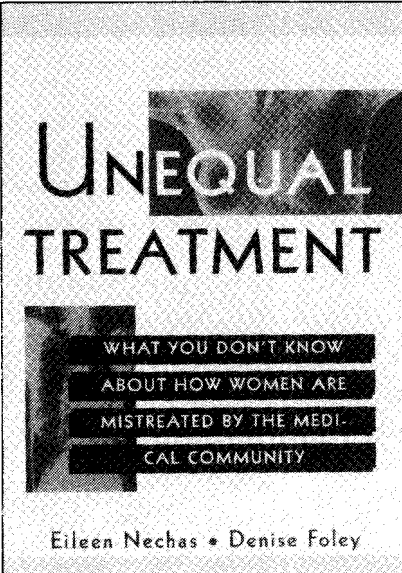
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