

1980

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Recommended Citation

Maria Scorcia, *Section 6(b)(5) of the Occupational Safety and Health Act of 1970: Is Cost-Benefit Analysis Required?*, 49 Fordham L. Rev. 432 (1980).

Available at: <https://ir.lawnet.fordham.edu/flr/vol49/iss3/12>

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SECTION 6(b)(5) OF THE OCCUPATIONAL SAFETY AND HEALTH ACT OF 1970: IS COST-BENEFIT ANALYSIS REQUIRED?

INTRODUCTION

The Occupational Safety and Health Act of 1970 (the Act)¹ seeks to assure that every American's working conditions are safe and healthful.² The Act also attempts to lessen the economic harms resulting from job-related accidents and diseases³ and to eliminate any competitive advantage enjoyed by companies unconcerned with safety.⁴ To achieve these goals, the Occupational Safety and Health Administration (OSHA) is charged with regulating various health and safety

1. 29 U.S.C. §§ 651-678 (1976). The Act has been the subject of academic debate ever since its enactment. *E.g.*, R. Smith, *The Occupational Safety and Health Act* (1976); Miller, *The Occupational Safety and Health Act of 1970 and the Law of Torts*, 38 *Law & Contemp. Prob.* 613 (1974); Morey, *Mandatory Occupational Safety and Health Standards—Some Legal Problems*, 38 *Law & Contemp. Prob.* 584 (1974).

2. Occupational Safety and Health Act of 1970, § 2(b), 29 U.S.C. § 651(b) (1976) ("The Congress declares it to be its purpose and policy . . . to assure so far as possible every working man and woman in the Nation safe and healthful working conditions and to preserve our human resources . . ."). Workplace health hazards, such as poor ventilation in mines and poisonous emissions in factories, first caused concern in the sixteenth century. J. Follmann, *The Economics of Industrial Health* 12 (1978). By 1800, many improvements had been made, including use of gas masks and safety lamps in mines. *Id.* In the United States, because most early health agencies were operated by states, regulations were not uniform. *Id.* at 15-17. The effect of regulations in one state could be nullified by another state with more lenient standards because industries could move to states that did not ban hazardous substances. Senate Subcomm. on Labor of the Senate Comm. on Labor and Public Welfare, 92d Cong., 1st Sess., *Legislative History of the Occupational Safety and Health Act of 1970*, at 144 (Comm. Print 1971) [hereinafter cited as *Legislative History*].

3. Occupational Safety and Health Act of 1970, § 2(a), 29 U.S.C. § 651(a) (1976). "The Congress finds that personal injuries and illnesses arising out of work situations impose a substantial burden upon, and are a hindrance to, interstate commerce in terms of lost production, wage loss, medical expenses, and disability compensation payments." *Id.* The resultant annual loss to the gross national product, at the time the Act was enacted, was estimated to be over \$8 billion. *Legislative History, supra* note 2, at 142. An estimated 4,000 miners die of black lung (pneumoconiosis) each year; 100,000 of the 500,000 asbestos workers will die of lung cancer; 12% to 30% of the 800,000 textile and cotton workers will develop brown lung (byssinosis); and 600 to 1,100 uranium miners will develop cancer over the next 20 years. J. Follmann, *supra* note 2, at 70. The threats to the American worker include carcinogenic chemicals, lasers, ultrasonic energy, pesticides, noise, and vibration. *Legislative History, supra* note 2, at 142-43. See generally N. Ashford, *Crisis in the Workplace: Occupational Disease and Injury* 3-12 (1976); J. Follmann, *supra* note 2, at 67-93.

4. *Legislative History, supra* note 2, at 144. Employers, especially smaller companies, often lack the economic incentive to take safety precautions. *Id.* The Act also attempts to guard against the possibility that employees, as well as employers, might disregard safety to increase productivity. For instance, employees who are working at a piecework rate might sacrifice safety for speed. *Id.* at 343.

hazards.⁵ The decision to regulate, like any other decision with economic consequences, is based at a minimum on an informal cost analysis.⁶ Governmental cost analysis, however, must be more precise and mathematical than the informal weighing done by individuals,⁷ and various levels of precision can be mandated by Congress to limit a government agency's discretion.⁸

5. See Occupational Safety and Health Act of 1970, §§ 2(b)(3), 3(8), 29 U.S.C. §§ 651(b)(3), 652(8) (1976). Before any standard can be promulgated under the Act, OSHA must find a significant workplace hazard. The Act does not require that employment be risk free; on the contrary, a significant risk of harm must exist before a hazard can be regulated. *Industrial Union Dep't v. American Petroleum Inst.*, 100 S. Ct. 2844, 2864 (1980) (plurality opinion). The Secretary must find, as a threshold matter, that the hazard in question poses a significant health risk and that the regulation is "therefore 'reasonably necessary or appropriate' " to provide a safe workplace. *Id.* at 2850 (quoting Occupational Safety and Health Act of 1970, § 3(8), 29 U.S.C. § 652(8) (1976)). The Supreme Court has held that this requirement applies to standards promulgated under § 6(b)(5), 29 U.S.C. § 655(b)(5) (1976), as well as to all other standards promulgated under the Act. 100 S. Ct. at 2864. The plurality argued that repeated use of the term "standard" in § 6(b)(5) requires that the § 3(8) definition be incorporated into § 6(b)(5). *Id.* The dissent rejected this risk requirement because existing scientific evidence is usually inadequate to make a "threshold finding of 'significance.'" *Id.* at 2888 (Marshall, J., dissenting). The dissent argued that the express language of § 6(b)(5) is not superseded by the language of § 3(8) on this point. *Id.* at 2899 n.28.

6. Cost analysis, as used in this Note, is a generic term that encompasses any consideration of economic factors. Assuming that everything can be measured in economic terms, every decision can be evaluated in terms of cost analysis. Kasper, *Cost-Benefit Analysis in Environmental Decisionmaking*, 45 Geo. Wash. L. Rev. 1013, 1014-15 (1977). The Act requires only an informal cost analysis under § 6(b)(5) when deciding whether to regulate, see 45 Fed. Reg. 5001, 5285 (1980) (to be codified at 29 C.F.R. § 1990.132), and how to regulate. See Brief for Federal Parties at 70-71, *Industrial Union Dep't v. American Petroleum Inst.*, 100 S. Ct. 2844 (1980) (OSHA's brief).

7. Regulations promulgated under the Act are upheld if supported by "substantial evidence in the record considered as a whole." Occupational Safety and Health Act of 1970, § 6(f), 29 U.S.C. § 655(f) (1976). This test requires a careful identification of the reasons for regulation. Facts must be evidenced in the record when a determination is made on a factual basis, and persuasive considerations must be identified when policy judgments are made. *Industrial Union Dep't v. Hodgson*, 499 F.2d 467, 475-76 (D.C. Cir. 1974). This "substantial evidence" test puts a greater burden on OSHA than the usual "arbitrary and capricious" test of the Administrative Procedure Act, 5 U.S.C. § 706(2)(A) (1976), but still gives OSHA broad discretionary authority. *AFL-CIO v. Marshall*, 617 F.2d 636, 649 (D.C. Cir. 1979), *cert. granted sub nom.* *American Textile Mfrs. Inst. v. Marshall*, 49 U.S.L.W. 3245 (U.S. Oct. 6, 1980) (Nos. 79-1429 & 79-1583). But see note 5 *supra* (OSHA can regulate only significant health risks). Various commentators argue that government should perform strict cost analysis. E.g., R. Smith, *supra* note 1, at 36-37; Green, *Cost-Risk-Benefit Assessment and the Law: Introduction and Perspective*, 45 Geo. Wash. L. Rev. 901, 904 (1977); Handler, *A Rebuttal: The Need for a Sufficient Scientific Base for Government Regulation*, 43 Geo. Wash. L. Rev. 808, 810-11 (1975); Hapgood, *Risk-Benefit Analysis*, Atlantic, Jan. 1979, at 33, 36. But see 45 Fed. Reg. 5001, 5250 (1980); Green, *supra*, at 910.

8. E.g., Flood Control Act of 1936, 33 U.S.C. § 701(a) (1976); Clean Air Act, 42 U.S.C. § 7545 (c)(2)(B) (Supp. II 1978). The language of any act in some way limits

Language that arguably restricts OSHA's power to promulgate standards by mandating cost analysis are delineated in two sections of the Act. Section 3(8) provides that an occupational safety and health standard be "reasonably necessary or appropriate."⁹ Section 6(b)(5) requires that standards regulating toxic materials or harmful physical agents be "feasible."¹⁰ This Note examines the question of whether the "feasible" language of section 6(b)(5) or the interaction of this language with that of section 3(8)¹¹ requires a formal cost analysis when

the power delegated to an administrative agency, although the permissible delegation can be quite broad. For example, appropriate administrative powers can be gleaned solely from the purpose and context of the act. *Lichter v. United States*, 334 U.S. 742, 785 (1948). A broad delegation is not unconstitutional if it sufficiently marks the field in which the administrator can comply with legislative intent. *Yakus v. United States*, 321 U.S. 414, 425 (1944); *Amalgamated Meat Cutters v. Connally*, 337 F. Supp. 737, 745 (D.D.C. 1971); *California Teachers Ass'n v. Newport Mesa Unified School Dist.*, 333 F. Supp. 436, 446 (C.D. Cal. 1971). A minimal definiteness, however, is needed before Congress can delegate authority to an administrative agency. *Schechter Poultry Corp. v. United States*, 295 U.S. 495, 538-39 (1935); *Panama Ref. Co. v. Ryan*, 293 U.S. 388, 430 (1935); see J. Nowak, R. Rotunda, & J. Young, *Handbook on Constitutional Law* 140, 147 (1978). Justice Rehnquist argued in *Industrial Union Dep't v. American Petroleum Inst.*, 100 S. Ct. 2844 (1980), that the "feasibility" language of § 6(b)(5), 29 U.S.C. § 655(b)(5) (1976), is so indefinite that it constitutes an unconstitutional delegation of Congressional authority. 100 S. Ct. at 2886 (Rehnquist, J., concurring). The plurality suggested that failure to quantify substantially the risk necessary for the promulgation of standards could, but in this instance did not, constitute an unconstitutional delegation. 100 S. Ct. at 2866 (plurality opinion). The dissent rejected the application of the delegation doctrine, arguing that the plain meaning of "feasible," as well as the contexts in which Congress had previously used the word, made it sufficiently definite. *Id.* at 2902 n.30 (Marshall, J., dissenting). Because the primary purpose of the Act is to protect health and promote safety, *Whirlpool Corp. v. Marshall*, 100 S. Ct. 883, 890 (1980), it should be liberally construed to achieve that Congressional purpose. *Id.* at 891; see *United States v. An Article of Drug . . . Bacto-Unidisk*, 394 U.S. 784, 798 (1969); *Lilly v. Grand Trunk W.R.R.*, 317 U.S. 481, 486 (1943).

9. *Occupation Safety and Health Act of 1970*, § 3(8), 29 U.S.C. § 652(8) (1976).

10. *Id.* § 6(b)(5), 29 U.S.C. § 655(b)(5) (1976). A toxic substance is a substance that poses an unreasonable risk to humans and the environment. *Toxic Substances Control Act*, 15 U.S.C. §§ 2601(a)(2), 2603(a)(1)(A)(i) (1976).

11. Industry has made this argument. See *American Petroleum Inst. v. OSHA*, 581 F.2d 493, 502 (5th Cir. 1978), *aff'd sub nom. Industrial Union Dep't v. American Petroleum Inst.*, 100 S. Ct. 2844 (1980); *American Textile Mfrs. Inst. v. Marshall*, 49 U.S.L.W. 3208-09 (news summary of questions presented), *cert. granted*, *id.* at 3245 (U.S. Oct. 6, 1980) (Nos. 79-1429 & 79-1583). Petitioners in *American Petroleum* also argued that this reading of the statute was bolstered by § 2(b), 29 U.S.C. § 651(b) (1976), which assures safe and healthful workplaces "so far as possible." 581 F.2d at 501. Congress inserted this language because it would be impossible to assure workers an absolutely safe and healthful workplace. The Secretary can impose regulations assuring a safe workplace "so far as possible" because "normal hazards [are] found in any occupation, . . . [and] particular vocations . . . are inherently dangerous." *Legislative History*, *supra* note 2, at 480.

OSHA promulgates standards under section 6(b)(5).¹² Part I explores the economic theory of cost analysis, focusing on OSHA's ability to implement the theory. Part II examines the Act's statutory framework.

I. ECONOMICS OF COST ANALYSIS

OSHA's goal in promulgating safety standards under the Act is to reduce or prevent injury and disease.¹³ These safety benefits, however, have societal and economic costs, which can be evaluated. The threshold cost determination is whether the regulations are feasible, that is, capable of achievement.¹⁴ Regulations are not feasible if the technology necessary to comply with them does not exist or the costs of compliance would bankrupt the regulated industry.¹⁵

Once feasibility is established, cost-benefit or cost-effectiveness analysis can be used to probe the economic worth of the OSHA regulation.¹⁶ Cost-benefit analysis weighs the costs of complying with the

12. The Supreme Court has agreed to hear this question in *AFL-CIO v. Marshall*, 617 F.2d 636 (D.C. Cir. 1979), *cert. granted sub nom. American Textile Mfrs. Inst. v. Marshall*, 49 U.S.L.W. 3245 (U.S. Oct. 6, 1980) (Nos. 79-1429 & 79-1553). The three specific questions that the Court will address are whether the dispute among the circuit courts over the meaning of economic feasibility should be resolved; whether the feasibility requirement under § 6(b)(5) is satisfied by the mere showing that the affected industry will not be put out of business; and whether OSHA must show that the standard promulgated under § 6(b)(5) is reasonably necessary and that there is a reasonable relationship between the costs and the benefits. 49 U.S.L.W. at 3208-09, 3245. The Court had previously agreed to address the question of what cost analysis OSHA was required to perform. *American Iron & Steel Inst. v. OSHA*, 577 F.2d 825 (3d Cir. 1978), *cert. dismissed*, 101 S. Ct. 38 (1980). Petitioners withdrew the case because the industry had essentially complied with the challenged OSHA standard, and consequently, the argument that the standards were an impossible economic burden was tenuous. *Nat'l L.J.*, Oct. 6, 1980, at 1, col. 1, at 39, col. 2; *N.Y.L.J.*, Sept. 26, 1980, at 1, col. 1.

13. *See, e.g., Whirlpool Corp. v. Marshall*, 100 S. Ct. 883, 890 (1980) (OSHA should not wait for employees to die or be injured before regulating a substance); *B & B Insulation, Inc. v. OSHRC*, 583 F.2d 1364, 1370-71 (5th Cir. 1978) (the Act is preventive, not compensatory); *cf. Lilly v. Grand Trunk W.R.R.*, 317 U.S.M 481, 486 (1943) (main purpose of Safety Appliance Act is protection); *Gowins v. Pennsylvania R.R.*, 299 F.2d 431, 433 (6th Cir.) (Boiler Inspection Act concerned with protection of employees), *cert. denied*, 371 U.S. 824 (1962); *Consumer Product Safety Act*, 15 U.S.C. § 2051(b)(1) (1976) (purpose of act is to protect public against unreasonable risks of injury).

14. *See J. Mendeloff, Regulating Safety* 124 (1979); R. Smith, *supra* note 1, at 15-17.

15. M. Rothstein, *Occupational Safety and Health Law* §§ 38, 39, 98, 99 (1978); *see N. Ashford, supra* note 3, at 252-53, 498; J. Mendeloff, *supra* note 14, at 76.

16. N. Ashford, *supra* note 3, at 328-29. A fixed budget analysis can also be used by business to evaluate safety costs, but it is not appropriate for governmental cost analysis. Fixed budget analysis attempts to maximize injury reduction for a given

regulation against the health and safety benefits that will result.¹⁷ Cost-effectiveness analysis uses the same figures to determine which proposed regulation best maximizes benefits while minimizing costs.¹⁸ Cost-effectiveness analysis, unlike cost-benefit analysis, assumes that all suggested regulations are worthwhile and feasible.¹⁹ Therefore, cost-benefit analysis generally precedes cost-effectiveness analysis to determine whether it makes economic sense to regulate the safety hazard.²⁰

A. Economic Benefit of Government Regulation

1. Health and Safety Benefits

The probability of accident or disease is the threshold determination in evaluating the health benefits of a safety regulation. Various sources, including scientific and occupational studies, can be used to calculate this probability.²¹ To supplement these sources, industry can be compelled under the Act to compile data concerning accidents

price. This inflexible analysis can work against employees if management will not change a predetermined health program in response to new findings. *Id.* at 359.

17. *Id.* at 328-29; J. Mendeloff, *supra* note 14, at 6-9.

18. J. Follmann, *supra* note 2, at 352. Cost-effectiveness analysis seeks to maximize the number of lives saved for any given expenditure. See Brief for Republic Steel Corp. at 66, *American Iron & Steel Inst. v. OSHA*, 577 F.2d 825 (3d Cir. 1978), *cert. dismissed*, 101 S. Ct. 38 (1980). A less expensive remedy for a hazard, however, is not automatically more cost-effective; the regulation must also further occupational safety. 45 Fed. Reg. 5001, 5244 (1980). See generally J. Follmann, *supra* note 2, at 368-96. This Note does not address any arguments that OSHA must perform cost-effectiveness analysis. Cost-effectiveness ideas can be found in the Act. For instance, if particular engineering and work practice controls are mandated by a standard, employees may in some instances, under the Occupational Safety and Health Act of 1970, § 6(d), 29 U.S.C. § 655(d) (1976), find an alternate, and presumably more cost-effective, way to meet the goal. *Id.* Controls are mandated only to the extent feasible and may be supplemented with other inexpensive, yet effective, devices. *Society of Plastics, Inc. v. OSHA*, 509 F.2d 1301, 1310 (2d Cir. 1975) (respirators used in addition to means of compliance suggested by OSHA). Other standards only indicate a permissible level of hazard and leave the means of compliance to the employer, who may then use the most cost-effective means. *United Steelworkers v. Marshall*, No. 79-1048, slip op. at 150 (D.C. Cir. Aug. 15, 1980).

19. J. Follmann, *supra* note 2, at 352.

20. See R. Smith, *supra* note 1, at 34-37.

21. See, e.g., *United Parcel Serv. v. OSHRC*, 570 F.2d 806, 811 (8th Cir. 1978) (injury statistics) (regulation requiring steel-toed shoes); 45 Fed. Reg. 5001, 5001-28 (1980) (scientific studies) (cancer policy) (to be codified at 29 C.F.R. § 1990); 43 Fed. Reg. 27350, 27350-94 (1978) (scientific studies) (cotton dust standard) (codified at 29 C.F.R. § 1910.1046 (1979)); 40 Fed. Reg. 18254, 18254-57 (1975) (occupational studies) (rollover protective structures for agricultural tractors) (codified at 29 C.F.R. § 1928.51 (1979)); cf. *D.D. Bean & Sons Co. v. Consumer Prod. Safety Comm'n*, 574 F.2d 643, 649 (1st Cir. 1978) (injury statistics: matchbooks).

and diseases,²² and to make available records already compiled.²³ In most instances, OSHA can calculate statistical probabilities rather precisely.²⁴ The probability of benefits accruing by limiting exposure to toxic substances such as carcinogens, however, is so imprecise as to make cost analysis meaningless.²⁵ Various time lag problems also lessen the worth of cost analysis. For instance, the average duration of use of a chemical within an industry is only five years.²⁶ By the time sufficient data can be compiled, the chemical may no longer be in use, yet the harm will have been done.²⁷ Because cost analysis assumes a certain amount of mathematical precision,²⁸ the appropriateness of requiring cost analysis is doubtful when this precision is not possible.²⁹

Once the statistical probability of a health risk is established, the value of the health preserved must be measured.³⁰ One traditional

22. 29 C.F.R. § 1904.2 (1979) (enacted pursuant to Occupational Safety and Health Act of 1970, § 8(c)(1), 29 U.S.C. § 657(c)(1) (1976)); cf. Consumer Product Safety Act, 15 U.S.C. § 2065(b) (1976) (requiring manufacturers to compile data on injuries caused by their products). Employers must record illness caused or aggravated by the occupational environment. *General Motors Corp. (Inland Div.)*, [1950] 3 *Empl. Safety & Health Guide (CCH)* (1980 *Occ. Safety & Health Dec.*) ¶ 24,743, at 30,470 (Rev. Comm'n).

23. 29 U.S.C. § 669(a)(5) (1976). Medical records of employee exposure to a suspected health hazard must be provided for the studies required by the Act. *United States v. Westinghouse Elec. Corp.*, 483 F. Supp. 1265, 1267-70 (W.D. Pa. 1980); *E.I. du Pont de Nemours & Co. v. Finklea*, 442 F. Supp. 821, 824-26 S.D.W. Va. 1977).

24. For example, it was determined that a regulation requiring steel-toed shoes on freight handlers would prevent nine serious injuries and the loss of 696 man hours. *United Parcel Serv. v. OSHRC*, 570 F.2d 806, 811 (8th Cir. 1978). Even for some toxic substances other than carcinogens, calculations of the risks and benefits can be made with little uncertainty. 45 *Fed. Reg.* 5001, 5247 (1980).

25. N. Ashford, *supra* note 3, at 79, 120-21. Estimated risks of exposure to carcinogens often differ by multiples of 10 to 10,000. Estimates for bladder cancer resulting from a lifetime of using saccharin range from .001 per 1,000,000 exposed, to 5,200 per 1,000,000 exposed. 45 *Fed. Reg.* 5001, 5247 (1980). At a hearing for the benzene standard, an industry witness attempted to graph the effect of various levels of exposure to benzene. The witness admitted, however, that the estimate was based on "a lousy set of data" and was slightly more than a guess. *Industrial Union Dep't v. American Petroleum Inst.*, 100 S. Ct. 2844, 2894 n.23 (1980).

26. N. Ashford, *supra* note 3, at 343.

27. *Id.* In addition, workers often move from one job to another and are exposed to a number of different hazardous substances, thus complicating long range studies on the effects of exposure to specific chemicals. Brief for Federal Parties at 64-66, *Industrial Union Dep't v. American Petroleum Inst.*, 100 S. Ct. 2844 (1980) (OSHA's brief).

28. N. Ashford, *supra* note 3, at 329; *see* notes 16-20 *supra* and accompanying text.

29. N. Ashford, *supra* note 3, at 329-31.

30. Cost analysis uses dollar figures to measure the benefits obtained under a regulation. N. Ashford, *supra* note 3, at 327; *see* note 6 *supra*. For example, no exact market value can be placed on clean air. Hapgood, *supra* note 7, at 35; Kasper,

method of calculating the dollar value of life is to measure directly the amount of future earnings an employee loses when life is ended prematurely.³¹ This approach, however, puts less value on groups with lower earnings, such as the elderly, women, and the uneducated, and consequently, affords them less protection.³² Furthermore, many low paying jobs are more hazardous and need more safety regulation than high paying jobs.³³

An approximate dollar value for life also can be calculated by measuring the value of the alternate ways of decreasing the number of deaths.³⁴ For example, the cost of a kidney dialysis program or a cancer treatment program shows how much society is willing to spend to prevent death and is a measure of the value of life.³⁵ The varying

supra note 6, at 1020. Even if a price can be put on the item, that price may not take certain intangibles into account. For example, the price of a bird may be \$10, but the intangible value may be infinite if the bird is the last of its species. J. Mendeloff, *supra* note 14, at 70. The underlying assumption of cost analysis, that intangibles have an economic value, is weakened by the argument that people who view life and death in numerical terms are insensitive and dangerous. Hapgood, *supra* note 7, at 35, 36. Nevertheless, people pay costs, in terms of increased health risks, in pursuit of profit or pleasure. They smoke, drive without seat belts, climb mountains, use unsafe lawnmowers, and play loud stereos. 45 Fed. Reg. 5001, 5247 (1980); R. Smith, *supra* note 1, at 34-35. Although the acceptable risk level for hazards voluntarily set for leisure activities probably may not be accurately analogized to risk levels in the workplace, 45 Fed. Reg. 5001, 5249 (1980), the benefits received can be used to calculate the value people place on life and limb. Fried, *The Value of Life*, 82 Harv. L. Rev. 1415 (1969). A comparison of prices of homes near airports with similar homes in quieter, yet comparable, neighborhoods shows that people pay about \$120 to \$150 less for each additional decibel. But noise from traffic, which can be just as loud, does not cause a comparable drop in prices. This might be because airports are disliked for reasons other than noise, including the risk of crashes. R. Smith, *supra* note 1, at 46-49.

31. 45 Fed. Reg. 5001, 5248 (1980). Lost earnings as a measure of the value of life frequently is used in other areas such as worker's compensation and tort law. See 5 U.S.C. §§ 8105, 8107, 8114 (1976) (worker's compensation); 1 S. Speiser, *Recovery for Wrongful Death* §§ 3:8-:21 (2d ed. 1975) (tort law).

32. 45 Fed. Reg. 5001, 5248 (1980); R. Smith, *supra* note 1, at 29. Lost future earnings are calculated to include one's total work life expectancy. Brams & Rives, *The Determination of Economic Loss in Tort Cases: The Relative Impact of Sex and Race*, 6 J. Contemp. L. 121, 125 (1979). Work life expectancy also varies for different groups and is often caused by discrimination. *Id.* at 127, 131. The discrimination inherent in pay scales and work life expectancy would be continued if lost future earnings were used as a measure of the value of life. In addition, factors other than safety, such as union membership or employee experience, affect future earnings. 45 Fed. Reg. 5001, 5248 (1980); R. Smith, *supra* note 1, at 29. Thus, use of lost earnings as a measure of the value of lost life within one particular industry is imprecise and discriminatory.

33. Studies indicate that lower income workers average more days lost due to occupational illness or accidents than higher paid workers. J. Follmann, *supra* note 2, at 75-77.

34. Kramer, *Economics, Technology, and the Clean Air Amendments of 1970: The First Six Years*, 6 Ecology L.Q. 161, 166-67 (1976).

35. 45 Fed. Reg. 5001, 5248 (1980).

costs of these programs, however, make calculations unreliable.³⁶ In addition, the costs of these programs will be greater than the costs of regulations resulting in comparable health benefits because society is willing to pay more to save people in real and present danger.³⁷ Hazard pay, additional pay offered employees as an incentive to take a high risk job over a safer job,³⁸ also provides a gauge of how much a workplace without a hazard is worth to the employee risking health.³⁹ Once converted into annual premiums, hazard pay is useful to gauge the value of life.⁴⁰ This calculation is not effective, however, unless workers clearly understand and can avoid the risks represented by the increased premiums.⁴¹ This is rarely the case.⁴² Related to hazard pay is the measure of how much an employee would be willing to pay to avoid potential harm.⁴³ This amount also could be used to calculate the value the employee places on life.

If required to perform cost analysis, OSHA would face difficulties in measuring health benefits precisely.⁴⁴ Nevertheless, the obstacles are not insurmountable.⁴⁵ For example, the lost earnings of an average American worker could be used as a base figure of the value of

36. Outside factors can affect the amount spent on medical programs. For example, more money may be spent for kidney disease than for hemophilia because kidney disease sufferers are helpless, while hemophiliacs can protect themselves. Hapgood, *supra* note 7, at 38.

37. Society and management, for example, spend a great deal of money to save a miner trapped by a cave in, but are reluctant to spend a comparable amount on accident prevention. J. Mendeloff, *supra* note 14, at 72-73; *see* Lovins, *Cost-Risk-Benefit Assessments in Energy Policy*, 45 *Geo. Wash. L. Rev.* 911, 927-28 (1977). *See generally* Fried, *supra* note 30.

38. N. Ashford, *supra* note 3, at 363-65; R. Smith, *supra* note 1, at 28-29.

39. 45 *Fed. Reg.* 5001, 5248 (1980); N. Ashford, *supra* note 3, at 364.

40. 45 *Fed. Reg.* 5001, 5248 (1980). The estimates of the value of life, using hazard pay as the measure, range from \$100,000 to \$1,000,000. *Id.*

41. *Id.*; N. Ashford, *supra* note 3, at 364-65.

42. N. Ashford, *supra* note 3, at 364-65. The value that an employee places on safety may be affected by the need to support his family, the lack of other skills, and other exigencies. *Id.* at 365. Workers who understand wage premiums prefer protection from the hazard, not extra money. J. Mendeloff, *supra* note 14, at 76-77; *see* Lovins, *supra* note 37, at 927-28.

43. R. Smith, *supra* note 1, at 34; *see* note 30 *supra* (potential harms are present in everyday life).

44. J. Follmann, *supra* note 2, at 84-85. The uncertainties make a "scientific" cost-benefit analysis impossible. Kramer, *supra* note 34, at 166-67; *see* notes 26-29 *supra* and accompanying text.

45. *See* note 7 *supra*. Even with the uncertainties, the Federal Aviation Administration (FAA) and the National Highway Traffic Safety Administration (NHTSA) have placed a monetary value on life. The FAA has placed the value at about \$200,000; the NHTSA has placed it at about \$240,000. J. Mendeloff, *supra* note 14, at 71. Both agencies include medical costs and lost future earnings in determining these figures. Hapgood, *supra* note 7, at 36. These mathematical calculations are sometimes taken to extremes; the NHTSA's figure on the value of life is also cited as exactly \$287,175. *Id.*

life.⁴⁶ This base figure could then be increased to take into account altered pay scales for hazardous jobs and willingness to pay more to guard against immediate dangers.⁴⁷ Similar calculations and adjustments could be done to determine the value of lost physical functions, such as hearing or lost limbs.⁴⁸

2. Other Benefits

The government and the employers also benefit from government safety regulation.⁴⁹ Direct benefits include prevention of, or decrease in, public assistance payments, worker's compensation costs, medical expenses, the need for substitute labor, costs of equipment repair, and the costs related to interrupted production.⁵⁰ These benefits are relatively easy to quantify.⁵¹ Indirect benefits include the increased productivity and morale of workers resulting from safer conditions.⁵² The regulations also may stimulate development of nontoxic substances and safer procedures that are more efficient and less expensive.⁵³ Because these indirect benefits are difficult to quantify and causally questionable,⁵⁴ however, they should not be, and usually are not, included in cost analysis computations.⁵⁵

46. See note 31 *supra* and accompanying text. The use of lost earnings as a measure of the value of life has been criticized because arguably irrelevant factors that affect earnings would be considered. See notes 31-32 *supra* and accompanying text. The use of a national average would eliminate this discrimination as to specific workers or jobs.

47. See notes 36-41 *supra* and accompanying text.

48. A base figure could be assigned for each health loss. See 5 U.S.C. § 8107(c) (1976) (varying amounts of compensation for loss of different parts of the body). This figure could be increased to compensate for obvious and immediate dangers. See text accompanying note 47 *supra*.

49. N. Ashford, *supra* note 3, at 350-51. Any comprehensive cost analysis would have to include societal or governmental benefits as well as industrial benefits. See N. Ashford, *supra* note 3, at 351. Including governmental benefits in OSHA cost analysis is especially appropriate because government would be conducting the analysis. See notes 6-8 *supra* and accompanying text.

50. N. Ashford, *supra* note 3, at 347, 351. Government social welfare agencies may have to pay for the rehabilitation, retraining, medical costs, and direct maintenance of the injured employee. Improved health conditions on the job also benefit the employee's family and friends, who would be affected by the pain and suffering following the loss or injury of a loved one. *Id.* at 351. See generally J. Follmann, *supra* note 2, at 84-92.

51. N. Ashford, *supra* note 3, at 347; see *United Steelworkers v. Marshall*, No. 79-1048, slip op. at 168-70 (D.C. Cir. Aug. 15, 1980).

52. N. Ashford, *supra* note 3, at 326; J. Follmann, *supra* note 2, at 92-93.

53. N. Ashford, *supra* note 3, at 326-27. This benefit should be sought because the Act is intended to force the development of safer technology. 45 Fed. Reg. 5001, 5245 (1980); see *Society of Plastics Indus., Inc. v. OSHA*, 509 F.2d 1301, 1309 (2d Cir.), cert. denied, 421 U.S. 992 (1975).

54. 45 Fed. Reg. 5001, 5238 (1980); J. Follmann, *supra* note 2, at 92-93; cf. L. Green, *Rationale of Proximate Cause* 11-39, 186-194 (1927) (indirect results are ignored in tort law under the doctrine of proximate cause); W. Prosser, *Handbook of*

B. Economic Cost of Government Regulation

Once the benefits have been calculated, the second step of cost analysis is to quantify the cost of the OSHA regulation.⁵⁶ Costs to industry include physical plant changes in machinery, ventilation systems, and the physical environment. Education programs also may be needed to acquaint employees with safety regulations that must be monitored or obeyed.⁵⁷ These costs have been easily and reliably quantified by OSHA.⁵⁸ Indirect costs to industry include organizational changes that rotate workers to limit exposure of each worker to the danger, and damages to the competitive structure of industry both nationally and internationally.⁵⁹ Because these indirect costs, like indirect benefits, are difficult to quantify and causally questionable, however, they should not be, and usually are not, included in cost analysis computations.⁶⁰

Even if the costs were limited to those that are direct and easily quantified, problems arise. First, the costs of compliance may vary depending on whether measured at the time the regulation is proposed or the time the regulation takes effect.⁶¹ This problem is easily resolved. Because the Act is intended to force the development of new technology,⁶² the costs of compliance should be measured at the time the regulation takes effect. Second, properly measured costs can

the Law of Torts § 43 (1971) (the more tenuous the causal connection between an act and tortious injury, the less likely a finding of liability).

55. N. Ashford, *supra* note 3, at 325-26; *see* note 29 *supra* and accompanying text (precision is a prerequisite of cost analysis).

56. *See* notes 13-18 *supra* and accompanying text. *See generally* J. Follmann, *supra* note 2, at 248-62.

57. N. Ashford, *supra* note 3, at 315-16. One infrequent cost to industry is work stoppage by employees who do not like a regulation. *See Atlantic & Gulf Stevedores, Inc. v. OSHRC*, 534 F.2d 541, 546-47 (3d Cir. 1976) (work stoppage to protest wearing protective gear).

58. To determine the economic feasibility of regulations, OSHA commissions reports by consultants on the costs of the proposed regulations, then revises the estimates to eliminate any improper counting. *United Steelworkers v. Marshall*, No. 79-1048, slip op. at 166-68 (D.C. Cir. Aug. 15, 1980); *see* 45 Fed. Reg. 5001, 5238 (1980).

59. N. Ashford, *supra* note 3, at 315-16; *cf.* Energy Policy and Conservation Act, 42 U.S.C. § 6295(d) (Supp. II 1978) (impact of lessening competition is a cost to be weighed). Firms that cannot comply with the standard might go out of business. Moreover, United States firms may be hurt competitively if foreign firms do not have to comply with equally expensive health standards. N. Ashford, *supra* note 3, at 316.

60. *See* N. Ashford, *supra* note 3, at 317-25; note 54 *supra*. In addition to the imprecision and causation problems, disregarding indirect costs and benefits also can be presumptively justified as unquantified benefits offsetting unquantified costs.

61. Kasper, *supra* note 6, at 1019.

62. *See* note 53 *supra*. Because OSHA can rely on technological means of compliance that are still experimental, estimating the costs is difficult. *United Steelworkers v. Marshall*, No. 79-1048, slip op. at 147 (D.C. Cir. Aug. 15, 1980).

be improperly allocated. For example, double counting occurs when compliance costs of overlapping standards are not divided proportionately between the standards,⁶³ or when previously made expenditures are included in the costs of meeting the new standard.⁶⁴ This problem can be alleviated by considering only the additional costs of complying with an OSHA regulation,⁶⁵ allowing for certain discretionary adjustments to be made in the interest of fairness.⁶⁶ Third, occasionally even adequately precise measures are insufficient, as when a substance prevents one health hazard and causes another.⁶⁷ In this instance, someone must decide whether to protect against the present or future danger, assuming no substitute is available.⁶⁸ Cost analysis cannot replace this basic policy decision.

63. *United Steelworkers v. Marshall*, No. 79-1048, slip op. at 166-67 (D.C. Cir. Aug. 15, 1980).

64. *Id.* at 168 n.130; *AFL-CIO v. Marshall*, 617 F.2d 636, 659-60 (D.C. Cir. 1979), cert. granted sub nom. *American Textile Mfrs. Inst. v. Marshall*, 49 U.S.L.W. 3245 (U.S. Oct. 6, 1980) (Nos. 79-1429 & 79-1583). Another instance of double counting occurs when costs not yet expended to meet an old standard are included in the costs of the new standard. *United Steelworkers v. Marshall*, No. 79-1048, slip op. at 166 (D.C. Cir. Aug. 15, 1980). Moreover, the cost of the standard may fall on the industry at one time. Prior to 1969, for example, only one state allowed victims of black lung disease to receive worker's compensation, even though nearly one third of the employees studied had the disease. When the Coal Mine Health and Safety Act of 1969, 30 U.S.C. §§ 801-960 (1976), was passed, these afflicted workers and their survivors became eligible for worker's compensation. *Id.* §§ 901, 922a. The employers thus became responsible for disability payments and insurance coverage at one time. See *id.* § 932(b). The economic strain of health regulation is rarely this great. N. Ashford, *supra* note 3, at 324-25; see *AFL-CIO v. Marshall*, 617 F.2d 636, 659-60, cert. granted sub nom. *American Textile Mfrs. Inst. v. Marshall*, 49 U.S.L.W. 3245 (U.S. Oct. 6, 1980) (Nos. 79-1429 & 79-1583).

65. *United Steelworkers v. Marshall*, No. 79-1048, slip op. at 237 (D.C. Cir. Aug. 15, 1980); 43 Fed. Reg. 54353, 54494 (1978) (lead standard).

66. Although OSHA is concerned only with one standard at one time, it will consider prior costs to the industry of other regulations promulgated by OSHA or another agency. *United Steelworkers v. Marshall*, No. 79-1048, slip op. at 237 (D.C. Cir. Aug. 15, 1980). The costs incurred become part of the economics of the industry and thus are important in determining what impact the costs of the proposed standard will have on the economic base of the industry. *Id.*; 43 Fed. Reg. 54353, 54494 (1978) (lead standard).

67. Green, *supra* note 7, at 906. For example, TRIS makes clothing flame retardant, but is a carcinogen. *Id.*

68. Kasper, *supra* note 6, at 1024. Cost analysis "can help to further our understanding of environmental [and other] problems and, in the long run, lead to better and more informed decisions." *Id.* Questions on the frontiers of science, although somewhat factual, ultimately have to be decided on the basis of policy. *Industrial Union Dep't v. Hodgson*, 499 F.2d 467, 474 (D.C. Cir. 1974). Moreover, compassion and good judgment can override scientific analysis. Kasper, *supra* note 6, at 1024. Policy considerations enter the decision making process because politics are involved. The agencies are accountable to legislators, and the legislators are accountable to the public. In the interest of political survival, agencies will temper regulations to please as many of the right people as possible. Green, *supra* note 7, at 905.

Because cost analysis is a more objective way for OSHA to make regulatory decisions, cost analysis is to be preferred when adequate measures of a regulation's costs and benefits are available.⁶⁹ When the measures are imprecise, as with carcinogens,⁷⁰ or when conflicting risks are involved,⁷¹ however, cost analysis should not and cannot displace the policy question properly within OSHA's discretionary powers. If cost analysis were required, effective government regulation would be stymied, and the nature of the decision would be distorted to comport with inappropriate economic terms.

II. THE STATUTORY FRAMEWORK OF THE ACT

A. Cost Analysis Under Section 6(b)(5)

Section 6(b)(5) requires that regulation of toxic substances be "set [at the level] which most adequately assures, to the extent feasible, on the basis of the best available evidence, that no employee will suffer material impairment of health."⁷² Semantically, this language, like the language in other statutes,⁷³ seems to require only that the regulations be feasible,⁷⁴ both technologically⁷⁵ and economically.⁷⁶

69. See note 7 *supra* and accompanying text. The government has a limited amount of money and almost unlimited ways of spending it. Cost analysis would allow the administrators to decide how to spend the money. At the same time, it would enable them to justify their spending and show that the decisions were not arbitrary. Hapgood, *supra* note 7, at 36. Moreover, the public could more closely scrutinize how tax dollars are spent. *Id.* at 38.

70. See note 25 *supra* and accompanying text.

71. See note 67 *supra* and accompanying text.

72. Occupational Safety and Health Act of 1970, § 6(b)(5), 29 U.S.C. § 655(b)(5) (1976).

73. Federal Mine and Safety Act, 30 U.S.C. § 811(a)(6)(A) (Supp. II 1978) (consider the feasibility of the standard). The legislative history of the Energy Policy and Conservation Act, 42 U.S.C. § 6201-6422 (1976) (consider technical feasibility and whether benefits exceed burdens), states that the word feasible means capable of being carried out, and "[e]conomic feasibility refers to whether or not a manufacturer has the economic capability to carry out the requirements of an energy efficiency standard." S. Rep. No. 516, 94th Cong., 1st Sess. 172, reprinted in [1975] U.S. Code Cong. & Ad. News 1956, 2014. Feasibility is an implicit requirement in other statutes. Ports & Waterways Safety Act, 33 U.S.C. § 1224(a)(7) (Supp. II 1978) (economic impact is a factor to be considered); Public Health and Safety Act, 42 U.S.C. § 242b(a)(2)(E) (Supp. II 1978) (economic factors to be considered).

74. See notes 14-15 *supra* and accompanying text.

75. *AFL-CIO v. Brennan*, 530 F.2d 109, 120-22 (3d Cir. 1975). Manufacturers must be able to develop and install engineering and work practice controls to meet an OSHA standard. *United Steelworkers v. Marshall*, No. 79-1048, slip op. at 159 (D.C. Cir. Aug. 15, 1980). OSHA is not limited to existing technology, however, and may require technology that has yet to be developed. *Id.*; *Society of Plastics Indus., Inc. v. OSHA*, 509 F.2d 1301, 1309 (2d Cir.), cert. denied, 421 U.S. 992 (1975). See generally M. Rothstein, *supra* note 15, § 38.

76. *Industrial Union Dep't v. Hodgson*, 499 F.2d 467, 477 (D.C. Cir. 1974); *AFL-CIO v. Brennan*, 530 F.2d 109, 122-23 (3d Cir. 1975); accord, *Industrial Union*

The case law supports this view. In *Industrial Union Department v. Hodgson*,⁷⁷ the District of Columbia Circuit defined economically feasible standards as those not threatening the existence or competitiveness of the industry.⁷⁸ The Third Circuit, in *AFL-CIO v. Brennan*,⁷⁹ defined economically feasible standards as those that did not create "the possibility of massive economic dislocation."⁸⁰ In both instances, this requirement did not mandate cost analysis beyond feasibility.⁸¹

The legislative history further bolsters this interpretation. The frequent references to, and focus on, toxic materials and harmful physical agents⁸² indicate that Congress intended section 6(b)(5) to provide OSHA with the means to protect workers against hazards caused by everchanging substances and technology.⁸³ The legislative history is replete with concern about the dangers caused by these "insidious 'silent' killers"⁸⁴ and the traditional neglect of people working with

Dep't v. American Petroleum Inst., 100 S. Ct. 2844, 2903 (1980) (Marshall, J., dissenting). See generally M. Rothstein, *supra* note 15, §§ 39, 99.

77. 499 F.2d 467 (D.C. Cir. 1974).

78. *Id.* at 478. The elimination of some competitors does not necessarily destroy competition. For example, in *United Steelworkers v. Marshall*, No. 79-1048 (D.C. Cir. Aug. 15, 1980), the court found that as many as 200 small producers would go out of business because of a regulation. *Id.*, slip op. at 204. Nevertheless, OSHA could find that competition survived because of the continued existence of at least 30 firms with 100 plants. *Id.* The market share of the larger producers, therefore, would increase only slightly. *Id.*

79. 530 F.2d 109 (3d Cir. 1975).

80. *Id.* at 123.

81. *Id.*; *Industrial Union Dep't v. Hodgson*, 499 F.2d 467, 477-78 (D.C. Cir. 1974); see *Industrial Union Dep't v. American Petroleum Inst.*, 100 S. Ct. 2844, 2902 (Marshall, J., dissenting). Although helpful to promote informed decisionmaking and to set priorities among hazardous substances that must be regulated, cost-benefit analysis is not mandated. *Id.* at 2897 n.26; *AFL-CIO v. Marshall*, 617 F.2d 636, 663 (D.C. Cir. 1979), *cert. granted sub nom.* *American Textile Mfrs. Inst. v. Marshall*, 49 U.S.L.W. 3245 (U.S. Oct. 6, 1980) (Nos. 79-1429 & 79-1583); *cf.* *Natural Resources Defense Council, Inc. v. SEC*, 606 F.2d 1031, 1059 (D.C. Cir. 1979) (in the absence of firm data, cost-benefit analysis is not required in the rule-making context).

82. Legislative History, *supra* note 2, at 160 (important to undertake studies of toxic agents); *id.* at 415 (exposure of workers to toxic substances and harmful physical agents of particular concern) (statement of Sen. Williams); *id.* at 859 (many problems caused by carcinogenic and toxic substances). An earlier House draft of this section stated that all standards were covered by the wording of § 6(b)(5). *Id.* at 943. The qualifying words, "toxic substances or harmful physical agents," were added in December of 1970 upon agreement of the House and Senate. *Id.* at 1188.

83. "Not only are occupational diseases which first came to light at the beginning of the Industrial Revolution still undermining the health of workers, but new substances, new processes, and new sources of energy are presenting health problems of ever-increasing complexity." Legislative History, *supra* note 2, at iii (foreword).

84. Legislative History, *supra* note 2, at 1003 (statement of Sen. Daniels); *accord, id.* at 142; *id.* at 160; *id.* at 338-39 (statement of Sen. Saxbe); *id.* at 415, 431 (statements of Sen. Williams); *id.* at 849; *id.* at 1052 (statement of Sen. Broomfield).

these substances.⁸⁵ This Congressional concern motivated the enactment of not only the permanent procedures of section 6(b)(5), but also the procedures for enacting temporary emergency regulations under section 6(c).⁸⁶ The legislative history of the Act makes clear that employee safety is the primary goal,⁸⁷ the cost of compliance with safety standards should be considered a necessary business expense,⁸⁸ and the costs of regulation of carcinogens need not be precisely quantified.⁸⁹ The only limitation is that complying with OSHA

85. *Id.* at 412-13 (statement of Sen. Williams). Concern over the dangers to workers who deal with hazardous substances led to the proposal of a bill, prior to the enactment of the Occupational Safety and Health Act, that would have regulated only those industries that dealt with toxic substances. *Id.* at 1052-54.

86. Occupational Safety and Health Act of 1970, § 6(c)(1), 29 U.S.C. § 655(c)(1) (1976). Past attempts to regulate substances under this section have been invalidated. *Synthetic Organic Chem. Mfrs. Ass'n v. Brennan*, 506 F.2d 385, 389 (3d Cir. 1974), *cert. denied*, 423 U.S. 830 (1975); *Florida Peach Growers Ass'n, Inc. v. Department of Labor*, 489 F.2d 120, 130 (5th Cir. 1974); *Dry Color Mfrs. Ass'n, Inc. v. Department of Labor*, 486 F.2d 98, 104 (3d Cir. 1973). Nevertheless, section 6(c) still allows OSHA to promulgate standards for any "new" hazards. Occupational Safety and Health Act of 1970, § 6(c)(1)(A), 29 U.S.C. § 655(c)(1)(A) (1976); *see* Legislative History, *supra* note 2, at 1016-17 (statement of Rep. Erlenborn).

87. Legislative History, *supra* note 2, at 1030 (statement of Rep. Dent). Other legislators condemned those who complained about the excessive costs of complying with safety standards. *Id.* at 510 (statement of Sen. Yarborough). "Is it too expensive for the employee who loses his hand or leg or eyesight? Is it too expensive for the widow trying to raise her children on meager allowance under workmen's compensation and social security? And what about the man—a good hard-working man—tied to a wheel chair or hospital bed for the rest of his life? That is what we are dealing with when we talk about industrial safety." *Id.* The House Report concluded that even one life was too great a price to pay for progress. *Id.* at 865.

88. *Id.* at 1150 (statement of Sen. Eagleton). Part of these costs would fall on the consumer in the form of higher prices. *Id.* at 444 (statement of Sen. Yarborough). Indeed, some marginally efficient businesses could be expected to fail because of the imposition of the standards. *Industrial Union Dep't v. Hodgson*, 499 F.2d 467, 478 (D.C. Cir. 1974). For these businesses, however, regulation may only hasten their inevitable failure. *American Iron & Steel Inst. v. EPA*, 526 F.2d 1027, 1054 (3d Cir. 1975), *modified*, 560 F.2d 589 (1977), *cert. denied*, 435 U.S. 914 (1978). *See generally* N. Ashford, *supra* note 3, at 366-73; J. Follmann, *supra* note 2, at 279-90.

89. OSHA's regulations can be based on the best available evidence. Occupational Safety and Health Act of 1970, § 6(b)(5), 29 U.S.C. § 655(b)(5) (1976). Factual determinations are not always possible when promulgating standards. *Industrial Union Dep't v. Hodgson*, 499 F.2d 467, 474-76 (D.C. Cir. 1974). Regulation of a suspected carcinogen is often based only on tests performed on animals. When a substance is shown to be carcinogenic in two animal species, § 6(b)(5) requires that the substance be considered carcinogenic in humans. *See Synthetic Organic Chem. Mfrs. Ass'n v. Brennan*, 503 F.2d 1155, 1158-59 (3d Cir. 1974) (construing 29 U.S.C. §§ 655(a), 655(b)(5) (1976)) (upholding this "prudent" legislative action), *cert. denied*, 420 U.S. 973 (1975). To conform with its statutory duty to state the basis of governmental regulations, *see* note 7 *supra*. OSHA adopted a formal policy for regulating carcinogens, effective April 21, 1980. 45 Fed. Reg. 5001-296 (1980). This policy has yet to be tested in court. *Industrial Union Dep't v. American Petroleum Inst.*, 100 S. Ct. 2844, 2876 & n.3 (Powell, J., concurring). Five Justices have held that quantification

regulations under section 6(b)(5) must be within the realm of feasibility,⁹⁰ a requirement necessitated by the government's inability to make the workplace risk-free.⁹¹

One line of cases, however, arguably precludes this conclusion. Two circuit courts, following the Occupational Safety and Health Review Commission's (OSHRC's) determinations, have held that use of the section 6(b)(5) standard of feasibility when regulating noise⁹² requires a weighing of costs and benefits.⁹³ The reasoning employed by the OSHRC is erroneous in at least three respects. First, the word feasibility should be narrowly construed. Limiting OSHA's discretion

cannot be required in all cases. *Id.* at 2876 (Powell, J., concurring); *id.* at 2900 & n.29 (Marshall, J., dissenting). Justices Brennan, White, and Blackmun joined in Justice Marshall's dissenting opinion. This significant health hazard can be established by expert testimony or opinion. *Id.* at 2876 (Powell, J., concurring).

90. *AFL-CIO v. Marshall*, 617 F.2d 636, 662 (D.C. Cir. 1979), *cert. granted sub nom.* *American Textile Mfrs. Inst. v. Marshall*, 49 U.S.L.W. 3245 (U.S. Oct. 6, 1980) (Nos. 79-1429 & 79-1583); *American Iron & Steel Inst. v. OSHA*, 577 F.2d 825, 836-37 (3d Cir. 1978), *cert. dismissed*, 101 S. Ct. 38 (1980); *Industrial Union Dep't v. Hodgson*, 499 F.2d 467, 477-78 (D.C. Cir. 1974). The feasibility requirement is reasonable because evasion becomes more likely as compliance becomes more expensive. *AFL-CIO v. Brennan*, 530 F.2d 109, 123 (3d Cir. 1975). Moreover, the Occupational Safety and Health Act of 1970 amended the Small Business Act, 15 U.S.C. § 631 (1976), to help small businesses meet the costs of the regulations. "[L]oans . . . determin[e]d to be necessary or appropriate to assist any small business concern in effecting [compliance] with the applicable standards promulgated pursuant to section 6 of [the Act shall be made] if the Administration determines that [the small business] is likely to suffer substantial economic injury without assistance . . ." Occupational Safety and Health Act of 1970, Pub. L. No. 91-596, § 28, 84 Stat. 1618 (amended 1974 to cover all federal regulations).

91. Legislative History, *supra* note 2, at 423 (statement of Sen. Dominick); R. Smith, *supra* note 1, at 34. "No job can be rendered perfectly safe, and no employee can be made perfectly secure from injury. Hence, it is impossible to fashion criteria which would assure these unattainable goals." Legislative History, *supra* note 2, at 480 (statement of Sen. Dominick). An earlier standard required that "no employee . . . suffer any impairment of health." *Id.* at 242 (emphasis added). This wording was deemed unrealistic because it could mandate the closing of every business in the United States. *Id.* at 367 (statement of Sen. Dominick); *see id.* at 345, 502 (statements of Sen. Dominick).

92. 29 C.F.R. § 1910.95(b) (1979). The standard states that "[w]hen employees are subjected to sound exceeding those listed in Table G-16, feasible administrative or engineering controls shall be utilized." *Id.* at § 1910.95(b)(1).

93. *RMI Co. v. Secretary of Labor*, 594 F.2d 566, 572-73 (6th Cir. 1979); *Turner Co. v. Secretary of Labor*, 561 F.2d 82, 85 (7th Cir. 1977); *Carnation Co.*, [1978] Occ. Safety & Health Dec. (CCH) ¶ 22,837, at 27,622 (Rev. Comm'n); *Castle & Cooke Foods*, [1977-1978] Occ. Safety & Health Dec. (CCH) ¶ 21,854, at 26,329 (Rev. Comm'n 1977); *Great Falls Tribune Co.*, [1977-1978] Occ. Safety & Health Dec. (CCH) ¶ 21,844, at 26,306 (Rev. Comm'n 1977); *Continental Can Co., Inc.*, [1976-1977] Occ. Safety & Health Dec. (CCH) ¶ 21,009, at 25,256 (Rev. Comm'n 1976).

by requiring cost-benefit analysis⁹⁴ can be, and should be, made clear.⁹⁵ Second, although the seriousness of the hazard determines which cost analysis to apply,⁹⁶ Congress has already defined serious health hazards by enacting section 6(b)(5).⁹⁷ The question is not whether noise hazards are serious, but whether Congress intended noise hazards to be within the ambit of section 6(b)(5). Because noise hazards are clearly within this ambit,⁹⁸ and thus defined as a serious health hazard, requiring cost-benefit analysis frustrates Congressional intent. Third, the challenged noise regulation was promulgated pursuant to section 6(a) as an "established Federal standard."⁹⁹ Because neither section 6(a) nor the history of this regulation requires any cost analysis,¹⁰⁰ no cost analysis should be required.¹⁰¹ In any case, even the OSHRC agrees that cost-benefit analysis is required only when regulating noise, not toxic substances such as carcinogens, which would still require only a feasibility analysis.¹⁰²

94. *AFL-CIO v. Marshall*, 617 F.2d 636, 662, 664-65 (D.C. Cir. 1979) (cost-benefit analysis is more constraining than feasibility analysis), *cert. granted sub nom. American Textile Mfrs. Inst. v. Marshall*, 49 U.S.L.W. 3245 (U.S. Oct. 6, 1980) (Nos. 79-1429 & 79-1583).

95. See notes 108-09 *infra* and accompanying text. Procedural requirements not mandated by Congress cannot be imposed by the courts. *Vermont Yankee Nuclear Power Corp. v. Natural Resources Defense Council, Inc.*, 435 U.S. 519, 558 (1978). The decision to mandate cost-benefit analysis is a policy question appropriately resolved by the legislatures and not by the courts. *Id.* In interpreting a statute, however, a court may find that cost-benefit analysis is mandated implicitly by the statute. *United Steelworkers v. Marshall*, No. 79-1048, slip op. at 7 n.6 (D.C. Cir. Aug. 15, 1980); *AFL-CIO v. Marshall*, 617 F.2d 636, 665 n.167 (D.C. Cir. 1979), *cert. granted sub nom. American Textile Mfrs. Inst. v. Marshall*, 49 U.S.L.W. 3245 (U.S. Oct. 6, 1980) (Nos. 79-1429 & 79-1583); see *TVA v. Hill*, 437 U.S. 153, 185 (1978).

96. Compare *Continental Can Co., Inc.*, [1976-1977] Occ. Safety & Health Dec. (CCH) ¶ 21,009, at 25,256 (Rev. Comm'n 1976) with notes 82-85 *supra* and accompanying text.

97. Occupational Safety and Health Act of 1970, § 6(b)(5), 29 U.S.C. § 655(b)(5) (1976). This provision specifically covers "toxic materials [and] harmful physical agents." *Id.*; see note 82 *supra* and accompanying text.

98. Legislators considered excessive noise to be a harmful physical agent within the meaning of § 6(b)(5) and thus subject to the "feasibility" requirement. Legislative History, *supra* note 2, at 845.

99. *Continental Can Co., Inc.*, [1976-1977] Occ. Safety & Health Dec. (CCH) ¶ 21,009, at 25,255 n.15 (Rev. Comm'n 1976). An "established Federal standard" is an occupational safety and health standard enacted by a federal agency or contained in an act of Congress prior to the Act. Occupational Safety and Health Act of 1970, § 3(10), 29 U.S.C. § 652(10) (1976).

100. *Continental Can Co., Inc.*, [1976-1977] Occ. Safety & Health Dec. (CCH) ¶ 21,009, at 25,256 (Rev. Comm'n 1976).

101. See note 95 *supra*.

102. See *Castle & Cooke Foods*, [1977-1978] Occ. Safety & Health Dec. (CCH) ¶ 21,854, at 26,329-30 (Rev. Comm'n 1977) (carcinogens are a more serious health hazard than noise and merit different treatment). The court in *AFL-CIO v. Marshall*, 617 F.2d 636 (D.C. Cir. 1979), *cert. granted sub nom. American Textile Mfrs. Inst. v. Marshall*, 49 U.S.L.W. 3245 (U.S. Oct. 6, 1980) (Nos. 79-1429 & 79-1583), inter-

B. Cost Analysis Under Section 3(8) and Its Effect on Section 6(b)(5)

Section 3(8), a general definitional provision, provides that an occupational safety and health standard be "reasonably necessary or appropriate to provide safe" working conditions.¹⁰³ The legislative history provides few guidelines for interpreting the "reasonably necessary" language of section 3(8).¹⁰⁴ One Supreme Court justice, however, has stated that section 3(8) requires that benefits of regulations under the Act must be reasonably related to the costs.¹⁰⁵ The Fifth and Eighth Circuits also have held that the language of section 3(8) mandates cost-benefit analysis,¹⁰⁶ with the formality of the analysis dependent on the precision with which the risks and benefits can be calculated.¹⁰⁷

preted the language used by the Commissioner to indicate that the Commissioner's ruling applied only to less harmful hazards and not those that posed a serious risk. *Id.* at 665 n.169 (distinguishing *Turner Co. v. Secretary of Labor*, 561 F.2d 82, 86 (7th Cir. 1977)).

103. Occupational Safety and Health Act of 1970, § 3(8), 29 U.S.C. § 652(8) (1976).

104. The meaning of section 3(8) can perhaps be derived from one Senator's characterization of the Act as an attempt to balance the need of the worker to have a safe workplace (safety benefits), against the requirement that industry function without undue interference (industry costs). Legislative History, *supra* note 2, at 435 (statement of Sen. Williams).

105. *Industrial Union Dep't v. American Petroleum Inst.*, 100 S. Ct. 2844, 2877-78 & n.5 (1980) (Powell, J., concurring).

106. *American Petroleum Inst. v. OSHA*, 581 F.2d 493, 503 (5th Cir. 1978), *aff'd sub nom. Industrial Union Dep't v. American Petroleum Inst.*, 100 S. Ct. 2844 (1980); *United Parcels Serv. v. OSHRC*, 570 F.2d 806, 812 (8th Cir. 1978). Other circuits have not interpreted the "reasonably necessary" language. 581 F.2d at 505. In *United Parcels*, a regulation requiring employees who handle packages to be equipped with steel-toed shoes was invalidated because the costs were not justified by the expected health benefits. 570 F.2d at 812. In view of the nature of the business involved, the small size of the vast majority of the parcels handled, the low incidence of injuries resulting from falling parcels, and the high rate of turnover among employees who would have to be equipped with the shoes, the court held that the standard was unreasonable and an abuse of discretion. *Id.* In holding that a reasonable relationship between the costs and benefits was required by § 3(8), the Fifth Circuit relied on *Aqua Slide 'N' Dive Corp. v. Consumer Prod. Safety Comm'n*, 569 F.2d 831 (5th Cir. 1978), in which it had ruled that analogous "reasonably necessary" language in the Consumer Product Safety Act (CPSA), 15 U.S.C. § 2058(c)(2)(A) (1976), required a determination of whether the benefits bear a reasonable relationship to the costs. 569 F.2d at 839-40. Because the purpose of the Act is to protect workers from dangerous conditions, *see* notes 2-3 *supra* and accompanying text, and the purpose of the CPSA is to protect consumers from dangerous products, the court felt compelled to follow the reasoning in *Aqua Slide*. 581 F.2d at 502.

107. *American Petroleum Inst. v. OSHA*, 581 F.2d 493, 503-04 (5th Cir. 1978) (carcinogen: reasonable relationship required), *aff'd on other grounds sub nom. Industrial Union Dep't v. American Petroleum Inst.*, 100 S. Ct. 2844 (1980); *United Parcels Serv. v. OSHRC*, 570 F.2d 806, 812 (8th Cir. 1978) (steelted shoes: precise weighing required). The regulator must have some factual basis for estimating whether benefits will be reasonably related to costs. *American Petroleum Inst. v.*

Similar statutory language also has been interpreted to mandate cost-benefit analysis. In some statutes, formalized cost-benefit analysis is mandated by express language requiring a weighing of the costs and benefits of a proposed regulation.¹⁰⁸ Other statutes, with language similar to that of section 3(8), mandate a balancing test to insure that the costs are not wholly disproportionate to the benefits.¹⁰⁹

OSHA, 581 F.2d 493, 504 (5th Cir. 1978), *aff'd on other grounds sub nom.* Industrial Union Dep't v. American Petroleum Inst., 100 S. Ct. 2844 (1980), *see note 7 supra* and accompanying text.

108. *E.g.*, Federal Environmental Pesticide Control Act of 1972, 7 U.S.C. § 136(bb) (1976) ("tak[e] into account the economic . . . costs and benefits of the use of any pesticide"), *construed in* Chemical Specialities Mfrs. Ass'n v. EPA, 484 F. Supp. 513, 515-16 (D.D.C. 1980); Flood Control Act, 33 U.S.C. § 701a (1976) ("benefits to whomsoever they may accrue are in excess of the estimated costs"), *construed in* United States v. West Virginia Power Co., 122 F.2d 733, 737-38 (4th Cir.), *cert. denied*, 314 U.S. 683 (1941) and *Libby Rod & Gun Club v. Poteat*, 457 F. Supp. 1177, 1186 (D. Mont. 1978), *aff'd in part, rev'd in part*, 594 F.2d 742 (9th Cir. 1979); Energy Policy and Conservation Act, 42 U.S.C. §§ 6295(a)(2)(D), (b)(2), (c), (d) (1976 & Supp. II 1978) (must have benefits that exceed the burdens).

109. *E.g.*, Consumer Products Safety Act, 15 U.S.C. § 2058(c)(2)(A) (1976) ("reasonably necessary"), *construed in* D.D. Bean & Sons Co. v. Commissioner Prod. Safety Comm'n, 574 F.2d 643, 649 (1st Cir. 1978) and *Aqua Slide 'N' Dive Corp. v. Consumer Prod. Safety Comm'n*, 569 F.2d 831, 838-40 (5th Cir. 1978); Clean Water Act, 33 U.S.C. §§ 1314(b)(1)(B), 1314(b)(2)(B), 1314(b)(4)(B) (1976 & Supp. II 1978) (reasonable relationship between costs and benefits), *construed in* BASF Wyandotte Corp. v. Costle, 598 F.2d 637, 656 (1st Cir. 1979), *cert. denied*, 100 S. Ct. 1063 (1980) and *American Paper Inst. v. Train*, 543 F.2d 328, 353-54 (D.C. Cir.), *cert. dismissed*, 429 U.S. 967 (1976) and *FMC Corp. v. Train*, 539 F.2d 973, 978-79 (4th Cir. 1976). Courts do not always agree on the standard mandated by statutory language. For instance, the language of the National Environmental Policy Act of 1969, 42 U.S.C. § 4332(2)(B) (1976) ("presently unquantified environmental amenities and values" should be considered), is interpreted sometimes to require formalized cost-benefit analysis and sometimes to require only a balancing. *Compare* Trout Unltd. v. Morton, 509 F.2d 1276, 1286 (9th Cir. 1974) (formal cost-benefit analysis not required) and *Environmental Defense Fund, Inc. v. Costle*, 439 F. Supp. 980, 993 (E.D.N.Y. 1977) (cost-benefit analysis broadly defined) and *Cape Henry Bird Club v. Laird*, 359 F. Supp. 404, 413 (W.D. Va.) (costs may outweigh benefits without regulation becoming invalid), *aff'd*, 484 F.2d 453 (4th Cir. 1973) with *Clavert Cliffs' Coord. Comm. v. Atomic Energy Comm'n*, 449 F.2d 1109, 1113 (D.C. Cir. 1971) ("NEPA mandates a rather finely tuned and 'systematic' balancing analysis") and *National Wildlife Fed'n v. Andrus*, 440 F. Supp. 1245, 1253 (D.D.C. 1977) (finely tuned balancing analysis required) and 40 C.F.R. § 1502.23 (1980) (Council on Environmental Quality, pursuant to 42 U.S.C. § 4342 (1976), favors explicit, though informal, cost-benefit analysis). *See generally* F. Anderson, NEPA in the Courts 246-51 (1973); E. Murphy, Nature, Bureaucracy and the Rules of Property 275-77 (1977); S. Rosen, Manual for Environmental Impact Evaluation 20-21 (1976). Statutes also may require both feasibility and cost-benefit analysis. *E.g.*, Outer Continental Shelf Lands Act, 43 U.S.C. § 1347(b) (Supp. II 1978) (feasibility and cost-benefit analysis); Clean Air Act, 42 U.S.C. § 7545(c)(2)(A) (Supp. II 1978) (feasibility when health is endangered); *id.* § 7545(c)(2)(B) (Supp. II 1978) (cost-benefit for machinery); *see* *Amoco Oil Co. v. Environmental Protection Agency*, 501 F.2d 722, 736-37 (D.C. Cir. 1974).

Assuming section 3(8) requires at least an informal balancing of costs and benefits, and section 6(b)(5) requires only feasibility, the question becomes whether the section 3(8) test controls when promulgating standards under section 6(b)(5).¹¹⁰ In *Industrial Union Department v. American Petroleum Institute*,¹¹¹ the Supreme Court discussed section 3(8)'s effect on standards promulgated under section 6(b)(5) for the threshold determination of whether a significant health risk must be shown before promulgating a regulation.¹¹² The plurality, refusing to address the cost analysis question, stated that section 3(8) has to be read in conjunction with section 6(b)(5).¹¹³ Justice Powell extended this reasoning to cost analysis and argued that OSHA must weigh costs and benefits before promulgating standards under section 6(b)(5).¹¹⁴ The four dissenters, along with Justice Rehnquist, argued that in no instance, including the threshold risk determination, is the express language of section 6(b)(5) superseded by the language of section 3(8).¹¹⁵ The circuits are similarly split. The Fifth Circuit agrees with Justice Powell's reasoning;¹¹⁶ the District of Columbia Circuit agrees with the dissent's reasoning.¹¹⁷

The rules of statutory construction bolster the interpretation that section 6(b)(5) controls. The meaning given in a general definitional clause controls throughout the statute, unless the definition gives rise to obvious incongruities or defeats the major purposes of the legislation.¹¹⁸ Requiring OSHA to conduct a cost-benefit analysis would frustrate Congressional intent to facilitate regulation of the "silent killers."¹¹⁹ Moreover, a specific provision governs over a general pro-

110. See note 11 *supra* and accompanying text.

111. 100 S. Ct. 2844 (1980).

112. *Id.* at 2863 (plurality opinion). For a discussion of the threshold risk determination, see note 5 *supra*.

113. *Id.* at 2850, 2866.

114. *Id.* at 2875, 2877 (Powell, J., concurring). Justice Powell agreed with the Fifth Circuit's position on this issue, as enunciated in *American Petroleum Inst. v. OSHA*, 581 F.2d 493, 502-03 (5th Cir. 1978), *aff'd on other grounds sub nom. Industrial Union Dep't v. American Petroleum Inst.*, 100 S. Ct. 2844 (1980).

115. 100 S. Ct. at 2883 (Rehnquist, J., concurring); *id.* at 2899 n.28 (Marshall, J., dissenting). Justices Brennan, White, and Blackmun joined in Justice Marshall's dissenting opinion.

116. *American Petroleum Inst. v. OSHA*, 581 F.2d 493, 502-03 (5th Cir. 1978), *aff'd on other grounds sub nom. Industrial Union Dep't v. American Petroleum Inst.*, 100 S. Ct. 2844 (1980); see note 114 *supra*.

117. *United Steelworkers v. Marshall*, No. 79-1048, slip op. at 140 n.102 (D.C. Cir. Aug. 15, 1980); *AFL-CIO v. Marshall*, 617 F.2d 636, 663 (D.C. Cir. 1979), *cert. granted sub nom. American Textile Mfrs. Inst. v. Marshall*, 49 U.S.L.W. 3245 (U.S. Oct. 6, 1980) (Nos. 79-1429 & 79-1583).

118. 1A C. Sands, *Sutherland's Statutes and Statutory Construction* § 27.02 (4th ed. 1972); see *State v. Howell*, 77 S.D. 518, 523, 95 N.W.2d 36, 39 (1959) (context indicated word carried different meaning in amendment than what had been clearly defined in the previous act).

119. See notes 83-86 *supra* and accompanying text.

vision when the specific section expressly alters the general rule.¹²⁰ Section 6(b)(5) should control because it expressly deals with the procedure for regulating toxic materials with a specific cost analysis.¹²¹

The economics of cost analysis and the legislative history of section 6(b)(5) also support the conclusion that section 6(b)(5) should control the procedure for regulating toxic substances. The hazards of carcinogens are very difficult to quantify; requiring cost-benefit analysis might effectively preclude government regulation.¹²² These difficulties were recognized and considered by Congress in passing section 6(b)(5).¹²³ Requiring cost-benefit analysis under section 3(8) would frustrate that Congressional intent.¹²⁴ The difficulty of measuring the dangers of toxic substances, coupled with the unquestioned severity of the harm that results, led Congress to discuss toxic substances in some depth and require only a feasibility test before regulation.¹²⁵ This concern is in marked contrast to the paucity of legislative history on the cost analysis required under section 3(8).¹²⁶ Surely the specific and clear feasibility requirement of section 6(b)(5) should prevail over the implied and unclear cost-benefit requirement of section 3(8).¹²⁷ Moreover, because a court cannot alter the procedural requirements set by the legislature,¹²⁸ and must favor the facilitation of government regulation furthering public health and safety,¹²⁹ section 6(b)(5)'s less strict standard should control.

CONCLUSION

Strict formalized cost analysis would hinder the regulation of toxic substances for which costs and benefits cannot be accurately quantified. Although cost analysis would facilitate implementation of standards regulating dangers that do not threaten life, money and efficiency should not be the major concern when lives are at stake. The purpose of the Occupational Safety and Health Act is not to protect as many workers as is profitable and to sacrifice the others. Rather, the goal is to protect as many workers as possible. The "cost" of safety regulation is something any civilized society should be willing to pay.

Maria Scorcia

120. *FTC v. Manager, Retail Credit Co.*, 515 F.2d 988, 993-94 (D.C. Cir. 1975); *American Tel. & Tel. Co. v. FCC*, 487 F.2d 865, 877 n.26 (2d Cir. 1973); *United States v. Jackson*, 143 F. 783, 787 (9th Cir. 1906). See generally 2A C. Sands, *Sutherland's Statutes and Statutory Construction* § 47.07 (4th ed. 1972).

121. See note 82 *supra*.

122. See note 25 *supra* and accompanying text.

123. See note 89 *supra*.

124. See note 82 *supra* and accompanying text.

125. See notes 82-86 *supra* and accompanying text.

126. See note 104 *supra* and accompanying text.

127. See notes 82-91, 104 *supra* and accompanying text.

128. See note 95 *supra*.

129. See note 8 *supra* and accompanying text.