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Fertility or Unemployment - Should You Have to Choose

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FERTILITY OR UNEMPLOYMENT - SHOULD YOU HAVE TO CHOOSE?

by
YVONNE SOR*

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Woman has ovaries, a uterus; these peculiarities imprison her in her own subjectivity, circumscribe her within the limits of her own nature. It is often said that she thinks with her glands. Man superbly ignores the fact that his anatomy also includes glands, such as testicles, and that they secrete hormones. He thinks of his body as a direct and normal connection with the world, which he believes he apprehends objectively, whereas he regards the body of woman as a hindrance, a prison, weighted down by everything peculiar to it. . . . Thus humanity is male and man defines woman not in herself but as relative to him; she is not regarded as an autonomous being. . . . He is subject, he is Absolute - she is the Other!

SIMONE DE BEAUVOIR, *THE SECOND SEX* xv-xvi (trans. by H.M. Parshley 1952)

I. INTRODUCTION

One of the most difficult problems that confronts our time is the effect of technological developments, particularly in the chemical industry, on the health of industrial workers¹ and on the environment.² The dilemma that we as a technological society have to face and resolve is whether we are willing to compromise the health of the present generation and that of future generations for the sake of progress or innovation.³ Congress has enacted several pieces of legislation aimed at protecting the environment⁴ and the health of industrial workers.⁵ An in-depth analysis of this health and safety legislation seems to indicate that it does not satisfactorily address the issue of safeguarding the health of future generations,⁶ but seeks to protect the well being of the present American workforce exclusively.⁷

¹ See generally G. NOTHSTEIN, *THE LAW OF OCCUPATIONAL SAFETY AND HEALTH* (1981); M. ROTHSTEIN, *OCCUPATIONAL SAFETY AND HEALTH LAW* (2d ed. 1983).

² See generally TOXIC SUBSTANCES CONTROL SOURCE BOOK (A. McRae and L. Whelchel ed. 1978); B. COMMONER, *THE CLOSING CIRCLE, NATURE, MAN AND TECHNOLOGY* (1971); R. CARSON, *SILENT SPRING* (1962).

³ See generally Davies, *The Effects of Federal Regulation on Chemical Industry Innovation*, *LAW & CONTEMP. PROBS.*, Summer 1983, at 41; Ashford and Heaton, *Regulation and Technological Innovation in the Chemical Industry*, *LAW & CONTEMP. PROBS.*, Summer 1983, at 109; Stewart, *Regulation, Innovation, and Administrative Law: A Conceptual Framework*, 69 *CALIF. L. REV.* 1263 (1981).

⁴ See, e.g., Federal Environmental Pesticide Control Act, 7 U.S.C. § 136 (1982); Toxic Substances Control Act, 15 U.S.C. § 2601 (1982); Federal Water Pollution Control Act, 33 U.S.C. § 1251 (1982); Clean Air Act, 42 U.S.C. § 7401 (1982); Resource Conservation & Recovery Act, 42 U.S.C. § 6901 (1976).

⁵ See, e.g., Federal Hazardous Substances Labeling Act, 15 U.S.C. § 1261 (1982); Toxic Substances Control Act, 15 U.S.C. § 2601 (1982); Occupational Safety and Health Act, 29 U.S.C. § 651 (1976); Federal Mine Safety & Health Amendments Act of 1977, 30 U.S.C. §§ 951-955 (1982).

⁶ See *infra* notes 177-247 and accompanying text.

⁷ See *infra* notes 248-309 and accompanying text.

The challenge faced by many chemical companies regarding their role and responsibility for the health of tomorrow's generations came into sharp focus in cases involving American Cyanamid's Willow Island plant and Olin Corporation's Pisgah Forest plant.⁸ These companies use chemical substances in their manufacturing processes which have been scientifically proven to adversely affect the reproductive system of women and the health of the fetus.⁹ Based on this scientific evidence women workers were excluded or removed from jobs that exposed them to the toxic chemicals¹⁰ which endangered their reproductive ability and, potentially, the well-being of the conceptus.¹¹

In the fall of 1977, American Cyanamid implemented a medical protection policy which provided that women of childbearing capacity, between the ages of sixteen and fifty-five, were not to be employed in jobs which required exposure to certain chemical substances at levels which were deemed to be hazardous to the fetus.¹² The program was confined strictly to the company's pigments department where employees were exposed to lead, a well known fetotoxic agent.¹³ Further, the policy provided that women between the ages of sixteen and fifty-five would be allowed to work in this department only upon proof of surgical sterilization.¹⁴ Between February and July of 1978, five women underwent sterilization. Two women who refused the surgery were transferred to other departments at lower wages.¹⁵

Essentially, American Cyanamid's protection policy forced women to either forgo fertility by giving up their ability to have children, or face unemployment. Our society must never place anyone in the position of being forced to choose sterility over unemployment. Therefore, legal methodologies and protections should be found and implemented so that no employee will ever have to face such a dilemma again.

Olin Corporation's fetal vulnerability policy was somewhat different from that adopted by Cyanamid. Olin's approach was to classify jobs based on their degree of hazard to the female reproductive system and

⁸ See *Oil, Chemical and Atomic Workers Int'l. Union v. American Cyanamid Co.*, 741 F.2d 444 (D.C.Cir. 1984); *Wright v. Olin*, 697 F.2d 1172 (4th Cir. 1982); *Wright v. Olin*, 585 F. Supp. 1447 (W.D.N.C. 1984); *Christman v. American Cyanamid Co.*, 92 F.R.D. 441 (N.D.W.V. 1981).

⁹ See *infra* notes 99-159 and accompanying text.

¹⁰ In this article toxicity is defined as the property of a chemical substance which causes adverse effects in an organism. 40 C.F.R. § 162.4 (nn). Toxicology is the study of the dose-response effect of toxic substances on biological systems. See generally 2A PATTY'S INDUSTRIAL HYGIENE AND TOXICOLOGY (G. Clayton & F. Clayton ed. 1981); N. PROCTOR & J. HUGHES, CHEMICAL HAZARDS OF THE WORK PLACE (1978).

¹¹ See *infra* notes 22-23 and accompanying text.

¹² *Christman v. American Cyanamid*, 92 F.R.D. 441, 445 (1981).

¹³ *Oil, Chemical and Atomic Workers Int'l. Union v. American Cyanamid Co.*, 741 F.2d 444 (D.C.Cir. 1984).

¹⁴ *Id.*

¹⁵ *Id.*

to the health of the fetus.¹⁶ The program instituted at the Pisgah Forest facility contained three job classifications. "Restricted jobs" were those jobs which required exposure to "known or suspected abortifacient or teratogenic agents."¹⁷ Fertile women employees were excluded from these jobs.¹⁸ Women who wanted to be assigned to "restricted jobs" were required to show medical proof of their inability to bear children.

The second category of jobs was classified as "controlled jobs." These jobs required very limited contact with fetally hazardous chemicals.¹⁹ Non-pregnant female employees were allowed to work in such jobs as long as they did not become pregnant.²⁰ The third job category consisted of "unrestricted jobs" in which employees were not exposed to hazardous chemicals that would affect either the pregnant woman or the fetus.²¹ These jobs were open to all female employees.

Even though Olin's program appears to be better planned and executed than American Cyanamid's, problems remain that are common to both. The bottom line regarding both companies' corporate fetal protection policies is that women are forced to choose whether to retain their ability to bear children or to be employed in a job for which they would otherwise be qualified, but which might physically harm them or their offspring. The Willow Island and Pisgah Forest scenarios are not uncommon. The same exclusionary policies are now pursued by several major chemical companies such as Allied Chemical,²² B.F. Goodrich, Sun Oil, Gulf Oil, Union Carbide, Monsanto, DuPont and Dow Chemical.²³ The choice confronting women employees in these companies

¹⁶ *Wright v. Olin Corp.*, 585 F. Supp. 1447 (1984).

¹⁷ *Id.* at 1448.

¹⁸ *Id.* See also Krause, *A Company Program To Control Toxic Exposures*, NAT'L. SAFETY NEWS, February 1979, at 52.

¹⁹ 585 F. Supp. at 1448.

²⁰ *Id.*

²¹ *Id.*

²² Bronson, *Allied Chemical Compensates 5 Women Laid Off to Protect Childbearing Ability*, Wall St. J., Jan. 5, 1979, at 1, col. 1. Allied's policy was aimed at preventing exposure "which may endanger reproductive capacity or which may adversely affect the health or the viability of the fetus." *Id.* The company's general counsel stated that this policy was used only in situations "where there [was] actual evidence of a medical effect, looking to employer experience in animal test data and not mere suspicion." *Id.* (emphasis added).

²³ See generally Lebowitz, *Overview: The Health of Working Women*, in WOMEN, WORK AND HEALTH: CHALLENGES TO CORPORATE POLICY 27 (D. Walsh and R. Egdahl ed. 1980). Doctor Bruce Karrh, corporate medical director at DuPont stated, "When we remove a woman, it is not to protect her reproductive capacity, but to protect her fetus." Shabecoff, *Industry and Women Clash Over Hazards in Workplace*, N.Y. Times, Jan. 3, 1981, at 9, col. 1. Some companies justify the exclusion of female employees from hazardous work environments on the basis that the cost of reducing the level of toxic substances is prohibitive. "The difficulty and cost of implementing good industrial hygiene shouldn't be used as a blanket excuse to exclude women. But if the cost is going to rise exponentially to reach a certain level for uniquely fetal toxins, it's justified to take a woman out of the work place then." Wall St. J., Feb. 9, 1981 (statement of Perry J.

is whether, for the sake of tomorrow's generation, they will today reject or be excluded from good paying jobs that may potentially expose their fetuses to harm from toxic chemicals.²⁴ Striking the balance between protecting women's reproductive capacity from chemical harm and fetuses from the consequences of their mothers' exposure to toxic work environments on the one hand, and equal employment opportunities on the other, is a quandary fraught with controversy and emotionalism.²⁵ The difficulties inherent in addressing and possibly solving this problem present a complexity of ethical, social, political and legal dilemmas.

This article will address the legal issues involved in establishing an equitable balance between women's rights to equal employment opportunities and the right of future generations to be free from disease caused by parental exposures to hazardous chemical work environments. In the author's opinion the present regulatory framework provided by the Occupational Safety and Health Act of 1970 (OSHAct),²⁶ the Toxic Substances Control Act (TSCA),²⁷ and Title VII of the Civil Rights Act of 1964²⁸ is inadequate to provide the requisite degree of protection to employees and, particularly, to their offspring.

Part II of the article will examine some of the available scientific and medical data regarding the reproductive effects of a few of the most commonly used industrial chemicals.

In Part III the statutory scheme provided by the OSHAct, TSCA, and Title VII will be analyzed. As stated above, the discussion will reveal that these statutes do not adequately answer the thorny problem of

Gehring, Director of Health and Environmental Services at Dow Chemical). See also Rawls, *Reproductive Hazards in the Work Place*, 58 CHEM. ENG'G. NEWS 30 (Feb. 11, 1980); Note, *Employment Rights of Women in the Toxic Work Place*, 65 CALIF. L. REV. 1113, 1119-21 (1977).

²⁴ Recent labor statistics indicate that in 1983 41,004,000 women over 20 years of age were employed in the United States. 107 MONTHLY LABOR REVIEW, U.S. DEPT. OF LABOR STATISTICS 8, Feb. 1984. From 1960 to 1981 the number of female blue collar workers rose from 3,637,000 to 5,828,000. This figure represents 31.7% of the labor force employed in manufacturing. U.S. Bureau of Labor Statistics, *Employment and Earnings*.

²⁵ See, e.g., Ashford and Caldart, *The Control of Reproductive Hazards in the Work Place: A Prescription for Prevention*, 5 INDUS. REL. L.J. 523 (1983); Rothstein, *Employee Selection Based on Susceptibility to Occupational Illness*, 81 MICH. L. REV. 1379 (1983); Sloan, *Employer's Tort Liability When a Female Is Exposed to Harmful Substances*, 3 EMP. REL. L.J. 506 (1978); Williams, *Firing the Woman to Protect the Fetus: The Reconciliation of Fetal Protection with Employment Opportunity Goals under Title VII*, 69 GEO. L.J. 641 (1981); Howard, *Hazardous Substances in the Workplace: Implications for the Employment Rights of Women*, 129 U. PA. L. REV. 798 (1981); Warshaw, *Non-Medical Issues Presented by the Pregnant Worker*, 21 J. OCCUP. MED. 89 (1979); Kuntz, *The Pregnant Woman in Industry*, AM. INDUS. HYG. ASS'N. J. 423 (July 1976).

²⁶ 29 U.S.C. §§ 651-678 (1976 & Supp. V 1981).

²⁷ 15 U.S.C. § 2601-2629 (1976).

²⁸ 42 U.S.C. § 2000e (1976 & Supp. II 1978).

reproductive and fetal health protection from the damaging effects of toxic substances. The primary reason for this inadequacy is that the statutes were never designed nor intended to deal with the health problems facing future generations of American workers, but rather, specifically focus on the present generation of employees.

Part IV of the article presents a statutory proposal in the form of an amendment to the OSHA Act aimed at accommodating the societal needs for fetal protection, without weakening the mandate of equal employment rights legislation. The proposed statute is designed to address the scientific reality that both women's and men's reproductive systems might be adversely affected by certain toxic chemicals. Therefore, both classes of employees should be legally protected from exposures to hazardous work environments by designating nondiscriminatory standards designed to best achieve this goal. Additionally, guidelines will be recommended for use by the courts to scrutinize employers' defenses regarding the establishment of exclusionary policies.

II. REPRODUCTIVE RISK MEDICAL AND SCIENTIFIC DATA

The first step in examining the issues involved in choosing a proper employment policy aimed at protecting fetal health through non-discriminatory schemes is an investigation of the available scientific evidence on the effects of toxic substances²⁹ upon the human reproductive system. While this article focuses on the legal issues associated with the protection of the reproductive ability of women of child bearing age and of the health of their fetuses, the effects of toxic work environments on the male reproductive system will also be evaluated.³⁰ This examination is necessary: 1) to insure that any proposed program adequately

²⁹ A toxic material has been defined as "[o]ne which demonstrates the potential to induce cancer; to produce long-term disease or bodily injury; to affect health adversely; to produce acute discomfort; or to endanger the life of man or animals through exposure via the respiratory tract, skin, eye, mouth, or other routes." *Slow Progress Likely in Development of Standards for Toxic Substances and Harmful Physical Agents Found in Work-places*, REPORT TO THE COMMITTEE ON LABOR AND PUBLIC WELFARE, U.S. SENATE, BY THE COMPTROLLER GENERAL OF THE UNITED STATES (September 28, 1973). It is the objective of occupational health specialists to eliminate or minimize the effects of exposures to toxic work environments. The objectives of occupational health are "the promotion and maintenance of the highest degree of physical, mental, and social well-being of workers in all occupations; the prevention among workers of departures from health caused by their working conditions, the protection of workers in their employment from risks resulting from factors adverse to health; the placing and maintenance of the worker in an occupational environment adapted to his physiological and psychological condition." World Health Organization, WHO TECHNICAL REPORT SERIES 4, No. 66 (1963) as quoted in N. ASHFORD, *CRISIS IN THE WORK PLACE: OCCUPATIONAL DISEASE AND INJURY* 130 (1976).

³⁰ See generally Clement Associates, Inc., *Chemical Hazards to Human Reproduction*, COUNCIL ON ENVIRONMENTAL QUALITY II-1-3 (1981); Manson and Simons, *Influence of Environmental Agents on Male Reproductive Failure*, in V. HUNT, *WORK AND THE HEALTH OF WOMEN* 155 (1979).

protects fetal health by focusing on the effects of the toxic work environment on *both* prospective parents; and 2) to provide a thorough and realistic background for an in-depth discussion of Title VII and the legal defenses available to employers.

A. *The Susceptibility of the Human Reproductive System to Toxic Chemical Substances*

1. The Male Reproductive System

The reproductive functions of the human male have three major aspects: 1) spermatogenesis, *i.e.*, the generation of the sperm; 2) performance of the male sexual act; and 3) hormonal regulation and control of male sexual functions.³¹ Toxic substances may affect each and every one of these phases and, consequently, the fetus.³²

The production of the sperm, *i.e.*, spermatogenesis, occurs in two separate steps. The first stage consists of the growth of spermatogonia (stem cells) into considerably enlarged cells called primary spermatocytes.³³ The primary spermatocytes contain 46 chromosomes each, which autocatalytically synthesize a new chromosome of its own type. Following this process each spermatocyte contains 92 chromosomes. The primary spermatocyte then undergoes a division into two secondary spermatocytes, each containing 46 chromosomes. The secondary spermatocytes each divide by meiotic division (without replication of the chromosomes) to form spermatids,³⁴ each containing only 23 chromo-

³¹ A. GUYTON, *TEXTBOOK OF MEDICAL PHYSIOLOGY* 1119 (3rd ed. 1968); Noceti, *Reproduction in MEDICAL PHYSIOLOGY* 992 (V. Mountcastle ed., 12th ed. 1968). The male reproductive system is composed of the primary sex organs, the testes, and the accessory sex structures—the vas deferens, the seminal vesicles, the ejaculatory ducts, the penis, the prostate and the bulbo-urethral glands. Noceti, *supra* at 1016. The testes are composed primarily of Sertoli, Leydig and germ cells. *The Testes in Normal and Infertile Men* 97, cited in Manson and Simons, *supra* note 30, at 156. The testes perform two major functions: 1) a cytogenetic function, *i.e.* the production of viable cells, the sperm; 2) the secretion of the male sex steroid, androgen. Noceti, *supra*, at 1016. The androgen is responsible for (a) the development and maintenance of the secondary sexual characteristics; (b) the development and maintenance of the size and secretory activity of the accessory structures; (c) inhibitory activity on the pituitary; and (d) an effect on general body metabolism. *Id.* The primary androgen secreted by the Leydig cells of the testes is testosterone. Testosterone begins to be excreted by the male about the second month of embryonic life. A. GUYTON, *supra*, at 1127. See also Sohval, *Anatomy and Endocrine Physiology of the Male Reproductive System* in *THE ENDOCRINOLOGY OF REPRODUCTION* 243 (J.T. Veludro, ed. 1958); Connell and Connell, *The Interstitial Tissue of the Testis*, in 4 *THE TESTIS* 333 (A.D. Johnson and W.R. Gomes, ed. 1977), cited in Manson and Simons, *supra* note 30, at 156.

³² See *infra* notes 54-98 and accompanying text.

³³ A. GUYTON, *supra* note 31, at 1120; Noceti, *supra* note 31, at 1016.

³⁴ Control of the sperm (germ cells) differentiation is exercised by the Sertoli cells. The spermatids attach themselves to these cells and it is believed that the Sertoli cells provide the necessary hormonal or enzymatic nutrient to cause the change from spermatids to spermatozoa. Clement Associates, *supra* note 30, at II-2; A. GUYTON *supra* note 31, at 1121.

somes, none of which are paired.³⁵ The spermatids lose most of the cytoplasm and undergo transformation into spermatozoa. Both processes take place in the seminiferous tubules of the testes. When first released from the seminiferous tubules the sperm are still immature, and must mature in the epididymis before they become motile and able to fertilize the ovum.³⁶

The production and maturation of sperm and male reproductive functions are controlled by various hormonal secretions. The principal hormonal secretion of the testes is testosterone.³⁷ Testosterone is an androgen that is responsible for the development and functionality of male sexual accessory structures and secondary characteristics.³⁸ The function of the testes and therefore the secretion of testosterone is controlled by the pituitary gland. This gland, also called the adenohypophysis, secretes three different gonadotropic hormones: 1) follicle stimulating hormone (FSH); 2) luteinizing hormone (LH), also called interstitial cell stimulating hormone (ICSH); and 3) luteotropic hormone (LTH).³⁹ Only LH and FSH are involved in the control of male sexual functions.

Testosterone is produced by the Leydig cells of the testes upon stimulation by LH. The quantity of testosterone secreted is regulated by the amount of LH available.⁴⁰ FSH acts upon the Sertoli cells by affecting

³⁵ Clement Associates, *supra* note 30, at II-2; A. GUYTON, *supra* note 31, at 1120; Noceti, *supra* note 31, at 1016. A similar reduction in the number of chromosomes occurs in the ovum during maturation. Then, when the spermatozoa combines with the ovum, the full complement of 46 chromosomes is established in the new organism. A. GUYTON, *supra* note 31, at 1120.

³⁶ Clement Associates, *supra* note 30, at II-2; A. GUYTON, *supra* note 31, at 1121; Manson and Simons, *supra* note 30, at 157.

³⁷ Noceti, *supra* note 31, at 1016; A. GUYTON, *supra* note 31, at 1126; Clement Associates, *supra* note 30, at II-2.

³⁸ Clement Associates, *supra* note 30, at II-2; A. GUYTON, *supra* note 31, at 1127. Testosterone is produced in small quantities during fetal development, but no hormone is produced during childhood. Testosterone secretion increases during puberty and lasts throughout the rest of the male's life. During puberty, testosterone causes the maturation of primary sex organs and of the secondary sexual characteristics such as distribution of body hair, voice, musculature. A. GUYTON, *supra* note 31, at 1127-28.

³⁹ Manson and Simons, *supra* note 30, at 156; A. GUYTON, *supra* note 31, at 1129; Clement Associates, *supra* note 30, at II-2. The secretion of gonadotropins is controlled and regulated by the hypothalamus. During childhood, *i.e.* the first ten years of life, the male child does not secrete any significant amount of gonadotropins, and, consequently, no testicular hormones. At about age ten, the pituitary (the adenohypophysis) begins to secrete increasing amounts of gonadotropins with subsequent increase in testicular function. By approximately age thirteen, the male child reaches full sexual maturity. A. GUYTON, *supra* note 31, at 1130-31.

⁴⁰ It appears that the amount of LH secreted by the pituitary is controlled through a feedback mechanism or rather through negative feedback. Animal experimentation has demonstrated that injection of testosterone into either a male or female animal inhibits the secretion of LH. Therefore the mechanism operates to maintain a constant level of testosterone through the inhibition of LH when testosterone is in excess. Conversely when the testosterone levels are low the pituitary releases increased LH which acts upon the Leydig cells to produce more testosterone. A. GUYTON, *supra* note 31,

the initiation of spermatogenesis at puberty and also has an important role in maintaining proper sexual functioning in adulthood.⁴¹ To complete the process of spermatogenesis, testosterone must be secreted in small amounts by the Leydig cells which mediate the process.⁴²

Generally, toxic substances may affect either directly or indirectly various male sexual organs and reproductive functions.⁴³ Thus, children whose fathers were occupationally exposed to toxic substances may be adversely affected by their fathers' exposures.⁴⁴

2. The Female Reproductive System

The female reproductive system is comprised of the primary sex organs, the ovaries, and the accessory structures which include the fallopian tubes, the uterus, and the vagina.⁴⁵ The female sexual functions are characterized by a periodic (monthly) pattern known as the female sexual cycle.⁴⁶

The reproductive process starts with the development of the ova in the ovaries.⁴⁷ In the middle of the cycle a mature ovum is released from an ovarian follicle into the abdominal cavity. The ovum is then transported through one of the fallopian tubes into the uterus. The uterine wall (endometrium) is prepared for implantation should the ovum be fertilized by a sperm.⁴⁸

at 1130; Manson and Simons, *supra* note 30, at 156.

⁴¹ Manson and Simons, *supra* note 30, at 157; A. GUYTON, *supra* note 31, at 1130-31; Clement Associates, *supra* note 30, at II-2.

⁴² Manson and Simons, *supra* note 30, at 157; A. GUYTON, *supra* note 31, at 1129.

⁴³ See *infra* notes 96-98 and accompanying text.

⁴⁴ See *infra* notes 103-07, 110-15, 133-35 and accompanying text.

⁴⁵ Noceti, *supra* note 31, at 1001; A. GUYTON, *supra* note 31, at 1134. The ovary has (1) a cytogenetic function in that it produces and releases the ova, and (2) a secretory function in that it secretes the sex hormones which control the female sexual functions and secondary characteristics. Noceti, *supra* note 31, at 1001.

⁴⁶ The average normal cycle varies between 28 to 45 days. Abnormal cycle length has been associated with decreased fertility. A. GUYTON, *supra* note 31, at 1135. See also *infra* notes 119, 123, 137 and accompanying text.

⁴⁷ At birth the two ovaries contain approximately 500,000 primary oocytes. A. GUYTON, *supra* note 31, at 1151. The primary oocytes do not undergo any changes during childhood until puberty when ovulation starts with the onset of the monthly cycle. Clement Associates *supra* note 30, at II-4; A. GUYTON, *supra* note 31, at 1151. The transformation of the primary oocytes into the mature ovum takes place in the following manner. Before the ovum is released from the follicle, the first polar body is expelled from the nucleus of the ovum to form a secondary oocyte. The secondary oocyte then expels a second polar body. During these divisions, each of the 23 pairs of chromosomes loses one of the partners so that 23 unpaired chromosomes remain in the ovum that is now ready to be fertilized. *Id.*

⁴⁸ The fertilized ovum implanted in the uterus develops into a fetus, a placenta, and fetal membrane. A. GUYTON, *supra* note 31, at 1134-45.

The female sexual cycle is controlled by pituitary hormonal secretions. Throughout childhood the ovaries are dormant since practically no gonadotropic secretions take place.⁴⁹ The pituitary in the female generally secretes the same hormones as in the male,⁵⁰ but they function differently, particularly with respect to their interaction with female sexual hormones.

There are two types of female sexual hormones: estrogen and progesterone.⁵¹ The estrogens affect primarily the female reproductive system and the secondary sexual traits.⁵² Progesterone mainly prepares the uterus for the implantation of the fertilized ovum, *i.e.*, for pregnancy.⁵³

The pregnancy or gestation period involves the development of the fertilized ovum into a fetus.⁵⁴ During the first weeks of pregnancy the placenta⁵⁵ and the fetal membranes develop at a much greater rate than the fetus itself.⁵⁶ Within the first month of gestation the organs of the

⁴⁹ The pituitary (adenohypophysis) starts secreting gonadotropic hormones when the female is about eight years old. The secretions increase progressively and reach a maximum level with the initiation of monthly cycles during puberty. A. GUYTON, *supra* note 31, at 1135; Noceti, *supra* note 31, at 1001. The pituitary secretes three hormones which act upon the ovaries: 1) follicle-stimulating hormone (FSH); 2) luteinizing hormone (LH); and 3) luteotropic hormone (LTH). A. GUYTON, *supra* note 31, at 1135; Noceti, *supra* note 31, at 1104.

⁵⁰ See *supra* note 39 and accompanying text.

⁵¹ A. GUYTON, *supra* note 31, at 1137; Noceti, *supra* note 31, at 1003-04.

⁵² Estrogens play a major role in the cellular proliferation and growth of sexual organs. They are active during puberty when the female sexual organs increase in size. Estrogens also act on the development of the mammary glands from a structural view point, but are not directly involved in the milk production. A. GUYTON, *supra* note 31, at 1139-40; Noceti, *supra* note 31, at 1004-06; ASSESSMENT OF RISKS TO HUMAN REPRODUCTION AND TO DEVELOPMENT OF THE HUMAN CONCEPTUS FROM EXPOSURE TO ENVIRONMENTAL SUBSTANCES 5, Proceedings of U.S. Environmental Protection Agency, October 1-3, 1980, Atlanta, Georgia, and December 7-10, 1980, St. Louis, Missouri [hereinafter cited as *Environmental Risks to Human Reproduction*].

⁵³ Progesterone causes a decrease in spontaneous uterine contractions thus helping the gestation process by preventing the expulsion of the fertilized ovum which has implanted itself in the uterus wall. Progesterone also affects the maturation of the breast but does not actually cause the secretion of milk. Noceti, *supra* note 31, at 1012; A. GUYTON, *supra* note 31, at 1141.

⁵⁴ A. GUYTON, *supra* note 31, at 1151. During the first four months of gestation the fertilized ovum is called the embryo, and after the fourth month the embryo is called the fetus and it is clearly recognizable as a human being. J. WILSON AND C. FRASER, 3 HANDBOOK OF TERATOLOGY 79-80 (1977).

⁵⁵ The permeability of the placenta permits the diffusion of nutrients and oxygen from the mother's blood into the fetus's blood. Conversely, it permits the diffusion of excretory products, including carbon dioxide, from the fetus into the mother. During pregnancy, the placenta secretes several hormones including chorionic gonadotropin, estrogens, and progesterone. Chorionic gonadotropin aids in the retention of the fertilized ovum in the uterus by preventing the normal involution of the corpus luteum at the end of the sexual month. It also causes the corpus luteum to secrete increased quantities of estrogen and progesterone so that there is a continuous increase in the uterine wall. A. GUYTON, *supra* note 31, at 1157-58; Noceti, *supra* note 31, at 1015. See also *supra* notes 51-53 and accompanying text.

⁵⁶ A. GUYTON, *supra* note 31 at 1157.

fetus are "blocked out," that is, they are clearly delineated. During the following two to three months the organs develop to the approximate configurations of the organs of the newborn child.⁵⁷ Significantly, even though the organs are formed from a gross anatomical viewpoint during the first four months of gestation, cellular development continues until birth.⁵⁸ Some organs such as the nervous system, the kidneys, and the liver, continue to develop even after birth.⁵⁹

B. Reproductive Damage Resulting from Hazardous Exposure

Statistics indicate that the deleterious effects of various environmental factors such as food, water, minerals, vitamins, drugs, chemicals, stress, smoking, and climate account for about ten to eleven percent of all birth defects.⁶⁰ Heredity-caused malformations, such as gene mutations and chromosomal abnormalities, are the cause for another ten to fifteen percent of developmental defects.⁶¹ However, approximately seventy percent of congenital malformations are the result of unknown causes.⁶² Among these unidentified agents, environmental and occupa-

⁵⁷ A. GUYTON, *supra* note 31, at 1170; Clement Associates, *supra* note 30, at II-5; See generally Strobino, Kline and Stein, *Chemical and Physical Exposures of Parents: Effects on Human Reproduction and Offspring*, 1 EARLY HUMAN DEV. 371 (1978).

⁵⁸ See *infra* notes 80, 90, 93, 94 and accompanying text.

⁵⁹ A. GUYTON, *supra* note 31, at 1170.

⁶⁰ Manson, *Human and Laboratory Animal Test Systems Available For Detection of Reproductive Failure*, 7 PREV. MED. 322 (1978) (citing J. WILSON, ENVIRONMENT AND BIRTH (1973)); Yager, *Congenital Malformations and Environmental Influence: The Occupational Environment of Laboratory Workers*, 15 J. OCCUP. MED. 724 (1973).

⁶¹ Barr, Rogan and Kline, *Summary of the Workshop of Perinatal and Postnatal Defects and Neurological Abnormalities from Chemical Exposures*, 320 ANN. N.Y. ACAD. SCIENCES 458, 466 (1979); Manson, *supra* note 60, at 323.

⁶² Yager, *supra* note 60, at 724, Clement Associates, *supra* note 30, at III-5-10; Manson, *supra* note 60, at 322. Data indicate that between five and seven percent of all live infants born in the United States have one or more congenital abnormalities. *Environmental Risks to Human Reproduction*, *supra* note 52, at 99; Manson, *supra* note 60, at 322; Barr, *supra* note 61, at 466. The most common form of reproductive failure consists of spontaneous abortion during the first trimester. It is estimated that approximately 50% of human conceptuses do not reach term due to fetal death resulting from spontaneous abortions (under 20 weeks) and still births (over 20 weeks). *Environmental Risks to Human Reproduction*, *supra* note 52, at 99; Barr, *supra* note 61, at 462; Manson, *supra* note 60, at 322. Most of the statistical data that are reported in various studies are limited in that they were collected for routine statistical recording rather than for surveillance purposes. Accordingly, the majority of the data reported came from vital statistics records. Some information may also be obtained from studies set up for surveillance of pregnancy outcomes. The major factor that limits the use of statistical data for the purpose of correlating reproductive impairments to toxic exposure is the incompleteness of the information. For example, it is likely that a substantial number of spontaneous abortions occur, but are never recorded because the mother is unaware of what has happened. Fetal deaths during the second and third trimesters are usually recorded on death certificates. Congenital malformations, however, are not always recorded on birth certificates, especially those which are not necessarily diagnosed during a

tional exposure to toxic chemicals are the most frequently suspected causes.⁶³

Even though compilation of medical evidence regarding the effects of such substances upon the human reproductive systems is still in the incipient stages, a strong correlation has already been established between occupational exposure to such substances and the deleterious physiological effects.⁶⁴ Most of the data acquired derive from animal experimentation aimed at identifying those chemicals which cause reproductive damage.⁶⁵ Unfortunately, there are inherent problems in the extrapolation of animal test results to the existence of human reproductive risks. These problems stem from interspecies differences between humans and various other mammals. Therefore, animal data are considered valid only when there appears to be a concordance between animal experimental test results across various species and observed physiological effects of the same chemical on human subjects.⁶⁶

routine examination after birth, such as biochemical, behavioral or immunologic defects. Clement Associates, *supra* note 30, at III-2-3.

⁶³ Manson, *supra* note 60, at 323; V. HUNT, *WORK AND THE HEALTH OF WOMEN* 98 (1979). Unfortunately only a small number of chemical substances have conclusively been identified as being sufficiently toxic to the human reproductive system to cause congenital malformations. *Environmental Risks to Human Reproduction*, *supra* note 52 at 100; Barr, *supra* note 61, at 458.

⁶⁴ The limited but convincing evidence and information regarding the effect of workers' exposure to toxic work places has been obtained from four different sources: case reports, ecologic studies, case-control studies, and cohort studies. Case reports usually alert medical professionals to the possible deleterious effects of certain chemicals by establishing an anecdotal connection between the effect and the toxin. Ecologic studies correlate rates of malformation with the frequency of exposure. However, case reports and ecologic studies are not to be interpreted as definitive findings, but rather as points of departure for further investigation consisting of epidemiological studies. Case-control studies are epidemiological investigations which compare the frequency of exposure to a suspected agent of persons with a particular disease to the frequency of exposure of comparable disease-free persons. Cohort studies entail the comparison of different groups based on the composition of each group. Although epidemiological studies are more reliable than case reports or ecologic studies, the information generated by them is still not considered conclusive until results are confirmed by other studies. The major drawback of this scenario is that very few chemicals have been studied thus far with sufficient thoroughness. Clement Associates, *supra* note 30, at IV-1-5; Barr, *supra* note 61, at 459-60.

⁶⁵ Data gathered from animal experimentation is considered to be the best available source to predict risk of reproductive damage as a consequence of exposure to toxic chemicals. The information obtained from such testing may help establish the safe levels for human exposure. *Environmental Risks to Human Reproduction*, *supra* note 52, at 100; J. WILSON AND F. FRASER, *3 HANDBOOK OF TERATOLOGY* 123 (1977).

⁶⁶ The degree of concordance between animal and human data regarding the response to exposure to the chemicals tested provides the theoretical basis for further research; that is—the closer the concordance, the better the predictability of the animal experimental data. Concordance has two components: concordance of effect and concordance of dose. Concordance of effect deals with the similarity in response between humans and animals regarding the effects of the same or similar chemicals. Concordance of dose relates to the issue of whether humans and animals are affected at the same or similar dose amounts.

Chemical substances which may be toxic to the reproductive system may be classified into two main categories, pre-conception and post-conception agents,⁶⁷ depending on when the exposure occurs. Pre-conception agents, such as mutagens, act directly upon the parents' germ cells by causing various malformations including genetic defects.⁶⁸ Such reproductive damage may lead to infertility,⁶⁹ spontaneous abortions,⁷⁰ and/or fetal anomalies, some of which are transmitted genetically.⁷¹

Because mutagens are chemicals which cause heritable alterations in the DNA of the egg and sperm prior to fertilization, their long-range effect may be insidious as mutations may appear in succeeding generations.⁷² Further, without a comprehensive monitoring system⁷³ such

It should be noted that especially in the case of reproductive failure, the most sensitive species should be tested so as to constitute a better predictor for the sensitive human embryo. Clement Associates, *supra* note 30, at VI 1-3.

⁶⁷ Strobino, Kline and Stein, *Chemical and Physical Exposures of Parents: Effects on Human Reproduction and Offspring*, in 1 EARLY HUMAN DEV. 371, 374 (1978) [hereinafter cited as Strobino], at 461.

⁶⁸ Strobino, *supra* note 67, at 373; Barr, *supra* note 61, at 461-62.

⁶⁹ Reduction in fertility or complete infertility is caused in either sex by a failure of the gametocytes to develop into viable gametes. In the sexually mature male the gametogenetic process takes place continuously through meiotic division. The process may be impaired or disrupted by the action of various chemical agents. In the female, because of the great number of primary oocytes available for conversion into viable ova, it appears unlikely that complete infertility would occur following exposure to toxins. In any case, infertility or a reduction in fertility is easier to diagnose in males than in females. Barr, *supra* note 61, at 462; *Environmental Risks to Human Reproduction*, *supra* note 52, at 42. See also *infra* note 48 and accompanying text.

⁷⁰ Spontaneous abortions occurring during the first trimester are due to various causes including failure of implantation of the blastocyst, and expulsion of the fetus. Scientific investigations have concluded that approximately 30% of spontaneous abortions are caused by chromosomal abnormalities such as aneuploidy (an abnormal number of chromosomes). Many more are caused by anatomical deformities. Barr, *supra* note 61, at 462-63; Messite & Bond, *Reproductive Toxicology and Occupational Exposure in DEVELOPMENTS IN OCCUPATIONAL MEDICINE* 61 (C. Zenz ed. 1980); Yager, *Congenital Malformations and Environmental Influence*, 15 J. OCCUP. MED. 724 (1973). See also Stein, Susser, Warburton, Wittes and Kline, *Spontaneous Abortion as a Screening Device: The Effect of Fetal Survival on the Incidence of Birth Defects*, 102 AM. J. EPIDEM. 275 (1975).

⁷¹ See notes 101, 102, 127-132 and accompanying text *infra*.

⁷² Claxton and Barry, *Chemical Mutagenesis: An Emerging Issue for Public Health*, 67 AM. J. PUBLIC HEALTH 1037 (1977); Buffer and Aase, *Genetic Risks and Environmental Surveillance: Epidemiological Aspects of Monitoring Industrial Populations for Environmental Mutagens*, 24 J. OCCUP. MED. 305 (1982).

⁷³ There are several methods for monitoring human populations for genetic defects: cytogenetic studies, which measure the rate of either numerical or structural chromosomal abnormalities; surveillance of birth defects for major and minor congenital malformations; and monitoring to ascertain the causes of spontaneous abortions and infertility. Industrial populations are considered very well suited for such monitoring because of the many substances workers are exposed to and the possibility of ascertaining, with a certain degree of precision, the level and the length of exposure. Industrial workers

genetic changes may go unnoticed for years. Dominant and recessive mutations may affect germ and somatic cells of either parent or of the fetus.⁷⁴ Dominant cell mutations appear in the direct descendant of the affected individual (parent or fetus) while recessive cell mutations may stay hidden for years and appear only in future generations.⁷⁵

There is substantial evidence to suggest that many mutagenic substances may also be carcinogenic.⁷⁶ This connection is manifested by the increased predisposition for leukemia in patients affected by genetic disorders such as Down's syndrome, Trisomy D, Klinefelter's syndrome, Falconi syndrome and Bloom's syndrome.⁷⁷

Post-conception agents are chemicals which cross the placenta through diffusion and thus affect the fetus during all the stages of gestation.⁷⁸ These substances may be divided into three categories: embryo-fetotoxins, teratogens, and carcinogens.⁷⁹ Embryo-fetotoxic chemicals may cause fetal death, morphologic and metabolic malformations, growth retardation, and various post-natal developmental disabilities including psychological and behavioral impairments.⁸⁰

may also be more willing to cooperate with the monitoring process since they and their offspring are the ones ultimately affected. Buffler and Aase, *supra* note 72, at 312. See also French and Bierman, *Probabilities of Fetal Mortality*, 77 PUB. HEALTH REP. 835 (1962); Taylor, *On the Methodology of Measuring the Probability of Fetal Death in a Prospective Study*, 36 HUMAN BIOL. 86 (1964).

⁷⁴ Buffler and Aase, *supra* note 72, at 312.

⁷⁵ *Id.*

⁷⁶ See, Ames, Lee and Durston, *An Improved Bacterial Test System for the Detection and Classification of Mutagens and Carcinogens*, 70 PROC. NAT'L. ACAD. SCI. 782-83 (1973). Dr. Ames of the University of California at Berkeley developed a Salmonella test for screening chemicals for cancer-causing properties. The Ames test protocol examines mutagenicity as an indicator of carcinogenicity based on the hypothesis that a chemical which causes mutations in bacteria may cause cancer in animals and humans. The test of 300 chemicals indicated that 90% of human carcinogens are mutagenic in bacterial systems. McCann, Choi, Yamasaki and Ames, *Detection of Carcinogens as Mutagens in the Salmonella Microsome Test: Assay of 300 Chemicals*, 72 PROC. NAT'L. ACAD. SCI. 5135, 5137 (1975). The Environmental Protection Agency Office of Pesticides and Toxic Substances (OPTS) has established a program "GENE-TOX" to evaluate the current status of bioassays in genetic toxicology. One of the aims of GENE-TOX is to appraise the performance of various test systems as predictors of chemical mutagenicity and carcinogenicity. Josephson, *Data Base for Genotoxicology*, 15 ENV. SCI. & TECHN. 143 (1981).

⁷⁷ See Kundson, *Mutation and Human Cancer*, 17 ADV. CANCER RES. 317-352 (1973), (cited in Claxton and Barry, *supra* note 72, at 1037).

⁷⁸ Karrh, Carmody, Clyne, Gould, Portela—Cubria, Smith and Freifeld, *Guidance for the Evaluation Risk Assessment and Control of Chemical Embryo - Fetotoxics*, 23 J. OCCUP. MED. 397 (1981) [hereinafter cited as Karrh]; Yager, *supra* note 70, at 724; Strobino, *supra* note 67, at 376.

⁷⁹ Karrh, *supra* note 78, at 397; Barr, *supra* note 61, at 461; Manson, *supra* note 60, at 326.

⁸⁰ Karrh, *supra* note 78, at 397.

Teratogens are toxic substances which act upon the fetus either indirectly by affecting the male or female before conception, or by disturbing the mother's metabolism during pregnancy. They also act directly by damaging the embryonic tissue.⁸¹ These substances have been defined as the causes, mechanisms, and manifestations of developmental deviations of either structural or functional nature.⁸² Teratogens affect the fetus at different stages of organ development (organogenesis).⁸³ The toxic effect upon the embryo and the fetus may vary depending upon the precise period of time during the organogenetic process that the exposure takes place.⁸⁴ This situation is indeed dangerous because it is during this time interval (*i.e.*, the first weeks of gestation) that the woman is the least likely to know she is pregnant.⁸⁵ Therefore, policies which exclude pregnant women from environments in which they may be exposed to teratogens may not be sufficient to protect the fetus from harm.⁸⁶

Carcinogens are substances which are capable of crossing the placenta and causing transformations in the cells of the fetus, thus causing cancer

⁸¹ Strobino, *supra* note 67, at 376; Manson, *supra* note 60, at 327.

⁸² J. WILSON, ENVIRONMENT AND BIRTH DEFECTS (1973), *cited in* Haas and Schottenfeld, *Risks to the Offspring from Parental Occupational Exposures*, 21 J. OCCUP. MED. 607 (1979).

⁸³ See generally Nishimura and Shiota, *Summary of Comparative Embryology and Teratology* in J. WILSON AND F. FRASER, 3 HANDBOOK OF TERATOLOGY 119-154; Yager, *supra* note 70, at 724; V. HUNT, *supra* note 63, at 112.

⁸⁴ Scientific studies regarding teratogenic effects of chemicals on various mammals have concluded that: 1) the stage of embryonic development is determinative regarding the effect of the chemical; 2) the magnitude of the outcome is dose-dependent; 3) the effect of the teratogen depends upon the genotype; and 4) a teratogenic agent's action in a particular mode on the cell metabolism results in either damage to the genetic mechanism or to the cell physiology. J. LANGMAN, MEDICAL EMBRYOLOGY 98-100 (1969), *cited in* Yager, *supra* note 70, at 724. The precise mechanism that causes abnormal embryonic development is not yet well understood because the primary site of toxic action has not been completely identified. Teratogenic agents are believed to act above a certain threshold level. Therefore, "teratogenesis in simplest terms depends upon destruction of a critical number of cells in excess of those which the embryo can restore by later proliferation." Wilson, *Current Status of Teratology - General Principles and Mechanisms Derived from Animal Studies* in J. WILSON AND F. FRASER, 1 HANDBOOK OF TERATOLOGY, *cited in* Manson, *supra* note 60, at 325.

The critical period of exposure to teratogens occurs during the early organ differentiation (eighteenth through thirtieth day). Severe injuries during the first seventeen days of gestation may result in death of the fertilized ovum. Lower-level exposures for longer period of time may produce long-term malformations which may or may not be obvious at birth. The period of heightened sensitivity to exposure to teratogens continues through the sixtieth day of gestation. During the following period of development the susceptibility of the fetus to teratogens decreases. Karrh *supra* note 78, at 398.

⁸⁵ Warshaw, *Non-Medical Issues Presented by the Pregnant Worker*, 21 J. OCCUP. MED. 89, 90 (1979); Stillman, *Women in the Workplace: A Legal Perspective*, 20 J. OCCUP. MED. 605, 608 (1978); Manson, *supra* note 60, at 327.

⁸⁶ See *infra* notes 252-65 and accompanying text.

in the offspring.⁸⁷ Transplacental carcinogens may act either directly on the fetal tissue, or indirectly, by activation of fetal or maternal enzymes.⁸⁸ Animal experimentation has indicated that the most critical stage for the direct action of transplacental carcinogens occurs at the beginning of organogenesis.⁸⁹ The identification of carcinogens can be difficult because of a long latency period between the original exposure and the time the tumor is diagnosed.⁹⁰ Some scientists suggest that transplacental carcinogenesis should not be viewed apart from adult human carcinogenesis, but rather as a related phenomenon which occurs during gestation. Thus far, no agents have been identified which act as carcinogens exclusively on the fetus, but it is clear that the fetus is more susceptible than the adult organism to transplacental carcinogens,⁹¹ particularly with respect to the exposure dose levels.

Mutagenesis, teratogenesis, and carcinogenesis are related phenomena, but the precise structure of the interrelation is not yet completely understood.⁹² It is possible that the same chemical that causes spontaneous abortion in the early stages of pregnancy may produce malformations during organogenesis and neoplasia (cancer) when exposure occurs later in the pregnancy.⁹³ At least one scientist has argued that screening for transplacental hazards should include, whenever possible, the entire range of fetal response, including cancers that may develop sometime after birth.⁹⁴

⁸⁷ Haas and Schottenfeld, *supra* note 82, at 607; Manson, *supra* note 60, at 326.

⁸⁸ Rice, *Carcinogenesis: A Late Effect of Irreversible Toxic Damage During Development*, 18 ENVTL. HEALTH PERSPECTIVES 133, 134-35 (1976). The only substance that has been identified so far as a transplacental carcinogen is diethylstilbesterol (DES). This drug was prescribed in the 50's to pregnant women for the prevention of spontaneous abortions. Female offspring of these women displayed an increase in vaginal and cervical clear - cell adenocarcinoma, vaginal adenosis, and ridges. Clement Associates, *supra* note 30, at A-14; Ulfelder, *The Stillbesterol-Adenosis-Carcinoma Syndrome*, 38 CANCER 426-31 (1976) *cited in* Manson, *supra* note 60, at 327. *See generally* Welch, Barnes, Robby & Herbst, *Transplacental Carcinogenesis: Prenatal Diethyl-Stillbestrol (DES) Exposure, Clear Cell Carcinoma and Related Anomalies of the Genital Tract in Young Females*, in SOCIETY FOR OCCUPATIONAL AND ENVIRONMENTAL HEALTH, PROCEEDINGS OF CONFERENCE ON WOMEN AND THE WORKPLACE. 47-50 (E. Bingham ed. 1976).

⁸⁹ Manson, *supra* note 60, at 327. Transplacental carcinogens which require metabolic activation act during the second trimester and generally late in gestation after the critical period for teratogens. Rice, *supra* note 88, at 133, 135; Manson, *supra* note 60, at 327.

⁹⁰ Rice, *An Overview of Transplacental Chemical Carcinogenesis* 8 TERATOLOGY 113-26 (1973) (*cited in* Manson, *supra* note 60, at 327); Fraumeni, *Chemicals in Human Teratogenesis and Transplacental Carcinogenesis*, 58 PEDIATRICS 807 (1974).

⁹¹ Rice, *supra* note 88, at 137-38; Manson, *supra* note 60, at 327.

⁹² Haas and Schottenfeld, *supra* note 82, at 607; Manson, *supra* note 60, at 326.

⁹³ Fraumeni, *supra* note 90, at 809.

⁹⁴ *Id.*

It should be noted that even though the scientific literature has concentrated on the effects of toxic substances on the female,⁹⁵ there is some literature that addresses the reproductive impact of paternal exposure to these substances.⁹⁶ There appear to be two mechanisms that may establish a connection between male exposure to toxic chemicals and detrimental reproductive consequences. First, paternal exposure, either in conjunction with maternal exposure or independently, may affect the female and thus the fetus.⁹⁷ Second, an exposure which damages the sperm may cause either infertility or a malformed conceptus.⁹⁸

C. Toxic Chemical Substances

1. Vinyl Chloride

Vinyl chloride (VC) is a chemical which is used as a raw material in the manufacture of plastics, vinyl and synthetic rubbers.⁹⁹ Exposure to VC has been linked to various abnormalities, including chromosomal aberrations, and also to birth defects, such as malformations of the central nervous system and of the genital organs.¹⁰⁰

Chromosomal abnormalities have been observed in men employed in VC manufacturing plants. Studies have matched exposed workers and healthy controls to ascertain the magnitude and the extent of the aberrations. Some of these studies indicated that there was a high correlation between the length and the level of the exposure and the incidence and magnitude of the abnormalities.¹⁰¹ Follow-up investigations have reported that the degree of abnormalities returned to normal after the

⁹⁵ See *supra* notes 23, 30, 57, 60, 61, 67, 70, 78, 88 and accompanying text.

⁹⁶ See, e.g., Strobino, *supra* note 67, at 388; Manson and Simons, *supra* note 30, at 155-79.

⁹⁷ Strobino, *supra* note 67, at 388. The semen may serve as a route to excretion of toxic chemical substances which are transmitted to the female during intercourse and absorbed through the vaginal mucosa. Clement Associates, *supra* note 30, at II-3; Manson and Simons, *supra* note 30, at 171.

⁹⁸ Strobino, *supra* note 67, at 388. See also *infra* notes 101, 103, 108, 112-15 and accompanying text.

⁹⁹ *Technology: Industry's Latest Cancer Scare*. BUS. WEEK Feb. 23, 1984, at 100, 102.

¹⁰⁰ Purchase, Richardson, Anderson, Paddle and Adams, *Chromosomal Analyses in Vinyl Chloride - Exposed Workers*, 57 MUTAT. RES. 325 (1978) [hereinafter cited as Purchase]; Anderson, Richardson, Weight, Purchase and Adams, *Chromosomal Analysis in Vinyl Chloride Exposed Workers Resulting from Analysis 18 and 42 Months after an Initial Sampling*, 79 MUTAT. RES. 151 (1980) [hereinafter cited as Anderson]; Infante, Wagoner and Waxweiler, *Carcinogenic, Mutagenic and Teratogenic Risks Associated with Vinyl Chloride*, 41 MUTAT. RES. 131 (1976) [hereinafter cited as Infante].

¹⁰¹ One study involving 57 workers who had been employed in VC industries for six to fifteen years reported that the workers had an increase in the incidence of chromosomal abnormalities in their lymphocytes by comparison with 24 control workers. The increase in all types of abnormalities was observed and it was greater in groups

airborne VC levels were lowered through industrial hygiene engineering controls. However, this decrease in chromosomal aberrations was achieved only at least 2.5 years after the high exposure levels.¹⁰² It appears, therefore, that at least for a limited period of time, exposure to high dose levels of VC causes injury to the germ cells of the father.

Some studies have also suggested a correlation between paternal exposure to VC and fetal loss due to spontaneous abortions in their wives.¹⁰³ Pregnancy outcomes in the wives of men exposed to vinyl chloride monomer (VCM) were even less favorable than those experienced by wives of a group of polymerization and polyvinyl chloride (PVC) fabrication workers.¹⁰⁴ These observations have been challenged by other researchers on the basis that the data were obtained without sufficient safeguards, such as the elimination of intervening factors which could have also affected pregnancy negatively.¹⁰⁵

The significance of the data obtained to date regarding both chromosomal abnormalities and negative pregnancy outcomes resulting from paternal exposures to VC is still open to question because of the inconclusiveness of such data.¹⁰⁶ Even so, vinyl chloride represents a good example of the dilemma involved in the study and regulation of toxic chemicals particularly with regard to reproductive hazards.¹⁰⁷

expected to have a high exposure, such as autoclave operators. Purchase, *supra* note 100, at 328-31. Another study correlated known heavy levels of exposure to statistically significant higher frequency of chromosome breakage (3.7% vs. 1.79% in controls). Hansteen, Hillestad, Thiis-Evensen and Heldaas, *Effects of Vinyl Chloride in Man: A Cytogenetic Follow-up Study*, 51 *MUTAT. RES.* 271, 279-81 (1978) [hereinafter cited as Hansteen]. See also Fleig and Theiss, *Mutagenicity of Vinyl Chloride*, 20 *J. OCCUP. MED.* 557 (1978).

¹⁰² Anderson, *supra* note 100, at 161-62; Hansteen, *supra* note 101, at 278.

¹⁰³ Waxweiler, Falk, McMichael, Mallor and Grivas, *A Cross-Sectional Epidemiologic Survey of Vinyl Chloride Workers*, National Institute for Occupational Safety and Health, Division of Surveillance, Hazard Evaluation, and Field Studies (1977) cited in Clement Associates, *supra* note 30, at IV-26; Infante, Wagoner, McMichael, Waxweiler and Falk, *Genetic Risks of Vinyl Chloride*, 1 *LANCET* 734-35 (1976); Infante, *supra* note 100, at 140-41.

¹⁰⁴ Infante, *supra* note 103, at 734-35.

¹⁰⁵ Clement Associates, *supra* note 30, at IV-26; Haas and Schottenfeld, *supra* note 92, at 610.

¹⁰⁶ Clement Associates, *supra* note 30, at IV-26.

¹⁰⁷ The Occupational Safety and Health Administration (OSHA) had issued standards regulating workplace exposure to vinyl chloride when it was discovered that VC was a carcinogen. 29 C.F.R. § 1910.1017 (1983). See also *Society of the Plastics Indus. v. OSHA*, 509 F.2d 1301 (2d Cir.), cert. denied, 421 U.S. 992 (1975). The court upheld the validity of the standards despite the industry's claims that the OSHA standard was not substantiated by firm medical evidence. The court commented that "the evidence is quite sufficient to warrant the [OSHA] Secretary's choice. . . . [I]t must be remembered that we are dealing . . . with human lives, and the record reveals that 11 manufacturing

Occupational exposure to chloroprene, which is similar in chemical structure to vinyl chloride, has been linked with a decrease in the fertility of and the number of sperm in male workers. It has also been linked to a significant increase in miscarriages suffered by their wives.¹⁰⁸ Chloroprene has also been identified as being mutagenic and possibly carcinogenic.¹⁰⁹

2. Dibromochloropropane

Dibromochloropropane (DBCP) is a widely used agricultural fumigant and pesticide. DBCP has been recognized as an animal testicular toxin¹¹⁰ and as a mutagen,¹¹¹ but until 1977 workers engaged in the manufacture or use of this chemical were not tested for reproductive impairments. When these workers were finally examined the test results showed that even though they were normal, many had no viable sperm in their semen (agospemia) and showed elevated levels of follicle stimulating hormone (FSH), an indication of testicular damage. Other workers had low sperm counts, below 20 million sperms per millimeter (oligospermia).¹¹² Another study showed that after the exposure had started three times as many

plant workers . . . have died from the effects of the potent chemical." *Id.* at 1308. See also *Doerr v. B.F. Goodrich*, 484 F. Supp. 320 (N.D. Ohio 1979) (discussing the justification for the company's exclusionary policies with regard to female employees based on the evidence regarding the correlation between the risks of congenital malformations and exposure to VC). *Id.* at 321.

¹⁰⁸ Infante, Wagoner and Young, *Chloroprene: Observations of Carcinogenesis and Mutagenesis*, presented at the Meeting on Origins of Human Cancer, Cold Spring Harbor Laboratory, Cold Spring Harbor, cited in Strobino, *supra* note 67, at 387; Infante, Wagoner and Young, *Chloroprene: Observations of Carcinogenesis and Mutagenesis*, presented at the Workshop on Methodology for Assessing Reproductive Hazards in the Workplace, NIOSH - SOEH, April 19-22, 1978, cited in Manson, *supra* note 60, at 328.

¹⁰⁹ Infante, *Mutagenic and Carcinogenic Risks Associated with Halogenated Olefins*, 21 ENVTL. HEALTH PERSP. 251 (1977); Infante, Wagoner and Young, *supra* note 108.

¹¹⁰ Torkelson, Sadek, Rowe, Kodama, Anderson, Lozuvar and Hine, *Toxicologic Investigations of 1, 2-dibromochloropropane*, 3 J. TOXICOL. APPL. PHARMACOL. 549, 558-89 (1961).

¹¹¹ Rosencranz, *Genetic Activity of 1, 2-dibromo-3-chloro-propane, a Widely Used Fumigant*, 14 BUL. ENVIRON. CONTAM. TOXICOL. 8-12 (1975) (cited in Goldsmith, Potashnik and Israeli, *Reproductive Outcomes in Families of DBCP-Exposed Men*, 39 ARCH. ENVTL. HEALTH 85 (March/April 1984) [hereinafter cited as Goldsmith]).

¹¹² Whorton, Krauss, Marshall and Milby, *Infertility in Male Pesticide Workers*, 2 LANCET 12, 89-61 (1977); Whorton, Milby, Krauss and Stubbs, *Testicular Function in DBCP Exposed Pesticide Workers* 21 J. OCCUP. MED. 161, 166 (1979). A one year follow-up study of 12 azospermic and 9 oligospermic production workers showed no recovery of spermatogenesis and no pregnancies among the wives of azospermic men, but the sperm count of 7 of the oligospermic men increased and 4 of them had children. Whorton and Milby, *Recovery of Testicular Function Among DBCP Workers*, 22 J. OCCUP. MED. 177-79 (1980).

pregnancies of wives of DBCP exposed workers ended in spontaneous abortions as before the exposure had occurred.¹¹³

A recent five year follow-up study of DBCP exposed workers and their families showed that spermatogenic recovery does occur after the cessation of exposure to the chemical.¹¹⁴ Also, children born to wives of these men appear to be in good health. It seems, therefore, that DBCP may not have long lasting or permanent effects.¹¹⁵

3. Polychlorinated Biphenyls

Polychlorinated biphenyls (PCB's) have been in production for approximately forty years and are now universally considered to be a major environmental pollutant.¹¹⁶ Animal experiments have indicated a variety of reproductive consequences linked to exposure to PCB's. Some of these repercussions include low birth weights,¹¹⁷ spontaneous abortions, still births, perinatal death,¹¹⁸ irregular menstrual cycles, and excessive bleeding.¹¹⁹ Some studies conclude that PCB's are teratogenic.¹²⁰

¹¹³ Kharrazi, Potashnik and Goldsmith, *Reproductive Effects of Dibromochloropropane*, 16 *ISR. J. MED. SCI.* 403-06 (1980) cited in Goldsmith, *supra* note 111, at 86.

¹¹⁴ Goldsmith, *supra* note 111, at 86-89. Other studies showed that there was recovery of spermatogenesis in 4 of 13 azospermic men four years after the exposure had ended and 5 of the 8 men who were initially oligospermic fathered children. Potashnik, Yanai-lubar and Sober, *Recovery of Human Testicular Function Suppression Caused by Dibromo-chloropropane* in 5 *ADVANCES IN DIAGNOSIS AND TREATMENT OF INFERTILITY* 313-20 (V. Insler and G. Belterdorf eds. 1981) cited in Goldsmith, *supra* note 111, at 86.

¹¹⁵ Goldsmith, *supra* note 111, at 89.

¹¹⁶ PCB POISONING AND POLLUTION (K. Higuchi ed. 1976) cited in Urabe, Koda and Asahi, *Present State of Yusho Patients*, 320 *ANN. N.Y. ACAD. SCI.* 273 (1979). In 1968 there was a case of mass PCB poisoning in Japan caused by the distribution of cooking oil contaminated with PCB. Among the many other catastrophic consequences of the poisoning, children displayed retarded growth and abnormal tooth development. Newborn babies showed systemic pigmentation and SFD (small for date). Urabe, Koda and Asahi, at 273-74.

¹¹⁷ Shiota, Tanimura and Nishimura, *Effects of Polychlorinated Biphenyls on Pre- and Postnatal Development in Rats*, 10 *TERATOLOGY* 97 (1974) [hereinafter cited as Shiota]; Villeneuve, Grant, Khera, Clegg, Baer and Phillips, *The Fetotoxicity of Polychlorinated Biphenyls Mixture (Aroclor 1254) in the Rabbit and in the Rat*, 1 *ENVIRON. PHYSIOL.* 67, 69-71 (1971).

¹¹⁸ Allen and Barsotti, *The Effects of Transplacental and Mammary Movement of PCBs on Infant Rhesus Monkeys*, 6 *TOXICOLOGY* 331, 340 (1976); Shiota, *supra* note 117, at 71.

¹¹⁹ Barsotti, Marlar and Allen, *Reproductive Dysfunction in Rhesus Monkeys Exposed to Low Levels of Polychlorinated Biphenyls (Aroclor 1248)*, 14 *FOOD COSMET. TOXICOL.* 99 (1976).

¹²⁰ National Institutes for Occupational Safety and Health (NIOSH), *Criteria for A Recommended Standard - Occupational Exposure to Polychlorinated Biphenyls (PCBs)* (1977).

Another serious consequence of exposure to PCB's is ability of the chemical to be transmitted to the newborn animal through the mother's milk.¹²¹

Many of the deleterious effects observed in animal experimentation have also been verified in human subjects subsequent to major accidental exposures.¹²² Women exposed to PCB-contaminated rice oil have shown such symptoms as abnormal or irregular menstrual cycles which are indicative of abnormal ovarian function.¹²³ One recent study examined the transfer of PCB from the mother to the infant either perinatally through the placenta or postpartum through the milk.¹²⁴ The results of the study showed that the PCB levels increased in the mother's blood during pregnancy, and at delivery they were significantly higher than in the umbilical cord blood. The PCB levels in breast-fed infants rose markedly with the ingestion of human milk, exceeding at age three months the level in the blood of their mothers, and that it continued to increase until the infants reached one year of age. However, the PCB levels in bottle-fed infants remained at a low concentration level during the same period. The study seems to suggest that the quantity of PCB transferred to infants from their mothers through the milk is much greater than that transferred via the placenta.¹²⁵

¹²¹ Allen, Barsotti, Lambrecht and Van Miller, *Reproductive Effects of Halogenated Aromatic Hydrocarbons on Nonhuman Primates*, 320 ANN. N.Y. A.C.A. SCI. 419, 424 (1979) [hereinafter cited as Allen]. The neonates displayed such symptoms of exposure to the toxin as swollen eyelids and reduced growth rate while they were nursing. These symptoms disappeared after weaning. Significantly, fetotoxicity was observed in PCB-treated monkeys even when the mothers were removed from the experimental diets and all overt signs of reproductive dysfunction had disappeared. Further complications of exposure to PCBs *in utero* and from mother's milk have been suggested in the studies on nonhuman primates. In addition to the development of acne, swollen eyelids, loss of eyelashes, and reduced growth rate, these infants have inadequately developed lymphoid tissues which seemingly were responsible for the increased susceptibility to infection. More subtle effects of PCB exposure on the fetus and neonate occurred in the central nervous system. Some data indicate that permanent learning and behavioral deficiencies are complications resulting from PCB exposure during fetal and neonatal development in nonhuman primates. *Id.* at 424.

¹²² See *supra* note 116 and accompanying text.

¹²³ Hirayama, *Chemical Aspects of PCB Poisoning* in PCB POISONING AND PULLUTION (K. Higuchi ed. 1976) cited in Allen, *supra* note 20, at 424; Kuratsume, Yoshimura, Matsuzaka and Yamaguchi, *Epidemiologic Study on Yusho, a Poisoning Caused by Ingestion of Rice Oil Contaminated with Commercial Brand of Polychlorinated Biphenyls*, 1 ENVIRON. HEALTH PERSP. 119, 127-28 (1972).

¹²⁴ Kodama and Ota, *Transfer of Polychlorinated Biphenyls to Infants from their Mothers*, 35 ARCH. ENVIRON. HEALTH 95 (1980).

¹²⁵ *Id.* at 100.

4. Hydrocarbons

Benzene, which is one of the chemicals most used by the American petrochemical industry, has been identified as a potential mutagen causing chromosomal aberrations following heavy occupational exposure.¹²⁶ One study of twenty male workers exposed to benzene for over twenty years has shown the existence of chromosomal abnormalities in 2.5% of all cells, compared to 1.0% to 1.4% for unexposed controls. Most of the excess was attributable to aberrations of the unstable types.¹²⁷ Also the number of unstable alterations per normal cell was higher in the cells of the exposed workers than in those of the controls.¹²⁸

Another study addressed the effects on workers of sequential exposures to benzene, toluene, and xylene respectively. Workers who were exposed exclusively to toluene were also examined.¹²⁹ The study showed a significantly higher proportion of abnormal cells in the benzene-exposed workers than in the matched controls. In the group of workers exposed to toluene only, no such excess was present.¹³⁰

Generally, these studies indicate that the exposure to high levels of benzene results in an increased incidence of chromosomal aberrations which might persist for years after the exposure has ended.¹³¹ These chromosomal aberrations might also occur in the germ cells of exposed workers and consequently be genetically transmitted to next generations thus resulting in fetal death, congenital malformations, or cancer.¹³²

Several studies have examined the possibility of establishing a correlation between the incidence of cancer in children of parents employed in hydrocarbon-related occupations and their parents' occupational exposures to hydrocarbons.¹³³ The first such study concluded that the

¹²⁶ Tough and Court Brown, *Chromosome Aberrations and Exposure to Ambient Benzene*, 1 LANCET 684 (1965); Forni, Pacifico and Limonta, *Chromosome Studies in Workers Exposed to Benzene or Toluene or Both*, 22 ARCH. ENVIRON. HEALTH 373 (1971); Forni, Cappellini, Pacifico and Vigliani, *Chromosome Changes and their Evaluation in Subjects With Past Exposure to Benzene*, 23 ARCH. ENVIRON. HEALTH 385 (1971) [hereinafter cited as Forni].

¹²⁷ Tough and Court Brown, *supra* note 126, at 684.

¹²⁸ *Id.*

¹²⁹ Forni, *supra* note 126, at 376-78.

¹³⁰ The group of subjects exposed to toluene did show a somewhat higher rate of unstable chromosome changes compared to the controls, but the difference was not statistically significant. *Id.* at 377-78.

¹³¹ Forni, *supra* note 126, at 390.

¹³² See *supra* note 126 and accompanying text.

¹³³ Fabia and Thuy, *Occupation of Father at Time of Birth of Children Dying of Malignant Diseases*, 28 BR. J. PREV. SOC. MED. 98 (1974); Hakulinen, Salonen and Tepo, *Cancer in the Offspring of Fathers in Hydrocarbon - Related Occupations*, 30 BR. J. PREV. SOC. MED. 138 (1976); Zack, Cannon, Loyd, Heath, Falletta, Jones, Housworth and Crowley, *Cancer in Children of Parents Exposed to Hydrocarbon - Related Industries and Occupations*, 111 AM. J. EPIDEM. 329 (1980) [hereinafter cited as Zack].

relative odds of cancer in the children of men involved in hydrocarbon-related jobs were higher than for children in a matched control group.¹³⁴ Two other studies have found no such correlation, but as the results of these investigations suggest, the data regarding the possible link between cancer in the offspring and the parents' occupation are not completely understood or sufficiently addressed.¹³⁵

5. Lead

The deleterious reproductive effects resulting from industrial exposure to lead have been known since the end of the nineteenth century and the beginning of the twentieth century¹³⁶ when European factory health inspectors reported an increase in the incidence of infertility, abortion, stillbirths, fetal death, and macrocephaly in women occupationally exposed to lead.¹³⁷ Lead has been linked to reproductive dysfunction in both men and women¹³⁸ who absorbed it mainly through inhalation.¹³⁹

¹³⁴ Fabia and Thuy, *supra* note 133, at 98. The study considered the following occupations as being hydrocarbon-related: motor vehical mechanic, service station attendant, machinist, miner, lumberman, painter, dyer and cleaner. The series was comprised of 386 children who had died of malignant disease under the age of five during the years of 1965-70 in Quebec, and a matched control group of 772 children. Comparison of these cases with the controls showed that in the test group there was a significant excess of fathers in hydrocarbon-related occupations; the relative risk was 2.1. The types of cancers found in the test group included: leukemia—lymphoma, nervous system malignancy, and other tumors. The investigation was based on children under age five. *Id.* at 100.

¹³⁵ A similar study was conducted in Finland but it included in its sampling pool children up to the age of 15. Contrary to the Quebec study, the risk ratio in this study was one which suggested that the "hydrocarbon-related" occupation of the father at the time of conception was not a risk factor for subsequent malignant disease in the offspring. However the Finnish researchers remarked that they "were unable to exclude the risk ratio of 2.1 . . . for children under five years of age." Hakulinen, Salonen and Teppo, *supra* note 133, at 140. The same results were obtained by Zack, *supra* note 133, at 333-36.

¹³⁶ V. HUNT, *supra* note 30, at 201-02; Needleman, Rabinowitz, Leviton, Linn and Schoenbaum, *The Relationship Between Prenatal Exposure to Lead and Congenital Anomalies*, 251 J.A.M.A. 2956 (1984) [hereinafter cited as Needleman]. See generally Y. SOR, EPIDEMIOLOGICAL STUDY ON THE EFFECTS OF MERCURY AND LEAD UPON THE INCIDENCE OF NEUROLOGICAL CONGENITAL MALFORMATIONS, CEREBRAL PALSY AND FETAL DEATH (1972).

¹³⁷ Oliver, *A Lecture on Lead Poisoning and the Race*; 1 BR. MED. J. 1096-98 (1911), cited in Needleman, *supra* note 136, at 2956.

¹³⁸ See generally U.S. ENVIRONMENTAL PROTECTION AGENCY, *Air Quality Criteria for Lead* (1977) [hereinafter cited as USEPA LEAD]; Clement Associates, *supra* note 30, at IV-25-26.

¹³⁹ See Kehoe, *Standards for the Prevention of Occupational Lead Poisoning*, 23 ARCH. ENV. HEALTH 245 (1971); Urbanowicz, *Occupational Exposure to Inorganic Compounds of Lead*, 23 ARCH. ENV. HEALTH 284 (1971); Malcolm, *Prevention of Long-Term Sequelae Following the Absorption of Lead*, 23 ARCH. ENV. HEALTH 292 (1971); See generally 29 C.F.R. § 1910.1025 App. A. (1984).

Medical evidence regarding occupational exposure of males to lead indicates that such exposure may lead to impotence, sterility, and decreased fertility.¹⁴⁰ Paternal exposure has also been associated with incidence of Wilm's tumor in the offspring.¹⁴¹ Wives of men employed in the lead industry have also suffered increased abortions, stillbirths, and miscarriages.¹⁴²

Both men and women occupationally exposed to lead have been shown to suffer from chromatid and chromosomal aberrations.¹⁴³ Medical evidence regarding the effect of lead on female reproductive outcomes indicates that exposure to this metal may lead to increased spontaneous abortions, stillbirths, and prenatal death.¹⁴⁴ Lead also has the ability to cross the placenta and act upon the fetus as a teratogen.¹⁴⁵ Neurological

¹⁴⁰ One study has shown that long-term exposure of male workers to lead has resulted in alterations in spermatogenesis, thus leading to a substantial decrease in fertility. This germinal insufficiency was caused by the direct toxic effect of lead on the gonads rather than through hypothalamic intervention. Lancranjan, Popescu, Gavanescu, Klepsch and Serbanescu, *Reproductive Ability of Workmen Occupationally Exposed to Lead*, 30 ARCH. ENV. HEALTH 396, 400 (1975); See also Bell and Thomas, *Effects of Lead on Mammalian Reproduction*, in LEAD TOXICITY 169, 174 (Singhal and Thomas eds. 1980).

¹⁴¹ Kantor, Curnen, Meigs and Flannery, *Occupations of Fathers of Patients with Wilm's Tumour*, 33 J. EPIDEMIOL. COMMUNITY HEALTH 253, 255 (1979).

¹⁴² This may be due to passage of lead from the male through the semen which could influence the fetus directly. Bell and Thomas, *supra* note 140, at 169. See also USEPA *Lead*, *supra* note 138, at 9; Manson and Simons, *supra* note 30, at 171-73.

¹⁴³ Forni, Sciamè, Bertazzi and Alessio, *Chromosome and Bio-chemical Studies in Women Occupationally Exposed to Lead*, 35 ARCH. ENV. HEALTH 139, 144-45 (1980); Deknudt, Leonard and Ivanov, *Chromosome Aberrations Observed in Male Workers Occupationally Exposed to Lead*, 3 ENVIRON. PHYSIOL. BIOCHEM. 132, 137-38 (1973); Forni, Cambiaghi and Secchi, *Initial Occupational Exposure to Lead: Chromosome and Biochemical Findings*, 31 ARCH. ENV. HEALTH 73, 77-78 (1976).

¹⁴⁴ USEPA *Lead*, *supra* note 138, at 9-15; Needleman, *supra* note 136, at 2956; Angle and McIntire, *Lead Poisoning During Pregnancy*, 108 AM. J. DIS. CHILD. 436, 439 (1964); Clement Associates, *supra* note 30 at IV-25; Y. SOR, *supra* note 136, at 106-07.

¹⁴⁵ Lauwerys, Buchet, Roels and Hubermont, *Placental Transfer of Lead, Mercury, Cadmium, and Carbon Monoxide in Women, I. Comparison of the Frequency Distributions of the Biological Indices in Maternal and Umbilical Cord Blood*, 15 ENV. RES. 278, 280 (1978); Roels, Hubermont, Buchet and Lauwerys, *Placental Transfer of Lead, Mercury, Cadmium and Carbon Monoxide in Women, III. Factors Influencing the Accumulation of Heavy Metals in the Placenta and the Relationship Between Metal Concentrations in the Placenta and in Maternal and Cord Blood*, 16 ENV. RES. 236, 240 (1978). This study has shown that there is a relationship between umbilical cord blood lead levels and the risk of minor congenital anomaly. Also the overall incidence of various congenital anomalies was increased in newborns with high lead levels in their blood. Needleman, *supra* note 136, at 2958. See also Rabinowitz, Leviton and Needleman, *Variability of Blood Lead Concentrations During Infancy*, 39 ARCH. ENV. HEALTH 74 (1984); Gerber, Leonard and Jacquet, *Toxicity, Mutagenicity and Teratogenicity of Lead*, 76 MUTAT. RES. 115-41 (1977).

and psychological impairments in the offspring of lead-exposed mothers have also been reported.¹⁴⁶

Because of the overwhelming scientific evidence regarding the reproductive effects of lead, many industrial employers have chosen to exclude females from workplaces where they might be negatively affected by lead. In the lead and zinc industries, fertile women workers have been transferred or dismissed from jobs where they might be exposed to high levels of airborne lead. Some of the companies reported to have instituted such policies are Allied Chemical, American Cyanamid, B.F. Goodrich, Dow Chemical, DuPont, General Motors, Monsanto and Olin.¹⁴⁷ Sadly, in some instances, women have chosen to undergo surgical sterilizations such as tubal ligations or hysterectomies to retain their jobs.¹⁴⁸

The Occupational Safety and Health Administration has issued standards and regulations regarding workplace lead levels.¹⁴⁹ The Lead Standard is a worthwhile attempt to regulate a reproductive toxin. However, as will be shown later in this article,¹⁵⁰ it is an inadequate model for future guidelines which must be aimed at striking a balance between the health of the fetus and the interests of the woman in having equal access to employment opportunities.

¹⁴⁶ Y. SOR, *supra* note 136, at 107; Rennert, Weiner and Madden, *Asymptomatic Lead Poisoning in 85 Chicago Children*, 9 CLIN. PEDIAT. 9 (1970); Rajegowda, *Lead Concentrations in the Newborn Infant*, 82 J. PEDIAT. 60 (1982); Beattie, Moore, Goldberg, Finlayson *et al.*, *Role of Chronic Low-Level Lead Exposure in the Aetiology of Mental Retardation*, 1 LANCET 589, 592 (1975). Neurological impairment has also been observed in animals who were administered low levels of lead during neurogenesis. Aveill and Needleman, *Neonatal Lead Exposure Retards Cortical Synaptogenesis in the Rat*, in *Low Level Lead Exposure: The Clinical Implications of Current Research* 201, 208-10 (H. Needleman ed. 1980). Behavioral studies conducted on the offspring of rats exposed to lead before conception showed impaired learning suggesting that the gametotoxic effects of lead can be expressed in behavioral impairment at doses well below those which produce macroscopic anatomic abnormality. Brady, Herrera and Zenick, *Influence of Parental Lead Exposure on Subsequent Learning Ability of Offspring*, 3 PHARMACOL. BIOCHEM. BEHAV. 561, 563-65 (1975).

¹⁴⁷ Bayer, *Women, Work and Reproductive Hazards*, THE HASTINGS CENTER REPORT, Oct. 1982, at 14, 15; Rawls, *Reproductive Hazards in the Workplace*, CHEM. & ENG. NEWS 30 (Feb. 11, 1980); McGhee, *Workplace Hazards: No Women Need Apply*, THE PROGRESSIVE, Oct. 1977, at 20, 21; Williams, *Firing the Woman to Protect the Fetus: The Reconciliation of Fetal Protection with Employment Opportunity Goals Under Title VII*, 69 GEO. L. J. 641, 647-53 (1981); Merenson, *Women Workers Are Sterilized or They Lose Their Jobs*, CIVIL LIBERTIES, (July 1982). Bronson, *Issue of Fetal Damage Stirs Women Workers at Chemical Plants*, WALL ST. J., Feb. 9, 1979, at 1, col. 1; Bronson, *Allied Chemical Compensates Five Women Laid Off to Protect Child Bearing Ability*, WALL ST. J., Jan. 5, 1979, at 6 col. 5.

¹⁴⁸ See *supra* notes 12-15 and accompanying text.

¹⁴⁹ 29 C.F.R. § 1910 (1984).

¹⁵⁰ See *infra* notes 255-65 and accompanying text.

6. Other Chemicals

Many other chemicals have been suspected of causing reproductive damage to both men and women. For example, occupational exposure to carbon disulfide has been linked to spermatogenic impairment in men.¹⁵¹ It has also been linked to numerous disorders of the menstrual and ovarian functions, increased incidence of spontaneous abortions, and premature births in women.¹⁵² Similarly, wives of men employed in plants using ethylene dibromide have displayed a marked decrease in fertility.¹⁵³ Men working in kepone manufacturing plants have been affected by reproductive failure caused by a substantial reduction in sperm mobility.¹⁵⁴ Occupational exposure to pesticides has been associated with incidences of chromosomal aberrations,¹⁵⁵ increased frequency of miscarriages, toxemia, low birth weights, and histopathological changes in placentas.¹⁵⁶ Further, there is considerable medical evidence that operating room exposure to anesthetic gases causes an increase in the incidence of spontaneous abortions¹⁵⁷ and of birth defects,¹⁵⁸ as well as decreased birth weights.¹⁵⁹

¹⁵¹ Lancranjan, Popescu and Klepsch, *Changes in Gonadic Function in Chronic Carbon Disulfide Poisoning*, 60 MED. LAV. 566-571 (1969), cited in Clement Associates, *supra* note 30, at A-11; See generally NATIONAL INSTITUTE FOR OCCUPATIONAL SAFETY AND HEALTH, CRITERIA FOR A RECOMMENDED STANDARD-OCCUPATIONAL EXPOSURE TO CARBON DISULFIDE 10 (1977) [hereinafter cited as NIOSH, CARBON DISULFIDE].

¹⁵² NATIONAL INSTITUTE FOR OCCUPATIONAL SAFETY AND HEALTH CRITERIA FOR A RECOMMENDED STANDARD-OCCUPATIONAL EXPOSURE TO WASTE ANESTHETIC GASES AND VAPORS 12-14 (1977) [hereinafter cited as NIOSH - GASES AND VAPORS].

¹⁵³ Wong, Utidjian and Karten, *Retrospective Evaluation of Reproductive Performance of Workers Exposed to Ethylene Dibromide (EDB)*, 21 J. OCCUP. MED. 98, 101-02 (1979).

¹⁵⁴ Taylor, Selhorst, Houff and Martinez, *Chordecane Intoxication in Man: 1. Clinical Observations*, 28 NEUROLOGY 626, 629-30 (1978).

¹⁵⁵ Yoder, Watson and Benson, *Lymphocyte Chromosome Analysis of Agricultural Workers During Extensive Occupational Exposure to Pesticides*, 21 MUTAT. RES. 335, (1973); Rabello, Becak, DeAlmeida, Pigati, Ungaro, Murata and Pereira, *Cytogenetic Study on Individuals Occupationally Exposed to DDT*, 28 MUTAT. RES. 449, 453-54 (1975); Kiraly, Szentesi, Ruzicska, and Czeize, *Chromosome Studies in Workers Producing Organophosphate Insecticides*, 8 ARCH. ENVIRON. CONT. TOXICOL. 309, 317-18 (1979).

¹⁵⁶ Clement Associates, *supra* note 30, at A-28.

¹⁵⁷ NIOSH-GASES AND VAPORS, *supra* note 152; Cohen, Bellville and Brown, *Anesthesia, Pregnancy and Miscarriage: A Study of Operating Room Nurses and Anesthetics*, 35 ANESTHESIOLOGY 343, 345 (1971); Knill-Jones, Rodrigues, Moir, and Spence, *Anesthetic Practice and Pregnancy*, 1972 LANCET 1326, 1328 [hereinafter cited as Knill-Jones].

¹⁵⁸ Corbett, Cornell, Endres and Lieding, *Birth Defects Among Children of Nurse-Anesthetists*, 41 ANESTHESIOLOGY 341, 343 (1974); Knill-Jones, *supra* note 157, at 1328.

¹⁵⁹ Pharoah, Alberman, Doyle and Chamberlain, *Outcome of Pregnancy Among Women in Anesthetic Practice*, 1977 LANCET 34, 36; *Anesthesiologists Point Out Hazards in Operating Room Atmosphere*, 230 J.A.M.A. 1109, 1110 (1974).

D. Conclusion

The discussion presented above regarding the toxic effects of certain industrial chemicals upon the reproductive functions of humans indicates that the workforce and particularly their progeny are in serious danger due to the long term consequences of occupational exposures to toxic substances. Faced with the enormity of this problem many industrial employers have chosen to implement policies which exclude pregnant workers from areas in which they may be exposed to reproductive toxins. These policies are clearly inadequate because many of the toxic industrial chemicals affect the fetus during organogenesis occurring in the first weeks of gestation¹⁶⁰ when the woman is least likely to know she is pregnant.¹⁶¹ Additionally, some of these substances affect both men and women.¹⁶² Therefore, companies must seek and design different policies to adequately address and deal with these concerns.

A solution which appears attractive from all points of view, is lowering the level of airborne concentrations of toxic substances. Unfortunately, even if employers were able to achieve lower concentrations and therefore lower the level of toxicity, the conceptus would still be threatened with teratogenic damage, since no conclusive scientific answers are available regarding the existence of threshold levels for exposure to teratogens.¹⁶³ If a threshold exposure level does not exist, then *any* airborne concentration above zero could have deleterious effects upon the embryo or the fetus.¹⁶⁴

Even though it appears that there may not be any definitive or completely satisfactory solution to the problem of fetal protection, one fact is quite clear — excluding only pregnant women from toxic environments is not an acceptable answer.¹⁶⁵ Based on these considerations, designing a policy that would strike a realistic balance between women's employment rights and safeguarding the health of their progeny is a problem that awaits a reasoned and principled solution.

¹⁶⁰ Kuntz, *The Pregnant Woman in Industry*, AM. IND. HYG. A. J. 423, 424 (1976); Yager, *Congenital Malformations and Environmental Influence*, 15 J. OCCUP. MED. 724 (1973); Stellman, *The Effects of Toxic Agents on Reproduction*, OCCUP. HEALTH AND SAFETY, April, 1979, at 36, 42; Manson, *Human and Laboratory Animal Test Systems Available for Detection of Reproductive Failure*, 7 PREVENTIVE MED. 322, 325-26 (1978).

¹⁶¹ Generally pregnancy may not be conclusively detected in the first weeks after conception, although one study indicates that it may be possible to detect it as soon as nine days into the gestational period. Marshall, Hammond, Ross, Jacobson, Rayford and Odell, *Plasma and Urinary Chorionic Gonadotropin During Early Human Pregnancy*, 32 OBSTETRICS AND GYNECOLOGY 760 (1968), See also Noceti, *supra* note 31, at 999-1000.

¹⁶² See *supra* notes 100-06, 111-15, 108-46 and accompanying text.

¹⁶³ Wilson, *Current Status of Teratology - General Principles and Mechanisms Derived from Animal Studies*, 1 HANDBOOK OF TERATOLOGY (J. Wilson and F. Fraser eds. 1977).

¹⁶⁴ *Id.* See also Manson, *supra* note 160, at 324-25.

¹⁶⁵ See *infra* notes 355-76 and accompanying text.

III. REGULATORY AND LEGISLATIVE FRAMEWORK

The problem of protecting workers' reproductive ability and the health of their unborn children will be examined further in light of applicable statutes. This analysis will show that the present legislative scheme, although adequate for achieving its avowed goals, is not sufficient to provide protection for the health of the offspring of the present day workforce.

A. *The Occupational Safety and Health Act*

The issue of regulating workplace hazards has received considerable scholarly¹⁶⁶ and legislative attention.¹⁶⁷ Whatever the legislative approach taken, it has to balance scientific and technological knowledge with the reality of economic and political pragmatism.¹⁶⁸ The first such comprehensive legislation aimed at protecting the health and safety of the American workforce was the Occupational Safety and Health Act (OSHA) of 1970.¹⁶⁹

The Act represented the response of Congress to the overwhelming evidence regarding the number of workers killed or disabled each year in work-related incidents,¹⁷⁰ and the economic impact caused by such death or disability.¹⁷¹ The purpose of the Act is to assure: "so far as possi-

¹⁶⁶ Some companies have implemented policies which exclude all women of child bearing age from jobs involving exposure to toxic chemicals. Such policies are fraught with as many if not more ethical and legal problems as the ones affecting pregnant women only. Rothstein, *Reproductive Hazards and Sex Discrimination in the Workplace: New Legal Concerns in Industry and on Campus*, 10 J. COLL. & U.L. 495, 510 (1984).

¹⁶⁷ See e.g., N. ASHFORD, *CRISIS IN THE WORKPLACE: OCCUPATIONAL DISEASE AND INJURY* (1976); Hoerger, Beamer and Hanson, *The Cumulative Impact of Health, Environmental and Safety Concerns on the Chemical Industry During the Seventies*, 46 LAW & CONTEMP. PROBS., Summer 1983, at 59; Ashford and Heaton, *Regulation and Technological Innovation in the Chemical Industry*, 46 LAW & CONTEMP. PROBS., Summer 1983, at 109; Bohrer, *Fear and Trembling in the Twentieth Century: Technological Risk, Uncertainty and Emotional Stress*, 1984 WIS. L. REV. 83; Schroeder and Shapiro, *Responses to Occupational Disease: The Role of Markets Regulation, and Information*, 72 GEO. L.J. 1231 (1983); Tuohy, *Regulation and Scientific Complexity: Decision Rules and Processes in the Occupational Health Area*, 20 OSGOOD HALL L.J. 563 (1982).

¹⁶⁸ See *infra* notes 186-202, 203-45 and accompanying text.

¹⁶⁹ 29 U.S.C. §§ 651-78 (1983).

¹⁷⁰ According to testimony presented by former Labor Secretary Shultz approximately 14,500 workers were killed annually in industrial accidents and 2.2 million workers were disabled in work related mishaps. Report of the Senate Committee on Labor and Public Welfare (submitted to accompany S. 2193, the Williams Bill) S. REP. NO. 1282, 91st Cong. 2d Sess. at 1-5 (1970) *cited in* M. ROTHSTEIN, *OCCUPATIONAL SAFETY AND HEALTH LAW* 4 (2d ed. 1983) [hereinafter cited as SENATE REPORT - ROTHSTEIN].

¹⁷¹ The economic impact of these deaths and disabilities has been calculated to amount to over \$1.5 billion annually in lost wages and an annual loss of over \$8 billion in the Gross National Product. SENATE REPORT - ROTHSTEIN, *supra* note 170, at 4. The House Education and Labor Committee Report concluded that the "well-being of every American working man and woman is an essential human right which we can no longer deny." H.R. REP. NO. 1291, 91st Cong. 2d Sess. 35 (1970).

ble every working man and woman in the nation safe and healthful working conditions and to preserve our human resources."¹⁷² This purpose is to be accomplished by encouraging employers and employees to minimize workplace hazards through the institution of safety programs, by developing and promulgating mandatory occupational safety and health standards, and by providing for research in the field of industrial hygiene and occupational diseases.¹⁷³

The Act imposes duties on employers to: 1) comply with the occupational safety and health standards established by the Occupational Safety and Health Administration (OSHA);¹⁷⁴ and 2) under the "general duty clause" to furnish employees a workplace free from recognized hazards.¹⁷⁵ The analysis presented below will demonstrate that neither the health standards nor the obligations imposed by the "general duty clause" provide adequate protection for the reproductive health of employees or their offspring.

1. Standard-Setting Function

The Act defines the term "occupational safety and health standard" as a "standard which requires conditions, or the adoption or use of one of more practices, means, methods, operations, or processes, reasonably necessary or appropriate to provide safe or healthful employment and places of employment."¹⁷⁶ There are special provisions which deal with setting standards for exposures to toxic substances which "most adequately assure, to the extent feasible, on the basis of the best available evidence, that no employee will suffer material impairment of health or functional capacity."¹⁷⁷ These standards are to be established based on several considerations including the attainment of the highest degree of health and safety for employees, the latest available scientific data, and the feasibility of the standard. Given the peculiar nature of toxic chemicals, their effects might become apparent only after years of exposure. This is particularly true in the case of carcinogens which usually have long latency periods.¹⁷⁸ Under the theory that any exposure to certain chemicals might cause cancer, the better reasoned approach is that these substances have

¹⁷² 29 U.S.C. § 651(b) (1982).

¹⁷³ 29 U.S.C. § 651(b)(1)–(13) (1982).

¹⁷⁴ 29 U.S.C. § 654(a)(2) (1982).

¹⁷⁵ 29 U.S.C. § 654(a)(1) (1982).

¹⁷⁶ 29 U.S.C. § 652(8) (1982).

¹⁷⁷ 29 U.S.C. § 655(b)(5) (1982).

¹⁷⁸ See generally Jasanoff, *Science and the Limits of Administrative Rule-Making: Lessons from the OSHA Cancer Policy*, 20 OSGOODE HALL L. J. 536, 543 (1982); ASHFORD, *supra* note 167, at 118-19.

a zero exposure threshold and are therefore not safe at any level.¹⁷⁹ The theory that threshold exposure levels were applicable to all toxic substances led to the establishment of Threshold Limit Values (TLVs) which were to serve as guidelines for OSHA to establish standards for controlling the level of hazardous chemical substances in industrial workplaces.¹⁸⁰ TLVs represent time-weighted average airborne concentrations for specific chemical substances for a seven or eight hour work day and a forty hour work week. It is believed that nearly all workers may be repeatedly exposed to these TLVs without adverse effects.¹⁸¹ While these exposure standards may be adequate to protect the overall health of most workers, they are clearly not intended to address the issue of fetal health protection. This constitutes just one of several reasons why OSHA standards do not provide a sufficiently adequate solution to the problem of safeguarding the health of the unborn in the context of parental exposure to fetotoxic chemicals.

Another reason why the Act is insufficient to protect the health of the present workforce in general, and the reproductive health of the workforce in particular, is the degree of OSHA's inefficiency in promulgating standards. To date OSHA has set TLVs for less than 500 of the approximately 20,000 industrial chemicals already identified as toxic, and for only sixteen of the approximately 2500 substances suspected of being carcinogenic.¹⁸² Given this lack of progress in establishing exposure standards for hazardous chemicals, it appears that the issue of fetal health is not about to be resolved satisfactorily by the standard-

¹⁷⁹ This concept was first articulated from a regulatory view point in 1958 by New York Congressman James Delaney as an amendment to the Food, Drug, and Cosmetic Act providing that no food additive should be allowed to be used "[i]f it is found to induce cancer when ingested by man or animal, or if it is found, after tests which are appropriate for the evaluation of the safety of food additives, to induce cancer in man or animal." 21 U.S.C. § 348(c)(3)(A) (1962). See generally Blank, *The Delaney Clause: Technical Naivete and Scientific Advocacy in the Formulation of Public Health Policies*, 62 CALIF. L. REV. 1084 (1974); Martin, *The Delaney Clause and Zero Risk Tolerance*, 34 FOOD DRUG COSM. L.J. 43 (1979).

¹⁸⁰ THRESHOLD LIMIT VALUES OF AIRBORNE CONTAMINANTS AND PHYSICAL AGENTS WITH INTENDED CHANGES ADOPTED BY THE AMERICAN CONFERENCE OF GOVERNMENTAL INDUSTRIAL HYGIENISTS (ACGIH) for 1983.

¹⁸¹ Actually the ACGIH cautions that TLVs do not represent a precise line of demarcation between what constitute safe and unsafe levels of exposure. TLVs are not established to protect all workers, particularly the most sensitive ones, but only the majority of workers. Consequently, TLVs, as established, do not meet the mandate of the OSHA Act "that no employee will suffer material impairment of health or functional capacity." ASHFORD, *supra* note 167, at 118-21.

¹⁸² 29 C.F.R. § 1910.1000 (tables Z-1 and Z-2 1984). See also Page and Munsing, *Occupational Health and the Federal Government: The Wages are Still Bitter*, 38 LAW & CONTEMP. PROBS., Summer-Autumn 1974, at 651, where the authors characterize the pace of standard development by the Federal government as "tortoise-like." *Id.* at 667.

setting function of OSHA. This result is not inconsistent with the avowed purpose of the Act, which is to protect the health of today's workers, not that of future generations. Therefore, consistent with the language of the statute, whatever standards are established will be specifically designed to accomplish this immediate goal.¹⁸³

Another major factor that OSHA needs to consider is the statutory requirement that the promulgated standards be feasible.¹⁸⁴ The concept of feasibility has both a technological and an economic component.¹⁸⁵

a. Technological Feasibility

The notion of feasibility appears in the statute in two separate references.¹⁸⁶ Federal courts have interpreted this component of the standard setting function of OSHA in various ways. The Second Circuit gave a most comprehensive judicial interpretation to the concept of feasibility in *Society of the Plastics Industry, Inc. v. OSHA*.¹⁸⁷ The petitioners, manufacturers of vinyl chloride and vinyl chloride products, challenged OSHA's one part per million (ppm) VC exposure level on the basis that: 1) the available scientific and medical evidence did not establish that the standard was required by health or safety considerations; and 2) that OSHA violated section 6(b)(5) of the Act (the feasibility requirement) by adopting a standard which industry claimed was technologically and economically unfeasible.¹⁸⁸

¹⁸³ Another problem associated with setting standards for exposure to toxic chemicals is the fact that workers are usually exposed to more than one substance at a time and therefore there is synergism which probably enhances the ultimate harmful effects of these toxins. ASHFORD, *supra* note 167, at 123. These synergistic effects are even more applicable in the case of reproductive toxins where the same substance may act differently given both the stage of gestation and the other substances the mother is being exposed to during the pregnancy. Manson, *supra* note 160, at 324-26.

¹⁸⁴ 29 U.S.C. § 655(b)(5) (1982).

¹⁸⁵ See generally Berger and Riskin, *Economic and Technological Feasibility in Regulating Toxic Substances Under the Occupational Safety and Health Act*, 7 *ECOLOGY L. Q.* 285 (1978); G. NOTHSTEIN, *THE LAW OF OCCUPATIONAL SAFETY AND HEALTH* 438-43 (1981); SENATE REPORT - ROTHSTEIN, *supra* note 170, at 82-86.

¹⁸⁶ Section 655(b)(5) states, "The Secretary, in promulgating standards dealing with toxic materials or harmful physical agents . . . shall set the standard which most adequately assures, to the extent feasible, . . . that no employee will suffer material impairment of health or functional capacity. . . . In addition to the attainment of the highest degree of health and safety protection for the employee, other considerations shall be . . . the feasibility of the standards . . ." 29 U.S.C. § 655(b)(5) (emphasis added).

¹⁸⁷ 509 F.2d 1301 (2d Cir. 1975). See generally Doniger, *Federal Regulation of Vinyl Chloride: A Short Course in the Law and Policy of Toxic Substances Control*, 7 *ECOLOGY L.J.* 497 (1978).

¹⁸⁸ 509 F.2d at 1303.

The Agency promulgated the stringent standard in view of medical evidence that linked VC to the death of several workers affected by angiosarcoma, a rare form of liver cancer.¹⁸⁹ The implementation of the one ppm time-weighted standard required expensive engineering and work practice changes to be supplemented wherever available controls were insufficient.¹⁹⁰ The court found that even though the medical and scientific evidence in the case was "on the frontier of scientific knowledge"¹⁹¹ it was sufficient to warrant the standard since human lives were at stake.¹⁹² In response to the petitioner's contention that the standard was not technologically feasible, the court stated that the industry needed "more faith in their own technology."¹⁹³ Even though significant reductions in exposure levels had already been put in place, a number of additional engineering changes which were available to the industry had not yet been implemented. The court held that in the area of safety "the . . . Secretary is not restricted by the status quo. He may raise standards which require the improvements in existing technologies or which require the development of new technology."¹⁹⁴

Using the same reasoning, the Third Circuit arrived at a different conclusion in *AFL-CIO v. Brennan*.¹⁹⁵ In *Brennan*, the court analyzed the feasibility of the mechanical power press standards and concluded that "at least to a limited extent, OSHA is to be viewed as a technology-forcing piece of legislation."¹⁹⁶ The court nonetheless held that the standard was not technologically feasible since OSHA was to be restricted to technology that "looms on today's horizon."¹⁹⁷

This issue was again before the Third Circuit in *American Iron & Steel Institute v. OSHA*,¹⁹⁸ where the court applied its interpretation of technological feasibility to OSHA's coke oven standards. The court held that OSHA need only establish that the desired exposure level "could be reached" within the industry.¹⁹⁹ According to the petitioners, OSHA imposed a duty on employers to research and develop new technology

¹⁸⁹ *Id.* at 1306.

¹⁹⁰ *Id.* at 1307.

¹⁹¹ *Id.* at 1308.

¹⁹² *Id.*

¹⁹³ *Id.* at 1309.

¹⁹⁴ *Id.*

¹⁹⁵ 530 F.2d 109 (3d Cir. 1975).

¹⁹⁶ *Id.* at 121.

¹⁹⁷ *Id.*

¹⁹⁸ 577 F.2d 825 (3d Cir. 1978), cert. dismissed sub nom. *Republic Steel Corporation v. OSHA*, 448 U.S. 917 (1980).

¹⁹⁹ *Id.* at 835.

if implementation of all required controls did not achieve the permissible exposure limit for coke oven emissions.²⁰⁰ The court agreed with the petitioners that section 6(b)(5) was technology forcing, but it stated that OSHA could only require employers "to implement technology 'looming on today's horizon'."²⁰¹ The Third Circuit held that the OSHA Act did not empower the Agency "to place an affirmative duty on each employer to research and develop new technology."²⁰² The question that was not answered by these decisions though, was exactly *how* new technology designed to protect the health of the workers was to be developed and *who* was to invent and develop such technology.

b. Economic Feasibility

Economic feasibility constraints on OSHA's rulemaking authority were first suggested by the D.C. Circuit in *Industrial Union Department, AFL-CIO v. Hodgson*,²⁰³ one of the first cases to challenge a health standard. The court ruled that economic feasibility is a proper consideration in the standard setting process:

There can be no question that OSHA represents a decision to require safeguards for the health of employees even if such measures substantially increase production costs. This is not, however, the same thing as saying that Congress intended to require immediate implementation of all protective measures technologically achievable without regard to economic impact. To the contrary, it would comport with common usage to say that *a standard that is prohibitively expensive is not "feasible"*. . . . Congress does not appear to have intended to protect employees by putting their employers out of business—either by requiring protective devices unavailable under existing technology or by making financial viability generally impossible.²⁰⁴

The *Hodgson* court did limit the economic infeasibility defense to cases in which the standards would be more than simply "financially burdensome and affect profit margins adversely."²⁰⁵ Further, it commented that

²⁰⁰ *Id.* at 838.

²⁰¹ *Id.*

²⁰² *Id.*

²⁰³ 499 F.2d 467 (D.C. Cir. 1974).

²⁰⁴ *Id.* at 477-78 (emphasis added).

²⁰⁵ *Id.* at 478. See also *Florida Peach Growers Ass'n Inc. v. United States Dep't of Labor*, 489 F.2d 120 (5th Cir. 1974) where the Fifth Circuit stated that: "[t]he promulgation of any standard will depend upon a balance between the protection afforded by

standards may be economically feasible even though they may affect the continued existence of some individual employers.²⁰⁶ The court stated that such a consequence was consistent with the purpose of the Act since an employer "who lagged behind the rest of the industry in protecting the health and safety of employees [would] consequently [be] unable to comply with new standards."²⁰⁷

The Third Circuit further limited the concept of economic feasibility in *Industrial Union Dep't. v. Brennan*,²⁰⁸ by stating that: "Congress did contemplate that the Secretary's rulemaking would put out of business some businesses so marginally efficient or productive as to be unable to follow standards otherwise universally feasible."²⁰⁹ The court defined infeasibility as "massive economic dislocation" of an industry,²¹⁰ and concluded that OSHA could not disregard such consequences since an industry would otherwise be forced to evade rather than comply with a regulation that threatened its existence.²¹¹

The cases discussed thus far reflect judicial concern for the policy underlying the Act—the urgent need to protect the health and safety of American workers tempered by a realistic economic view. The decisions that will be examined below reflect a reordering of priorities by an attempt to create a balance between the need for the standard and the economic hardship imposed on the employer who must comply with it.

One of the most controversial decisions²¹² concerning the limits of OSHA's standard setting authority is *Industrial Union Department, AFL-CIO v. American Petroleum Institute*,²¹³ where the Supreme Court in a five to four ruling affirmed the Fifth Circuit's decision to set aside the benzene standard promulgated by OSHA. The Fifth Circuit analyzed the validity of the standard in light of section 3(8) of the Act²¹⁴ which

the requirement and the effect upon economic and market conditions in the industry. . . . It is essential that employees be protected against exposure to highly toxic materials, but this should be done without eliminating the agriculture enterprise and the associated jobs." *Id.* at 130.

²⁰⁶ 499 F.2d at 478.

²⁰⁷ *Id.*

²⁰⁸ 530 F.2d 109 (3rd Cir. 1975).

²⁰⁹ *Id.* at 123.

²¹⁰ *Id.*

²¹¹ *Id.*

²¹² See generally Cranor, *Epidemiology and Procedural Protections for Workplace Health in the Aftermath of the Benzene Case*, 5 INDUS. REL. L. J. 372 (1983); Latin, *The "Significance" of Toxic Health Risks: An Essay on Legal Decisionmaking Under Uncertainty*, 10 ECOLOGY L.Q. 339 (1982); Comment, *Regulation of Toxic Substances in the Workplace*, 18 HOUSTON L. REV. 884 (1981).

²¹³ 448 U.S. 607 (1980).

²¹⁴ *American Petroleum v. OSHA*, 581 F.2d 493 (5th Cir. 1978), *aff'd sub nom. Industrial Union Dep't v. American Petroleum Inst.*, 448 U.S. 607 (1980).

defines health standards as those which require "conditions . . . practices, means, methods, operations or processes reasonably necessary or appropriate to provide safe or healthful employment and places of employment."²¹⁵ The Fifth Circuit held:

Although 29 U.S.C. § 655(b)(5) requires the goal of attaining the highest degree of health and safety protection for the employee, it does not give OSHA the unbridled discretion to adopt standards designed to create absolutely *risk-free* workplaces regardless of cost. To the contrary, that section requires standards to be feasible, and it contains a number of pragmatic limitations in the form of specific kinds of information OSHA must consider in enacting standards dealing with toxic materials.²¹⁶

The appellate court seemed to indicate the need for a cost-benefit analysis in the promulgation of standards.²¹⁷

The plurality opinion, written by Justice Stevens, indicated that the selection of the one ppm exposure limit over other limits "was established not on the basis of a proven hazard at ten ppm, but rather on the basis of OSHA's best judgment . . . [o]f feasibility of compliance with the proposed standard."²¹⁸ This approach was consistent with the Agency's carcinogen policy to set an exposure limit at the lowest technologically feasible level that did not affect the viability of the industry regulated.²¹⁹ The Court ruled that this standard was not supported by appropriate scientific findings in that OSHA's rationale for lowering the permissible exposure limit to one ppm had no scientific basis. Specifically, there was no evidence that leukemia, a form of cancer, has ever been caused by exposure to ten ppm of benzene or that it will *not* be caused by exposure to one ppm, but rather "on a series of assumptions indicating that some leukemias *might* result from exposure to ten ppm and that the number of cases might be reduced by reducing the exposure to one ppm."²²⁰

The plurality interpreted section 6(b)(5), which empowers OSHA to promulgate occupational health standards "reasonably necessary or appropriate to provide safe or healthful employment," to require the Secretary to make a "threshold finding"²²¹ that a workplace is unsafe in the sense that "*significant risks* are present and can be eliminated or lessened by a change in practices."²²² The Court interpreted the intent of the statute as not mandating employers to provide "absolutely risk-free"²²³ workplaces whenever technologically and economically feasible.

²¹⁵ 581 F.2d at 502 (quoting 29 U.S.C.A. § 652(8)).

²¹⁶ *Id.* (emphasis added).

²¹⁷ *Id.* at 502-03.

²¹⁸ 448 U.S. at 625.

²¹⁹ *Id.* at 613.

²²⁰ *Id.* at 634 (emphasis added).

²²¹ *Id.* at 642.

²²² *Id.* (emphasis added).

²²³ *Id.* at 641.

Rather the statute was intended to require the elimination "as far as feasible, of significant risks of harm."²²⁴ The Court concluded that:

Only after the Secretary has made the threshold determination that such a [significant] risk exists with respect to a toxic substance, would it be necessary to decide whether Section 6(b)(5) requires him to select the most protective standard he can consistent with economic and technological feasibility or whether . . . the benefits of the regulation must be commensurate with the costs of its implementation.²²⁵

The *American Petroleum* Court challenged OSHA's apparent policy to ensure that not even one employee will be subject to any risk of serious harm, no matter how small that risk may be.²²⁶ In perhaps the most significant language of the opinion, the plurality declared that this theory was "at odds with Congress' express recognition of the futility of trying to make all workplaces totally risk free."²²⁷ Essentially, the Court substituted OSHA's approach to diminishing or eliminating workers' exposure to carcinogens, with its own newly proclaimed "significant risk" standard. The implication of this test is that it imposes upon OSHA the burden of evaluating whether substantial scientific evidence exists that the proposed health standard is reasonably necessary or appropriate (at least more likely than not) to remedy a significant risk of material health impairment.²²⁸ While such a policy may be adequate in the case of many toxic substances, it is definitely callous in the case of carcinogens. Furthermore, we should not be forced to make an evaluation of what constitutes "significant risk" in this context before establishing the most effective standards to minimize or completely eliminate the exposure to cancer causing agents.

The *American Petroleum* decision left unresolved the issue of whether the feasibility parameter required a cost-benefit analysis. Writing separately, Justice Powell concluded that the statute requires OSHA to determine that the economic effects of its standard bear a reasonable relationship to the expected benefits, and therefore "[a]n occupational health standard is neither 'reasonably necessary' nor 'feasible' . . . if it calls for expenditures wholly disproportionate to the expected health . . . benefits."²²⁹ He recommended that the standard-setting process take economic factors into consideration and that the promulgation of standards be achieved with reference to comparable benefits available at a lower cost.²³⁰ The logic intrinsic in such reasoning is that a worker's op-

²²⁴ *Id.*

²²⁵ *Id.* at 639-40.

²²⁶ *Id.* at 650.

²²⁷ *Id.*

²²⁸ *Id.* at 653.

²²⁹ *Id.* at 667.

²³⁰ *Id.* at 670. Justice Powell's argument seems to support an interpretation of economic feasibility as something short of massive dislocation. He stated that a cost-

portunity for employment in an environment free from the risk of cancer has a specific price to which one may ascribe a particular monetary value. The direct implication of such logic is that each human life has a specific economic value which is subordinate to the economic worth of the corporation.

Under the "significant risk" analysis as applied to the fetal protection issue it appears that the fetus would lose since the scientific evidence available in the field does not meet the stringent criteria required by the plurality in *American Petroleum*. Also, any OSHA standard promulgated solely to safeguard the health of fertile women and their fetuses might be struck down as not being reasonably necessary or appropriate. The same result would ensue if Justice Powell's cost-benefit analysis were to be used since the tangible cost to industry of providing a fetus-safe work environment might not be justified by its speculative, intangible societal benefits.

The issues of economic feasibility and cost-benefit analysis were further examined by the District of Columbia Circuit in *American Federation of Labor v. Marshall*²³¹ where the court upheld most of OSHA's cotton dust standard. The *Marshall* court held that the Act did not require OSHA to undertake a "systematic evaluation of costs and benefits."²³² The court further stated that Congress itself balanced the costs and benefits in its mandate to OSHA under section 6(b)(5) to adopt the most feasible protective standard.²³³

The court then engaged in a cogent discussion on the disadvantages of cost-benefit studies.²³⁴ According to the court, costs and benefits are often expressed arbitrarily, and numerical estimates may hide assumptions and qualifications that create bias.²³⁵ A cost-benefit analysis regarding health or environmental quality is particularly difficult since it would require a comparison between present readily calculable costs and less easily ascertainable benefits spread over time and people.²³⁶ Applying

benefit analysis would ensure that an industry remained competitive. *Id.* at 668-69 n.4 & 6. He quotes Senator Williams, a sponsor of the Act, as advocating a balance between providing a healthy work environment and allowing industry to function "without undue interference." *Id.* at 668 n.5. "Without undue interference" may require something less than massive dislocation, but not necessarily a cost-benefit analysis. Justice Powell's own comments reveal this distinction: "[t]here could be no such 'balance' if OSHA were authorized to impose standards without regard to economic consequences *short of serious dislocation*." *Id.* at 668-69 n.5 (emphasis added). He also stated that Congress did not intend to advocate health and safety at the expense of maintaining a strong national economy. *Id.* at 669 n.6.

²³¹ 617 F.2d 636 (D.C. Cir. 1979) *aff'd in part, vacated in part, and remanded sub nom. Textile Mfr. Inst. Inc. v. Donovan*, 452 U.S. 490 (1981).

²³² 617 F.2d at 663.

²³³ *Id.*

²³⁴ *Id.* at 665.

²³⁵ *Id.*

²³⁶ *Id.* at 665-66 n.172.

this analysis to the issue of fetal protection raises some rather perplexing questions. One cannot calculate or assign a monetary value to the health of future generations. Should society have to balance employment opportunities with the cost of avoiding birth defects?

In *American Textile Mfr. Inst., Inc. v. Donovan*,²³⁷ the Supreme Court left most of *American Fed'n of Labor v. Marshall* intact. In a five-three ruling, the Court stated:

Congress itself defined the basic relationship between costs and benefits, by placing the "benefit" of worker health above all other considerations save those making attainment of this benefit unachievable. Any standard based on a balancing of costs and benefits by the Secretary that strikes a different balance than that struck by Congress would be inconsistent with the command set forth in section 6(b)(5). Thus, *cost-benefit analysis by OSHA is not required by the statute because feasibility analysis is.*²³⁸

The Court limited its inquiry to considering the type of analysis the Agency is to perform in setting standards for toxic materials or harmful physical agents. It concluded that since Congress specified that these standards be promulgated *to the extent feasible*, Congress did not intend to impose an additional and overriding cost-benefit analysis requirement on the issuance of those standards.²³⁹ The Court construed the legislative history of the Act to stand for the proposition that Congress intended to emphasize the importance of insuring the health and safety of the country's labor force, while maintaining that the additional costs incurred by employers to clean up the workplace were necessary costs of doing business.²⁴⁰

Subsequent to the *American Textile* decision, OSHA developed a four-step process for the development and promulgation of standards for exposure to toxic substances under section 6(b)(5).²⁴¹ This process incorporates some of the principles enunciated by the Supreme Court in both *American Petroleum* and *American Textile*. The Agency is to 1) establish whether a significant risk to the health of workers exists; 2) show that compliance with the standard will reduce the risk; 3) consider all relevant technical, medical, and economic data in setting the appropriate

²³⁷ 452 U.S. 490 (1981). See generally Note, *Cost-Benefit Analysis, Cost-Effectiveness Analysis and the Cotton Dust Standard: A Matter of Life and Death*, 35 RUTGERS L. REV. 133 (1982) [hereinafter cited as Note, *Cost-Benefit Analysis*].

²³⁸ 452 U.S. at 509 (citations omitted) (emphasis added).

²³⁹ *Id.* at 513.

²⁴⁰ *Id.* at 521.

²⁴¹ *OSHA to Use Four-Step in Setting Standards*, CHEM. & ENG'G. NEWS 7 (July 20, 1981).

permissible exposure level (PEL); and 4) use cost-effectiveness analysis to decide the best means of implementing the PEL.²⁴² OSHA thus replaced the concept of cost-benefit with that of cost-effectiveness. The difference between the two analytical approaches involves the specific point in time when the economic test is to be performed. Cost-benefit analysis is applied at the time of the promulgation of the standard, while cost-effectiveness analysis is used at the time of implementation of the standard to find the best means of achieving the desired goal.²⁴³ One commentator has suggested that in the context of the Act, cost-effectiveness analysis is as inappropriate as cost-benefit analysis since it would shift the burden of achieving the standard to the employee rather than leaving it on the employer as Congress had intended.²⁴⁴

The *American Textile* analysis and the cost-effectiveness test could be applied to the issue of fetal health to justify the establishment of stringent standards that would protect both mother and fetus at considerable cost to the employer. Under the cost-effectiveness analysis, standards for fetal protection might be promulgated, but the fertile worker would have to affirmatively participate in the implementation of the standard. Such participation might even include voluntary removal of employees from the toxic environment.²⁴⁵ The Lead Standard²⁴⁶ promulgated by OSHA might be considered representative of the types of provisions such a standard should contain. But, as will be seen from the analysis presented in the next section, the intrinsic inconsistencies in this standard make it inadequate to protect the health of the fetus.²⁴⁷

c. The Lead Standard

A careful analysis of the Lead Standard will demonstrate its ineffectiveness in safeguarding the health of the fetus. The standard established a permissible lead exposure limit (PEL) of 50 micrograms/m³ ($\mu\text{g}/\text{m}^3$) average over an eight hour period,²⁴⁸ and a 30 $\mu\text{g}/\text{m}^3$ action

²⁴² *Id.*

²⁴³ Note, *Cost-Benefit Analysis*, *supra* note 237, at 149.

²⁴⁴ *Id.* at 151.

²⁴⁵ OSHA has issued guidelines regarding a voluntary compliance program which provides that a company is eligible for the program if the following conditions exist: (1) an ongoing safety program; (2) an internal employee complaint mechanism; (3) assurances that workers who file complaints will not be subject to discrimination; (4) a cooperative atmosphere between workers and the employer; (5) no discrimination of employee rights under the Act; and (6) a good injury rate record. 47 Fed. Reg. 29,025 (1982). See generally Chelius & Stark, *OSHA's Voluntary Protection Program*, 35 LAB. L.J. 167 (1984).

²⁴⁶ 29 C.F.R. § 1910.1025 (1984).

²⁴⁷ See *infra* note 253 and accompanying text.

²⁴⁸ 29 C.F.R. § 1910.1025 (1984). This constitutes the highest level of lead in the air to which workers may be exposed over an eight hour workday. *Id.* Appendix B.

level.²⁴⁹ According to OSHA the PEL was established with the intent of maintaining the workers' blood lead level at or below 40 $\mu\text{g}/100\text{g}$,²⁵⁰ a level at which most workers will be protected from adverse health effects.²⁵¹

The Agency recognized the serious effects lead has on the reproductive system of both men and women and on the health of the offspring. Such overexposure may result in decreased sex drive, impotence, and sterility in men. Lead can alter the structure of sperm cells increasing the risk of birth defects. The Agency further stated that lead exposure also may result in decreased fertility and abnormal menstrual cycles in women. The course of pregnancy may be adversely affected by exposure to lead since it crosses the placental barrier and poses risk to the developing fetus. In discussing the effects of lead on the progeny of parents exposed to this toxin, the Agency remarked that children born of parents, either one of whom had been exposed to excess lead levels, have an increased risk of being born with birth defects, mental retardation, or behavioral disorders, or of dying during the first year of childhood.²⁵²

Even though the 50 $\mu\text{g}/\text{m}^3$ exposure level might protect workers by maintaining their blood lead level at 40 $\mu\text{g}/100\text{g}$, this PEL is inadequate to protect workers who plan to become parents. OSHA states that the blood lead levels of both male and female workers who intend to have children should be maintained below 30 $\mu\text{g}/100\text{g}$ to minimize adverse reproductive health effects upon the parents and the developing fetus.²⁵³ This lower level is also necessary to protect the fetus from neurological impairment since, as discussed above, lead infiltrates the placenta. Lead levels in the mother's blood are comparable to concentrations of lead in the umbilical cord at birth. According to OSHA, despite the fact that there are insufficient direct data on damage to the fetus from exposure to lead, it is generally assumed that the fetus and newborn are at least as susceptible to neurological damage as young children. Therefore, OSHA recommended that the blood lead level in children as well as newborns and fetuses should be maintained below 30 $\mu\text{g}/100\text{g}$.²⁵⁴

Although OSHA has specifically recognized that the 30 $\mu\text{g}/100\text{g}$ blood lead level is necessary to protect workers' reproductive abilities and to ensure fetal health, the standard in no way enforces or guarantees the

The 50 $\mu\text{g}/\text{m}^3$ level represents the lowest feasible level. 43 Fed. Reg. 52,963 (1978). The Lead Standard was upheld in *United Steel Workers of America v. Marshall*, 647 F.2d 1189 (D.C. Cir. 1980), cert. denied, 453 U.S. 913 (1981).

²⁴⁹ 29 C.F.R. § 1910.1025(b) (1984). This level initiates exposure monitoring, medical surveillance, and training and education. *Id.* at Appendix A.

²⁵⁰ *Id.* at Appendix A.

²⁵¹ *Id.*

²⁵² *Id.*

²⁵³ *Id.*

²⁵⁴ *Id.* at Appendix C.

achievement of this level.²⁵⁵ The inadequacy of the Lead Standard in this area was summarized rather pragmatically, if not callously, in the following statement: "While OSHA believes that a standard should be set which protects all persons affected — male and female workers, and the fetus — *the agency is limited by the requirement that a standard be feasible.*"²⁵⁶

A further indication that the Lead Standard is apparently ineffective in safeguarding fetal health or workers' reproductive abilities, is the provision for medical removal of pregnant workers and of male and female workers who are planning to have children.²⁵⁷ Removal under the medical removal protective provision (MRP) is triggered as a result of either elevated blood lead levels²⁵⁸ discovered during examinations under the biological monitoring system²⁵⁹ or of "a detected medical condition which places the employees at increased risk of material impairment to health"²⁶⁰ discovered during a medical examination under the medical surveillance provisions of the standard.²⁶¹ Under the provisions of the standard, automatic removal occurs only when the blood lead level is at or above 50 $\mu\text{g}/100\text{g}$,²⁶² which is well above the safe level for fetal health and reproductive integrity. Therefore, a worker, male or female, concerned about the health of his or her offspring, who wanted to be removed from hazardous exposure to unsafe lead levels, would have to submit themselves voluntarily²⁶³ to medical examinations.²⁶⁴

In summary, the worker bears the burden and primary responsibility for the health of future generations since there can be no removal based on concern for fetal health without employer participation in medical surveillance.²⁶⁵ A medical removal protective system might be successful

²⁵⁵ In the Preamble to the Lead Standard, OSHA acknowledged that the 50 $\mu\text{g}/\text{m}^3$ will not result in a 30 $\mu\text{g}/100\text{g}$ blood lead level, but rather in a 35 $\mu\text{g}/100\text{g}$ level. 43 Fed. Reg. 52,966 (1978).

²⁵⁶ *Id.* (emphasis added).

²⁵⁷ 29 C.F.R. § 1910.1025, Appendix C (1984).

²⁵⁸ 29 C.F.R. § 1910.1025(k)(i) (1984).

²⁶⁰ 29 C.F.R. § 1910.1025(k)(ii) (1984).

²⁶¹ 29 C.F.R. § 1910.1025(j)(3)(C) (1984).

²⁶² 29 C.F.R. § 1910.1025(k)(D) (1984).

²⁶³ Medical surveillance is voluntary at the initiation of the worker. 29 C.F.R. § 1910.1025(j)(3)(C) (1984).

²⁶⁴ The standard provides:

The employer shall make available medical examinations and consultations to each employee [who is or may be exposed above the action level for more than 30 days a year] . . . as soon as possible, upon *notification by an employee* . . . that the employee desires medical advice concerning the effects of . . . exposure to lead or the employee's ability to procreate a healthy child. . . .

Id. (emphasis added).

²⁶⁵ The MRP provisions under the Lead Standard were judicially reviewed by the District of Columbia Circuit in *United Steel Workers of America v. Marshall*, 647 F.2d 1189 (D.C. Cir. 1980), *cert. denied*, 453 U.S. 913 (1981). See *infra* p. 44 and accompanying notes.

in providing fetal protection when used specifically for that purpose rather than as a pretext for discrimination.

d. Medical Removal Protection

The discussion above recognized that neither the legislative history of the OSHAct nor judicial interpretation of the Act call for OSHA to promulgate standards that would provide a completely risk-free environment.²⁶⁶ Consequently, the health of some highly sensitive workers who are susceptible to toxic substances even at low levels of exposure, or of workers who have been exposed to toxins for an extended period of time, is not adequately protected by exposure standards.²⁶⁷ Consequently, the only effective protection against occupational illness for these workers is a system of health monitoring or medical surveillance that alerts both the employees and the employer of potential health problems long before disability becomes either permanent or life-threatening.²⁶⁸

The majority of OSHA's standards contain medical surveillance and biological monitoring provisions.²⁶⁹ In case the results of the medical examination indicate that the worker's health "would be materially impaired by continued exposure," the regulations provide for removal of the

²⁶⁶ See *supra* notes 169-75 and accompanying text.

²⁶⁷ See generally Rothstein, *Employee Selection Based on Susceptibility to Occupational Illness*, 81 MICH. L. REV. 1379 (1983): "a wide range of larger ethical and societal questions are inherent in any effort to address the legal problems raised by employer screening for susceptibility to occupational illness. . . . Congress intended that employers have final responsibility for ensuring employee safety and health by eliminating workplace hazards, not by eliminating high-risk workers." *Id.* at 1493-95 (footnote omitted).

²⁶⁸ See 29 U.S.C. § 655(b)(7) (1982) which provides, in relevant part:

Where appropriate, such standard shall also prescribe suitable protective equipment and control or technological procedures to be used for monitoring or measuring employee exposure at such locations and intervals, and in such manner as may be necessary for the protection of employees. In addition, where appropriate, any such standard shall prescribe the type and frequency of medical examinations or other tests which shall be made available, by the employer or at his cost, to employees exposed to such hazards in order to most effectively determine whether the health of such employees is adversely affected by such exposure.

²⁶⁹ See 29 C.F.R. § 1910.1003(g) (1984) (medical surveillance for exposure to 4 - Nitrobiphenyl - a suspected carcinogen); 29 C.F.R. § 1910.1004(g) (1984) (medical surveillance for exposure to alpha-Naphthylamine - suspected carcinogen); 29 C.F.R. § 1910.1006 (1984) (medical exposure to Methylchloromethyl ether—a suspected carcinogen); 29 C.F.R. § 1910.1007(g) (1984) (medical surveillance for exposure for 3,3'-Dichlorobenzidine - a suspected carcinogen); 29 C.F.R. § 1910.1008(g) (1984) (medical surveillance for exposure to bis-Chloromethyl ether—a suspected carcinogen); 29 C.F.R. § 1910.1009(g) (1984) (medical surveillance for exposure to beta-Naphthylamine—a suspected carcinogen); 29 C.F.R. § 1910.1010(g) (1984) (medical surveillance for exposure to Benzidine - a suspected carcinogen); 29 C.F.R. § 1910.1011(g) (1984) (medical surveillance for exposure to 4-Aminodiphenyl - a suspected carcinogen); 29 C.F.R. § 1910.1012(g) (1984) (medical surveillance for exposure to Ethyleneimine—a suspected

employee from the hazardous work environment until it is medically safe for the employee to return to his or her regular job.²⁷⁰ Generally the Medical Removal Protection (MRP) provisions attempt to safeguard workers' health without economic dislocation.²⁷¹

The Lead Standard²⁷² provides for rather comprehensive MRP measures.²⁷³ The District of Columbia Circuit upheld the validity of these provisions in *United Steelworkers of America v. Marshall*.²⁷⁴ This case is the only one to consider OSHA's authority to establish the MRP program that provides for mandatory payments of benefits to workers, even if they do not work.²⁷⁵ The Lead Industry Association argued that OSHA

carcinogen); 29 C.F.R. § 1910.1014(g) (1984) (medical surveillance for exposure to 2-Acetylaminofluorene - a suspected carcinogen); 29 C.F.R. § 1910.1055(g) (1984) (medical surveillance for exposure to 4-Dimethylaminoazobenzene—a suspected carcinogen); 29 C.F.R. § 1910.1016(g) (1984) (medical exposure for N-Nitrosodimethylamine—a suspected carcinogen); 29 C.F.R. § 1910.1017(k) (1984) (medical surveillance for exposure to vinyl chloride); 29 C.F.R. § 1910.1018(n) (1984) (medical surveillance for exposure to inorganic arsenic); 29 C.F.R. § 1910.1025(k) (1984) (medical surveillance for exposure to lead); 29 C.F.R. § 1910.1029(j) (1984) (medical surveillance for exposure to coke oven emissions); 29 C.F.R. § 1910.1043(h) (1984) (medical surveillance for exposure to cotton dust); 29 C.F.R. § 1910.1044(m) (1984) (medical surveillance for exposure to 1,2-dibromo-3-chloropropane—a carcinogen); 29 C.F.R. § 1910.1045(m) (1984) (medical surveillance for exposure to acrylonitrile—a carcinogen).

²⁷⁰ See generally Mahoney and Kendall, *OSHA's Medical Surveillance and Removal Programs: Implications and Validity*, 42 U. PITT. L. REV. 779 (1981); Note, *The Validity of Medical Removal Protection in OSHA's Lead Standard*, 58 TEX. L. REV. 1461 (1981).

²⁷¹ See e.g., 29 C.F.R. § 1910.1025 App. B which explains the Medical Removal Protection in the context of response to lead:

In most cases, employers will likely transfer removed employees to other jobs with sufficiently low lead exposure. . . . MRP benefits must be provided during the period of removal - i.e. [the employee will] continue to receive the same earnings, seniority, and other rights and benefits [he/she] would have received if [he/she] had not been removed. . . . When [the employee] is medically eligible to return to [his/her] former job, [the employer] must return [him/her] to [his/her] former job status.

²⁷² See *supra* notes 254-64 and accompanying text.

²⁷³ The MRP program under the Lead Standard has the added feature, as compared with simple removal programs, that it *guarantees* the employee's economic welfare as well as health:

The employer shall provide to an employee up to eighteen (18) months of medical removal protection benefits on each occasion that an employee is removed from exposure to lead. . . . [T]he requirement that an employer provide medical removal protection benefits means that employee shall maintain the earnings, seniority and other employment rights and benefits of an employee as though the employee had not been removed from normal exposure to lead.

29 C.F.R. § 1910.1025(k)(2)(i)(ii) (1984). See also 29 C.F.R. § 1910.1001(d)(2)(iv)(c) (1984) (asbestos medical removal provisions).

²⁷⁴ 647 F.2d 1189 (D.C. Cir. 1980), *cert. denied*, 453 U.S. 913 (1981).

²⁷⁵ See Mahoney and Kendall, *supra* note 270, at 782; Rothstein, *supra* note 267, at 1379, 1430.

was not empowered by Congress under the Act to establish MRP programs since the Act was silent on this subject.²⁷⁶ The court upheld OSHA's right to require removal of employees from the workplace without loss of pay or benefits since it concluded that the Act gives OSHA "almost unlimited discretion to devise means to achieve the congressionally mandated goal."²⁷⁷ This goal is "to assure so far as possible every working man and woman in the nation safe and healthful working conditions . . . by developing innovative methods . . . for dealing with occupational safety and health problems."²⁷⁸

Perhaps MRP programs represent the type of "innovative methods" Congress intended to be implemented by OSHA in order to achieve the goal of ensuring a healthy and safe workplace where employees are protected from debilitating or life threatening occupational disease. The *United Steelworkers* court further stated that the test for promulgating any measures or standards under the Act was that they should be "reasonably necessary."²⁷⁹ In defining OSHA's burden of proof in establishing reasonableness the court stated:

OSHA must demonstrate substantial evidence to support any conclusions of determinable fact that underlie the program and, where the new provision cannot rely on factual certainty, must carefully explain the bases of its legislative decision to create it. This test essentially reinforces the principle that where a statute empowers an agency to make rules necessary to carry out the provisions of the statute, the court will uphold such a rule, if it is reasonably related to the purpose of the enabling legislation.²⁸⁰

MRP provisions of the type promulgated under the Lead Standard would minimize or eliminate workers' reluctance to submit themselves to medical examinations because of fear of job loss or decrease in pay due to transfer.²⁸¹ This reluctance might be exacerbated in the case of

²⁷⁶ The Preamble to the Lead Standard states:

OSHA's legal authority to adopt MRP was perhaps the greatest source of controversy during the lead proceeding, with industry representatives uniformly arguing that no legal authority for MRP exists. It is true that the Occupational Safety and Health Act contains no language which either explicitly requires or expressly authorizes the inclusion of MRP in OSHA health standards. The legislative history of the Act reveals no evidence that Congress gave any consideration to the appropriateness of MRP as a protective health mechanism.

43 Fed. Reg. 52,976 (1978).

²⁷⁷ 647 F.2d at 1230 (emphasis added).

²⁷⁸ 29 U.S.C. § 651(b)(5) (1982).

²⁷⁹ 647 F.2d at 1231.

²⁸⁰ *Id.* at 1237 (citation omitted).

²⁸¹ See *American Textile Mfrs. Inst. v. Donovan*, 452 U.S. 490, 537-39 (1981) where the Court struck down the MRP provision of the cotton dust standard. The Court declined to decide "whether or not OSHA had [the underlying authority] to require employers

workers who plan to become parents. Since the future generations are not protected under the Act,²⁸² removal benefits may not even be available.

2. The General Duty Clause

Congress recognized that section 6(b) of the Act establishing the standard-setting procedure may not be sufficient to address all possible health and safety hazards present in the workplace. Therefore, it included in the Act a general duty clause which provides that each employer shall "furnish to each of his employees employment and a place of employment which are free from recognized hazards that are causing or are likely to cause death or serious physical harm to his employees."²⁸³

Preventing reproductive hazards and the deleterious consequences or parental exposure to toxic substances on the fetus could come within the general duty clause, when such medical risks constitute "known" hazards²⁸⁴ which a "reasonably prudent employer"²⁸⁵ would have taken adequate precautions to eliminate or minimize. In 1979 OSHA charged that American Cyanamid's fetal protection policies which forced five women to choose to be sterilized rather than lose their jobs, were in viola-

to guarantee employees' wage and employment benefits" because the Agency failed to publish a statutorily required statement of reasons that its "wage guarantee requirement is related to the achievement of a safe and healthful work environment." *Id.* at 537-38. OSHA had argued that: "[e]xperience under the Act has shown that employees are reluctant to disclose symptoms of disease and tend to minimize work-related health problems for fear of being discharged or transferred to a lower paying job. . . . Brief for Federal Respondent 67." *Id.* at 539.

²⁸² *But see Public Citizen v. Aucther*, 702 F.2d 1150 (D.C. Cir. 1983) (proceedings to set the standard for ethylene oxide) where the court commented that both "workers" and "the children they will hereafter conceive" must be taken into consideration by OSHA when setting standards.

²⁸³ 29 U.S.C. § 654(a)(1) (1982). See generally Morgan and Duvall, *OSHA's General Duty Clause: An Analysis of Its Use and Abuse*, 5 INDUS. REL. L.J. 293 (1983); Drapkin, *OSHA's General Duty Clause: Its Use is Not Abuse - A Response to Morgan and Duvall*, 5 INDUS. REL. L.J. 322 (1983).

²⁸⁴ See *National Realty and Construction Co. v. OSHRC*, 489 F.2d 1257 (D.C. Cir. 1973) where the court interpreted "recognized hazard" as follows:

An activity may be a "recognized hazard" even if the defendant employer is ignorant of the activity's existence or its potential for harm. . . . A recognized hazard is a condition that is known to be hazardous and is known not necessarily by each and every individual employer but is known taking into account the standard of knowledge in the industry. In other words, whether or not a hazard is recognized is a matter for objective determination; it does not depend on whether the particular employer is aware of it. 116 Cong. Rec. (Pt. 28) 38377.

Id. at 1265 n.32.

In *Brennan v. OSHRC (Vy Lactor Laboratories, Inc.)* 494 F.2d 460 (8th Cir. 1974) the court held that an employer's personal knowledge of the existence of a hazard was sufficient to render the hazard "recognized."

²⁸⁵ *Donovan v. Royal Logging Co.* 9 O.S.H. Cas. (BNA) 1755, 1762 (9th Cir. 1981).

tion of the Act's general duty clause.²⁸⁶ OSHA interpreted the forced sterilization as work-related injuries to the women's reproductive system.

The Occupational Safety and Health Review Commission (OSHRC), in a two-to-one ruling, held that the general duty clause was not applicable to American Cyanamid's Fetus Protection Policy.²⁸⁷ The majority rejected the argument that OSHA's mandate to safeguard the physical well being of workers "while they are engaged in work-related activities" should be extended to elective sterilization. According to the Commission: "Congress did not intend the Act to apply to every conceivable aspect of employer-employee relations and that due to its unique characteristics this condition of employment is not a hazard within the meaning of the general duty clause."²⁸⁸ The majority found that the women's choice to undergo sterilization to enable them to keep their jobs was not a consequence of corporate policy, but was a personal decision of the individual woman which "grows out of economic and social factors which operate primarily outside the workplace [and] the employer neither controls nor creates those facts."²⁸⁹

Commissioner Cottine wrote a scathing dissent in which he commented that the majority unduly narrowed its interpretation of the Act and consequently placed American workers beyond the protective scope of the law: "One fact is inescapable in this case. Five American Cyanamid employees have been sterilized. As a matter of law, this irreversible termination of their childbearing capacities is a material impairment of functional capacity resulting from a condition of employment imposed by their employer."²⁹⁰

Rejecting the logic of the majority, the dissent could see no distinction between the Fetus Protection Policy and the willful exposure of workers to toxic substances: "Corporate policy that offers employees a choice between jobs and surgical sterilization is comparable to corporate policy that offers employees a choice between jobs and exposure to sterilizing chemicals."²⁹¹

²⁸⁶ *Secretary of Labor v. American Cyanamid Co.* No. 79-5762 (O.S.H.R.C. filed Oct. 25, 1979).

²⁸⁷ *American Cyanamid Co.*, 9 O.S.H. Cas. (BNA) 1596, 1981 O.S.H. Dec. (CCH) Paragraph 31,421 (1981). When OSHA did not appeal this decision the union sought review in the D.C. Circuit, *Oil Chem. & Atomic Workers Union, Local 3-499 v. OSHRC*, Docket No. 81-1687. The D.C. Circuit denied American Cyanamid's motion to dismiss, but held that American Cyanamid and not OSHRC was the proper defendant. 671 F.2d 643 (D.C. Cir.), cert. denied sub nom *American Cyanamid Co. v. Oil, Chem. & Atomic Workers Union, Local 3-499*, 12 OSH REP. (BNA) 391 (1982).

²⁸⁸ *Id.* at 1599, 1981 O.S.H. Dec. (CCH) at Paragraph 31,430.

²⁸⁹ *Id.* at 1600, 1981 O.S.H. Dec. (CCH) at Paragraph 31,431.

²⁹⁰ *Id.* at 1605, 1981 O.S.H. Dec. (CCH) at Paragraph 31,436.

²⁹¹ *Id.*

The D.C. Circuit upheld the decision of the OSHRC in *Oil, Chemical and Atomic Workers Int'l. Union v. American Cyanamid Co.*²⁹² The court held that the language of the Act could not "be stretched so far as to hold that the sterilization option of the [company's] fetus protection policy is a 'hazard of employment' under the general duty clause."²⁹³ The court chose to simply interpret the statute rather than get involved in the complex moral issues raised by the case.²⁹⁴ But, should not moral considerations be part of the promulgation and, especially, interpretation of a statute? A statute affects people and is supposed to protect their best interests. The D.C. Circuit, by proclaiming that no moral issues were going to be addressed by their interpretation of the language of the OSHAct, chose to ignore the very core of the fetal protection issue.

The *American Cyanamid* court recognized that the words of the general duty clause could conceivably be interpreted to cover the sterilization option offered by American Cyanamid to its female employees,²⁹⁵ but it conveniently decided to construe the language of the statute in light of precedential interpretations.²⁹⁶ It focused on the definition of "working conditions" in the context of "the language of industrial relations":²⁹⁷ "The element of working conditions encompasses two subfactors: 'Surroundings' and 'hazards.' 'Surroundings' measures the elements, such as toxic chemicals or fumes, regularly encountered by a worker. . . . 'Hazard' takes into account the physical hazards regularly encountered . . . and the severity of injury they can cause."²⁹⁸ Applying this definition, it concluded that the general duty clause did not apply to a corporate *policy* as contrasted with a *physical condition* of the workplace.²⁹⁹ Thus, the court engaged in an exercise of exalting form over substance.

The court also addressed the argument advanced by Commissioner Cottine in his dissent to the OSHRC decision that the American Cyanamid fetal protection policy in reality offered to its women employees two choices: 1) to undergo sterilization or 2) to quit.³⁰⁰ Such a situation is analogous to giving an employee a choice between working in the presence of a sterilizing chemical or resigning.³⁰¹ The court concluded that "a

²⁹² 741 F.2d 444 (D.C. Cir. 1984).

²⁹³ *Id.* at 445.

²⁹⁴ *Id.*

²⁹⁵ *Id.* at 447.

²⁹⁶ *Id.* at 448.

²⁹⁷ *Id.*

²⁹⁸ *Id.*, (quoting *Corning Glass Workers v. Brennan*, 417 U.S. 188, 202 (1974)).

²⁹⁹ *Id.*

³⁰⁰ See *supra* notes 12-14 and accompanying text.

³⁰¹ 741 F.2d at 449.

chemical is not the same thing as a policy and a congressional decision to deal with one does not necessarily constitute a decision to deal with the other."³⁰² This conclusion conveniently deals with semantics rather than the crux of the analogy, namely, whether any employee should continue to work in a clearly hazardous work environment or be forced to quit his or her job.

Instead the court chose to decide the issue very narrowly, ruling that the fetal protection policy is not a hazard within the meaning of the general duty clause.³⁰³ The court commented that a different decision would have resulted in the adoption of "a broad principle of unforeseeable scope: any employer policy which, because of employee economic incentives, left open an option exercised outside the workplace that might be harmful would constitute a 'hazard' that made the employer liable under the general duty clause."³⁰⁴ Choosing sterilization over unemployment is not merely a case of simple economic incentives; rather, it is essentially a case of choosing between continuing one's life as a normal human being and possible starvation. Perhaps, the language of the Act should be stretched to include this idea within the concept of "hazard."³⁰⁵

From the discussion above it is apparent that while the general duty clause might be interpreted to provide some attractive features in terms of fetal protection, OSHRC and the D.C. Circuit have chosen not to apply it to fetal protection programs. Their rather narrow and literal interpretation of the law only applies to incidents of sterilization. The Commissioners have suggested that it is "impossible for an employer to compel employees to undergo sterilization."³⁰⁶ The question is, how does the Commission define "compel." At least in the case of five women it appears that the loss of employment constituted sufficient coercion.³⁰⁷

³⁰² *Id.*

³⁰³ *Id.*

³⁰⁴ *Id.*

³⁰⁵ The court commented that such an augmentation of the language of the Act was within the purview of Congress not the court. Accordingly the court should not speculate as to whether Congress contemplated the statute's application to situations such as the one in this case where an employer-offered choice, leading to injury rather than discharge, constituted a violation of the statute. The court stated: "That conclusion would have required a great deal of thought about unforeseen liabilities for employers and how far to let employees decide what is in their own best interest. It is not possible to say that, in all circumstances imaginable, Congress would have made employers liable for giving employees an option where the only feasible alternative was discharge." *Id.*

³⁰⁶ 9 O.S.H. Cas. (BNA) at 1599 n.14 (1981).

³⁰⁷ Two opposing views regarding the scope of the General Duty Clause have been presented. One view suggests that the use of the clause is most appropriate "where the hazard and its capacity to harm employees are obvious." Under this interpretation of the clause, extreme care should be given in issuing citations where there is a great deal of "scientific uncertainty." In these cases it is recommended that OSHA alert the employer to the existence of the hazard and to urge him to take voluntary measures to reduce the risk. Therefore, this view of the clause urges a narrow construction consistent with

3. Conclusion

The purpose of the Act is to protect the health and safety of the American workforce.³⁰⁸ Reproductive impairment is definitely covered under the Act since it constitutes a material impairment of the employee's health. The problem that remains is whether the protection of the statute extends to the workforce of the future. As demonstrated above, standards established by OSHA, even when they address the issue of reproductive health, are still insufficient to protect the fetus.³⁰⁹

The approach American Cyanamid took in its fetus protection policy is woefully inadequate. First, it is discriminatory against women; and second, it does not address the contingency that fetal harm may be caused by the exposure of both parents to lead.

B. Toxic Substances Control Act

In 1976 Congress passed the Toxic Substances Control Act (TSCA)³¹⁰ to protect human health and the environment from unreasonable risks presented by chemical substances.³¹¹ The Act empowers the Environmental Protection Agency (EPA) to regulate the manufacture, processing, distribution in commerce, use, and disposal of chemical substances and mixtures.³¹² The Administrators of the EPA may require manufacturers or processors of potentially harmful chemicals to conduct toxicological tests on these substances.³¹³ Toxicological testing is designed to either evaluate the characteristics of the chemical, such as persistent or acute toxicity, or to clarify the health and environmental effects including carcinogenic, mutagenic, behavioral, and synergistic effects.³¹⁴ The Administrator must establish the need for such testing based on the following criteria: 1) whether the chemical may present unreasonable health

Congressional intent to subordinate the clause to the standard-setting function. Morgan and Duvall, *supra* note 283, at 315-18.

The other view urges an expansive interpretation of the clause in view of the slow pace at which OSHA issues standards. One author states: "If we wait for the promulgation of specific standards, we might as well forget about protecting workers from the array of new and continuing hazards which constantly plague the workplace." Drapkin, *supra* note 283, at 322.

³⁰⁸ See *supra* notes 169-75 and accompanying text.

³⁰⁹ See *supra* notes 253-56 and accompanying text.

³¹⁰ 15 U.S.C. §§ 2601-2629 (1982).

³¹¹ See generally ASPEN SYSTEMS CORPORATION, CENTER FOR COMPLIANCE INFORMATION, TOXIC SUBSTANCES CONTROL SOURCEBOOK (1978); Gaynor, *The Toxic Substances Control Act: A Regulatory Morass*, 30 VAND. L. REV. 1149 (1977).

³¹² 15 U.S.C. § 2601(a)(2) (1982).

³¹³ 15 U.S.C. § 2603 (1982).

³¹⁴ 15 U.S.C. § 2603(b)(2)(A) (1982).

or environmental risks through exposure to the chemical or otherwise; 2) whether there are insufficient data and experience for determining and protecting the health and environment from the effects of the chemical; and 3) whether testing of the chemical is necessary to develop such data.³¹⁵

A company which manufactures a new chemical or finds a significant new use for an existing chemical substance must notify the EPA administrator 90 days prior to manufacture.³¹⁶ This pre-market notification must contain sufficient information³¹⁷ to enable the administrator to decide whether to allow the market introduction of the chemical, to order additional testing to establish further details regarding the toxicity of the chemical, or to prohibit the marketing of the specific substance in the event the chemical is found to present an unreasonable risk.³¹⁸

In terms of reproductive and fetal protection, the TSCA specifically provides for the regulation of substances found to be carcinogenic, mutagenic, or teratogenic:

Upon receipt of . . . information . . . which indicates to the Administrator that there may be a reasonable basis to conclude that a chemical substance or mixture presents or will present a significant risk of serious or widespread harm to human beings from cancer, gene mutations, or birth defects, the Administrator shall, within the 180 day period beginning on the date of the receipt of such data or information, initiate appropriate action . . . to prevent or reduce to a sufficient extent such risk or publish in the Federal Register a finding that such risk is not unreasonable.³¹⁹

Findings under this section are to be reported to OSHA for appropriate action under the Occupational Safety and Health Act, but the EPA Administrator has no statutory authority to prescribe or enforce standards or regulations affecting occupational safety and health.³²⁰

Through this provision it is possible for the EPA and OSHA to work together in identifying and regulating toxic chemicals which are hazardous either to the reproductive system of prospective parents or to the health of the fetus. To date no such action has been taken.³²¹

Unfortunately, even though TSCA might have the statutory language necessary to support a fetal protection program, the Act seems to have sufficient shortcomings which render it inadequate to safeguard the health

³¹⁵ 15 U.S.C. § 2603(a)(A)(i)-(iii) (1982).

³¹⁶ 15 U.S.C. § 2604(a)(1)(A)-(B) (1982).

³¹⁷ 15 U.S.C. § 2604(a)(2)(A)-(D) and 15 U.S.C. § 2604(b)(2)(A)-(B) (1982).

³¹⁸ 15 U.S.C. § 2604(e)-(f) (1982).

³¹⁹ 15 U.S.C. § 2603(f) (1982).

³²⁰ 15 U.S.C. § 2608(c) (1982).

³²¹ See Ashford and Caldart, *The Control of Reproductive Hazards in the Workplace: A Prescription for Prevention*, 5 IND. REL. L.J. 523 (1983).

of future generations. Such deficiencies include procedural unmanageability, an insufficient number of specifically trained individuals capable of supervising the implementation of the Act, and delays in the enforcement of sanctions against the use of chemicals found to be toxic.³²²

C. *Title VII of the Civil Rights Act of 1964 and the 1978 Pregnancy Discrimination Act*

The preceding sections of this article analyzed the impact that toxic substances have on the reproductive capabilities of employees and on the health of fetuses. Despite the fact that many of these toxins affect males and females equally, employers, when designing and implementing exclusionary policies, have used the excuse that females are more often or more severely affected³²³ by these chemicals.³²⁴ Such paternalistic measures have a long tradition in the American employment scene, and in the courts.³²⁵ Although these provisions were ostensibly aimed at safeguarding the health of women and their children, they actually became obstacles to the advancement of women.³²⁶

This section will examine the non-discriminatory employment policies employers are required to institute and follow under Title VII of the Civil Rights Act with respect to women. It will also examine how industrial employers might reconcile these measures with health and safety considerations.

Title VII of the Civil Rights Act of 1964, as amended, prohibits discrimination in employment based on race, religion, national origin, and sex.³²⁷ Clearly, employment programs which segregate women and

³²² Gaynor, *supra* note 311, at 1189.

³²³ See *supra* notes 12-23 and accompanying text.

³²⁴ See *supra* notes 8-11 and accompanying text.

³²⁵ In 1908 the Supreme Court in *Muller v. Oregon*, 208 U.S. 412 (1908) upheld the constitutionality of an Oregon statute limiting the maximum number of hours women could work. What was remarkable about the decision was its departure from precedent, especially from *Lochner v. New York*, 198 U.S. 45 (1905) which proclaimed the supremacy of the individual's freedom of contract. The Court justified its decision on the theory that women's reproductive abilities had to be protected in order for women to fulfill their natural role since "healthy mothers are essential to vigorous offspring, the physical well-being of the woman becomes an object of public interest and care in order to preserve the strength and vigor of the race." 208 U.S. at 421. The Court concluded that "woman's physical structure and the performance of maternal functions place her at a disadvantage in the struggle for subsistence." *Id.* See also *Bradwell v. State*, 83 U.S. (16 Wall) 130 (1873) (upholding the state of Illinois' decision to deny women the right to practice law since their "paramount destiny and mission" under the "law of the Creator" is "to fulfill the noble and benign offices of wife and mother"). *Id.* at 141.

³²⁶ See Andrade, *The Toxic Workplace: Title VII Protection for the Potentially Pregnant Person*, 4 HARV. WOMEN'S L.J. 71, 78 (1981).

³²⁷ The Statute provides:

It shall be an unlawful employment practice for an employer - (1) to fail or refuse to hire or to discharge any individual, or otherwise to discriminate against any individual with respect to his compensation, terms, conditions, or privileges

circumscribe their access to hazardous jobs are violative of Title VII. Programs such as the ones adopted by American Cyanamid use a different approach in that they exclude either fertile or pregnant females from exposure to toxic substances, not on the basis of their sex, but on the basis of their medical condition.³²⁸ The results are the same: depriving women of employment opportunities. The 1978 Pregnancy Amendment³²⁹ to Title VII was passed to address specifically the issue of discrimination due to pregnancy.³³⁰

1. The Pregnancy Amendment

The Pregnancy Amendment was passed by Congress in response to the Supreme Court decision in *General Electric Co. v. Gilbert*.³³¹ In *Gilbert*, the Court held that disability plans that did not cover pregnancy-related disabilities were not violative of Title VII.³³² The Court's reasoning was based mainly on its prior decision in *Geduldig v. Aiello*,³³³ where the validity of "a strikingly similar disability plan" was upheld under the fourteenth amendment.³³⁴ In *Geduldig*, the Court stated that:

[T]he insurance program does not exclude anyone from benefit eligibility because of gender but merely removes one physical condition—pregnancy—from the list of compensable disabilities. While it is true that only women can become pregnant, it does

of employment, because of such individual's race, color, religion, sex or national origin; or (2) to limit, segregate or classify his employees or applicants for employment in any way which would deprive or tend to deprive any individual of employment opportunities or otherwise adversely affect his status as an employee, because of such individual's race, color, religion, sex or national origin.

42 U.S.C. § 2000e-2(a) (1982). See generally B. SCHLEI & P. GROSSMAN, *EMPLOYMENT DISCRIMINATION LAW* (1983).

³²⁸ See *supra* notes 8-9 and accompanying text.

³²⁹ 42 U.S.C. § 2000e(k) (Supp. V 1981). The amendment states:

The terms "because of sex" or "on the basis of sex" include, but are not limited to, because of or on the basis of pregnancy, child-birth, or related medical conditions; and women affected by pregnancy, child-birth, or related medical conditions shall be treated the same for all employment-related purposes, including receipt or benefits under fringe benefits programs, as other persons not so affected but similar in their ability or inability to work, and nothing in § 703(h) of this title shall be interpreted to present otherwise.

See Note, *Sexual Equality Under the Pregnancy Discrimination Act*, 83 COLUM. L. REV. 690 (1983).

³³⁰ HOUSE COMM. ON EDUCATION AND LABOR, PROHIBITION OF SEX DISCRIMINATION BASED ON PREGNANCY, H.R. Rep. No. 948, 95th Cong. 2d Sess. (1978), reprinted in 1979 U.S. CODE CONG. & AD. NEWS 4749, 4752.

³³¹ 429 U.S. 125 (1976).

³³² *Id.* at 138-39.

³³³ 417 U.S. 484 (1974), cited in 429 U.S. 132-38.

³³⁴ 417 U.S. at 496-97, cited in 429 U.S. 132-38.

not follow that every legislative classification concerning pregnancy is a sex-based classification.³³⁵

The exclusion of pregnancy from the coverage of the benefit plan in *Geduldig* was characterized by the Court as not constituting discrimination based on sex.³³⁶ The Court therefore concluded that even though "[p]regnancy is, of course, confined to women,"³³⁷ it could not infer "that the exclusion of pregnancy disability benefits from [the plan] is a . . . pretext for discriminating against women."³³⁸

The Supreme Court's lack of direction and inconsistency in this area became evident in *Nashville Gas Co. v. Satty*.³³⁹ *Satty* involved the issue of whether a company policy that required pregnant employees to take a "voluntary" leave of absence, without pay and with a subsequent loss of seniority benefits, was discrimination.³⁴⁰ Under the company policy, a pregnant woman was treated in a manner similar to an employee who wanted to go back to school.³⁴¹ Employees with "any disability other than pregnancy" not only retained their seniority during their absence, but accumulated additional seniority while on leave.³⁴² The Court held that the seniority provisions of the leave policy constituted a prima facie violation of Title VII for which the employer failed to present a valid business necessity defense.³⁴³

The majority found that unlike the situation in *Gilbert*, the policy in *Satty* did have a discriminatory impact on women. The employer's classification imposed a substantial burden on women that men did not suffer since it deprived women of employment opportunities in violation of Title VII.³⁴⁴ The Court reiterated the position adopted in *Gilbert* that a classification scheme that treated pregnancy different from other disabilities was not "on its face a discriminatory policy;"³⁴⁵ and therefore, differential treatment based on pregnancy was not sex discrimination.³⁴⁶

Satty was remanded on the issue of the discriminatory effect of the denial of maternity benefits during the pregnancy leave since the lower courts had not addressed the question of whether differentiation based

³³⁵ 417 U.S. at 496, n.20, cited in 429 U.S. 134.

³³⁶ 429 U.S. at 135.

³³⁷ *Id.* at 136.

³³⁸ *Id.*

³³⁹ 434 U.S. 136 (1977).

³⁴⁰ *Id.* at 137.

³⁴¹ *Id.* at 1340 n.2.

³⁴² *Id.* at 140.

³⁴³ *Id.* at 143.

³⁴⁴ *Id.* at 142.

³⁴⁵ *Id.* at 140.

³⁴⁶ *Id.* at 143.

on pregnancy was a pretext for sex discrimination.³⁴⁷ The Court did, however, comment that the denial of payments was "merely a loss of income for the period the employee is not at work [and that] such an exclusion has no direct effect upon employment opportunities or job status."³⁴⁸

As stated above, the controversy sparked by *Gilbert* led to swift action by Congress.³⁴⁹ The legislative history of the amendment³⁵⁰ reflects the concern of Congress which led it to denounce and reject the stereotypes that have traditionally plagued working women.³⁵¹ The amendment forbids making employment distinctions based on these types of criteria. It requires employers to base their decisions affecting pregnant workers solely on the woman's ability to perform the job.³⁵²

The issue of how pregnant employees should be treated in toxic work environments was not seriously addressed during the Congressional debates on the amendment. Though the legislative history indicates that this problem was only briefly discussed,³⁵³ Congress affirmatively decided that pregnant women should be treated no differently from other workers

³⁴⁷ *Id.* at 145-46.

³⁴⁸ *Id.* at 145.

³⁴⁹ See *Discrimination on the Basis of Pregnancy, 1977: Hearings on S. 995 Before the Subcom. on Labor of the Senate Comm. on Human Resources, 95th Cong., 1st Sess. 31 (1977)* [hereinafter cited as *Senate Hearings*] where Senator Williams stated that the *Gilbert* decision "came as a critical blow to working women across the country. It constituted a major setback in the battle for women's rights and poses a serious threat to the development of antidiscrimination policies under Title VII of the Civil Rights Act." *Id.*

³⁵⁰ For a complete legislative history of the Pregnancy Amendment, see Furnish, *Prenatal Exposure to Fetally Toxic Work Environments, The Dilemma of the 1978 Pregnancy Amendment to Title VII of the Civil Rights Act of 1964*, 66 *Iowa L. Rev.* 63, 77-82 (1980).

³⁵¹ Such stereotypes include the contention that women work only until they get married and fulfill their "true role" as wives and mothers. This hypothesis is used by employers to treat women as second class or marginal workers: "[T]he assumption that women will become pregnant and leave the labor market is at the core of the sex-stereotyping resulting in unfavorable disparate treatment of women in the workplace." *Senate Hearings, supra* note 349, at 1.

³⁵² See generally Scales, *Toward a Feminist Jurisprudence*, 56 *IND. L. J.* 375 (1981); Wald, *Judicial Construction of the 1978 Pregnancy Discrimination Amendment to Title VII: Ignoring Congressional Intent*, 31 *AM. U. L. REV.* 591 (1982); Note, *Sexual Equality Under the Pregnancy Discrimination Act*, 83 *COLUM. L. REV.* 690 (1983).

³⁵³ The Chamber of Commerce expressed concerns that bill S. 995 (the Senate version of the amendment) might pose job related health problems by requiring that "women affected by pregnancy, childbirth or related medical conditions shall be treated the same for all employment related purposes." This would preclude employers from excluding pregnant employees from jobs which might present a threat to the health of either the prospective mother or her unborn child. *Discrimination on the Basis of Pregnancy: Hearings on S. 995 Before the Subcomm. on Labor of the Sen. Comm. on Human Resources, 95th Cong. 1st Sess. 482 (1977)*. See also *Senate Hearings, supra* note 349, where it was

similarly situated.³⁵⁴ Therefore, if the pregnant woman is as capable of performing the job as any other employee, the employer is prohibited under section 701(k) from instituting any exclusionary policies. While the amendment safeguards the rights of pregnant employees, it may jeopardize the health of the mother-to-be and of the fetus, thus ultimately putting the financial burden of birth defects and deformed children on society as a whole.

Given the clear language of the amendment and the fact that Congress did not squarely address the issue of fetal safety, the issue arises as to whether employers should be permitted to excuse their exclusionary policies based on the danger presented to the fetus by toxic work environments. An affirmative answer would force courts and juries to balance women's rights to equal employment against the apocalyptic vision of a generation affected by toxic chemicals. The speculation regarding defective offspring should not be the basis for making decisions regarding employment opportunity. Anti-discrimination advocates claim that employers use the emotionally laden argument of societal need for fetal protection as the pretextual excuse for policies designed to remove fertile women from jobs for which they might otherwise be qualified. This justification is advanced in lieu of cleaning up the workplace and making it safe for all employees and their offspring.³⁵⁵ Given the reality that it may not be technologically possible to render all workplaces completely safe for the fetus, society has to ensure through our legal system the health of future generations without jeopardizing women's employment rights.

The Pregnancy Amendment represents some inroads towards this goal, but it is unsatisfactory in terms of fetal protection. The intrinsic conflict between women's equal employment opportunities and the need for protecting the fetus from harm that might result from such employment should be resolved in an ordered and compassionate manner.

2. EEOC Proposed Guidelines

In February 1980, the Equal Employment Opportunity Commission (EEOC) in conjunction with the Office of Federal Contract Compliance Programs (OFCCP) and the Department of Labor proposed Interpretative Guidelines on Employment Discrimination and Reproductive Hazards.³⁵⁶ The guidelines were aimed at addressing the relationship between the

stated that "under [the amendment] employers will no longer be permitted to force women who become pregnant to stop working regardless of their ability to continue . . . and they will not be able to refuse to . . . promote women simply because they are pregnant." *Id.* at 6.

³⁵⁴ HOUSE COMM. ON EDUCATION AND LABOR, PROHIBITION OF SEX DISCRIMINATION BASED ON PREGNANCY, H.R. Rep. No. 948, 95th Cong., 2d Sess. 5 (1978), reprinted in U.S. CODE CONG. & AD. NEWS 47-49 (1978).

³⁵⁵ See, e.g., Petchesky, *Workers Reproductive Hazards, and the Politics of Protection: An Introduction*, 5 FEMINIST STUDIES 232 (1979); MacGhee, *Workplace Hazards; No Women Need Apply*, THE PROGRESSIVE, Oct. 1977, at 20.

³⁵⁶ 45 Fed. Reg. 7,514 (1980) (as corrected in 45 Fed. Reg. 16,501) (1980) [hereinafter cited as *EEOC Proposed Guidelines*].

policies protecting workers from reproductive hazards in toxic work environments and the employment rights of pregnant women.³⁵⁷ Although the proposed guidelines were subsequently withdrawn,³⁵⁸ their methodical approach to resolving the problems associated with workers' exposure to the reproductively toxic workplace presents a useful paradigm for analysis.

The proposed guidelines assumed extensive consultation and cooperation between the various sponsoring agencies.³⁵⁹ It appears that these agencies saw no irreconcilable differences between equal employment legislation and legislation aimed at safeguarding the health and safety of the American workforce.³⁶⁰ They were issued for the purpose of communicating to employers the appropriate policies to be implemented in order to strike a balance between employees' reproductive health and equal employment opportunities.³⁶¹ The proposed guidelines stated that the wholesale exclusion of one sex-based class constitutes a *per se* violation of Title VII and Executive Order 11246.³⁶² This statement was in direct response to the conclusion drawn by the EEOC and the OFCCP that "an increasing number of employers had initiated policies excluding all women of childbearing capacity from certain jobs because they involved exposure to hazardous substances."³⁶³ These exclusionary policies resulted in the termination or transfer of women to lower paying jobs. Just as disconcerting to the agencies was the fact that employers had often shown a lack of concern for similar effects on men and their offspring.³⁶⁴

Based on these considerations the guidelines recommended that employers establish gender neutral policies aimed at protecting all employees from reproductive harm.³⁶⁵ If the hazard is known to affect the fetus through either parent, the implementation of an exclusionary policy directed only at women would violate Title VII. Additionally, if through "reputable scientific evidence" it is established that the hazard

³⁵⁷ The guidelines state: "This document sets forth for the first time proposed interpretations of the relationship between employment discrimination and the application of employer/contract or policies, practices and plans regarding reproductive hazards." *EEOC Proposed Guidelines*, *supra* note 356, at ¶ 7,514.

³⁵⁸ 46 Fed. Reg. 3,916 (1981).

³⁵⁹ *EEOC Proposed Guidelines*, *supra* note 356, at ¶ 7,514. The guidelines provided the role of OSHA to be: "one of consultation and coordination with EEOC and OFCCP, particularly with reference to scientific data." *Id.*

³⁶⁰ "These Guidelines and the objectives of Title VII and E.O. 11246 are premised on the assumption that laws prohibiting discrimination in employment are consistent with those laws designed to assure a workplace free of conditions that threaten the health or safety of employees." *Id.*

³⁶¹ *Id.*

³⁶² *Id.* at ¶ 7,515.

³⁶³ *Id.* at ¶ 7,514.

³⁶⁴ *Id.*

³⁶⁵ *Id.* at ¶ 7,515.

to the fetus results from the exposure of the mother only, the employer's policy must be directed towards pregnant women only and not towards all women of childbearing age.³⁶⁶

In instances where an employer had "reputable scientific evidence" of reproductive harm to one sex-based class only, the guidelines permitted an employer to institute a "temporary emergency exclusion" policy protecting the endangered sex-based class of employees, provided that the policy was: "a) narrowly tailored to those individuals to whom harm is indicated; b) reflect[ed] consideration and adoption of suitable alternatives; and c) provide[d] for timely completion of research on the other sex-based class."³⁶⁷ Furthermore, the guidelines permitted an employer to temporarily remove employees from work areas where reproductive hazards were present, if the employees made their intention to have children known and voluntarily requested such an exclusion.³⁶⁸

The guidelines also addressed the interplay between the employers' policies with regard to reproductive hazards and the defenses they might raise to justify their exclusionary policies. The guidelines suggested that conduct which treats members of a sex-based class raise a presumption of violation of Title VII.³⁶⁹ Where such a presumption is raised, an employer would be given the opportunity to "articulate a legitimate, non-discriminatory reason for the policy."³⁷⁰ The guidelines allowed the agencies to determine whether that reason was in fact a pretext for discrimination.³⁷¹ In addition, the guidelines addressed situations involving the "traditional" concept of the adverse impact created in cases where a facially neutral employment policy has an adverse impact upon a specific sex-based class.³⁷² Such policies constituted unlawful employment practices unless the policy was truly neutral.³⁷³ This was particularly true in light of the Pregnancy Amendment³⁷⁴ which prohibited discrimination against women based on pregnancy, childbirth, or related medical conditions.³⁷⁵ The guidelines stated that in light of this amendment, all women, pregnant and nonpregnant, had to be treated the same for employment-related purposes.³⁷⁶

³⁶⁶ *Id.*

³⁶⁷ *Id.*

³⁶⁸ *Id.* at ¶ 7,516.

³⁶⁹ *Id.* at ¶ 7,515.

³⁷⁰ *Id.*

³⁷¹ *Id.*

³⁷² *Id.*

³⁷³ *Id.*

³⁷⁴ *Id.*

³⁷⁵ See *supra* notes 330, 348-54 and accompanying text.

³⁷⁶ *EEOC Proposed Guidelines*, *supra* note 356, at ¶ 7,515.

The proposed guidelines, although not perfect in terms of addressing all of the problems connected with workers' exposure to toxic work environments, were a praiseworthy attempt at devising a principled balance between employees' reproductive health and their equal employment rights.³⁷⁷ Since the guidelines were never implemented, due to numerous objections,³⁷⁸ alternative regulatory means must now be promulgated to achieve the same goal.

3. Employer Defenses to Title VII Violations

A plaintiff employee seeking relief under Title VII has the initial burden of establishing a prima facie case of discrimination.³⁷⁹ Employment discrimination claims may be based on three theories: 1) facial (overt) discrimination; 2) disparate treatment; and 3) disparate impact.³⁸⁰

Facial discrimination results from an employer's policy that treats employees who are members of a protected class differently from other

³⁷⁷ *Id.*

³⁷⁸ One commentator criticized the proposed guidelines based on the premise that despite their praiseworthy goal of protecting future generations from workplace hazards, they were flawed. They did not identify how such employer considerations leading to the potential exclusion of pregnant workers could serve as recognized defenses to Title VII violations. This is particularly true in light of the clear and unequivocal mandate of the Pregnancy Amendment that an employer may not differentiate among employees based on pregnancy, child-birth, or related medical conditions except when the differential treatment reflects the workers' ability to perform the job. According to this commentator, the proposed guidelines came into direct conflict with this requirement and did not offer any principled means of solving this dilemma, in terms of statutory or judicially recognized Title VII defenses. Furnish, *supra* note 350, at 114-15.

³⁷⁹ In *McDonnell Douglas v. Green*, 411 U.S. 792 (1973), the Court held that to establish a prima facie case, a plaintiff must show:

(i) that he belongs to a racial minority [or protected class]; (ii) that he applied and was qualified for a job for which the employer was seeking applicants; (iii) that, despite his qualifications, he was rejected; and (iv) that, after his rejection, the position remained open and the employer continued to seek applicants from persons of complainant's qualifications.

Id. at 802.

The plaintiff bears the ultimate burden of proving discrimination by a preponderance of the evidence throughout the trial. *See, e.g., Texas Dep't. of Community Affairs v. Burdine*, 450 U.S. 248, (1981) (quoting from the Court's syllabus), where the Court held:

First, the plaintiff has the burden of proving by the preponderance of the evidence a prima facie case of discrimination. Second, if the plaintiff succeeds in proving the prima facie case, the burden shifts to the defendant "to articulate some legitimate, nondiscriminatory reason for the employer's rejection. [citation omitted]" Third, should the defendant carry this burden, the plaintiff must then have an opportunity to prove by a preponderance of the evidence that the legitimate reasons offered by the defendant were not its true reasons, but were a pretext for discrimination.

Id. at 252 (citing *McDonnell Douglas Corp. v. Green*, 411 U.S. at 802).

³⁸⁰ *Hayes v. Shelby Memorial Hosp.*, 725 F.2d 1543, 1547 (11th Cir. 1984). *See generally Williams, supra* note 25, at 668-73; *See also Furnish, A Path Through the Maze: Disparate Impact and Disparate Treatment Under Title VII of the Civil Rights Act of 1964 After Beazer and Burdine*, 23 B.C. L. Rev. 419 (1982).

employees.³⁸¹ In such cases, proof of discriminatory intent is required.³⁸² In cases of disparate treatment, the employer intentionally discriminates against a member of a protected class by instituting ostensibly neutral policies which in fact result in less favorable treatment of those members.³⁸³ In such cases, proof of discriminatory motive must be presented.³⁸⁴ An employee may bring a Title VII action under a disparate impact theory in situations where the employer promulgates a "facially neutral" employment policy which has a disproportionate, adverse effect on a protected class.³⁸⁵ Proof of discriminatory intent is not necessary.³⁸⁶

³⁸¹ See, e.g., *Diaz v. Pan Am. World Airways, Inc.*, 442 F.2d 385 (5th Cir.), cert. denied, 404 U.S. 950 (1971) (refusal to hire men as flight attendants); *Dothard v. Rawlinson*, 433 U.S. 321 (1977) (refusal to hire women as corrections officers in a male correctional facility).

³⁸² See *International Bd. of Teamsters v. United States*, 431 U.S. 324, 335-36 n.15 (1977); *United States Postal Serv. Bd. of Governors v. Aikens*, 103 S. Ct. 1078 (1983). See generally Bartholet, *Proof of Discriminatory Intent Under Title VII*; *United States Postal Service Board of Governors v. Aikens*, 70 CALIF. L. REV. 1201 (1982).

³⁸³ See, e.g., *McDonnell Douglas v. Green*, 411 U.S. 792 (employer's use of past criminal conduct as the excuse for failure to rehire a black employee may only be pretext for racially motivated refusal to hire); *Furnco Const. Corp. v. Waters*, 438 U.S. 567 (1978) (employee asserted that excuse by employer that its refusing to hire unknown black applicants on job site was necessitated by requirement for knowing employees, may be only a pretext for racial discrimination). See also *International Bd. of Teamsters*, 431 U.S. at 335-36 n.15.

³⁸⁴ *International Bd. of Teamsters*, 431 U.S. at 335-36 n.15. See also *McDonnell Douglas*, 411 U.S. at 801.

³⁸⁵ *Griggs v. Duke Power Co.*, 401 U.S. 424 (1971). The Court held that if an employment test which was a prerequisite to hiring was failed by a much higher percentage of blacks than whites, then its effects created a disparate impact and thereby discriminated against blacks. *Id.* Justice Burger, writing for an unanimous Court, stated that Title VII required: "the removal of artificial, arbitrary, and unnecessary barriers to employment where the barriers operate invidiously to discriminate on the basis of racial or other impermissible classification. . . . Congress directed the thrust of the Act to the consequences of employment practices, not simply their motivation." *Id.* at 432. See also *Nashville Gas Co. v. Satty*, 434 U.S. 136 (1977) (maternity leave policy requiring immediate leave and surrender of all accumulated seniority created a disparate impact on women); *Dothard*, 433 U.S. 321 (height/ weight requirements of 5'2" and 120 lbs. for employment as corrections officer have disparate impact on women).

³⁸⁶ See *Griggs*, where the Court asserted that "[Good] intent or absence of discriminatory intent does not redeem employment procedures or testing mechanisms that operate as, built-in head winds, for minority groups and are unrelated to measuring job capability." 401 U.S. at 432. See also *Dothard*, 433 U.S. at 329. The Supreme Court summarized the difference between these two methods of analyzing discriminatory employment practices in the following terms:

Disparate treatment . . . is the most easily understood type of discrimination. The employer simply treats some people less favorably than others because of their race, color, religion, sex, or national origin. Proof of discriminatory motive is

Once the plaintiff has established a prima facie case of discrimination, the employer may assert different defenses depending on the specific discrimination theory advanced by the employee. In cases of facial discrimination, employers may raise the affirmative statutory defense that religion, sex, or national origin is a "bona fide occupational qualification [BFOQ] reasonably necessary to the normal operation of that particular business or enterprise."³⁸⁷

In discrimination cases based on the covert disparate treatment theory, once the plaintiff has established a prima facie case of discrimination the burden shifts to the employer to "articulate some legitimate non-discriminatory reason" to justify his action.³⁸⁸ The burden then shifts back to the employee to establish that the stated reason was a mere pretext for the discriminatory policy.³⁸⁹

In cases of disparate impact, the employer may defend on the basis that the employment practice is justified as a "business necessity."³⁹⁰ The employee may rebut such a defense by showing that the employer could have availed itself of less restrictive alternatives to achieve the same result.³⁹¹

a. Bona Fide Occupational Qualification

Section 703(e) of Title VII provides that "it shall not be an unlawful employment practice . . . to hire and employ employees . . . on the basis of . . . sex . . . in those instances where . . . sex . . . is a bona fide occupational qualification (BFOQ) reasonably necessary to the normal operation of that particular business or enterprise."³⁹² In this section the issue of whether the BFOQ defense may be asserted by employers who exclude women from hazardous work environments will be analyzed from

critical although it can in some situations be inferred from the mere fact of differences in treatment. . . . Claims of disparate treatment may be distinguished from claims that stress "disparate impact." The latter involve employment practices that are facially neutral in their treatment of different groups but that in fact fall more harshly in one group than another and cannot be justified by business necessity. . . . Proof of discriminatory motive . . . is not required under disparate-impact theory.

International Bd. of Teamsters, 431 U.S., at 335-36 n.15.

³⁸⁷ 42 U.S.C. § 2000e-2(e) (1976).

³⁸⁸ *Furnco*, 438 U.S., at 578 (quoting *McDonnell Douglas*, 411 U.S. at 802).

³⁸⁹ *McDonnell Douglas*, 411 U.S. at 802-03; *Furnco*, 483 U.S. at 577.

³⁹⁰ See *infra* notes 447-57 and accompanying text.

³⁹¹ *Albemarle Paper Co. v. Moody*, 422 U.S. 405 (1975). If the employer proves that the challenged requirements are job related, the plaintiff may then show that other selection devices without discriminatory effect would also "serve the employer's legitimate interest in efficient and trustworthy workmanship." *Id.* at 425 (quoting *McDonnell Douglas*, 411 U.S. at 802). See also *Dothard*, 433 U.S. at 329.

³⁹² 42 U.S.C. § 2000e-2(e) (1981).

both an administrative and a judicial perspective. The analysis will conclude that the BFOQ defense may not be available to such employers.

The EEOC guidelines narrowly interpret the BFOQ defense in the context of sex discrimination.³⁹³ According to the guidelines, there are three instances under which the defense does not apply. First, an employer may not use the BFOQ defense when its hiring policy is based on assumptions about the comparative employment characteristics of women in general.³⁹⁴ Second, the defense is inapposite in cases where the employer's policy is based on stereotypical characterizations of the sexes.³⁹⁵ Examples of such stereotypes are that men are less capable of assembling intricate equipment, or that women are less capable of aggressive salesmanship. Third, refusal to hire based on the gender preference of co-workers or customers of the employer will not give rise to a BFOQ defense.³⁹⁶ The EEOC guidelines also state that Title VII supersedes conflicting state protective labor legislation and as such, state law may not be used as part of a BFOQ defense.³⁹⁷

Based on these guidelines it appears that employers may not be able to use the BFOQ justification to defend their exclusionary policies. Such policies are clearly based on the stereotype of women being more vulnerable and in need of greater protection than the male counterpart.³⁹⁸

The lower federal courts have developed two approaches to the analysis of the BFOQ defense in sex discrimination cases. One approach was formulated by the Fifth Circuit in *Weeks v. Southern Bell Tel. and Tel. Co.*³⁹⁹ and *Diaz v. Pan Am. World Airways, Inc.*⁴⁰⁰ In *Weeks*, a woman was denied a switchman's job simply because of her gender and not because of her lack of ability to perform the job.⁴⁰¹ The court stated that the company had the burden of proving that its decision was within the nar-

³⁹³ 29 C.F.R. § 1604.2(a) (1984).

³⁹⁴ 29 C.F.R. § 1604.2(a)(1)(i) (1984).

³⁹⁵ 29 C.F.R. § 1604.2(a)(1)(ii) (1984).

³⁹⁶ 29 C.F.R. § 1604.2(a)(1)(iii) (1984).

³⁹⁷ 29 C.F.R. § 1604.2(a)(1)(iv) (1984).

³⁹⁸ This type of reasoning is reminiscent of state protective labor legislation as exemplified by the following pronouncement from the Nebraska Supreme Court:

Women and children have always to a certain extent been wards of the state. . . . They are unable, by reason of their physical limitations, to endure the same hours of exhaustive labor as may be endured by adult males. Certain kinds of work, which may be performed by men without injury to their health, would wreck the constitutions and destroy the health of women, and render them incapable of bearing their share of the burdens of the family and the home. The state must be accorded the right to guard and protect women as a class, against such a condition.

Wenhan v. State, 65 Neb. 394, 400 (1902). See generally J. BAER, *THE CHAINS OF PROTECTION* (1978); Andrade, *The Toxic Workplace: Title VII Protection for the Potentially Pregnant Person*, 4 HARV. WOMEN'S L.J. 71, 75-79 (1981).

³⁹⁹ 408 F.2d 228 (5th Cir. 1969).

⁴⁰⁰ 442 F.2d 385 (5th Cir.), cert. denied, 404 U.S. 950 (1971).

⁴⁰¹ 408 F.2d at 231.

rowly interpreted "bona fide occupational qualification" exception.⁴⁰² The court held that:

[T]he principle of nondiscrimination requires that . . . in order to rely on the bona fide occupational qualification exception an employer has the burden of proving that he had reasonable cause to believe, that is, a factual basis for believing, that all or substantially all women would be unable to perform safely and efficiently the duties of the job involved.⁴⁰³

The employer in *Weeks* did not satisfy his burden because he did not introduce evidence regarding the inability of women to lift certain weights, while unquestionably assuming that men are usually stronger than women.⁴⁰⁴

In *Diaz* the Fifth Circuit expanded upon the *Weeks* holding regarding the parameters of the BFOQ defense. At issue in *Diaz* was Pan American's denial of employment to men as flight attendants based on perceived passenger preference.⁴⁰⁵ The court held that the airline could not exclude "all males simply because most males may not perform adequately. . . . Before sex discrimination can be practiced, it must not only be shown that it is impracticable to find men who possess the abilities that most women possess, but that the abilities are *necessary* to the business, not merely tangential."⁴⁰⁶ It concluded that discrimination based on sex is valid only if the *essence* of the business would be undermined by not restricting the hiring to members of one sex exclusively.⁴⁰⁷ Under the *Weeks-Diaz* test,⁴⁰⁸ the BFOQ defense does not pass muster as a justification for employer-promulgated exclusionary policies. Scientific evidence is inconclusive regarding the toxic effects of certain chemicals on all women. Therefore, their wholesale exclusion does not meet the criterion that all women may be unable to perform the job safely, or more

⁴⁰² *Id.* at 232 (footnote omitted).

⁴⁰³ *Id.* at 235.

⁴⁰⁴ *Id.* at 235-36.

⁴⁰⁵ 442 F.2d at 387.

⁴⁰⁶ *Id.* at 388-89.

⁴⁰⁷ *Id.* at 338.

⁴⁰⁸ In *Burwell v. Eastern Airlines, Inc.*, 458 F. Supp. 474 (E.D. Va 1978), the *Weeks-Diaz* test was formulated as follows:

[A]n employer asserting a BFOQ defense has the burden of showing (1) that its policy . . . is reasonably necessary to the essence of its business . . . and that (2) the employer has a factual basis for believing that all or substantially all persons within the class . . . would be unable to perform safely and efficiently the duties of the job involved, or that it is impossible or impractical to deal with persons . . . on an individual basis. . . .

Id. at 497, (citing *Arritt v. Grisell*, 567 F.2d 1267, 1271 (4th Cir. 1977), *aff'd in part and rev'd in part, per curiam*, 633 F.2d 631 (4th Cir. 1980), *cert. denied*, 450 U.S. 965 (1981)).

specifically that not hiring women of childbearing age is essential to any successful business operation.

The other approach to the BFOQ defense was developed by the Ninth Circuit in *Rosenfeld v. Southern Pacific Co.*⁴⁰⁹ In *Rosenfeld*, the employer implemented a policy whereby women were excluded from certain jobs that were considered too arduous. In fact, assigning women to these positions would have violated protective state labor legislation.⁴¹⁰ The court seemed prepared to recognize that the BFOQ defense may be applicable in cases where "sexual characteristics of the employee are as crucial to the successful performance of the job, as they would be for the position of wet-nurse."⁴¹¹ The court found, however, that this was not the case in *Rosenfeld*.⁴¹² It therefore enunciated a different test: "[S]exual characteristics, rather than characteristics that might, to one degree or another, correlate with a particular sex, must be the basis for the application of the BFOQ exception."⁴¹³

Under the *Rosenfeld* test, exclusionary policies which apply strictly to women of childbearing age merely because they are more susceptible to reproductive damage would not constitute a BFOQ. A woman's reproductive ability may not be any more vulnerable to toxic assault than that of a man.⁴¹⁴ As such, exclusionary policies based on this criterion do not come within the narrow scope of the *Rosenfeld* test for a valid BFOQ defense.

The Supreme Court addressed the issue of what constitutes a valid BFOQ defense to a claim of sex discrimination in *Dothard v. Rawlinson*.⁴¹⁵ *Dothard* involved two employment policies implemented by the Department of Safety of Alabama which resulted in the exclusion of female applicants from the position of prison guard. One policy involved a minimum height and weight requirement for prison guards and the other involved an official regulation which excluded women from "contact" positions in the prison.⁴¹⁶ The Court applied the disparate impact test to the facially neutral policy of a minimum height and weight requirement and concluded that this practice had a disproportionate impact on women and was therefore discriminatory.⁴¹⁷

⁴⁰⁹ 444 F.2d 1219 (9th Cir. 1971).

⁴¹⁰ *Id.* at 1223.

⁴¹¹ *Id.* at 1224.

⁴¹² In this case, the airline made its decision based on the "commonly accepted characterization of women as the 'weaker sex' " which it raised to the level of a BFOQ. *Id.*

⁴¹³ *Id.* at 1225.

⁴¹⁴ See *supra* notes 99-159 and accompanying text.

⁴¹⁵ 433 U.S. 321 (1977).

⁴¹⁶ *Id.* at 324-25.

⁴¹⁷ *Id.* at 327-29.

The *Dothard* Court next considered whether the second policy could be defended as a legitimate BFOQ. The analysis was akin to that of the Fifth Circuit's in *Weeks* and *Diaz*. Finding that the essence of a prison guard's job is to maintain prison security,⁴¹⁸ the *Dothard* Court concluded that a woman's ability to perform this job safely and effectively would be seriously curtailed by her "womanhood,"⁴¹⁹ particularly given the fact that many of the inmates were sex offenders. Therefore, it held that the practice of excluding females from "contact" positions was justified under the BFOQ defense.⁴²⁰

Employers who have promulgated policies aimed at excluding women from hazardous work environments might be encouraged by *Dothard* to raise the BFOQ defense as a justification for their otherwise discriminatory policies. They could argue that the BFOQ is applicable since women are much more susceptible to reproductive damage than men and since the health of the offspring is more imperiled by the exposure of women to toxic chemicals than by the exposure of men. But such an argument is inconsistent with the *Dothard* rationale. The policy in *Dothard* was upheld on the premise that a female applicant's very womanhood⁴²¹ constituted an impediment to her performing the essential duties of the job. The inquiry therefore, was properly focused on the woman's individual ability to perform the job of correctional officer. This logic may not be applied in the case of fertile women who are excluded from fetally hazardous work environments because the exclusions are not specifically based on the women's ability to do the job. In such cases therefore, the BFOQ defense may not be invoked.⁴²²

The foregoing discussion indicates that the BFOQ defense may be inapplicable in the reproductive hazard context. An examination of cases

⁴¹⁸ *Id.* at 335.

⁴¹⁹ *Id.*

⁴²⁰ *Id.* at 336.

⁴²¹ Justice Marshall in his dissent addressed the fallacy of this argument: In short the fundamental justification for the decision is that women as guards will generate sexual assaults. . . . [T]his rationale . . . perpetuates one of the most insidious of old myths about women - that women, wittingly or not are seductive sexual objects. The effect of this decision . . . is to punish women because their very presence might provoke sexual assaults. *It is women who are made to pay the price in lost job opportunities* for the threat of depraved conduct by prison inmates. . . . To deprive women of job opportunities because of the threatened behavior of convicted criminals is to turn our social priorities upside down. *Id.* at 345-46 (emphasis added).

⁴²² This conclusion is particularly compelling since the *Dothard* Court emphasized that the "BFOQ exception was in fact meant to be an extremely narrow exception to the general prohibition of discrimination on the basis of sex." *Id.* at 334. Justice Marshall urged that lower courts would recognize that this decision should be construed very narrowly and limited to its facts, because expansion of this decision beyond its "narrow factual basis would erect a serious road block to economic equality for women." *Id.* at 347.

involving challenges brought by female flight attendants to mandatory maternity leave policies promulgated by many airlines provides a useful analytical model. These cases concentrate on the ability of the pregnant stewardess to perform the duties of her job, *i.e.*, to insure the safety of her passengers. Some courts have also shown concern for the health of the pregnant employee herself and that of her unborn child.

The Ninth Circuit addressed this issue in *Harriss v. Pan American Airlines*,⁴²³ holding that mandatory leave for stewardesses upon knowledge of pregnancy was justified on the basis of a BFOQ.⁴²⁴ The *Harriss* court also examined the impact of the Pregnancy Amendment and concluded that under a pre-amendment analysis, discrimination based on pregnancy created a disparate impact on females, but, because of concerns over passenger safety, discrimination was justifiable as a business necessity.⁴²⁵ In the case of post-amendment discrimination, however, the court found that the language and legislative history of the amendment required that distinctions based on pregnancy be treated as *per se* violations of Title VII.⁴²⁶ Therefore, the *Harriss* court held that the employer was limited in his defenses, and could only argue that "nonpregnancy" was a BFOQ.⁴²⁷ Although the court recognized this defense as a narrow one,⁴²⁸ the concerns regarding passenger safety were sufficient to justify Pan American's policy.⁴²⁹

The Fifth Circuit used a similar approach in *Levin v. Delta Airlines*.⁴³⁰ The test considered by the court was whether⁴³¹

the airline had reasonable cause, that is, a factual basis, for believing that all or substantially all [pregnant flight attendants] would be unable to perform safely and efficiently the duties of the job involved, or whether it is impossible or impractical to deal with [pregnant flight attendants] on an individualized basis.⁴³²

The court concluded that the inability of the employer to predict which flight attendants would be affected by medical problems during flight

⁴²³ 649 F.2d 670 (9th Cir. 1980).

⁴²⁴ *Id.* at 677.

⁴²⁵ *Id.* at 675-76.

⁴²⁶ *Id.* at 676.

⁴²⁷ *Id.*

⁴²⁸ *Id.*

⁴²⁹ The *Harriss* court concluded that Pan Am proved that its stop work policy for pregnancy was "reasonably necessary to passenger safety" and thus was justified under a BFOQ analysis. *Id.* at 677.

⁴³⁰ 730 F.2d 994 (5th Cir. 1984).

⁴³¹ The test was originally developed in *Usery v. Tamiami Trail Tours, Inc.*, 531 F.2d 224 (5th Cir. 1976) cited in *Levin*, 730 F.2d at 997.

⁴³² 531 F.2d at 236 cited in *Levin*, 730 F.2d at 998.

made it difficult for Delta to deal with pregnant stewardesses on an individualized basis. Therefore, Delta "justifie[d] its blanket exclusion of pregnant attendants from flight duty"⁴³³ under the second prong of the test outlined above. Because of these safety considerations, the Fifth Circuit held that exclusion based on pregnancy was justified under the BFOQ doctrine.⁴³⁴

Employers using exclusionary practices aimed at protecting pregnant employees from toxic workplaces might also use a *Levin*-type justification. They could argue that even though not each and every woman exposed to hazardous substances will give birth to deformed babies, the inability to predict the likelihood of such an incident for individual workers' justifies wholesale exclusions.

A federal district court in Florida, in *In re National Airlines, Inc.*,⁴³⁵ used a different approach to the BFOQ defense in the airline safety context. The court stated: "the question of harm to the fetus is basically a decision to be made not by this court, but by the mother of the fetus."⁴³⁶ This argument may be used by women who have been excluded from hazardous work environments because of concern for the health of the fetus. The health and safety of a woman's offspring is not germane to the employer's business. Decisions as to the well-being of the fetus should by right be vested exclusively with the mother.⁴³⁷

More recently, the BFOQ defense was examined in the context of fetal protection from the consequences of a mother's exposure to a hazardous

⁴³³ *Levin*, 730 F.2d at 998 (emphasis added).

⁴³⁴ *Id.* at 999. The court cautioned though that "pregnancy is not a BFOQ with respect to all airlines as a transcendent matter of law." *Id.*

⁴³⁵ 434 F. Supp. 249 (S.D. Fla. 1977), *aff'd per curiam*, 700 F.2d 695 (11th Cir. 1983).

⁴³⁶ *Id.* at 259.

⁴³⁷ One commentator has expressed concern that courts might be inclined to succumb to the argument that concern over the health of the fetus should lead to an expansion of the BFOQ defense. *However*, this commentator urged that courts continue to adhere to the traditional analysis which "is likely to prove more beneficial to the health interests of the fetus than such an expansion." As such, employers would be forced to protect fetal health by developing and implementing neutral rather than gender specific policies in order to avoid Title VII liability. Ultimately the health of the offspring would be protected from the exposure of both parents. Williams, *supra* note 25, at 681-82. Title VII jurisprudence indicates that the BFOQ defense should not be applied to justify notions of "romantic paternalism":

Title VII rejects . . . romantic paternalism as unduly Victorian and instead vests the individual woman with the power to decide whether or not to take on unromantic tasks. Men have always had the right to determine whether the incremental increase in remuneration for strenuous, dangerous, obnoxious, boring or unromantic tasks is worth the candle. The promise of Title VII is that women are now to be on an equal footing. We cannot conclude that by including the bona fide occupational qualification exception Congress intended to renege on the promise. *Weeks v. Southern Bell Tel. and Tel. Co.*, 408 F.2d 228, 236 (5th Cir. 1969).

work environment. The case of *Hayes v. Shelby Memorial Hospital*⁴³⁸ dealt with the claim of an X-ray technician that the hospital had violated the Pregnancy Discrimination Act by firing her upon learning of her pregnancy. The analytical framework the court chose to use in this case was whether the challenged policy created a rebuttable presumption of facial discrimination against female employees.⁴³⁹ The employer may rebut the presumption by showing that although the policy applies only to women, it is neutral in the sense that it effectively and equally protects the offspring of all employees.⁴⁴⁰ Therefore, the employer

must show 1) that there is a substantial risk of harm to the fetus or potential offspring of women employees from the women's exposure, either during pregnancy or while fertile, to toxic hazards in the workplaces, and 2) that the hazard applies to fertile or pregnant women, but not to men.⁴⁴¹

If the employer is not able to satisfy these criteria and therefore does not overcome the burden of proving that the policy is not facially discriminatory, he may nevertheless raise the BFOQ defense.

The Eleventh Circuit held that: "when a policy designed to protect employee offspring from workplace hazards proves facially discriminatory, there is, in effect, no defense, unless the employer shows a *direct relationship* between the policy and the actual ability of a pregnant or fertile female to perform her job."⁴⁴² Under this analysis, the court reaffirmed the doctrinal approach that the Pregnancy Discrimination Act mandates, that an employer treat all employees equally with respect to policies promulgated to protect the health of the offspring.⁴⁴³ The court decided that in this case the BFOQ defense was not applicable because the hospital did not try to prove that the employee's performance was negatively affected by her fear of harm to the fetus or that her ability to perform the job was reduced by her pregnancy.⁴⁴⁴

This analytical framework may be successfully applied to the case of women's exposure to fetotoxic chemicals. The employer must first meet the criteria necessary to prove that the exclusionary policy is not facially discriminatory. A substantial risk of harm to the fetus which results exclusively from the exposure of fertile or pregnant women to the toxic chemicals must be shown. Meeting this burden is a threshold require-

⁴³⁸ 726 F.2d 1543 (11th Cir. 1984).

⁴³⁹ *Id.* at 1548.

⁴⁴⁰ *Id.*

⁴⁴¹ *Id.* (footnote omitted).

⁴⁴² *Id.* at 1549 (footnote omitted).

⁴⁴³ *Id.*

⁴⁴⁴ *Id.*

ment. The employer meets this burden by producing sufficient scientific evidence regarding the risk of harm to the fetus and by showing that such risk does not exist in the case of paternal exposure to the same chemicals.⁴⁴⁵

Industrial employers may not be able to satisfy this burden in many cases given the paucity of definitive scientific evidence. This is especially true with regard to the exclusivity of the deleterious consequences of exposures to toxic chemicals affecting one sex and not the other. Therefore, these employers would have to try to avail themselves of the BFOQ defense. But as the *Hayes* court indicated, such a defense may be unavailable in these cases unless the employer is able to show a direct correlation between the policy and the individual ability of the employee to perform the job. As seen from the *Hayes* case this may not be possible since the health of the fetus would not usually adversely affect the mother's job performance.

In conclusion, it appears that the BFOQ defense may not be generally available to employers who implement exclusionary policies given the fact that the focus of the defense is on the employee's ability to perform the job.⁴⁴⁶ This is particularly true in view of the Pregnancy Amendment which specifically provides that employers may not make distinctions based on pregnancy or related conditions. Unfortunately, even if the BFOQ defense were to apply in some cases, the problem of safeguarding the health and safety of the fetus would still not be satisfactorily addressed.

b. Business Necessity Defense

Unlike the statutory BFOQ defense, the business necessity defense was articulated by the courts to be used in cases of disparate impact. This theory was first enunciated in *Griggs v. Duke Power Co.*,⁴⁴⁷ where the Supreme Court held that Title VII: "proscribes not only overt discrimination, but also practices that are fair in form, but discriminatory in operation. . . . Congress directed the thrust of the Act to the consequences of the employment practices, not simply the motivation."⁴⁴⁸ Once a plaintiff is able to establish a prima facie case of disparate impact, the employer may defend on the ground that the challenged practice was mandated

⁴⁴⁵ *Id.* at 1548.

⁴⁴⁶ See also *Fields v. Bolger*, 723 F.2d 1216 (6th Cir. 1984). Postal Service employee did not establish a prima facie case of intentional discrimination since light duty policy was applied equally to all employees regardless of their sex or pregnancy: "There was no evidence that the policy was applied differently to the [pregnant] plaintiff than to any other employee with a non-job related disability. . . . Nothing in Title VII compels an employer to prefer for alternative employment an employee who, because of pregnancy, is unable to perform her full range of duties." *Id.* at 1220; see also *Fancher v. Nimmo*, 549 F. Supp. 1324 (E.D. Ark. 1982).

⁴⁴⁷ 401 U.S. 424 (1971).

⁴⁴⁸ *Id.* at 431-32 (emphasis original).

by "business necessity."⁴⁴⁹ Thus, according to the Court: "if an employment practice which operates to exclude [members of a protected group] cannot be shown to be related to job performance, the practice is prohibited."⁴⁵⁰ The business necessity defense requires the employer to show that the discriminatory policy or requirement has a manifest relationship to the successful performance of the job in question.⁴⁵¹

The *Griggs* decision contained some ambiguities in terms of the stringency of the burden the employer had to discharge,⁴⁵² which subsequent Supreme Court decisions did not fully clarify.⁴⁵³ Lower federal

⁴⁴⁹ The Court declared: "The touchstone is business necessity." *Id.* at 431. See generally Comment, *The Business Necessity Defense to Disparate Impact Liability under Title VII*, 46 U. CHI. L. REV. 911 (1979); Note, *Business Necessity: Judicial Dualism and the Search for Adequate Standards*, 15 GA. L. REV. 376 (1981) [hereinafter cited as Note, *Business Necessity*].

⁴⁵⁰ 401 U.S. at 431.

⁴⁵¹ *Id.*

⁴⁵² According to one commentator the fundamental ambiguity in the theory of disparate impact stems from its underlying purpose. The question that needs to be addressed is whether this theory is only a modest addition to the theory of disparate treatment, designed to prevent pretextual discrimination by shifting part of the burden of proof to the defendant or if it was meant to be an entirely independent theory intended to discourage an employer's use of policies which have an adverse impact upon a protected group. This commentator further explored the consequences of the two alternative explanations for the theory. If the disparate impact theory is designed to prevent pretextual discrimination, then the employer would be liable only when there was evidence of disparate treatment not sufficient to establish discriminating intent. Such a theory could be rebutted rather easily by a showing that the policy was related to job performance. If, on the other hand, the disparate impact theory was intended to discourage employment policies which had an adverse impact on a certain group of employees, then the employer's liability would result from a proof of discriminatory effects. The employer would have to discharge a heavy burden of justifying such a policy. G. RÜTHERGLEN, *MAJOR ISSUES IN FEDERAL LAW OF EMPLOYMENT DISCRIMINATION* 15-16 (1983). Another commentator suggested that lower court interpretations of the *Griggs* decision were hampered by its ambiguous language and therefore had to adopt various lines of reasoning concerning: 1) which facts should be considered as sufficiently legitimate to override the prima facie showing of disparate impact; 2) the magnitude of the burden placed upon the employer to establish the existence of a legitimate need for the challenged practice; 3) the need for the adoption of least discriminatory alternative employment practices which would meet the legitimate needs of his business. Note, *Business Necessity*, *supra* note 449, at 387.

⁴⁵³ The first disparate impact case after *Griggs* was *Albermarle Paper Co. v. Moody*, 422 U.S. 405 (1975) where the Supreme Court had an opportunity to clarify "the appropriate standard of proof for job relatedness" with regard to the pre-employment job testing requirement. The Court held that: "The message of [the EEOC] guidelines is the same as that of the *Griggs* case — that discriminatory tests are impermissible unless shown, by professionally accepted methods, to be predictive of, or significantly correlated with, important elements of work behavior which comprise or are relevant to the job or jobs for which candidates are being evaluated." *Id.* at 413 (quoting 29 C.F.R. § 1607-4(c)). In *Dothard v. Rawlinson*, 433 U.S. 321 (1977) the Supreme Court decided that a policy which required applicants for the position of correctional counselor to meet a minimum height and weight requirement, constituted a prima facie showing of disparate impact

courts have generally held that the challenged discriminatory policy must be essential to the employer's business⁴⁵⁴ to be considered sufficiently job related.

Some lower federal courts have also added a third element to the analytical framework of disparate impact cases in the form of a less restrictive alternative test.⁴⁵⁵ This test allows courts to decide which policies are necessary for the successful management of the business enterprise and which practices are simply convenient.⁴⁵⁶ In *Robinson v. Lorillard*

discrimination. The defendants were not able to discharge their burden that these requirements were essential to job performance:

If the job-related quality that the appellants identify is bona fide, their purpose could be achieved by adopting and validating a test for applicants that measures strength directly. Such a test, fairly administered, would fully satisfy the standards of Title VII because it would be one that measure[s] the person for the job and not the person in the abstract.

Id. at 332. Justice Rehnquist's concurrence foreshadowed the trend the Supreme Court currently seems to be following:

Appellants, in order to rebut the prima facie case under the statute, had the burden placed on them to advance job-related reasons for the qualification. . . . This burden could be shouldered by offering evidence or by making legal arguments not dependent on any new evidence. . . . [O]nce the burden has been placed on the defendant, it is then up to the defendant to articulate the asserted job-related reasons underlying the use of the minim[um job requirements].

Id. at 339-40.

The Court in *New York City Transit Auth. v. Beazer*, 440 U.S. 568 (1979) adopted the concurring opinion from *Dothard* and held that a policy promulgated by the defendant to exclude persons on methadone maintenance was justified based on a showing that it served the employer's legitimate goals of safety and efficiency. *Id.* at 587. The dissent criticized the majority opinion in the following terms:

[The] petitioners had the burden of showing job relatedness. They did not show that the rule results in a higher quality labor force, that the cost of making individual decisions about those on methadone was prohibitive. . . . No one could reasonably argue that petitioners have made the kind of showing demanded by *Griggs* or *Albemarle Paper Co. v. Moody*. . . . By petitioners own stipulation . . . this employment barrier was adopted without meaningful study of [its] relationship to job performance ability. . . .

Id. at 602.

⁴⁵⁴ See, e.g., *White v. Caroline Paper Bd. Corp.*, 564 F.2d 1073, 1082 (4th Cir. 1977); *Green v. Missouri Pac. R.R.* 523 F.2d 1290, 1297-98 (8th Cir. 1975); *United States v. St. Louis - San Francisco Ry.*, 464 F.2d 301, 308 (8th Cir. 1972), cert. denied, 409 U.S. 1116 (1973); *United States v. Jacksonville Terminal Co.*, 451 F.2d 418, 451 (5th Cir. 1971); *Muller v. United States Steel Corp.*, 509 F.2d 923, 929 (10th Cir. 1975); *Spurlock v. United Airlines, Inc.*, 475 F.2d 216, 218-19 (10th Cir. 1972).

⁴⁵⁵ See, e.g., *Donnell v. General Motors Corp.*, 576 F.2d 1292 (8th Cir. 1978); *Parson v. Kaiser Aluminum & Chem. Corp.*, 575 F.2d 1374 (5th Cir. 1978); *Patterson v. American Tobacco Co.*, 535 F.2d 257 (4th Cir. 1976); *Muller v. United States Steel Corp.*, 509 F.2d 923 (10th Cir. 1975).

⁴⁵⁶ See Note, *Business Necessity*, supra note 449, at 397.

Corp.,⁴⁵⁷ the Fourth Circuit enunciated this test as follows:

[T]he applicable test is not merely whether there exists a business purpose for adhering to a challenged practice. The test is whether there exists an overriding legitimate business purpose such that the practice is necessary to the safe and efficient operation of the business. Thus the business purpose must be sufficiently compelling to override any racial impact; the challenged practice must effectively carry out the business purpose it is alleged to serve; and there must be available no acceptable alternatives, policies or practices which would better accomplish the business purpose advanced, or accomplish it equally well with a lesser differential racial impact.⁴⁵⁸

The *Robinson* test indicates that a successful invocation of the business necessity defense requires that the employer provide specific proof that the use of the policy is unavoidable in order to insure the viability of the business.

Employers who implement facially neutral exclusionary policies aimed at protecting the health of the future offspring of their workers may invoke the business necessity defense to justify their practices. Under the analytical paradigm outlined in *Griggs*, the employer's justification for the practice would have to transcend the woman's capability of performing the job, since normal pregnancies do not impair a woman's ability to work.⁴⁵⁹ An employer would also have to overcome the *Robinson* test. The first question the employer would have to answer is whether the exclusionary practice meets an overriding legitimate business purpose. The viability of the enterprise would constitute a legitimate business purpose. Employers might be able to assert that by not removing women from hazardous environments, they leave themselves open to liability resulting from tort litigation brought by deformed babies⁴⁶⁰ or by parents

⁴⁵⁷ 319 F. Supp. 835 (1970), *aff'd in part, rev'd. in part*, 444 F.2d 791 (4th Cir. 1971), *cert. dismissed* 404 S.Ct. 1006 (1971).

⁴⁵⁸ *Id.* at 798.

⁴⁵⁹ In 1977 the American College of Obstetricians and Gynecologists (ACOG) published a report entitled: *Guidelines on Pregnancy and Work* which stated that: "a normal woman with a normal pregnancy and a normal fetus in a job presenting no greater potential hazards than those encountered in normal daily life in the community may continue to work without interruption until the onset of labor, and may resume working several weeks after an uncomplicated delivery." Cited in *Warshaw, Non-Medical Issues Presented by the Pregnant Worker*, 21 J. OCCUP. MED. 89 (1979).

⁴⁶⁰ Until 1946 courts consistently refused to recognize a child's cause of action for prenatal injuries. This doctrine was first established in *Dietrich v. Inhabitants of Northampton*, 138 Mass. 14 (1884) where the court, relying upon lack of precedent in this area and upon the concept that the fetus was part of the mother, denied recovery for injuries suffered by a child "en ventre sa mere." However, in *Bonbrest v. Katz*, 65 F. Supp. 138 (D.C.C. 1946) the court held that injuries to a viable unborn child were compensable in a tort action brought after the child's birth. The court reasoned that once it was demonstrated that a fetus could live outside the mother's womb, the concept that

the fetus was not an independent entity from the mother was no longer applicable. Further, the court stated that even if both parents were compensated for their loss "there is a residuum of injury for which compensation cannot be had save at the suit of the child." *Id.* at 140-41. *Bonbrest* thus originated the viability doctrine under which viability, including "quickening," became a prerequisite to recovery for prenatal injuries. This doctrine was confined for a long time to injuries received by the fetus after conception. *See, e.g., Porter v. Lassiter*, 91 Ga. App. 712, 776, 87 S.E.2d 100, 103 (1955); *Damasiewicz v. Gorsuch*, 197 Md. 417, 438, 79 A.2d 550, 560-61 (1951). One related issue is whether there can be recovery for the wrongful death of the stillborn child resulting from injury either before or after viability. The major issue in this context is whether the fetus is a "person" covered by the wrongful death statutes. Some jurisdictions allow recovery in such cases: *See, e.g., Eich v. Town of Gulf Shores*, 293 Ala. 95, 300 So.2d 354, 358 (1974); *Hatala v. Markiewicz*, 26 Conn. Supp. 358, 224 A.2d 406, 408 (Super. Ct. 1966); *Worgan v. Greggo & Fenara, Inc.*, 50 Del. 258, 128 A.2d 557, 558 (1956); *Chrisafogeorgis v. Brandenburg*, 55 Ill.2d 368, 304 N.E.2d 88, 92 (1973); *Britt v. Sears*, 150 Ind. App. 487, 277 N.E.2d 20, 27 (1971); *Mone v. Greyhound Lines, Inc.*, 368 Mass. 354, 331 N.E.2d 916 (1975); *Pehrson v. Kistner*, 301 Minn. 299, 222 N.W.2d 334 (1974); *Moen v. Hanson*, 85 Wash.2d 597, 537 P.2d 266 (1975).

In *Renslow v. Mennonite Hosp.*, 67 Ill.2d 348, 367 N.E.2d 1250 (1977), the Illinois Supreme Court confronted the issue of whether a child born with birth defects may recover from injuries caused by preconception negligence towards the mother. The court held that the child could maintain a cause of action against the hospital on the ground that the child had a right to be born free from prenatal injuries foreseeably caused by a breach of duty to the infant's mother. *Id.* at 357-58, 367 N.E.2d at 1255. *See also Jorgensen v. Meade Johnson Laboratories, Inc.*, 483 F.2d 237 (10th Cir. 1973) (under Oklahoma law a cause of action was recognized on behalf of mongoloid twins who claimed that their condition was caused by defective birth control pills). *See generally Kader, The Law of Tortious Prenatal Death Since Roe v. Wade*, 45 Mo. L. Rev. 639 (1980); Robertson, *Toward Rational Boundaries of Tort Liability for Injuries and Wrongful Life*, 1978 DUKE L.J. 1401; Comment, *Preconception Negligence: Reconciling an Emerging Tort*, 67 GEO. L.J. 1239 (1980); Comment, *Prenatal Liability for Prenatal Injury*, 14 COLUM. J. L. & SOC. PROB. 47 (1978). Comment, *Recovery for Prenatal Injuries: The Right of a Child Against its Mother*, 10 SUFF. U. L. REV. 582 (1976). The *Renslow* rationale may be used in the cases of fetal injury caused by parental exposure to toxic substances. Several issues arise in this context especially if liability is to be used as the basis for a business necessity defense. According to one commentator the child born with birth defects has to overcome several obstacles to litigation in the context: 1) Some jurisdictions do not recognize a cause of action for prenatal injuries or for wrongful death for a stillborn child. 2) The employer's duty under tort law towards the employee is not completely clear, particularly in situations where the employer meets the OSHA standards and generally makes an effort to keep a safe and healthy workplace. 3) Difficulty arises in establishing causation given the limited scientific knowledge in this area.

In the alternative, the child might bring his suit under a strict liability theory consistent with the doctrine of *Rylands v. Fletcher*, L.R. 3 H.L. 330 (1868) which states that a person is strictly liable in tort for damage caused by him in the course of an abnormally dangerous activity that is inappropriate to its location, regardless of its social utility. But maintaining such an action might be difficult since there may be factual problems regarding the "abnormally dangerous" quality of toxic chemicals and the inappropriateness of their use in an industrial enterprise. Comment, *Birth Defects Caused by Parental Exposure to Workplace Hazards: The Interface of Title VII with OSHA and Tort Law*, 12 MICH. J. L. REFORM 239, 253-56 (1979).

whose children were born with birth defects.⁴⁶¹ Whether such potential liability would constitute a sufficient business purpose to legitimize a discriminatory practice is questionable.⁴⁶²

Another business purpose the employer might assert is the need to comply with the mandate of the OSHAct to insure the health and safety of the American workforce.⁴⁶³ But, as discussed previously, the Act protects the health of today's generation of workers not that of tomorrow's generation.⁴⁶⁴ It is doubtful whether an employer could use this argument as a justification for the wholesale exclusion and discrimination against women of childbearing age.

The second prong of the *Robinson* test requires that the practice in question effectively carry out the business purpose it is designed to serve.⁴⁶⁵ Assuming that the business purpose is minimizing corporate liability for birth defects, excluding all women of childbearing age is by no means an effective approach for achieving this goal. There is sufficient evidence to indicate that such birth defects may result from paternal as well as maternal exposure to toxic substances.⁴⁶⁶ If the business purpose to be served is compliance with the spirit of the OSHAct in terms of insuring the safety of the workplace, excluding women of childbearing age would definitely not serve this purpose. A fertile or pregnant woman in no way increases the danger of the workplace since the only entity that might be affected by the exposure to toxic substances is her unborn child. Therefore, removing such women from hazardous environments in reality does not serve any business purpose, let alone serve it efficiently.

The third requirement of the *Robinson* test calls for a showing of the non-existence of an acceptable alternative policy or practice that would accomplish the business purpose either better or equally well with less

⁴⁶¹ A parent might have a cause of action against his/her employer on the basis that his/her reproductive ability was impaired because of the exposure to toxic substances. The damages would be awarded for the injuries he/she suffered and also possibly for pain and suffering. Also, parents might be able to bring derivative suits for costs incurred in rearing a child born with birth defects. Note, *Preconception Torts: Foreseeing the Unconceived*, 48 U. COLO. L. REV. 621, 628 n.38 (1977).

⁴⁶² See generally Sloan, *Employer's Tort Liability When a Female Employee is Exposed to Harmful Substances*, 3 EMPL. REL. L.J. 506 (1978); Comment, *Birth Defects Caused by Parental Exposure to Workplace Hazards: The Interface of Title VII with OSHA and Tort Law*, 12 U. MICH. J. L. REF. 237 (1979); Rothstein, *Reproductive Hazards and Sex Discrimination in the Workplace New Legal Concerns in Industry and on Campus*, 10 J. COLL. & UNIV. L. 495, 505-09 (1984); Swinton, *Regulating Reproductive Hazards in the Workplace: Balancing Equality and Health*, 33 U. TORONTO L.J. 45 (1983).

⁴⁶³ See *supra* notes 169-75 and accompanying text.

⁴⁶⁴ See *supra* notes 169-75, 253-56 and accompanying text.

⁴⁶⁵ See *supra* note 456 and accompanying text.

⁴⁶⁶ See *supra* notes 101-59 and accompanying text.

discriminatory effect.⁴⁶⁷ Given the limited scientific data regarding the effects of exposure to toxic substances, the employer might have a difficult time in proposing viable alternatives if there is a consensus that protection of the health of the employee's offspring is indeed a legitimate business purpose. This difficulty was encountered in the few decisions that dealt with this issue.

The Fourth Circuit, in *Wright v. Olin Corp.*,⁴⁶⁸ applied the disparate impact/business necessity analysis to the "Female Employment and Fetal Vulnerability" policy of Olin Corporation. Under this policy, Olin adopted a job classification system, placing each position within the plant into one of three categories: "restricted," "controlled," or "unrestricted."⁴⁶⁹ The goal of the policy was to protect the unborn fetuses of pregnant employees from the damaging toxic effects of certain known toxic chemicals particularly lead and carbon disulfide.⁴⁷⁰

The "restricted" jobs category applied to jobs which required contact with and exposure to known or suspected abortifacient or teratogenic agents.⁴⁷¹ All fertile women were precluded from holding these positions. Women diagnosed as unable to bear children by the company's medical staff were permitted to be placed in restricted jobs.⁴⁷² "Controlled" jobs required only limited exposure to harmful chemicals.⁴⁷³ Pregnant women could work in these jobs only after the medical department had conducted individual case-by-case evaluations. Non-pregnant women could work in "controlled" jobs only after signing a form stating that they recognized that the job presented "some risk although slight."⁴⁷⁴

Finally, "unrestricted" jobs were those which did not present a hazard to either the pregnant female or her fetus.⁴⁷⁵ They were open to all women. Men were not restricted from any jobs, although they were warned orally of the effects of exposure to lead.⁴⁷⁶ Olin asserted that it decided to implement this policy after investigating potential alternatives such as substituting non-toxic materials or improving ventilation, and finding them impracticable.⁴⁷⁷

⁴⁶⁷ 444 F.2d at 798.

⁴⁶⁸ 697 F.2d 1172 (4th Cir. 1982).

⁴⁶⁹ *Id.* at 1182. See also Krause, *A Company Program to Control Toxic Exposures*, NAT'L. SAFETY NEWS, Feb. 1979, at 52, 55.

⁴⁷⁰ 697 F.2d at 1182.

⁴⁷¹ *Id.* The Company defined "abortifacient agents" as those substances which "may induce abortions" and "teratogenic agents" as ones which "may produce various fetal abnormalities." Krause, *supra* note 470, at 55.

⁴⁷² 697 F.2d at 1182.

⁴⁷³ *Id.*

⁴⁷⁴ *Id.*

⁴⁷⁵ *Id.*

⁴⁷⁶ *Id.*

⁴⁷⁷ *Id.*

The district court found that the policy was instituted for sound medical and humane reasons and was based upon competent medical knowledge and research and years of monitoring levels of chemical exposure at Olin's plant. Further, the court found that the intent behind the promulgation of the policy was not to discriminate against women, but rather to protect the unborn fetus at a time when it was most vulnerable to exposure to harmful chemicals.⁴⁷⁸ Therefore, the court concluded as a matter of law that the policy "does not discriminate against females in violation of Title VII."⁴⁷⁹

On appeal, the two sides proposed different legal approaches for the circuit court to evaluate and adopt. The plaintiffs claimed that the company's fetal vulnerability policy, with its exclusive adverse effect upon the employment of women, was either facially violative of Title VII⁴⁸⁰ or constituted a prima facie case of disparate impact discrimination.⁴⁸¹ The defendant corporation contended that the proper analytical framework was provided by the disparate treatment theory.⁴⁸² Under this theory, Olin claimed that the expert evidence adduced at trial to justify the exclusionary policy constituted a "legitimate nondiscriminatory reason" to rebut the prima facie case of sex discrimination.⁴⁸³

The district court had analyzed the policy from a disparate treatment viewpoint which the circuit court rejected as "wholly inappropriate" for resolving the legal and factual theories involved in the fetal vulnerability program.⁴⁸⁴ The court of appeals rejected the overt discrimination/BFOQ analytical approach just as summarily,⁴⁸⁵ and decided that the most appropriate analytical framework for the fetal vulnerability program was provided by the disparate impact/business necessity theory.⁴⁸⁶

The court recognized that the fetal vulnerability program while not "facially neutral" as required by the disparate impact paradigm, did meet the essential substantive principle underlying this theory in that the policy had definite disproportionate consequences on women, whether or not they were intentional.⁴⁸⁷ Thus, the court concluded that the evidence of

⁴⁷⁸ *EEOC v. Olin Corp.*, 24 Fair Empl. Prac. Cas. (BNA) 1646, 1659 (W.D.N.C. 1980), *aff'd in part, and rev'd in part sub nom. Wright v. Olin Corp.*, 697 F.2d 1172 (4th Cir. 1982).

⁴⁷⁹ *Id.*

⁴⁸⁰ 697 F.2d at 1183.

⁴⁸¹ *Id.* (citing *Griggs v. Duke Power Co.*, 401 U.S. 424 (1971) and *Nashville Gas Co. v. Satty*, 434 U.S. 136 (1977)).

⁴⁸² *Id.* at 1183 (citing *McDonnell Douglas v. Green*, 411 U.S. 792 (1973) and *Texas Dep't. of Community Affairs v. Burdine*, 450 U.S. 248 (1971)).

⁴⁸³ *Id.*

⁴⁸⁴ *Id.* at 1185. The court recognized that this factual situation did not precisely fit within any of the traditional analytical frames for Title VII. *Id.* at 1184.

⁴⁸⁵ *Id.* at 1185.

⁴⁸⁶ *Id.*

⁴⁸⁷ *Id.* at 1186.

the existence and operation of the fetal vulnerability program establishes as a matter of law a prima facie case of Title VII violation.⁴⁸⁸

The next issue addressed by the court was whether the business necessity defense would apply, and "if so, on what basis, employment practices avowedly designed to protect the unborn fetuses of women workers from workplace dangers can be justified on that basis despite their disproportionate adverse impact upon women's employment opportunities."⁴⁸⁹

The specific question to be resolved by the court was "whether under any circumstances" the protection of workers' unborn children can properly be considered a "necessity" within the meaning of the business necessity defense.⁴⁹⁰ The court applied the *Robinson* test which requires the showing of "an overriding legitimate business purpose such that the practice is necessary to the safe and efficient operation of the business."⁴⁹¹ With respect to the fetal vulnerability program, the puzzling question was whose safety ought to be considered a matter of business necessity. The court suggested that proper subjects include the women workers, personal service customers of the business, and other employees. The *Olin* court acknowledged that precedent indicates that the safety of the customer has been recognized as an overriding business necessity.⁴⁹²

Further, the court stated that "the legitimacy of an employer's purpose to protect by discriminatory means the safety of the unborn children of workers would appear to lie conceptually somewhere between a purpose to protect the safety of workers themselves and a purpose to protect that of customers exposed in normal course to workplace hazards."⁴⁹³ The court narrowed its inquiry by analogizing the unborn child to a special category of invitees and licensees legitimately on the business premises and exposed to the associated hazards present in the workplace,

⁴⁸⁸ *Id.* at 1187.

⁴⁸⁹ *Id.* at 1188.

⁴⁹⁰ *Id.*

⁴⁹¹ *Id.* (quoting *Robinson v. Lorillard Corp.*, 444 F.2d 791, 798 (4th Cir.), cert. dismissed, 404 U.S. 1006 (1971)).

⁴⁹² One case that the *Olin* court used as precedent was *Burwell v. Eastern Airlines, Inc.*, 633 F.2d 361 (4th Cir. 1980) (en banc), cert. denied, 450 U.S. 965 (1981). Such reliance may be misplaced in that the *Olin* court ignored a major logical link in the *Burwell* decision. In *Burwell* the court emphatically stated: "Eastern's contention that an element of business necessity is its consideration for the safety of the pregnant flight attendant and her unborn child is not persuasive. If this personal compassion can be attributed to corporate policy it is commendable, but in the area of civil rights, personal risk decisions not affecting business operations are best left to individuals who are the targets of discrimination." 633 F.2d at 371. The *Olin* court on the other hand stated that it rejected "any contention that under Title VII a woman's right to make her own choices respecting workplace hazards rather than submit to discriminatory restrictions is exactly paralleled by a right to make the same choices in behalf of her unborn children." 697 F.2d at 1189 n.25.

⁴⁹³ 697 F.2d at 1189.

to that of personal service customers of the business.⁴⁹⁴ According to the court, the business necessity of providing for customer safety is of more "overriding" importance than providing for the safety of visitors. Further, the legislative intent behind Title VII was interpreted as standing for the proposition that the Act did not mean to completely deprive employers of the right to provide any protection for licensees and invitees legitimately on the premises. Expanding its analogy, the court held that "under appropriate circumstances an employer may, as a matter of business necessity, impose otherwise impermissible restrictions on employment opportunity that are reasonably required to protect the health of unborn children."⁴⁹⁵ It remanded on the issue of whether the business necessity defense was applicable to the fetal vulnerability program.⁴⁹⁶ The Fourth Circuit established several criteria to be used by the district court in making its decision regarding this issue.

First, the employer must carry the burden of persuasion that toxic substances which harm the fetus do so exclusively through exposure of the fertile or pregnant women and that men are unaffected; consequently, the only means of protection for the fetus is the exclusion or restriction of women from exposure.⁴⁹⁷ Second, this burden may not be discharged simply by proving that the employer subjectively and in good faith believed the program was necessary and effective for the purpose. The employer must present objective scientific evidence that the policy was necessary to achieve its goal of protecting fetal health.⁴⁹⁸ Such evidence should be presented exclusively by expert witnesses.⁴⁹⁹ The evidence presented need not reflect a general consensus, but there should be a sufficient showing "that within [the] community there is so considerable a body of opinion that significant risk exists, and that it is substantially confined to women workers, that an informed employer could not responsibly fail to act on the assumption that this opinion might be an accurate one."⁵⁰⁰ A successful showing would establish a *prima facie* business necessity defense. This *prima facie* defense may be rebutted by the plaintiffs if they can show the existence of "acceptable alternative policies or practices which would better accomplish the business purpose . . . [of protecting against the risk of harm], or accomplish it equally well with a lesser differential . . . impact [between women and men workers]."⁵⁰¹ Such rebuttal may result in two distinct means of recovery for the plaintiff.⁵⁰²

⁴⁹⁴ *Id.*

⁴⁹⁵ *Id.*

⁴⁹⁶ *Id.* at 1187.

⁴⁹⁷ *Id.* at 1189.

⁴⁹⁸ *Id.* at 1190.

⁴⁹⁹ *Id.*

⁵⁰⁰ *Id.* at 1191.

⁵⁰¹ *Id.* (quoting *Lorillard*, 444 F.2d at 798).

⁵⁰² *Id.* at 1191.

The district court for the Western District of North Carolina applied these criteria when it decided the case on remand.⁵⁰³ Olin presented evidence to rebut the prima facie case of discrimination established by the plaintiff. The company's expert witnesses testified that the exclusionary policy was the only efficient means for insuring the health of the fetus.⁵⁰⁴ From the testimony presented, the court concluded that no such policies needed to be implemented for men.⁵⁰⁵

Olin was able to establish that the fetal health defects which formed the basis for the policy in fact occurred only through maternal exposure. Based on the scientific evidence presented on remand, the district court found that Olin's policy was not underinclusive: "There is substantial risk of fetal harm through maternal exposure, as contrasted with a negligible or theoretical risk through paternal exposure. Clearly . . . the risk is substantially confined to women."⁵⁰⁶

Though neither the Fourth Circuit, nor the law in general, require that a defendant prove the non-existence of less discriminatory alternatives,⁵⁰⁷ the court nonetheless concluded that the evidence tended to show that such alternatives were not available to Olin.⁵⁰⁸ It stated that it was not in a position to recommend that Olin seek and adopt such alternatives to reduce the level of exposure of its women employees to the hazardous substances.⁵⁰⁹

The court held that an employer may justifiably choose a policy of fetal protection as "a moral obligation" to protect the next generation from injury, and that such protection is a social goal that should be en-

⁵⁰³ *Wright v. Olin Corp.*, 585 F. Supp. 1447 (W.D. N.C. 1984).

⁵⁰⁴ Fletcher Roberts, Olin's director of the Safety Loss Prevention Services and an expert in the fields of industrial safety and health, testified that the company has tried to minimize workers' exposure to the chemicals most prevalent at Olin's Pisgah Forest facility, such as toluene, carbon disulfide, and lead. The company has tried to implement the following alternatives: 1) possible use of respirators and other personal protective equipment; 2) provision for better ventilation; 3) substitution of lower toxicity chemicals such as a better grade of toluene at greater cost because it contained less benzene; 4) maximization of the goals of workers' health and equal employment through the transfer rather than exclusion of its workers. He also testified that Olin met all of the OSHA standards. Doctor Sergio Fabro, who was recognized by the court as an expert in the field of obstetrics-gynecology, expressed the opinion that there were significant risks of harm to the unborn children of women workers at Olin's facility from their exposure during pregnancy to the toxic hazards of carbon disulfide, benzene, toluene, and lead. He stated that women of reproductive years should be restricted from an exposure to such toxic hazards in order to avoid potential harm to the offspring. *Id.* at 1149-50.

⁵⁰⁵ *Id.*s at 1149-50.

⁵⁰⁶ *Id.* at 1150-51.

⁵⁰⁷ *Id.*

⁵⁰⁸ *Id.* at 1152-53.

⁵⁰⁹ *Id.*

couraged rather than penalized.⁵¹⁰ It concluded that Olin had rebutted the prima facie case of discrimination established by the plaintiff "by showing through the testimony of independent, objective scientific expert witnesses a business necessity for its fetal vulnerability program."⁵¹¹

The *Olin* case represents the quintessence of the dilemma faced by our judicial system. On one hand, the courts have a moral obligation to safeguard the health of the unborn. On the other hand, they are obligated to enforce the legislative mandate regarding equal employment opportunities. The *Olin* court stretched the meaning of the business necessity defense to encompass the fetal vulnerability program by equating laudable moral obligations and societal goals with an "overriding business purpose." Such an analysis defies precedent.⁵¹² It introduces even more confusion and inconsistency in an area already filled with controversy and emotionalism.

In *Hayes v. Shelby Memorial Hosp.*,⁵¹³ the Eleventh Circuit likewise examined the validity of the business necessity defense as applied to a hospital's policy of firing a pregnant woman based upon the employer's alleged belief that the woman's continued employment presented a substantial hazard to her fetus. This court rejected as unnecessary the legal gyrations adopted by the Fourth Circuit which had equated the fetus with a business invitee.⁵¹⁴ The court stated that it "simply recognize[d] fetal protection as a legitimate area of employer concern to which the business necessity defense extends."⁵¹⁵

The plaintiff contended that the basis for the defense was avoidance of possibly ruinous litigation. The court found that such emphasis was misplaced and the defense of business necessity in a fetal protection case is justified by a genuine desire on the part of the employer to promote the health of employee offspring, not by self-interest.⁵¹⁶ In a surprisingly candid statement, the *Hayes* court commented that its extension of

⁵¹⁰ *Id.* at 1153.

⁵¹¹ *Id.* The court held that the plaintiff had not successfully rebutted the business necessity defense. As such, Olin's fetal vulnerability policy did not discriminate against the plaintiff.

⁵¹² See *supra* notes 459-62 and accompanying text.

⁵¹³ 726 F.2d 1543 (11th Cir. 1984).

⁵¹⁴ *Id.* at 1552. n.14. It is interesting to note that this court adopted the principles developed in *Wright v. Olin Corp.* 697 F.2d 1172 (4th Cir. 1982) regarding what constituted a sufficient showing of "business necessity" and applied these principles to what constitutes a sufficient proof for a BFOQ defense. 726 F.2d at 1548.

⁵¹⁵ 726 F.2d at 1552 n.14.

⁵¹⁶ *Id.* at 1553 n.15. See also *Zuniga v. Kleberg County Hosp.*, 692 F.2d 986 (5th Cir. 1982) where an X-ray technician established a prima facie case of sex discrimination since the policy imposed a burden on women which no man would ever suffer. The hospital claimed that the potential harm to the fetus from ionizing radiation and the possibility of a tort suit from a future "damaged" child constituted a business necessity which justified its termination of the plaintiff's employment. The court did not see the need to address the issue of whether these considerations constituted a valid business

the defense, beyond a strict relationship to job performance,⁵¹⁷ was prompted by considerations of "a higher public policy other than simply protecting employers from suits."⁵¹⁸

The Eleventh Circuit declared that from the evidence adduced at trial, the practice constituted disparate impact discrimination. The employer justified the practice on the basis of an automatic business necessity defense validated by the scientific evidence regarding the exclusive connection between birth defects and maternal exposure to hazardous work environments.⁵¹⁹ According to the *Hayes* court, once an employer defends his policy, the employee may rebut the defense by proving the existence of acceptable alternative policies that would better accomplish the purpose of safeguarding fetal health.⁵²⁰ Since the hospital employed no alternatives to the outright firing of the plaintiff the court decided that the plaintiff-employee successfully rebutted the business necessity defense.

Hayes represents a further expansion of the business necessity defense to fetal protection policies. There is a paucity of analytical depth regarding the suitability of this defense to the fetal health context. This situation reflects the difficulty of trying to fit socially or morally justifiable employer conduct within an inappropriate statutory setting.

4. Conclusion

The discussion presented in this section indicates that application of traditional Title VII defenses may not be available to protect an employer who attempts to safeguard the health of the unborn by excluding women from exposure to toxic work environments. These defenses have been either statutorily or judicially developed to protect the employer's prerogative in conducting business according to his best judgment and not to insure the health of the next generation. They focus on the employees' job performance and not on the employees' or their offsprings' medical condition.

When an employer uses the statutory BFOQ defense, he has to prove that employees of only a particular sex have the ability to perform the job in question.⁵²¹ Employers using the business necessity defense must

necessity since the plaintiff was able to prove that the alleged business necessity defense was merely a pretext for discrimination by showing that the hospital failed to utilize a less discriminatory alternative. *Id.* at 991-92. The court did comment in dicta that: "the economic consequences of a tort suit brought against the Hospital by a congenitally malformed child could be financially devastating, seriously disrupting the safe and efficient operation of the business." *Id.* at 992 n.10 (citation omitted).

⁵¹⁷ See *supra* notes 515-16 and accompanying text.

⁵¹⁸ 726 F.2d at 1553 n.15.

⁵¹⁹ *Id.* at 1553.

⁵²⁰ *Id.*

⁵²¹ See *supra* notes 392-444 and accompanying text.

show that the challenged practice or policy is necessary for the safe and efficient performance of the particular job.⁵²² Insofar as the possibility for harm to the fetus is not directly or even tangentially related to the employee's ability to perform the job, the traditional defenses to Title VII violations do not provide satisfactory solutions to the problems of safeguarding the health of future generations without penalizing the job opportunities of the present one.

Olin and *Hayes* best exemplify the extremes to which courts are prepared to go to insure the protection of the fetus from the consequences of the exposure of their mothers to toxic work environments. These cases bring into focus the quandry the judicial system faces in balancing the health of the next generation with the rights of the present generation. The courts have consistently remarked that they need more precise statutory guidelines to better enable them to answer this challenge.⁵²³

IV. STATUTORY PROPOSAL

As the analysis of the existing statutory scheme and the judicial statutory construction indicate, at the present time neither employees' reproductive ability nor the health of the fetus appear to be adequately protected. The very strong societal interest in minimizing or eliminating the incidence of birth defects due to all causes, including environmental and occupational hazards, is undisputed.⁵²⁴ This section will discuss a statutory proposal aimed at developing a methodology which is designed to protect the health of both male and female employees and that of their offspring, as well as to safeguard all workers' employment opportunities. The proposal will also address means employers might use to avoid liability under Title VII for excluding pregnant employees or women of child bearing age from fetally hazardous work environments.

⁵²² See *supra* notes 459-519 and accompanying text.

⁵²³ See, e.g., *Wright v. Olin Corp.*, 697 F.2d 1172 (4th Cir. 1982) where the court remarked: "we note . . . that the problem of fitting the fetal vulnerability program into the appropriate theory of claim and defense as developed in Title VII litigation [is complicated in that this] fact situation is one of first impression with the Court and . . . does not fit with absolute precision into any of the developed theories." *Id.* at 1184; See also *Oil, Chemical and Atomic Workers Int'l Union v. American Cyanamid Co.*, 741 F.2d 444 (D.C.C. 1984) where the court stated:

The fetus protection policy . . . does not affect employees while they are engaged in work or work-related activities. . . . [T]he fetus protection policy is not a hazard within the meaning of the general duty clause. Were we to decide otherwise, we would have to adopt a broad principle of unforeseeable scope: any employer policy which, because of employee economic incentives, left open an option exercised outside the work-place that might be harmful would constitute a "hazard" that made the employer liable under the general duty clause. It might be possible to legislate limitations upon such a principle but that is a task for Congress rather than courts.

Id. at 449 (emphasis added).

⁵²⁴ See *supra* notes 1-5 and accompanying text.

This legislative proposal is premised upon two hypotheses: 1) under the present level of technological knowledge and expertise the workplace may not be rendered completely safe for the fetus; and 2) under current legal theories the fetus has very few if any rights, particularly before viability. These two premises will be discussed in detail below.

A. *Cleaning Up the Work Place*

There is little doubt that the best solution to the problem of the fetal-toxic work environment would be to eliminate all hazards or at least minimize them to a level at which the fetus would not be harmed.⁵²⁵ Such a situation would address and fulfill the goals that wholesale exclusion was designed to meet: the protection of workers' reproductive ability and the insurance of the health of the fetus.

Although this approach appears to be the most attractive resolution of the problem since it satisfactorily answers all the issues of concern, it is the least achievable. As seen above, the OSHA Act requires that the Agency institute standards insofar as they are feasible from both a technological and economic viewpoint.⁵²⁶ Furthermore, economic or technological feasibility may not be the threshold level of inquiry. Rather, the initial concern is the lack of sufficient scientific understanding of the issues involved in harm to the fetus resulting from the parents' occupational exposure to toxic substances.

Given the current level of scientific and technological knowledge, it appears that the implementation of exclusionary policies may be necessary in order to safeguard the health of the unborn, since cleanup of the work environment may not be realistically attainable. However, when such policies are sex-based, they come into direct conflict with the mandate of Title VII.⁵²⁷ Therefore, the issue is how to reconcile the uncomfortable reality that parental exclusion may be the only solution to protecting the future generation with the right of all workers to equal employment opportunities as guaranteed by the Civil Rights Act. The question that must be resolved is whether it is equitable that parents prevail in this quandry simply because they are currently protected by statute while the rights of the fetus are not yet recognized.

B. *Fetal Rights*

In *Roe v. Wade*,⁵²⁸ the Supreme Court held that the "word 'person,' as used in the Fourteenth Amendment, does not include the unborn."⁵²⁹ This holding was tempered by the Court's comment that the state has an "important and legitimate interest in protecting the potentiality of

⁵²⁵ See *supra* notes 29, 60-98 and accompanying text.

⁵²⁶ See *supra* notes 186-247 and accompanying text.

⁵²⁷ See *supra* notes 323-30 and accompanying text.

⁵²⁸ 410 U.S. 113 (1973).

⁵²⁹ *Id.* at 158.

human life."⁵³⁰ *Roe* thus confirmed the right, if not the duty, of the state to protect the unborn.⁵³¹ The issue not directly addressed by the Court was what would happen when the interests of parents and those of the unborn conflict, particularly in instances where the rights of the parents are assured by statute.

This question is more troublesome in situations involving the pre-viable fetus. The Court stated that the state's compelling interest in protecting potential life becomes fully realized at viability "because the fetus then presumably has the capability of meaningful life outside the mother's womb."⁵³² Therefore, it appears that at least up to viability, the rights and interests of the parents are to prevail.⁵³³ Such an interpretation is consistent with traditional legal views regarding the protection of the unborn.⁵³⁴ Tort law represents the complexity and inconsistency inherent

⁵³⁰ *Id.* at 162.

⁵³¹ See generally Parness & Pritchard, *To Be or Not to Be: Protecting the Unborn's Potentiality of Life*, 51 U. CIN. L. REV. 257 (1982); King, *The Judicial Status of the Fetus: A Proposal for Legal Protection of the Unborn*, 77 MICH. L. REV. 1647 (1979); Parness, *The Duty to Prevent Handicaps: Laws Promoting the Prevention of Handicaps to Newborns*, 5 W. NEW ENG. L. REV. 431 (1983).

⁵³² 410 U.S. at 163.

⁵³³ Under this type of analysis, excluding women from hazardous workplaces on the basis of their pregnancy would be denied. This is particularly true during the first trimester, since under *Roe* the interests of the woman are to prevail. This would present an even greater risk to the embryo who is most susceptible to toxic assault during the early stages of gestation.

⁵³⁴ The *Roe* Court commented that inheritance law recognizes the rights of the unborn to inherit property, but such acquisition is contingent upon live birth. 410 U.S. at 162. The Uniform Probate Code recognizes the rights of "[r]elatives of the decedent conceived before his death but born thereafter [to] inherit as if they had been born in the lifetime of the decedent." Uniform Probate Code § 2-108 (1983). The Probate Code also provides that a testator's pretermitted child who is born after the execution of the will is entitled to receive "a share in the estate equal in value to that which he would have received if the former died intestate." Uniform Probate Code § 2-302 (1983). One commentator agrees that the code undermines the interests of the unborn by making the taking of property contingent upon live birth: "The state's legitimate interest in 'protecting the potentiality of human life', would warrant elimination of the incentive to abort [such that the spouse inherits the whole estate, rather than her legal share]." Parness & Pritchard, *supra* note 531, at 265 (citation omitted).

Criminal law has addressed the issue of whether the fetus is to be afforded legal protection through the enactment of legislation prohibiting abortion, feticide, homicide, and manslaughter. One commentator has remarked that these types of statutes are limited in their ability to protect the unborn because their main focus is the protection of the mother. Parness & Pritchard, *supra* note 531, at 267. The *Roe* rationale regarding viability has limited the breath of coverage of these statutes. See, e.g., *Keeler v. Superior Court*, 2 Cal.3d 619, 470 P.2d 617, 87 Cal. Rptr. 481 (1970) where the Supreme Court of California held that a viable fetus was not a human being under the state's homicide laws. Consequently California amended its homicide statute to read: "Murder is the unlawful killing of a human being, or a fetus, with malice aforethought." CAL. PENAL CODE § 187 (West 1983). The revised statute was construed in *People v. Smith*, 59 Cal. App.3d 751, 129 Cal. Rptr. 498 (1976) where an appellate court affirmed the decision of the trial court

in these legal theories. Recovery in cases involving torts committed against the fetus may depend upon several factors including: 1) when the injury occurred; 2) whether the injury occurred prior to conception; and 3) the type of injury suffered by the fetus.⁵³⁵

Today, the majority of jurisdictions allow recovery in wrongful death cases involving the unborn, particularly when the injury causing the death of the fetus occurred after viability.⁵³⁶ Recovery has also been granted in a few cases involving pre-conception torts.⁵³⁷ Though there appears to be some sporadic court approval for weakening the concept of viability as a prerequisite for recovery in tort, such a change in legal position does not seem to be forthcoming in a majority of jurisdictions.

A few courts have found that section 1983⁵³⁸ does not protect the rights of the fetus, particularly those of the pre-viable fetus.⁵³⁹ These cases are consistent with the *Roe* decision that the fetus is not a person whose rights are protected under the fourteenth amendment and, as such, may not maintain a cause of action under section 1983.⁵⁴⁰

which dismissed murder charges against a man who allegedly murdered a pre-viable fetus, based on a mistaken interpretation of the *Roe v. Wade* rationale:

The underlying rationale of *Wade*, therefore, is that until viability is reached, human life in the legal sense has not come into existence. Implicit in *Wade* is the conclusion that as a matter of constitutional law the destruction of a non-viable fetus is not a taking of human life. It follows that such destruction cannot constitute murder or other form of homicide, whether committed by a mother, a father (as here), or a third person.

Id. at 755, 129 Cal. Rptr. at 502. See also *State v. Brown*, 378 So.2d 916 (La. 1979). See generally Parness & Pritchard, *supra* note 531, at 267-69; King, *supra* note 531, at 1662-64.

⁵³⁵ See *supra* notes 531-34 and accompanying text.

⁵³⁶ See *supra* note 533 and accompanying text.

⁵³⁷ *Id.*

⁵³⁸ 42 U.S.C. § 1983 (Supp. V 1982). Section 1983 provides:

Every person who, under color of any statute, ordinance, regulation, custom, or usage, of any State or Territory or the District of Columbia, subjects, or causes to be subjected, any citizen of the United States or other person within the jurisdiction thereof to the deprivation of any rights, privileges, or immunities secured by the Constitution and laws, shall be liable to the party injured in an action at law, suit in equity, or other proper proceeding for redress.

⁵³⁹ See generally Note, *The Fetus Under Section 1983: Still Struggling for Recognition*, 34 SYRACUSE L. REV. 1029 (1983).

⁵⁴⁰ See, e.g., *McGarvey v. Magee-Women's Hosp.*, 340 F. Supp. 751 (W.D. Pa. 1972), *aff'd mem.*, 474 F.2d 1339 (3d Cir. 1973) (suit against hospital claiming that by providing abortions the hospital deprived children of their lives without due process of law. The court held that fetal life was not constitutionally protected based on the rationale that the history of the Constitution and of the Civil Rights Act was not intended to protect the fetus and that the issue of fetal protection was to be left to the individual state legislatures); *Poole v. Endsley*, 371 F. Supp. 1379 (N.D. Fla. 1974), *aff'd in part and rem. mem.* 516 F.2d 898 (5th Cir. 1975) (under the *Roe* rationale a fetus is not entitled to benefits under Aid to Families with Dependent Children (AFDC)); *accord, Burns v. Alcalá*, 420 U.S. 575 (1975) (strict statutory construction that "dependent children"

This short survey dealing with the present status of the law regarding the legal safeguards provided to the fetus indicates that: 1) the state may assert its interest in protecting the health of the unborn particularly after viability; and 2) prior to viability the fetus is generally unprotected and the interests of the parents are paramount. This legal view comes into direct conflict with current advances in medicine and in biological sciences which indicate that viability may occur prior to the twenty-fourth week of gestation.⁵⁴¹

The issue of fetal protection, specifically of insuring the health of the unborn, comes into even sharper focus in the case of the fetally toxic environment. One commentator has suggested that in this context a balancing analysis would be appropriate and would lead to four alternative causes of action:⁵⁴² 1) The state could mandate that potential parents be banned from hazardous work environments; 2) The state could require that employers clean up the workplace and thus minimize or eliminate the hazards; 3) The state might require the employer to transfer employees who are potential parents to less toxic work environments, wherever possible; and 4) The state might provide the unborn with remedial tort relief by making the employer or even the parents legally responsible for the harm resulting from the exposure.⁵⁴³ The statutory proposal presented below incorporates some of these suggestions particularly to the extent that it is premised upon weighing the interests of employers, employees, and their future offspring.

C. Legislative Proposal

The clash between the toxic work environment and the Pregnancy Amendment may be solved by Congress through a legislative enactment aimed specifically at protecting the health of future generations, while

did not encompass fetuses). *Harman v. Daniels*, 525 F. Supp. 798 (W.D. Va. 1981) (birth defective child may not maintain a cause of action under section 1983 for injuries received *in utero* from a police officer's alleged physical mistreatment of the mother); *but see Douglas v. Town of Hartford*, 542 F. Supp. 1267 (D. Conn. 1982) (birth defective infant has a cause of action under section 1983 based on a long tradition in Connecticut of recognition of fetal rights).

⁵⁴¹ See King, *supra* note 531, at 1673-77.

⁵⁴² See Parness & Pritchard, *supra* note 531, at 295.

⁵⁴³ See generally Comment, *Parental Liability for Prenatal Injury*, 14 COLUM. J. L. & SOC. PROBS. 47, 84 (1978) where the author commented that:

If children can sue their parents for negligent conduct and can sue third parties for negligence causing prenatal injury, it is logically inconsistent to deny the cause of action of a child prenatally injured by parental negligence. The discrepancy between the position of the child prenatally injured by his parents and that of the child similarly injured by others is unjust. The former are denied a cause of action whereas the latter may recover as successful plaintiffs. Since the parents are in a position of being able to inflict at least as much, if not more, harm than any third party tortfeasor during pregnancy, the discrepancy is even more disturbing.

ensuring that women's employment opportunities would not be adversely affected. Such legislation will be proposed in this section.

The statute to be designated as the Fetal Protection Act (F.P. Act) is to be promulgated as an amendment to the Occupational Safety and Health Act and thus to be administered by OSHA. OSHA is to defer to the EEOC in cases involving violations of Title VII. The F.P. Act is to provide for the implementation of workplace health and safety policies reaching both men and women planning to become parents. These policies are to be based on sound scientific data regarding reproductive impairments and the consequences resulting from parental exposure to a fetally toxic work environment.

As discussed above,⁵⁴⁴ the problem with present regulatory schemes is that they do not specifically address the issue of fetal protection in the employment context. They concern themselves strictly with the present generation of workers and not with their future offspring. The proposed statute is designed to rectify this particular problem. It would provide for:

- 1) *A program of economic incentives to employers.* Such incentives are to include tax incentives⁵⁴⁵ for employers who provide a fetally safe work environment through massive engineering changes *exceeding* those mandated by compliance with OSHA standards.⁵⁴⁶
- 2) *Voluntary removal of workers from toxic areas.* Such removals are to be granted to employees who request them based on their desire for parenthood. The removals are not to result in economic losses to the workers, *e.g.*, they will maintain all of their benefits and accumulated seniority.
- 3) *Medical monitoring of workers.* Regular monitoring of workers is to be provided by the employer to ascertain incipient reproductive damage, such as chromosomal aberrations. When such damage is diagnosed, the affected worker is to be immediately removed from the hazardous work environment and his/her medical condition shall continue to be monitored to decide when the worker may safely return to his/her former job or whether the damage is irreversible.

⁵⁴⁴ See *supra* notes 168-520 and accompanying text.

⁵⁴⁵ Expenditures for such a purpose could qualify for tax credit under I.R.C. § 30 (1985), which states:

(a) GENERAL RULE. There shall be allowed as a credit against the tax imposed by this chapter for the taxable year an amount equal to 25 percent of the excess (if any) of

- (1) the qualified research expenses for the taxable year, over
- (2) the base period research expenses.

(b) QUALIFIED RESEARCH EXPENSES. The term "qualified research expenses" means the sum of the following amounts which are paid or incurred by the taxpayer during the taxable year in carrying on any trade or business of the taxpayer

- (A) in-house research expenses, and
- (B) contract research expenses.

⁵⁴⁶ See *supra* notes 176-84 and accompanying text.

- 4) *Mandatory communication to employees regarding the exposure to toxic substances.* Employers are to establish formal procedures to inform employees both in writing and in training sessions about the reproductive hazards presented by exposure to certain toxic chemicals. Workers are to confirm in writing that they understand the dangers of exposure to such toxins.
- 5) *Mandatory removal of employees.* In instances where it is either scientifically or economically impossible to render the workplace fetally safe, the employer may exercise the option of temporarily removing at-risk employees based on their potential for parenthood. When there is substantial scientific evidence that only one sex-based classification of employees is affected, the employer may remove or exclude members of the sex-based category. Such removals are not to result in economic hardship or losses to the affected worker.
- 6) *Funding for medical and scientific research.* Funding for research in this area is to be provided by the government to NIOSH and to the National Institute of Health (NIH). Also research grants are to be awarded to various academic institutions to conduct basic investigations in this field.
- 7) *Limitation of the liability of employers to employees.* In certain circumstances the liability of the employer to the employee for birth defects resulting from exposure to toxins is to be limited. Such circumstances are to include instances where no scientific evidence existed at the time of exposure regarding the potential for reproductive damage and instances where the employee chose to continue working in the hazardous work environment, even after being informed of his/her options for voluntary removal (assumption of risk).
- 8) *The establishment of a national fund to compensate children born with birth defects.* The statute is to provide for the establishment of a national fund based on mandatory contributions from affected industries to compensate children born with birth defects *conclusively* resulting from parental exposures to fetally toxic work environments. The need for such a funding process results from the virtual impossibility of tracing an injury to a specific employer, especially where the employee has worked for several employers and was exposed to potential fetotoxic agents at each workplace.

In cases where employers would be forced to remove workers of either sex from a toxic environment because of overwhelming scientific or medical evidence, they would have available a BFOQ-type defense to justify the exclusionary policies. Courts are to interpret this defense as narrowly as traditional BFOQ defenses. They are to use scientific evidence presented by experts regarding the unavoidable need for removal of members of a particular class of employees based upon the unpredictability of the effects of the exposure.⁵⁴⁷

⁵⁴⁷ See *supra* notes 60-98 and accompanying text.

D. Conclusion

This Article has attempted to critically analyze the statutory avenues available to deal with the problem of reproductive hazards in toxic workplaces. This survey concludes that current legal approaches do not fully deal with all the parameters of the issue. In order to address the total spectrum of the problem, a legislative proposal was presented which is aimed at balancing several competing interests: that of the worker for a safe and healthful workplace and equal employment opportunities; that of the employer for continued economic viability and profitability; and that of society for a healthy future generation.