

WOHRC NEWS

WOMEN'S OCCUPATIONAL HEALTH RESOURCE CENTER
SCHOOL OF PUBLIC HEALTH
COLUMBIA UNIVERSITY

• • Briefly Noted • •

PREGNANCY LEAVES BEFORE SUPREME COURT

In 1982 Lillian Garland returned from her unpaid pregnancy leave at the California Federal Bank to find that she no longer had a job. She had been replaced by the employee she had trained. Under California law Garland was entitled to up to four months of unpaid pregnancy leave if she become physically disabled from work.

Discrimination charges were brought against the Bank, which in turned sued the State of California, charging discrimination against men who suffer from other disabilities but have no job guarantees. California has countered that the law equalizes women's employment opportunities by allowing them to have children without penalty.

The pivotal issue was raised by Justice Powell during the early October arguments: Assume that a man and women in the same company are both disabled from work on the same day, she for pregnancy, he for a physical ailment and both attempt to return on the same day. She is guaranteed her job by the State. He is not rehired. Is this fair? California's response was that the law requires that employers treat workers equally with respect to pregnancy: if he were pregnant he would also receive leave. (A similar argument had been used by the Court previously in denying coverage for pregnancy related medical costs of employee wives: if female employees' husbands were pregnant, they too would not have benefits.)

If the Court finds for the Bank the legality of most current pregnancy leave disability laws will be in question.

EPA WARNING TO OSHA ON GLYCOL ETHERS

The U.S. Environmental Protection Agency has issued notice to OSHA that four widely used glycol ethers pose an unreasonable reproductive risk to workers, stating that appropriate OSHA action can reduce the risk to the approximately 569,000 workers exposed to these glycols at levels that pose significant risk for reproductive hazards in both males and females. In addition, based on animal studies, these chemicals can affect hematologic (blood) system, leading to hemolysis (rupture of blood cells), bone-marrow depression and reduced immunity. (The bone-marrow produces the blood cells.)

Under the Toxic Substances Control Act EPA is obliged to inform another agency when it determines that a hazard exists which can be reduced or prevent-

WOHRC News Now Quarterly

The Fall 1986 issue of WOHRC News marks the beginning of a quarterly publication schedule. The new, expanded format will allow greater depth of coverage of an expanded range of issue relating to Women's Occupational Health.

In this issue...

- *new data on shift work and heart disease
- *pay discrimination for women in hazardous jobs
- *new rules for asbestos
- *health in health care
- *male reproductive health hazards
- *new books and resources

.... and more

ed by another agency. OSHA must respond to the EPA notice, published in the May 1986 Federal Register, within 180 days.

The glycol ethers are 2-methoxyethanol (2-ME), 2-methoxyethanol acetate (2-MEA), 2-ethoxyethanol (2-EE) and 2-ethoxyethanol acetate (2-EEA), with an estimated annual production of 320 million pounds. Printed circuit board and semiconductor manufacture, two female dominated industries, utilize these chemicals, as does photographic developing. Glycols are used in paints, coatings, inks, lacquer thinners and as chemical intermediates. About half of the 2-ME is used as a deicing additive for military jet fuel.

(Copies of the Federal Register notice, including scientific rationale and bibliography are available through WOHRC, see page 15.)

NEW RESOURCES FOR RIGHT-TO-KNOW

New Jersey is producing more than 50 fact sheets each month on hazardous substances in support of its Worker and Community Right to Know Act, according to Environmental Scientist Dr. Yves B. Mikol, who announced that a total of 2051 fact sheets will be available by the project end. The fact sheets are comprehensive (and comprehensible) and include summaries of chronic and acute health effects, medical testing, exposure limits, safety hazards, first aid, handling techniques and ways of reducing exposure.

They can be purchased individually or as a set, at a cost of \$0.25. Contact Dr. Mikol at the New Jersey Department of Health, CN368, Trenton NJ 08625 for further information.

The Bureau of Toxic Substance Assessment, New York State Health Dept. (ESP-Corning Tower, Albany NY

(continued next page)

12237) also announced availability of training and informational materials.

With more than 20 State and local laws establishing worker and/or community "Right-to-Know," many States are developing and disseminating supportive the technical backup materials. WOHRC readers should check with their State Departments of Health on whether a law applies to them and if similar materials are available.

OSHA PROPOSES LAB CHEMICALS STANDARD

The Occupational Safety and Health Administration has proposed regulations for controlling exposures to toxic chemicals in the laboratory. The regulations are flexible and consider that work practices in laboratories differ greatly from chemical use in heavy industry. Most experts agree that laboratory workers can be exposed to many different chemicals over time, often in small amounts. The modes of contact with chemicals may also differ dramatically from industrial workers.

Application of OSHA standards, with their extensive requirements for recordkeeping, monitoring, medical surveillance and training on a substance by substance basis, appeared to many critics to be both obstructive of research and not necessarily conducive to better occupational health for laboratory workers.

Under the proposed regulations any laboratory handling even one chemical for which a current OSHA standard exists or which has been identified as a carcinogen by the National Toxicology Program or the International Agency for Research on Cancer, IARC, would be required to submit a chemical hygiene plan specifying specific operating procedures for handling toxics and a set of criteria under which specific control procedures would be required.

Laboratories which use carcinogens would be required to maintain controlled access areas for their use, have employee hazard training and specific disposal and protective clothing protocols. The guidelines are based on Department of Health and Human Services "Guidelines for the Laboratory Use of Chemicals" and the National Academy of Sciences "Prudent Practices for Handling Hazardous Chemicals in Laboratories."

It seems likely that the regulations will become official in their current form early next year.



CONGRESS TURNS TABLES ON OMB

Under its various Congressional charges and mandates the Office of Management and Budget, OMB, has routinely scrutinized proposed rules, regulations and standards, as well as protocols for governmental and contractual health surveys. OMB power for such review will be seriously weakened by the House Appropriations Committee's vote to cut off all funding for OMB's office of information and regulatory affairs. The Committee turned down the Administration's request for \$5.4 million for OMB's review of regulations for cost-effectiveness and appropriateness.

The OMB has often been charged by critics with tactics designed to delay, weaken or stop a number of studies and health and environmental regulations. Most recently Congressman (D.-Mich.) John Dingell's Subcommittee on Oversight & Investigations launched an investigation of specific charges that the OMB has blocked EPA's cancer risk assessment guidelines.

WOHRC News recently reported (7/5-6) on OMB's required deletion of questions concerned with stress and fertility from the proposed NIOSH study on VDT's. OMB had reviewed and required these changes under its authority from the Paperwork Reduction Act designed during the Carter Administration for reducing unnecessary paperwork from the public.

NCI FORMALDEHYDE STUDY STILL DRAWING CRITICISM

The National Cancer Institute was called before a House Energy & Commerce subcommittee to defend both the conclusions drawn in its study on cancer mortality in formaldehyde workers and the methods by which the study were carried out, including the collaboration with the Formaldehyde Institute, FI.

(See WOHRC News 7(4) for a summary and critique of the study which concludes that the study found a positive association for pharyngeal cancers and excess lung cancer rates for the longest employed, most heavily exposed workers.)

Major labor union criticisms were that unions were
(continued page 11)

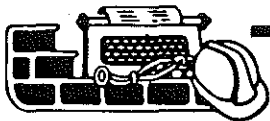
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WOHRC Update: Health in Health Care

WOMEN'S OCCUPATIONAL HEALTH RESOURCE CENTER NEWS

ETHYLENE OXIDE...

...Court orders ceiling

The Occupational Safety and Health Administration has been ordered by the U.S. Court of Appeals in Washington D.C. to stiffen the ethylene oxide, ETO, standard by adding a short-term exposure limit [STEL]. The current standard, successfully challenged by three unions and the Public Citizen Research Group, requires that exposure only be controlled to an average level of 1 part per million (1 ppm).

The STEL had been a hotly contested issue during the 1984 OSHA standards-making procedure, with many experts and groups attesting to the potentially toxic effects of short-term excursions to relatively high levels, a condition which occurs often in health care situations, such as during the transfer of sterilized materials from the ETO sterilizer unit to the aerator unit. OSHA, under pressure from the Office of Management and Budget, did not include the STEL in its final rulemaking.

The major implications of the STEL will be for workers in health care, where the predominant human exposure is thought to occur, despite the fact that health care uses of ETO represent only about 0.5% of the total production in the U.S.

The District Court refused a petition by the Association of Ethylene Oxide Users.

...Human cancer risks grow

The District Court ruling follows the publication of a study Swedish factory workers which has found that even at low levels of exposure, workers at the ETO producing factories were suffering from leukemia and stomach cancer rate ten times above the national Swedish rates. Eight cases of leukemia were found where only 0.8 were expected and six cases of stomach cancer were reported compared to the 0.65 cases expected for the 733 exposed workers.

The implications of these findings for health care workers are not yet clear, however, it was estimated that some of the exposed men had worked at exposure levels close to the new OSHA standard. Cancer-causing substances are assumed to act in a dose-related fashion, that is, they have a greater effect at higher doses. The National Institute for Occupational Safety and Health's (NIOSH) estimates of health care worker exposures place them at levels above these Swedish factory workers.

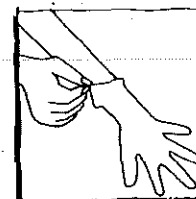
Ref: Hogstedt, C., Aringer, L. and Gustavsson, A. 'Epidemiologic support for ethylene oxide as a cancer causing agent.' JAMA(255), 1575-1578, 1986.

ALWAYS

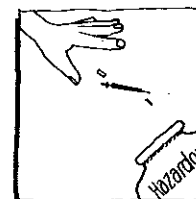
WASH HANDS



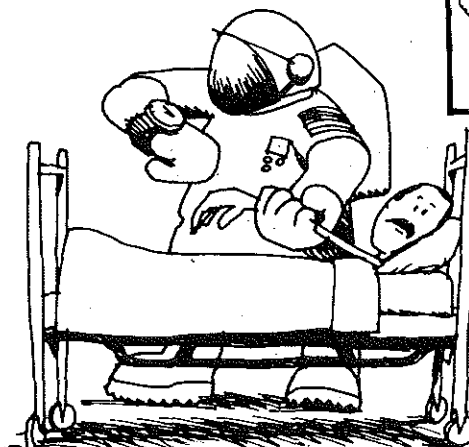
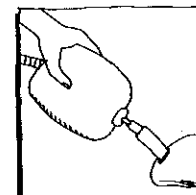
WEAR GLOVES



**DISPOSE OF
NEEDLES PROPERLY**



**KEEP AN AMBUBAG
AT BEDSIDE**



Taking more precautions than are needed makes it harder for patients to cope with their illness.

AIDS...

...New guide for workers

Fear of AIDS has reached epidemic proportions. Yet health care workers must conquer fears to provide services to AIDS patients. 'The AIDS Book: Information for Workers' is an exceptionally well-written, easy-to-read yet accurate guide on the nature of AIDS and actions needed to avoid accidental exposure to infected blood or other body fluids. Worker health and patient well-being are primary here. Published by the Service Employees International Union, it is available @\$2.50 (prepaid) from SEIU Health & Safety Dept, 1313 L Street NW, Washington DC 20005. Single copies of the brochure excerpted above are free.

...Lab data shows more harm

Two more laboratory studies of the biological effects of ETO have demonstrated effects to the reproductive capacity of male mice and of enhanced mutation (alteration of genetic materials) in hamster cell cultures. Both experiments demonstrated a dose-related response for the effects.

Groups of male mice subjected to increasing levels of ETO gas exhibited increasing dominant-lethal test effects. This test mates treated males with untreated females, sacrifices the pregnant females and counts the number of dead embryos. Many substances toxic to male reproduction will increase the number of dead embryos, as in the current report on ETO. In mice the later stages of sperm development appear to be the most susceptible to ETO.

Ref: Generoso, WM et al, ETO Dose and Dose-Rate Effects in the Mouse Dominant-Lethal Test. Env. Mutagenesis 8, 1-7, 1986.

Hatch, G. et al, 'Mutation and Enhanced Virus Transformation of Cultured Hamster Cells by Exposure to ETO.' Env. Mutagenesis 8, 67-76, 1986.

HEPATITIS B...

...Unions seek standard

A request for an Emergency Temporary Standard, ETS, for Hepatitis B, a serious, sometimes fatal, infectious liver disease and a recognized occupational hazard for health care workers, some of whom may have an infection rate fifteen times the national average, has been submitted to OSHA by the Service Employees International Union (SEIU), the National Union of Hospital & Health Care Employees and Local Local 1199, which together represent about 450,000 health care workers. The Unions also requested OSHA to issue an immediate directive requiring employers to pay for hepatitis vaccine for high-risk workers.

A request for an ETS mandates OSHA to initiate a rule-making process and to consider promulgating the requested standard.

The issue of payment for the vaccine, which costs about \$100, is pivotal since non-professional health care workers are among the lowest paid wage-earners in the United States. Costs may thus preclude their participation in vaccination programs. The Unions maintain that OSHA already has the regulatory authority to issue such a mandate. In addition the OSHA Review Commission has upheld an OSHA citation against an employer for failure to provide free vaccine, thus establishing a precedent.

To date OSHA has only published a document suggesting ways in which to reduce risk by patient isolation, body fluid management techniques and housekeeping procedures, as well as by notification of the presence of an infected patient, among other guides.

ANTI-CANCER DRUGS...

...OSHA issues guidelines

In 1979 the first scientific report indicating the potential hazard of exposure for nurses and pharmacists who mix and/or administer anti-cancer drugs was published by a group of Finnish geneticists. Other researchers have since confirmed that finding and have demonstrated that some of these agents were absorbed by workers handling them.

Since most cancer chemotherapeutic agents are highly toxic and many can cause cancer or birth defects, several professional groups and the National Institutes of Health have issued guidelines for their safe handling. In early 1986 OSHA joined this growing group of agencies by issuing an 'OSHA Instruction PUB 8-1.1: Guidelines for Cytotoxic (Antineoplastic) Drugs.'

The OSHA instruction deal with various aspects of drug handling, including drug preparation, administration and waste disposal. They are not legal requirements but do establish work practices that should be regarded as safe. Copies of the document are available at no charge from the OSHA Area Office to members of health care facilities.

...Public interest survey

The extent to which health care institutions are in compliance with the OSHA guidelines on handling anti-neoplastic drugs will be the subject of an study by the Health Research Group, a Ralph Nader affiliate.

OSHA has not announced any plans to monitor health care facilities to determine the effectiveness of the voluntary guidelines nor is it known at this time whether the guidelines themselves have been adequately distributed to health care facilities.

The survey is now in its final stages of preparation. Participation in the survey will be voluntary.

...More worker exposure data

Scientists in France have completed an investigation in nurses of the genetic effects of handling anti-cancer drugs and have observed no significantly increased rate of abnormalities. The nurses in this study worked with a smaller number of doses than did nurses in other studies in which genetic changes had been observed. The exact nature, extent and meaning of genetic changes is not yet well-understood and such changes have not been related to specific diseases or risks as yet.

Ref: Stucker, I. et al, Int'l Arch Occup Environ Hlth 57, 195-205, 1986.

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WOHRC Update: Gender & Health

WOMEN'S OCCUPATIONAL HEALTH RESOURCE CENTER NEWS

There are major health differences between males and females. On the average women live about 7 years longer than men. Their death rates, for every leading cause of death, are lower than males. Yet, women are more frequently ill, have a higher number of days of restricted physical activity due to illness, have greater use of medical drugs and more frequent medical care. These higher female illness rates persist even when child-bearing related conditions are adjusted for in the calculations.

University of Michigan social scientist, Dr. Lois M. Verbrugge has examined these "far-reaching differences ... [which] have inspired curiosity, poetry, romance and polemics for centuries," in her words, but "have only recently prompted scrutiny by social scientists." In a recent scientific update she presents the leading social theories on these gender differences and examines whether the theories and the facts as we know them are consistent.

Common Theories About Gender Differences

Explanations for the sex differences in health and health-related behaviors have focussed on: (1) biological differences between the sexes such as the theory that female hormones protect women from heart disease; (2) social differences where women's work and home life are thought to put them at lower risk; (3) psychological aspects which say that women are more sensitive toward recognizing health problems, seeking help and following through on continued care.

Verbrugge examines these theories systematically, although she notes that "speculation far exceeds evidence for these hypotheses."

Biological Differences: Although there is no evidence that the course of a disease will differ between men and women, once acquired, women's relative resistance to certain disease is well-established, according to Verbrugge. No full understanding of why this occurs is yet available as yet.

Acquired Risks: Males do engage in more risky activities and have, in the past, had poorer smoking and drinking habits. Men tend to drive automobiles more, particularly when intoxicated. However, women's activities at home and at work are not risk-free and the true extent of these risks for women is not yet known. Some generalizations, such as that men are under more stress, are not justified. There is a need for much more research on the relationships between women's roles and women's health.

Psychological Factors, Symptoms and Care: Contrary to popular notions, it is not well-documented whether women are more sensitive to symptoms of ill health and to pain than are men. According to Verbrugge, "the evidence suggests that women and men with comparable health problems and work roles seek out medical care and restrict their activities at the same

Cause of Death	Age Adjusted Rate		Sex Ratio	Rank	
	M	F		M	F
All Causes	777.2	432.6	1.80		
Heart Diseases	280.4	140.3	2.00	1	1
Cancers	165.5	109.2	1.52	2	2
Cerebrovascular (stroke)	44.9	37.6	1.19	4	3
Accidents	64.0	21.8	2.94	3	4
Motor Vehicle	34.3	11.8	2.91		
Other	29.6	19.6	2.96		
Chronic Lung Diseases	26.1	8.9	2.93	5	8
Pneumonia & Influenza	17.4	9.8	1.78	6	5
Diabetes mellitus	10.2	10.0	1.02	10	6
Chronic liver disease	17.1	7.9	2.16	8	9
Atherosclerosis	6.6	5.0	1.32	12	7
Suicide	18.0	5.4	3.33	7	12
Homicide	17.4	4.5	3.87	9	13
Conditions originating before birth	11.1	8.7	1.28	11	11
Kidney disease	5.7	3.6	1.50	13	10
Birth Defects	6.5	5.6	1.16	14	12
Septicemia	3.2	2.2	1.45	15	14
All other causes	83.1	52.1	1.60		

The age-adjusted death rate in males is greater than in females for every cause of death. Although men and women share the same leading causes of death, they have different ranks as a cause of death (last two columns).

pace." It is the difference in roles, such as more flexible schedules among some women, that may explain why women visit their doctors more frequently, but this has not been fully researched as yet.

Women, beginning in their childhoods, are more willing to discuss their illnesses while boys early on "reject the sick role" which Verbrugge hypothesizes may well be a "learned helplessness" reaction among girls, and not an inborn trait.

Differences and Similarities

Overall, Verbrugge concludes that for major problems, such as life threatening chronic diseases and severe acute conditions, men and women take similar initial health actions, but women appear to take more protracted care. For minor problems women tend to have greater disposition to take both initial and continued care.

Differences in health largely reflect the differences in acquired risks: sex roles, stress, life styles and long-term preventive health practices and women may be doing more poorly now. Better opportunities for leisure and role options differences in sickness and death rates may be narrowed.

Adapted from Lois M. Verbrugge, Gender and Health, in the J. of Health and Soc. Behavior 26, 156-182, 1985.



Women and Hazard Pay: Working Harder, Earning Less?

The concept of "hazard pay," the term commonly applied to the economic theory that a worker will accept a job that poses health and safety risk in exchange for higher wages, can be traced back to Adam Smith's *Wealth of Nations*, a basic treatise on the free enterprise system, published in 1776.

Recently Fordham University economist Dr. Janis Barry, decided to test whether the theory still holds in this hazard-aware, post-OSHA age. She drew a random sample of men and women production workers that had been included in the 1977 *Quality of Employment Survey* to see whether workers in more hazardous jobs earned a differentially higher wage. She defined hazardous jobs by developing a hazard rating scale and drawing job definitions from the government's *Dictionary of Occupational Titles*.

Barry's analysis showed that male production workers did indeed earn a higher salary in the jobs rated as more hazardous. But the finding for women workers was completely different: not only was there no differentially higher pay but, in fact, women workers earned less the more hazardous their work!

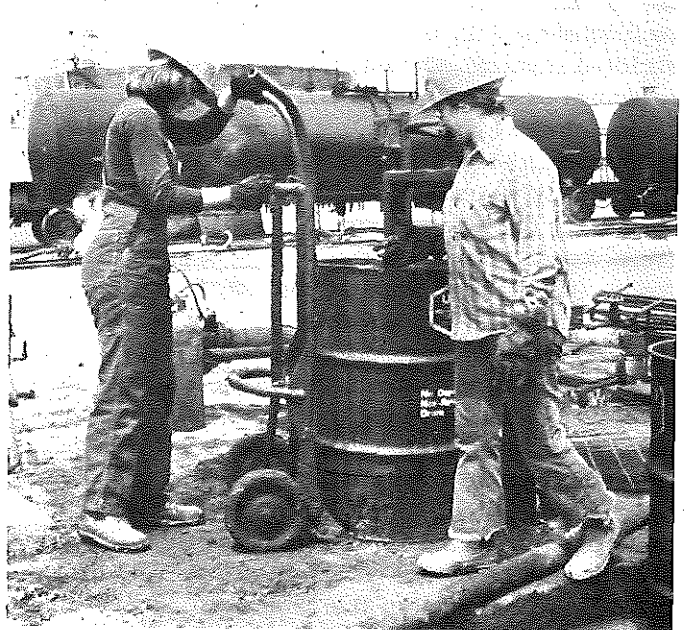
Most women in the sample were employed in less risky occupations than men, but, among those in the more hazardous jobs, usually traditionally male jobs, women did not receive "rewards" in the form of higher pay.

Skilled and Unskilled Work

Economist Barry's findings can be divided into an analysis of jobs in two economic sectors: the primary and secondary. Primary sector jobs are defined as those which are well-paid, require skills and are generally stable and provide career advancement paths. Secondary sector jobs do not have these characteristics.

Among production workers craft and semi-skilled jobs and unionized mass production jobs continue to be male-dominated. These jobs are also the ones that were rated as most severe in the hazardous job classification scheme. Barry's work confirmed the well-known phenomenon of overall pay discrimination. Women in the primary-sector, male jobs earn 43% to 53% of male wages while women in the secondary sector earn about 60% of men's wages.

The striking finding in Barry's work is the combination of this pay discrimination with the decreased earnings for the greater level of job hazards. She hypothesizes that some reasons for trend may be that union membership, for example, may not "empower" women to the same extent that it does men. Other reasons for the discriminatory differential may be that employers evaluate jobs differently depending on the gender of the employer.



Women in male-intensive hazardous work may be suffering a "harsh penalty" of less-pay for more hazards, an opposite trend from male workers, according to economist Dr. Janis Barry.

In addition to earning less for more hazardous work, women survey participants also reported that employers informed them less fully of health and safety hazards than they did male workers.

Discrimination in All Sectors

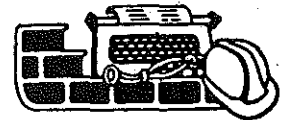
Another important finding of this research is that women reported having jobs which require less skill and provide less freedom to decide and to learn new things than did males, regardless of whether the women worked in the primary or secondary labor sectors. Thus Barry concludes that women workers are suffering from a variety of discriminatory employment problems relating both to general employment trends and to compensation for hazards on the job.

Dr. Barry's work is published in part in the American Economic Review, Papers & Proceedings, May 1985.

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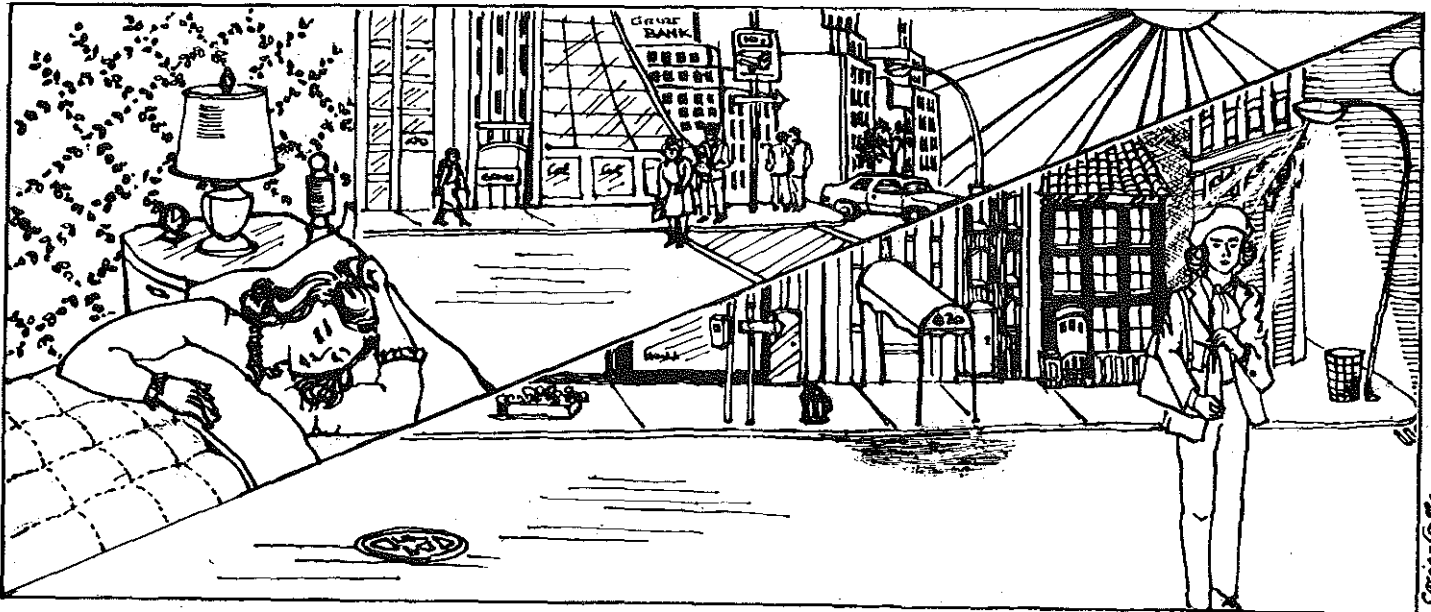
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WOHRC FACT SHEET



WOMEN'S OCCUPATIONAL HEALTH RESOURCE CENTER NEWS

Shift Work: Recent Research Reveals More Risks



As of spring 1980, 26% of men and 18% of women workers in the United States reported working on variable shifts. Shift work has long been known to be disruptive of normal family life and social routine and has been associated with digestive system problems. Recent research has now found male rotating shift work-

ers to be at significant increased risk for ischemic heart disease. Researchers have also found that female shift workers use more tranquilizers, sleeping pills and alcohol than their non-shift working peers. Shift workers report higher levels of job stress and lower levels of social support than day workers.

Before the ready availability of electric power, workers largely labored during the day, with natural light as their source of illumination. Electrical power and increasing levels of mechanization have been accompanied by ever-increasing numbers of workers who work the evenings and the night. In the last decade computerization has expanded the ranks of night workers to the white collar clerical and technical sectors, with many professionals like computer programmers also working on night shift.

The effects of night work have long been a matter of debate and, unfortunately, even today much too little is known about the long-term consequences of shifting a worker's schedule away from normal day-working hours in order to accommodate production and machine needs, or to provide essential centralized services. However, a recently published study of Swedish pulp mill shift workers has found a significantly elevated two- to three-fold risk for ischemic heart disease [blockage of coronary arteries] in rotating shift workers compared to their straight day-working peers (see refs: Knutsson et al).

In the Knutsson study the workers were on variable or rotating shifts, where they worked thus: NNNN - MM- AAAM - MMM - AAA - NNN - OOOOO (N=night; M=morning; A=afternoon, O=day off). Shift work can also be steady, with the worker always working late afternoon or night shift.'

Consistent with Earlier Indicators

The Swedish study provides the first evidence that shift work may be related to a life-threatening condition. The findings are, however, consistent with earlier research findings where higher levels of cholesterol (both high density and LDL) and of triglycerides have been found in the serum of shift workers compared to day workers. Serum triglycerides and cholesterol are established risk factors for cardiovascular disease.

Risky Lifestyles and Shift Work

Shift workers, on the average, have adopted lifestyles and health habits which are associated with poor health and heart disease. In general they smoke more heavily, are more obese, have poorer dietary

habits and participate in fewer leisure activities.

(Knutsson and colleagues took these habits into account in their analysis and found that smoking and family status could not significantly predict the increased risk for heart disease. Only shift work retained an independent predictive effect.)

Nancy Gordon and her colleagues at the Harvard School of Public Health have recently quantified the extent to which health-related behaviors of shift workers differ from other workers by analyzing data from the National Center for Health Statistics National Survey of Personal Health Practices and Consequences.

They found that women shift workers have significantly more frequent sleeping pill and tranquilizer use and they drink four or more drinks per day more often than do female steady day shift workers. Similar trends in male shift workers were not statistically significant.

This study did not show excessive smoking and drinking in shift workers compared to other workers.

Shift Work and Social Life

Other clearcut effects of shift work are social. As St. Louis University psychologist Dr. Gloria Gordon, a psychologist and former WOHRC staffer has noted the effects on the family can be so great that the employer in essence, "has hired the family, not just the worker."

Social effects of shift work were also observed in the Harvard study where statistically significant elevated rates of job stress and emotional problems were found in both males and females. Females also scored significantly lower on social network scores, which are set of questions used by social scientists to reflect social networking.

The data used in the Harvard study was cross-sectional and could not be used to evaluate the prevalence of chronic conditions. In addition, insufficient information was available to differentiate straight shift workers from those who work on a rotating basis. It may be that this latter group would have even more pronounced social and health-behavior effects that the group taken as a whole.

Self-Selection: A Research Problem

One factor complicating research on the health effects of shift work is that shift workers who become ill on the job or who cannot "take" the stress will, in general, switch to day work. This means that those remain on shift work will usually be more fit or better able to tolerate the social and physiological stresses. This effect, often called the "healthy worker effect" is encountered in most studies of workers when they are compared to the general population. Here it is a pronounced effect even when comparing one group of workers to another.

Shift work and health is more than an interesting research problem in Sweden, where well-known stress researcher Dr. Lennart Levi considers it a "special problem" which require "workers' protection legisla-

tion concerning ... eating and sleeping arrangements for shift workers ..." among other needs. Levi's conclusion, which is echoed by many other Swedes, is that "physical, mental, and social problems and complaints increase with ... night shifts and decrease if night shifts are eliminated.

EFFECTS OF SHIFT WORK ON HEALTH AND WELL-BEING

PHYSIOLOGICAL: Body functions which vary systematically over the course of a day (Circadian functions) may be affected, particularly by rotating shifts. Examples are sleep, alertness, digestion, immune system. Higher blood triglycerides and cholesterol (risk factors for cardiovascular disease).

MORBIDITY AND MORTALITY: Significantly elevated risks for Ischemic heart disease have been observed in Swedish pulp shift workers compared to day workers. Sleep disorders and problems with digestion have been found in several studies.

ACCIDENTS AND INJURIES: Shift workers have higher accident and injuries rates (the highest occurring between 4:00 - 6:00 am) than other workers. Laboratory studies have associated this with disturbances in circadian functions, slowing of motor reflexes, loss of attention, motivation and concentration ability.

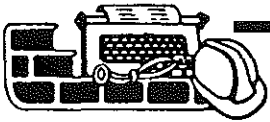
LIFESTYLE: Male shift workers have higher rates of heavy drinking; female shift workers use more sleeping pills, tranquilizers and alcohol.

SOCIAL STRESS: Higher levels of job stress; lower ability to establish social networks. Less time to spend with families and friends and to participate in community & civic functions

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Asbestos: Still An Active Issue

OSHA Revises Standard

The U.S. Occupational Safety and Health Administration, OSHA, has dramatically reduced the maximum permissible worker exposure limit (PEL) for asbestos exposure from 2 fibers/cc (cubic centimeter) to 0.5 fibers/cc. The monitoring, surveillance, training and other requirements of the standard are triggered when an air "action level" of 0.1 fibers/cc is found.

The new OSHA standard has been following the arduous legal paths of revision for some time begun after OSHA's own estimates showed that a lifetime exposure to air levels of 2 fibers/cc could yield a risk of 64 workers dying of lung cancer per each 1,000 workers. The 0.5 fibers/cc will lower the estimated death rate by about 90% to 6.7/1,000.

OSHA has also estimated that the former 2 fibers/cc standard produced a risk of asbestosis at the rate of 50 workers per 1,000 workers. Under the revised 0.5 fiber/cc standard this figure is reduced to 5/1,000. Asbestosis is a lung disease where scar tissue forms in the lung. In advanced cases it can be disabling and even fatal.

Other health risks from asbestos exposure include mesothelioma or cancer of the pleural lining of the lungs and possibly cancer of other sites.

The new standard for asbestos also introduces several new requirements, including worker education and training programs designed to alert employees to the dangers of asbestos. Workers are also to be given information on safe work practices.

Exceeding the "action level" of 0.1 fibers/cc necessitates a medical surveillance program for workers. Work practice and engineering controls are required, with respirators only to be used when environmental controls are not attainable or feasible. However, respirators will be permitted in some general industry grinding and sanding operations for asbestos levels between the action level and the maximum average of 0.5 fibers/cc.

Also, unlike the older asbestos regulation, a second separate standard is being promulgated for regulation of asbestos in the construction industry on the basis that the temporary nature of construction worksites, the effect of variations in weather and the mobile nature of the worksite require different regulatory controls.

Congress Passes School Rules

Congress has acted to require the U.S. Environmental Protection Agency, EPA, to establish rules for ridding the nations' schools of asbestos hazards. The Asbestos Hazard Emergency Act of 1986, HR 5073 requires the EPA to issue standards for inspection and safe procedures for abating asbestos in schools and requires schools to follow these rules.

SOME POINTS TO PONDER ABOUT ASBESTOS REGULATION THE OSHA AIR STANDARDS

- *OSHA has twice revised the legal maximum average air concentration permitted for workers:
 - original 5 fibers/cc (cubic centimeter)
 - 1st revision 2 fibers/cc
 - latest revision 0.5 fibers/cc

THE LUNGS

- *A typical male doing light work will inhale an average of 25 liters/minute of air (heavier work can double to triple this rate)

THE STANDARD AND THE LUNGS

- *Over an eight hour period a typical light working male will inhale about 12,000 liters. Under OSHA the following would be permitted:

- Inhalation of 60,000 fibers at 5 fibers/cc
- Inhalation of 24,000 fibers at 2 fibers/cc
- Inhalation of 6,000 fibers at .5 fibers/cc

(N.B. These are minimum estimates since the OSHA standard is for fibers visible by optical microscopy. Highly respirable smaller fibers visible by electron microscopy are not counted.)

THE COSTS

- *HUMAN: OSHA estimates for health risks:
 - dying from lung cancer
 - 2 fibers/cc: 64 deaths/1000 workers
 - .5 fibers/cc: 6.7 deaths/1000 workers
 - developing disabling & sometimes fatal asbestosis
 - 2 fibers/cc: 50 cases/1000 workers
 - .5 fibers/cc: 5 cases/1000 workers
- *MONETARY: OSHA estimates of compliance costs:
 - general industry: \$108 million
 - construction industry: \$352 million
- *MONETARY & HUMAN: OSHA asbestos exposure estimates:
 - 133,700 construction workers
 - 1.3 million general industry workers
- or: \$2630 compliance costs/ asbestos workers
- \$0.83 compliance costs/ general industry
- Typical medical costs of lung cancer \$20,000/case
- Other costs: earnings loss to family and taxes
- : human suffering -- not calculable

In order to comply with the Act school districts must develop an abatement plan for each school by hiring an expert and deciding whether to remove or encapsulate the asbestos. School districts must ensure that the actions are taken within specified time limits.

Because improperly controlled removal of asbestos can introduce rather than remove asbestos hazards, abatement contractors must be certified by the state. In addition, maintenance or operations personnel who work with asbestos must be given special training on techniques and hazards. All potentially hazardous

(continued next page)

asbestos areas must be clearly identified.

The EPA has estimated that 30,000 schools have potentially hazardous asbestos levels, placing 15 million school children and 1 million employees at risk.

Court Orders Rules

In a related action the U.S. District Court, in response to a suit by the Service Employees International Union, SEIU, has ordered EPA to issue specific rules for abating asbestos both in schools and commercial buildings.

In 1983 SEIU had petitioned the EPA for rules governing employee health in these buildings, as well as for inspection and abatement procedures, citing EPA's obligations to act under the Toxic Substances Control Act, TSCA. EPA had released proposed inspection rules in 1980, under the Carter Administration but rules for abatement had not been forthcoming.

Confrontation with the EPA heightened through a series of Congressional investigations and hearing. In August 1985 the National Governors Conference adopted a resolution supporting the SEIU petition requesting EPA regulations.

Commenting on the U.S. District Court decision, SEIU health and safety director Bill Borwegen noted that "Congress and the courts are making them [EPA] do what they should have done all along." He also emphasizes that the Court ruling will extend protection to building service workers in commercial buildings as well as to school workers, adding that "Building workers don't have a special immunity to the effects of asbestos."

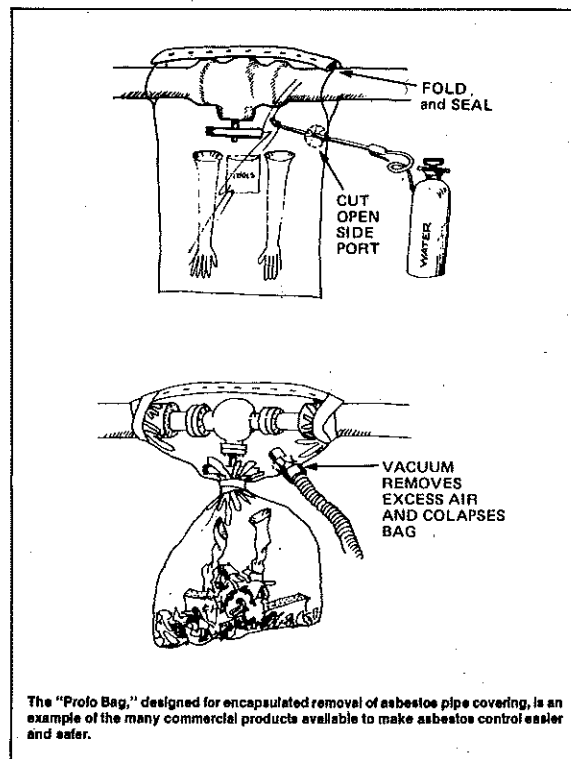
Risk Management

The abatement of asbestos risks in commercial buildings and schools requires an integrated management approach, according to researchers at the Johns Hopkins School of Public Health, including former OSHA head Dr. Morton Corn, who presented a decision matrix for action in the *American Industrial Hygiene Association Journal*.

The Hopkins approach is based on experience derived from programs developed for the U.S. General Accounting Office, the Library of Congress, the General Services Administration and IBM Corporation and includes designation of a qualified Asbestos Control Program Manager, ACPM and qualitative and quantitative hazard assessments of the asbestos risks.

Qualitative assessment in general requires determining (1) the location of all asbestos sources and how subject they are to heavy traffic or air movements; (2) assessing the asbestos' condition (e.g. how easily it crumbles); (3) the numbers of people potentially exposed and the length of this potential exposure.

Quantitative assessment will require air sampling and the Hopkins team cautions that optical phase



The "Profo Bag," designed for encapsulated removal of asbestos pipe covering, is an example of the many commercial products available to make asbestos control easier and safer.

contrast microscopy required by OSHA for industrial samples is not appropriate for commercial, residential and school assessment. They recommend transmission electron microscopy (TEM) to analyze air samples. Standards for TEM measures of asbestos have been developed by several Agencies, including EPA.

Air samples are an important aspect of asbestos management because they can help pinpoint asbestos contamination areas and also establish the background levels. This will help to insure that abatement procedures have reduced the asbestos levels. Sometimes inappropriately removed asbestos leads to an increase, rather than decrease, in levels of asbestos in the environment.

Minimizing access to locations known to contain asbestos is an important part of a risk management program. All building, maintenance, custodial and service personnel should be informed of these locations and should be given training and education programs which enable them to understand potential risks and to learn safe work practices.

Warning labels of the type specified by OSHA should be affixed to all asbestos-containing materials as part of the effort to avoid disruption of the asbestos. The ACPM should also establish a permit system whereby access to asbestos areas is controlled.

Adapted from Paull, JM et al, Am. Ind. Hyg. Assoc. J. (47), 497-504, 1986.

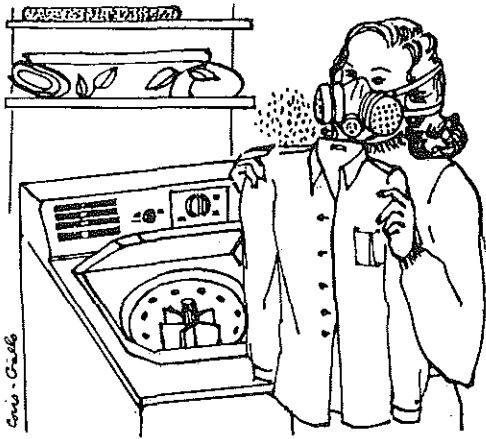
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inadequately consulted in the design and conduct of the study, in contrast to the full collaboration with the Formaldehyde Institute, a trade association. Scientific criticisms identified the very low exposures among the majority of the study populations. Populations with low exposures would be statistically less likely to show an adverse effect.

NCI Director, Dr. Vincent DeVita Jr. told the committee that labor unions should have been better represented and that he regretted that "we didn't proceed in a different fashion." He also suggested that "The study as published is not the end of the subject."

Industry representatives testifying before the committee dismissed the charges of bias. FI President John F. Murray said "Our commitment to research reflects our willingness to abide by results, whether favorable or not."



LAUNDRY CONTAMINANTS CAN CAUSE HAZARD

Workshirts worn by employees at a beryllium refinery were found to be contaminated by this highly toxic dust. Agitation of the fabric released respirable (capable of being inhaled) particles into the air. The New York University researchers found that older workshirts resuspended significantly higher amounts of materials than did new shirts.

The research was undertaken after contamination of air samples by resuspended particles from work clothing had been found. The samplers were worn on their lapels by the workers.

The authors conclude that resuspension in the air of dust from work clothing can be a source of exposure and dust inhalation by workers.

No data are available on whether contamination of the home environment or family laundry is occurring among these workers, although previous studies have shown that familial asbestos exposure can arise from contaminated work clothing. Current OSHA asbestos rules require that workclothing be supplied and laundered by the employer.

Laundering of contaminated clothing has been shown to be a hazard to laundry workers so that precautions are needed commercially as well as in the home. Laundry work is a female dominated occupation.

(Reference: Cohen, B.S. and Positano, R., *Am. Ind. Hyg. Assoc. J.* (47), 255-8, 1986.)



ARE ARTIFICIAL SWEETENERS ARTIFICIAL AID?

Do you fight the battle of the bulge by reaching for the artificial sweetener or drinking a diet soda instead of "indulging" yourself with a natural sugar? Well, according to American Cancer Society researchers', Steven D. Stellman and Lawrence Garfinkel, findings, you may be engaging in a useless exercise at weight control. Weight and artificial sweetener use data on 78,694 women aged 50-69, which were collected in the Society's massive Cancer Prevention Study II, encompassing more than 1 million people and designed to study key questions on environment (including cigarettes) and cancer, showed that there was little relationship between losing weight and the sweeteners. On the other hand, artificial sweetener users were more likely than nonusers to gain weight, regardless of their initial weight.

NAT'L OCCUPATIONAL HEALTH PREVENTION STRATEGIES

In May, 1985 a National Symposium co-sponsored by NIOSH and the Association of Schools of Public Health, ASPH, brought together experts and observers to develop strategies for prevention of occupational diseases and injuries. The Second National Symposium has taken place in October, 1986.

The strategies covering occupational lung diseases, cardiovascular diseases and cancer, as well as musculoskeletal injuries and severe occupational traumatic injuries, have been published the ASPH, under contract to NIOSH. The strategies were developed by panels in each subject in which 51 experts served as faculty and 450 representatives of industry, business, trade unions, voluntary organizations, the professions and academia participated.

Each 'strategy' approaches the problem area systematically, beginning with surveillance, then identifying areas where further research, with an emphasis on control technologies, is needed. Training is an integral part of the prevention strategies.

According to NIOSH director J. Donald Millar, the "primary purpose of the Proposed Strategies is to stimulate action by any and all who are in a position to act to prevent occupational diseases and injuries."



ALICE HAMILTON:
A Life in Letters
By Barbara Sicherman
Harvard University Press, 1984
460 pages, \$25.00 (cloth)

Just as historian Barbara Sicherman discovered the letters of Alice Hamilton, I have belatedly, but fortunately, discovered her wonderful book. Dr. Alice Hamilton, who is considered the founder of industrial health as a discipline (and as a cause) in America, was an extraordinary woman from an extraordinary family. The first female professor at Harvard, admitted to the medical school faculty years before women were admitted as students and only with the explicit proviso that her position was not to be taken as a sign that other women were welcome, she lived and worked in the world of men and industrialists. (N.B. Despite all her fame and impact she retired as Assistant Professor Emerita -- is this also a first?)

Alice Hamilton's was a scholar and social activist with deep moral convictions. A woman in an explicitly man's world, she moved in ideological circles but was no ideologue. She fought industrial abuse, yet functioned well with industrialists. How did she accomplish it? Sicherman, by a brilliant and sensitive choice of letters, with just enough background and interpretation to have it all make sense, gives us insight into these questions.

There were many contradictions in Alice Hamilton, some she recognized and discussed, others she did not. Sicherman helps us to understand Hamilton, her life and her times. Modern feminists can profit from the historical lessons of a pioneer and occupational health enthusiasts will benefit from Hamilton's first-hand accounts of occupational health reforms. Alice Hamilton is on my 'must reading' list.

Jeanne M. Stellman
Executive Director, WOHRC

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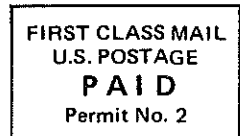
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