

● In this chemical age, a growing number of occupations are hazardous to the health and lives of workers—and to their children, born and unborn. Read this eye-opening report on one of the most important and far-reaching issues facing working women—and men—today.

BY SUSAN EDMISTON
AND JULIE SZEKELY

What We Must Know About Health Hazards in the Workplace

● Early in 1979 five women at a chemical plant in Willow Island, West Virginia, made public the fact that they had had themselves sterilized in order that they might keep their jobs. "I didn't want to be sterile," said Barbara Cantwell, 31 at the time and the divorced mother of two. "But when you're faced with something like this from a big company, you feel powerless. What do you have to do to hold a normal job so you can support your children? I wish now that I had been stronger. I wasn't going to have any more kids at my age." added Lola Rymer, then 43 and with three children, one of whom has cerebral palsy—and a husband disabled by arthritis. "But I don't think it's right that a company can tell you to do a thing like that to keep your job. I did it because I was scared and I had to have the income." The women worked in the pigments division of American Cyanamid around high concentrations of lead, a substance known for more than a century to cause a wide range of reproductive problems, including miscarriages, stillbirths and birth defects. A 1978 company directive stated that women of childbearing potential would be transferred to other departments, where they would earn substantially less money. Rather than lose their better-paying jobs, the women voluntarily were sterilized. In addition to the five Cyanamid employees, four other women are known to have traded their fertility for jobs—one at St. Joe's Mineral Corporation in Manaco, Pennsylvania; one at the General Motors of Canada lead-storage battery plant in Oshawa, Ontario; and two at Allied Chemical in Danville, Illinois. And at least 100 women at these plants and others have lost their jobs as industry has moved to bar women who can bear children from jobs that expose them to substances suspected to be dangerous to a fetus. These cases dramatize an extremely complicated and emotional issue. At first glance it

appears to be a head-on collision of two social goods: the right of women to earn a livelihood for themselves and their families and the right to bear healthy children. But further examination raises questions: Is industry justified in barring women from these jobs? Are dangerous substances in the workplace in fact more hazardous to pregnant women than to other workers, specifically men? May not the fetus be at equally great risk through the exposure of the male parent? Does the exclusion of fertile women obscure a larger issue—that vast numbers of workers, male and female, are exposed to substances that pose a serious danger to the survival of a healthy human race? Is the issue being used to discriminate against women workers? The idea that pregnant women in the workplace need special protection was first proposed during World War I by Dr. Alice Hamilton. She realized, (Continued on page 171)

that certain chemicals entering a pregnant woman's blood stream could induce miscarriage or affect the developing embryo. During World War II, when women again entered the industrial work force in large numbers, Dr. Anna Bactjer urged protection for pregnant workers, pointing specifically to benzene, carbon disulfide, carbon monoxide, hydrocarbons, lead, mercury and radiation as threats to the fetus. When the wars ended, the recommendations made by Hamilton and Bactjer were forgotten.

Since then, however, we have become more aware of the sensitivity of the fetus to a wide range of substances. In the '50s we discovered that x-rays caused birth defects. In the '60s we were shocked by the devastating effects of the sedative drug thalidomide, demonstrated when women around the world gave birth to children with deformed limbs. In the '70s we found that the damaging effects of substances to which the fetus has been exposed can take years, even decades, to show up, when diethylstilbestrol (DES) was found to cause vaginal cancer in the grown daughters of women who had taken the drug during pregnancy to avert miscarriage.

Recent environmental disasters have made us additionally aware of the vulnerability of the human fetus. Both the burying of chemical wastes in the Love Canal area of Niagara Falls, New York, and the spraying of forests with 2,4,5-T in Alsea, Oregon, caused epidemics of miscarriages and birth defects.

As any mother knows intuitively, the fetus is a delicate organism. And any disruption of the normal pattern of growth in the early stages—the first few months—of pregnancy when the cells are dividing and differentiating is irreversible and is magnified thousands of times as the fetus grows.

Given this sensitivity, it seems only reasonable to do whatever is possible to protect the fetus. As far as protecting it from hazards of the workplace, there are various ways to do so. One is to make conditions in the workplace as safe as possible. The other way to protect the fetus—the way some industries have chosen—is simply to exclude it from the workplace by excluding pregnant women. And since some women may be pregnant without being aware of it, the strategy has been to bar all women who might be carrying fetuses—in other words, all women between the ages of 16 and 50.

What this amounts to is the penalizing of women because they have this peculiarity: They are the childbearers of the race. Is this fair? Shouldn't those who bear children be entitled to earn just as good a living as those who don't? (The women who have chosen the more hazardous production jobs usually have done so because they pay more than the traditionally female secretarial and janitorial jobs.) This seems particularly important in a time when one in seven households is headed by a woman. (Of the five women at American Cyanamid and the one woman at General Motors

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who were sterilized, three were the sole or main support of their families.)

"Even the mother of a fetus has to eat," says Odessa Komer, vice-president of the United Auto Workers. "If the pattern set by the lead industry of barring fertile women from certain work were to be followed by other employers, virtually every woman's job would be in jeopardy." Dr. Shirley Conibear, of the University of Illinois School of Public Health, in Chicago, says: "Women have been underpaid and kept in low-skill jobs with little chance for advancement, and they have been used as a reserve labor force to be moved in and out of the job market as needed. Our society has decided this is morally wrong and illegal. To proceed, then, to use women's reproduction function as an excuse to reinstate discriminatory practice is inexcusable."

It is also impractical. If we were to be consistent about barring women from hazardous occupations, we would be excluding them from industries involving chemicals or radiation as well as from myriad other jobs. Workers are exposed to toxic substances not only in the obvious nuclear and chemical-related occupations but also in many of the more commonplace, traditionally female ones. Toll-booth attendants breathe exorbitant amounts of carbon monoxide. Airline flight attendants are exposed to abnormally high levels of carbon monoxide and benzopyrene, an extremely dangerous breakdown product of cigarette smoke that is found also in coke ovens. Office workers may be exposed to harmful levels of ozone by operating photocopying machines. And even breathing "secondhand smoke" exhaled by cigarette-smoking coworkers can be dangerous. Lila Braun, of Benicia, California, who worked with seven smokers, was advised by her doctor to seek a transfer when she became pregnant.

Hospital workers are exposed to highly dangerous anesthetic gases, to infectious diseases such as rubella, and compose one of the largest groups of

workers exposed to radiation. Dental assistants are exposed to both anesthetic gases and mercury. Hairdressers worked for many years with hair sprays propelled by vinyl chloride (this substance was banned in hair sprays in 1974) and continue to dip their fingers daily into a variety of dangerous chemicals, including some hair dyes suspected of being carcinogenic. In these occupations, where women are essential to the work force, no one considers protecting the fetus by excluding the worker.

Another important question that arises is this: If there are substances in the workplace that are potentially harmful to women who are or who might become pregnant, might not such substances also be harmful to nonfertile women and to men? Despite the fact that it is women who are being barred from the workplace, recent cases indicate that a man's reproductive capacity can also be affected by exposure to certain toxins, and that a fetus is as much at risk, if not more so, if the male parent has been exposed.

To understand why this is so, it is necessary to understand the various ways in which hazardous substances can affect the fetus. Some substances, called teratogens, from the Greek "teras," meaning "monster," are dangerous only after the sperm has fertilized the egg. The drug thalidomide is a good example of a teratogen. If taken by a pregnant woman between the twentieth and thirty-fifth day after conception, it almost always will cause serious defects in the growing embryo.

The "transplacental carcinogens" make up a second group of harmful substances. These (DES, for one) cross the placenta of the pregnant woman, pass into the blood stream of the fetus and create conditions for the later development of cancer. Since the cancer takes years to develop, it is difficult to foresee which substances will have this effect.

Both teratogens and transplacental carcinogens affect the fetus directly. But a third category of dangerous substances—mutagens—causes mutations, or changes, in the genes and chromosomes of the germ cells—the egg and the sperm—from which the fetus is formed. Such mutations result in stillbirths, miscarriages, retardation and deformity, and are at least as likely to occur in the father's sperm as in the mother's egg.

In the case of lead, for instance, it has been known for more than 60 years that reproductive abnormalities can result when only the male parent is exposed. A 1916 study by Dr. Thomas Oliver showed that wives of house painters had three times the rate of stillborn babies as the population in general. (Today lead is still found in industrial paints.) Another study by the same researcher found that of 32 pregnancies in women married to lead workers, there were 11 miscarriages, one stillbirth and 13 deaths in the first year of life. Only two of the children lived to adulthood. A 1974 Canadian study of children under the age of five who died of cancer found that the fathers of many of the children were exposed to hydrocarbons in their work

as motor-vehicle mechanics, machinists, miners and painters. A 1976 study by the National Institute of Occupational Safety and Health in Bethesda, Maryland, found a significant excess of spontaneous abortion among wives of workers exposed to vinyl chloride. And a study completed this past fall by the Department of Labor's Occupational Safety and Health Administration (OSHA) found that of the 36 substances from which industry reports it bars women of child-bearing age, 21 can affect men, causing cancer, infertility or mutations in the sperm.

It seems, in fact, that the vast majority of reproductive abnormalities can be traced to the male parent—to problems with the sperm—rather than to the female—to problems with the egg or to exposure of the pregnant woman after conception. "There is an eighty-three per cent reduction in birth defects in cases of artificial insemination," says Peggy Richardson, of the OSHA Office of Policy Analysis. "When the sperm are frozen, the defective cells are killed. In other words, we can reduce the incidence of birth defects by eighty-three per cent just by cleaning up the male contribution."

Some substances interfere with the ability of men to father children. For several years, men who worked with the pesticide DBCP at the Occidental Chemical Company in Lathrop, California, joked about the fact that they had fathered very few children. When the workers were tested, 60 per cent were found to be sterile. (The workers have filed a \$10-million lawsuit, which is still pending in the courts.) Men working with DES at Dawes Laboratories in Chicago Heights, Illinois, suffered from sexual impotence and abnormal breast development; in one case a worker required a double mastectomy.

In view of the evidence, does it make sense to remove fertile women from a hazardous workplace and to leave behind fertile men who can just as easily pass defects on to offspring or who may become sterile? "If it is a fact that women married to lead workers have abnormal births, then we also have to remove the men," says Dr. Bertram Carnow, director of the Department of Occupational and Environmental Medicine at the University of Illinois School of Public Health. "We either wind up with eunuchs in the workplace or we must eliminate the toxins. I suggest that it would be easier to eliminate the toxins."

In any event, in spite of the risks, men have always had the choice of whether or not to work around these toxins. Some women argue that they should have the same right. Two years ago Robin Schorn, of Pottstown, Pennsylvania, was denied a job in the chemical division of the local Firestone Plastics Company because it would have exposed her to vinyl chloride monomer, a highly toxic substance that is also a suspected transplacental carcinogen. The job went to a less-qualified man. "I was on the Pill," says Ms. Schorn. "I didn't want to

have a child. The men were given the choice of working near a hazardous substance. Why weren't the women?" In the historic 1971 case in which Lorena Weeks fought Southern Bell for the right to work as a "switchman," the Supreme Court struck down most state protective legislation. "Men have always had the right to determine whether the increase in remuneration for strenuous, dangerous, obnoxious, boring or unromantic tasks is worth the candle," ruled the Court. "The promise of Title VII [of the Civil Rights Act of 1964] is that women are to be on equal footing."

The arbitration brief denying Robin Schorn her grievance argues that the employee cannot be allowed to choose to take the risk because: "While the employee might be willing to waive any possible claim against the Company for herself, it is doubtful that she could effectively waive any possible future claims against the Company by her offspring." Some experts feel that threat of lawsuit rather than threat to the fetus is at the heart of exclusion of fertile women from the workplace. "What this is really about," says Sue Nelson, a director in the OSHA Office of Policy and Legislation, "is that the employers are trying to save themselves from expensive lawsuits. It is easier for a woman worker than a man to bring a lawsuit against a company on behalf of a fetus." Recently, however, a man who worked with the pesticide DBCP filed an \$8-million lawsuit on behalf of his year-old son, who had been born with a hernia, genital damage and a hand deformity.

What makes the issue of choice difficult in this instance is that the implications go beyond the individual mother, father and fetus involved. Mutations cause changes that are carried in the gene pool from generation to generation. Most serious are mutations in sex-linked recessive genes. These may have subtle and totally unpredictable results at unpredictable times. Dr. Peter Infante, director of OSHA's Office of Carcinogen Identification and Classification, pondered a number of possible effects: "Does this mean susceptibility to other environmental insults? Does this mean psychobehavioral changes? Is this going to show up two generations or five generations later? In one experiment male fruit flies were exposed, just once, to vinyl chloride and then mated with un-

exposed females. Two generations later half the males died. Is this what predisposes us to such chronic diseases as heart disease and cancer?"

Most cancers are, indeed, caused by gene mutations, and there is a high overlap, perhaps as high as 90 per cent, between agents that are mutagenic and agents that are carcinogenic. Such genetic defects are a threat not only to the individual, but also to the entire human race.

Ultimately, allowing fertile women in the workplace or excluding them are not the only choices. A third choice is to clean up the workplace so that no one—man, woman or fetus—is exposed to hazardous substances. This involves determining which substances are hazardous, eliminating or reducing them to tolerable levels and providing workers with necessary protections, such as face masks. It is clear what must be done:

- Systematic research must be undertaken. We now manufacture 1,800 food additives, 1,500 pesticides and 5 million medicinals. We do not know which of these are hazardous to human beings—relatively few have been tested for reproductive effects—but experience has taught us that some of them are. Despite the vast number, it is possible to screen them systematically. "We must establish priorities and then proceed to screen the selected compounds in a meaningful manner," says Dr. Marvin S. Legator, of the University of Texas Division of Environmental Toxicology and Epidemiology, in Galveston. Dr. Legator emphasizes the importance of industrial monitoring as well as animal studies. Analysis of workers' blood, urine and semen can indicate what effect the chemicals are having.

- Epidemiologic information must be gathered more effectively. The U.S. Center for Disease Control, in Atlanta, Georgia, currently runs a Birth Defects Monitoring Program, which collects data from 1,200 hospitals on 1 million births each year. But the program collects no information concerning parents' occupations. New York and West Virginia are the only states that list both parents' jobs on birth certificates of the stillborn.

- Workers must demand as much information as possible about the substances with which they work. In many plants, toxic chemicals are identified by code names or brand names that conceal their nature. Workers must also be trained in proper procedures for handling the substances. (The fact that this has not always been done was dramatically highlighted in the Karen Silkwood case. Silkwood, who worked in the Kerr-McGee plutonium plant near Oklahoma City, Oklahoma, died mysteriously in November of 1974 on her way to tell a reporter from The New York Times about unsafe conditions in the plant. In the recent lawsuit brought against Kerr-McGee by her heirs, former workers testified that "contamination was everywhere.") Workers must watch carefully over their own health. Women workers should keep records about menstrual irregularities, miscarriages, birth defects, delay in achieving pregnancy and changes in sex drive.

CREDITS IN THIS ISSUE

Photo credits: pages 27, Courtesy of CBS; 40, Michel Legrou. Special credits: pages 51, 58, drawings by Nancy Stahl; 90, all props from The Pottery Barn; 91, breadbasket and mugs for Mushroom Broth from The Mexican Folk Art Annex, Inc.; mustard and pickle containers from Manhattan Ad Hoc Housewares; platters holding raw vegetables and oven-browned potatoes from Ceramonte, Ltd.; blue tiles from Country Floors, Inc.; 92-93, bowl Pita Garden Sandwiches from the Mexican Folk Art Annex, Inc.; Inside-Out Manicotti baking dish from Conran's. All addresses, New York City.

• Finally, industry must clean up the workplace. In 1970 Congress passed the Occupational Safety and Health Act "to assure so far as possible every working man and woman in the nation safe and healthful working conditions and preserve our human resources." The act established OSHA to set standards, inspect workplaces and levy fines up to \$1,000—for repeated violations, \$10,000. (On October 10th of last year, nine months after the sterilization of the five women had been revealed, American Cyanamid was fined \$10,000 and ordered to eliminate the hazardous conditions.) So far OSHA has issued standards for 23 substances: asbestos, vinyl chloride, coke-oven emissions, benzene, DBCP, arsenic, cotton dust, acrylonitrile, lead and a group of 14 carcinogens.

operating-room workers and wives of male anesthesiologists suffered increased rates of spontaneous abortion and birth defects, fewer than 50 per cent of hospitals had installed them. When OSHA set its standard for vinyl chloride, industry claimed that compliance would cost \$90 billion and 2.2 million jobs. OSHA held its ground. Within a year the standard had been met at a cost of \$34 million—\$89,966,000,000 less than the original estimate. The cleaner technology cut labor costs and industry saved on losses of vinyl chloride gas that previously had been leaking into the environment. And a thriving new industry that manufactures monitoring equipment had created new jobs.

That industry can clean up is demonstrated by the example of the Allied Chemical plant in Danville, Illinois. In March, 1977, when the company became alarmed at a study linking fluorocarbons with birth defects, it laid off five women who worked with Fluorocarbon 22 and

The most effective remedy is the clean-up of the workplace. If concern for the fertile woman can help bring this about everyone will benefit. Says Dr. Jeanne Stellman, director of the Women's Occupational Health Resource Center in New York City, "It was first for women that the restrictions on the legal hours of work were achieved. It was first for women that a minimum wage was passed. It is to be hoped that the special needs that women have when pregnant can likewise be the driving wedge for improved working conditions for all workers, including potential fathers and nonchildbearing adults." THE END

Susan Edmiston, an award-winning journalist and frequent contributor to Redbook, is executive editor of the new magazine Savvy. Julie Szekely, a former newspaper reporter and consumer investigator, is a New York-based writer.

"Celestine" mini-floral-patterned, fabric-backed wall covering and companion cotton-polyester fabric. "Celeste" floral-and-ribbon-patterned wall covering, from the "Donghia" Collection designed by Angelo Donghia for James Seeman Studios, Division of Masonite. "Royal Harvest" carpeting in Delta Blue made of 100 per cent Anso Nylon, Scotchgard-protected, in 12-foot widths, by Bigelow-Sanford. "Granada" blue-and-white geometric, 100-per-cent-wool area rug, 4 by 6 feet, from Concepts International. Hand-painted 1820 trunk made of Native Pine, 39 inches by 14 inches by 23 inches, and "Mary Jane Smith-Stock" framed print—both by Habersham Plantation. Fabric cat pillow, from the Gazebo. Feather-edge double-faced satin ribbon in light blue (#305) used on bed cover, from C.M. Offray and Son.

"Blue Skies" pattern, pre-pasted vinyl wall covering, from the Fashion Playbill Collection by General Tire and Rubber Wallcovering Company. McKenzie Trail

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"Arithmetic VI" geometric-patterned, paper-backed vinyl wall covering and "Bo Boo" border, designed by Ristomatti Ratia and Lyn Peterson for Marimekko (distributed by Motif Designs). Scotchgard-protected "Love Song" carpeting in Emerald Green Colorway, of 100 per cent nylon, in 12-foot widths, from Bigelow-Sanford. See 'N Say "The Farmer Says" toy, from Mattel, Inc. The area rug, wire baskets on the door and the toy bear—all are from Conran's. Porcelain wall books are from Azuma. Yellow raincoat and red boots, from JCPenney.

WILMINGTON MORNING NEWS

Tuesday, March 3, 1981

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File

State hazardous waste plan OK'd

The hazardous waste regulatory program developed last fall by the Department of Natural Resources and Environmental Control has been approved by the federal Environmental Protection Agency.

The approval gives the state the authority to enforce the federal Resource Conservation and Recovery Act in Delaware, which has about 140 hazardous waste handlers. The program had been jointly carried out by the state and the federal agency since the regulations implementing the act went into effect in November.

The state will be responsible for:

- Identification of hazardous waste producers, transporters and treaters.
- Regulation of hazardous waste treatment, storage and disposal facilities through site inspections and sampling.
- Management of the manifest system, an official paper trail that follows hazardous waste from its generation to its disposal.
- Regulation of hazardous waste generators and handlers.

Additional federal regulations are expected to be adopted later this year that will also give the state authority to issue permits governing hazardous waste treatment, storage and disposal facilities.