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Historical Perspective

Ergonomics and Regulatory Politics: The Washington State Case

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Background *Every year in the State of Washington more than 50,000 workers experience a work related musculoskeletal disorder (WMSD), making up more than 30% of all worker compensation cases. In 2000, the Washington State Department of Labor and Industries (L&I) adopted a workplace ergonomics rule requiring employers to reduce worker exposure to hazards that cause or contribute to WMSDs. In 2003, the ergonomics rule was repealed by a margin of 53.5–46.5 in a statewide voter initiative.*

Methods *The official rulemaking record of approximately 100,000 pages, along with supplementary published and unpublished material, was reviewed. The relationship between scientific deliberation and the public policy process in adopting and repealing the ergonomics rule was assessed and described. The deliberative features of the regulatory, judicial, legislative, and ballot processes were compared.*

Results and Conclusions *The ergonomics rule was successful in the regulatory and legal arenas where the process was most transparent and open to public involvement, differing views could be presented fully, and decision makers were expected to explain their decisions in light of the record. The rule fared most poorly in the legislature and at the ballot box when these features were lost and where considered deliberation was replaced by unconstrained political conflict. Additional checks and balances are needed.* Am. J. Ind. Med. 50:391–401, 2007. © *2007 Wiley-Liss, Inc.*

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INTRODUCTION

Every year in the State of Washington more than 50,000 workers experience a work related musculoskeletal disorder (WMSD) such as tendinitis, carpal tunnel syndrome, and low back strain. These WMSDs make up more than 30% of all worker compensation cases and more than 45% of worker compensation costs. The direct costs of medical care and partial wage replacement are more than $340 million a year. The indirect costs such as reduced productivity bring the annual total to more than $1 billion per year [Washington State Department of Labor and Industries, 2000].

On May 26, 2000, the Washington State Department of Labor and Industries (L&I) adopted a workplace ergonomics rule requiring employers to reduce worker exposure to hazards that cause or contribute to WMSDs [Washington Administrative Code, 2000]. A business coalition organized a ballot initiative campaign to repeal the rule. Initiative 841 read "...The state ergonomics regulations...are repealed.

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The director shall not have the authority to adopt any new or amended rules dealing with musculoskeletal disorders, or that deal with the same or similar activities as these rules being repealed, until and to the extent required by congress or the federal occupational safety and health administration.''

With a 38% turnout of eligible voters in the November 4, 2003 statewide mid-term election, the rule was repealed by a 53.5–46.5% margin. (See Fig. 1 for a chronology of the rulemaking from 1980s to 2006.)

This article examines the balance between scientific deliberation and political values in the regulatory process leading to the adoption of the ergonomics rule and in the electoral process resulting in its repeal. It discusses the key role that executive branch regulatory agencies play in securing the optimal blend of science and politics in public policy by ensuring that facts and values are fully presented and that all interested parties have meaningful opportunities for participation before decisions are rendered. When this buffering role is diminished or eliminated the policy process can swing wildly out of balance with unchecked political power determining outcomes.

THE WASHINGTON STATE WORKPLACE ERGONOMICS RULE

Workplace ergonomics is the science and practice of making sure that the physical requirements of work match

Year(s)	Event(s)
1980s	• Training programs for employers • Assistance to employers with job modifications • First ergonomics inspections in response to employee complaints
1990-1997	• First L&I ergonomists hired, assigned to inspection, consultation and research programs • Ergonomics workshops offered to employers • Ergonomics research program initiated; 23 research reports and technical papers published, including analyses of workers' compensation data • Established advisory committee to help develop voluntary ergonomics guidelines • Ergonomics training for inspectors and consultants • Published ergonomics program guidelines, workplace guidelines for VDTs, booklets on manual lifting and office ergonomics • Ergonomics inspections conducted using L&I's "general duty" or "safeplace" authority, resulting in 5-10 citations with penalties each year
1998	• Published Work-related Disorders of the Back and Upper Extremity in Washington State, 1989-1996, analyzing the cost and incidence of workers' compensation claims • Initiated survey of 5000 employers regarding physical work demands, musculoskeletal injuries and current prevention practices • L&I decides to initiate rulemaking and publishes Pre-proposal Statement of Inquiry (Form CR101) to notify the public that a rule is being considered • Public rule development conferences held in 7 cities, attended by 514 people
1999	• January: Results of employer survey released • February: Ergonomics Rulemaking Advisory Committee established, 30 labor, business and health professional members meet seven times over a five month period • March: Ergonomics Subcommittee of the L&I Construction Advisory Committee established, 20-40 labor and business representatives meet five times over a four month period • March: Published Work-related Disorders of the Back and Upper Extremity in Washington State, 1990-1997, updating previous reports • November: L&I publishes Proposed Ergonomics Rule (Form CR102), including a Small Business Economic Impact Statement • December: Fourteen public hearings are held, two in each of seven cities, with 237 people presenting oral testimony
2000	• January – May: 850 written comments received and reviewed; rulemaking record of more than 100,000 pages is completed; proposed rule revised in response to all comments and evidence in the record • April: Published Work-related musculoskeletal disorders of the neck, back and the upper extremity in Washington State, 1990-1998, updating previous reports. • May: L&I publishes the Ergonomics Rule (Form CR103), including a Concise Explanatory Statement, Cost-Benefit Analysis, Rule Implementation Plan. Compliance deadlines are phased in over a four year period beginning July 1, 2002. • May – December: L&I works on 26 demonstration projects, three basic

FIGURE 1. Chronology of the Washington State Ergonomics Rule.

	workshops, six industry specific workshops, a train the trainer program, dozens of compliance guides and fact sheets, and a model employee education program.
2001	• January: Governor Gary Locke appoints an Ergonomics Blue Ribbon Panel to assess whether L&I's preparations for enforcement prior to July, 2002 were adequate • February – December: L&I continues work on demonstration projects, workshops, compliance guides, and education programs • October: Washington Employers Concerned About Regulating Ergonomics (WECARE) and 28 other business organizations begin litigation to repeal the ergonomics rule in the Thurston County Superior Court
2002	• March: Ergonomics Blue Ribbon Panel reports that demonstration projects were successful; effective education materials were widely available; the requirements were understandable; and enforcement policies and procedures were fair and consistent. Governor Locke decides to provide industry with two additional years, until July 2004, before enforcement would begin • April – July: L&I continues work on demonstration projects, workshops, compliance guides, and education programs • June: Oral arguments in the ergonomics litigation before Judge Paula Casey in Thurston County Superior Court • July: Judge Casey, Thurston County Superior Court upholds ergonomics rule
2003	• January: The Building Industry Association of Washington (BIAW) files Initiative 841 with the Secretary of State and begins to gather signatures • February: Governor Locke directs L&I to establish an ergonomics resource center, build an ergonomics clearinghouse, produce a small business ergonomics guide, and appoint an ergonomics ombudsman • April: Ergonomics litigation is appealed to the Washington State Supreme Court • May: Oral arguments before the Washington State Supreme Court • July: The BIAW completes signature drive and Initiative 841 qualifies for the November election • July: The BIAW petitions L&I to repeal the ergonomics rule. L&I denies the petition. • November: Initiative 841 passes and the Washington ergonomics rule is repealed
2004	• June: The BIAW files a complaint with the State Executive Ethics Board alleging that officials of L&I violated the State Ethics Act by using public resources to assist opponents of Initiative 841 • October: The State Executive Ethics Board dismisses the ethics complaint
2006	• October: The Washington State Supreme Court rules that Initiative 841 did not repeal L&I's authority to apply its "general duty" or "safeplace" requirements to ergonomics issues

FIGURE 1. (*Continued*)

the capacities and limitations of the human body. When the things we do everyday require more repetitive movements, forceful exertions, or stressful postures than our bodies were built to endure, the result is damage to our muscles, tendons, bones, and joints. In this way, the common demands of work such as lifting, bending, twisting, and reaching can lead to WMSDs including inflamed tendons, strained ligaments, and compressed nerves. Ergonomic controls protect the human body by keeping things within reach, reducing the need for prolonged or extreme muscle force and highly repetitive movements, and making tools and equipment adjustable.

In the 1980s, L&I recognized that preventable WMSDs constituted the largest group of all worker compensation claims in the state. The agency began programs to encourage employers to use ergonomics to control hazards on a voluntary basis [Washington State Department of Labor and Industries, 2006]. It developed workplace ergonomics guidelines and actively encouraged their use with free educational materials, on-site consultations, free workshops, and by sharing the results of research on best practices. In addition, during the 1990s L&I used its ''general duty'' or ''safe place'' authority 5–10 times a year to cite and penalize employers for failing to control worker exposures to recognized hazards that are known to cause WMSDs [Revised Code of Washington, 2006a].[1]

The rate of worker compensation claims for WMSDs declined slowly during the 1980s and 1990s, but not as fast as the drop in other types of claims. WMSDs remained by far

[1] This practice was discontinued in 2000 when the specific ergonomics rule was adopted, but it was resumed when the rule was repealed. When L&I attempted to use the safe place requirement in an investigation of ergonomics issues at a SuperValu food distribution center in 2003, the employer took the agency to court, arguing that when the voters passed Initiative 841 they intended not only to repeal the specific ergonomics rule but also any application of the general safe place requirements to ergonomics. On 10/19/2006, The Washington State Supreme Court rejected this argument, holding that ''The language of I-841 is plain and unambiguous. Nothing in I-841 suggests that L&I is stripped of its general regulatory authority to address serious or deadly ergonomics related workplace hazards by way of RCW 49.17.060.1.''

the biggest and most costly group of workplace injuries and illnesses [Silverstein et al., 2000]. A 1998 L&I survey of a random, stratified sample of approximately 5,000 employers found that while significant hazards for WMSDs were prevalent in all industries, 60% of employers reported no efforts to control them [Foley and Silverstein, 1999]. Even among employers who recognized WMSD hazards in their workplaces, 40% reported no such prevention efforts. Employers taking steps to prevent WMSDs generally reported that ergonomic controls resulted in benefits including fewer injuries along with improved product or service quality, morale, and absenteeism.

L&I concluded that these efforts had been useful but not sufficient and that additional regulation and enforcement were needed to ensure equal protection from workplace hazards for all employees, not just those fortunate enough to work for employers who take voluntary action. L&I initiated rulemaking in 1998.[2] The 2 year process was governed by the state Administrative Procedure Act (RCW 34.05), which requires the following before an agency may adopt a new rule: (a) a concise explanatory statement explaining the rule and responding to all comments; (b) a small business economic impact statement; (c) an opportunity for written comments and a public hearing; (d) a determination that the rule is needed, alternatives were considered, the rule is the least burdensome of these alternatives, and the probable benefits outweigh the probable costs; (e) a rule making file sufficient to persuade a reasonable person that the determinations are justified; and (f) a rule implementation plan.

Phase 1: Development of the Proposed Rule

More than 500 people in seven cities attended nine public meetings in October 1998 to discuss whether L&I should develop a rule and, if so, what it should include. Business representatives expressed opposition to rulemaking, but urged that any rule be specific enough for employers to know exactly what was required of them yet flexible enough to ensure that it was not ''one size fits all.'' Union representatives supported rulemaking and argued for worker participation provisions.

[2] Rulemaking in the State of Washington paralleled what was happening at the federal level. Federal OSHA efforts to encourage employers to use ergonomics to prevent work related musculoskeletal disorders began in the early 1980s. In 1990, Secretary of Labor Elizabeth Dole announced that there was sufficient evidence to consider rulemaking. In July 1991, 30 labor organizations petitioned OSHA to adopt an emergency temporary ergonomics rule. In April 1992, Secretary of Labor Lynn Martin OSHA denied this petition, but committed the agency to begin the regular process for adopting a regulation. Four months later OSHA issued an Advance Notice of Proposed Rulemaking on ergonomics.

Following the public meetings, two advisory committees (general industry and construction) were established and met for 6 months in numerous public sessions. While these committees did not achieve consensus about the need for a rule, there was general agreement that any rule should be short and clear, impose few requirements in workplaces with minor risks, be phased in over a long period, and balance specific requirements with flexible options.

Based on this input L&I published its proposed ergonomics rule in November 1999. It required employers to identify certain workplace hazards known to cause WMSDs and to reduce employee exposure to them to the degree technologically and economically feasible. More specifically the rule required employers to determine whether any employees regularly worked on jobs, called ''caution zone jobs,'' with sufficient amounts of heavy, awkward lifting; highly repetitive motion; high hand force; awkward postures; hand–arm vibration; or repeated impact to warrant attention. There were 14 specific criteria defining caution zone jobs, for example, ''working with the hand(s) above the head or the elbow(s) above the shoulder more than 2 hr total per day.''

If there were no caution zone jobs the employer would be in compliance and have no further obligations. If any caution zone jobs were present the employer would have to provide basic awareness education and evaluate whether any of these jobs was dangerous enough to be considered a hazard that required control. Hazards were defined by additional duration, intensity or combination of risks. For example, working with the hands above the head for more than 2 hr put a job in the caution zone while doing this for more than 4 hr made it a correctable hazard. The employer would have to reduce exposure to hazards to the degree economically and technologically feasible. The burden of proof was on the agency if it wanted to challenge an employer's decision about feasibility. While the rule was specific about what constituted a hazard it provided employers with substantial flexibility in how they chose to reduce exposures to them (allowing controls that rely primarily on employee behavior only when other measures such as process redesign or tool change were not feasible).

The rule's enforcement was to be phased in over 6 years, with a group of large employers in 12 high-risk industries covered first. The phase-in would allow L&I time to work with employers and employees on model compliance programs, industry best practices, and demonstration projects.

Phase 2: Public Hearings and Adoption of the Final Rule

Fourteen public hearings were conducted in seven cities during January 2000. Two hundred forty-nine witnesses

testified and L&I received more than 850 written post-hearing comments. Most witnesses and most of those submitting post-hearing comments were from organizations inside the State of Washington. In addition many national business associations, labor organizations, and public health group submitted written comments for the record. While most comments were brief or of moderate length and focused on the way various provisions in the rule would affect specific jobs or industries, several organizations, and individuals presented more substantial scientific or economic arguments. For example, the Association of Washington Business engaged the M. Cubed consulting firm in San Francisco to prepare an economic analysis of the proposed rule and the Occulink consulting firm to evaluate the methodology of L&I's scientific analyses. The United Parcel Service engaged the law firm of Gibson, Dunn, and Crutcher (whose lead attorneys, Baruch Fellner, and Eugene Scalia, also represented the National Coalition on Ergonomics) to submit a detailed analysis, attached to which were numerous scientific articles and affadavits from experts.

Following the hearings, L&I evaluated all these submissions, revised its proposal and published the final ergonomics rule in May, 2000[3] along with responses to all the comments and a detailed explanation of the reasoning behind its decisions. L&I also made a formal determination that the probable social benefits of the rule outweighed the probable compliance costs by a ratio of 4.24–1.0 [Washington State Department of Labor and Industries, 2000a]. The rulemaking file upon which decisions about the rule were made totaled more than 100,000 pages.

The final rule included several changes in response to public comments. For example, the rule stated more explicitly than the proposal that ''this rule does not require an employer to control WMSD hazards by replacing full-time employees with part-time employees or otherwise reducing an individual's hours of employment. If an employer has implemented all other technologically and economically feasible controls, and a WMSD hazard remains, the employer will be deemed in compliance with this subsection'' [Washington Administrative Code, 2000].

To prepare for initial compliance, L&I developed 26 demonstration projects, 3 basic workshops, 6 industry specific workshops, a train the trainer program, dozens of compliance guides and fact sheets, and a model employee education program. It conducted hundreds of workshops and completed a formal evaluation of workshop effectiveness. As a final step before enforcement Governor Gary Locke appointed a Blue Ribbon Panel of independent experts to assess whether L&I's preparations were adequate.[4] He asked the Panel to consider whether demonstration projects had been successful; effective education materials were widely available; the requirements were understandable; and the enforcement policies and procedures were fair and consistent. The Panel concluded that all four criteria had been met [Washington State Department of Labor and Industries, 2002]. While accepting the Panel's conclusions the Governor nonetheless decided to provide industry with two additional years, until July 2004, before enforcement would begin. The rule was repealed, however, before this date and was never enforced in any workplace.

ASSESSING THE SCIENTIFIC EVIDENCE

The Washington Industrial Safety and Health Act requires workplace health rules to be reasonably necessary, based on the best available evidence and designed to assure that workers are protected from material impairment of health or functional capacity to the extent feasible. In this regard, Washington law is similar, but not identical, to federal OSHA law.

L&I's evaluation of scientific evidence was the most comprehensive it had ever undertaken. It assessed the scientific evidence in three ways. First, the agency reviewed several hundred epidemiological and laboratory studies, including several major literature reviews [Hagberg et al., 1995; Burdorf and Sorock, 1997; Buckle and Devereux, 1999; Viikari-Juntura and Silverstein, 1999; Riihimaki and Viikari-Juntura, 2000]. In doing this, L&I searched for methodologically sound studies that estimated the quantitative relationship between workplace exposures and the occurrence of WMSDs. NIOSH has established a set of widely accepted criteria for sound study design, including objective exposure assessment, high participation rates, blinded assessment of health and exposure status, and the absence or control of selection bias [Bernard, 1997]. L&I gave the most serious consideration to studies meeting the NIOSH criteria. It identified a subset of these studies that quantified exposure in terms of frequency, duration, and/or

[3] In addition to the Washington State rule, a federal ergonomics regulation was adopted by the Occupational Safety and Health Administration on November 14, 2000. It was repealed when Congress passed a measure under the Congressional Review Act of 1996 that was signed by the President on March 20, 2001. While the federal rule differed in many details from the Washington State rule, the political dynamics responsible for the development and demise of the two rules shared much in common.

[4] The Blue Ribbon Panel on Ergonomics was co-chaired by Claude Golden, The Boeing Company; and Larry Bindner, Washington and Northern Idaho District Council of Laborers. Its other members were: William Andersen, University of Washington Law School; Stewart C. Burkhammer, Bechtel Corporation; Lee Anne Jillings, Voluntary Protection Plan Participants Association; Gwen Malone, General Motors Powertrain Group; James McCauley, Perdue Farms (retired); James A. Merchant, University of Iowa School of Public Health; Susan Schurman, George Meany Center for Labor Studies, National Labor College; Pat Tyson, Board of Directors, National Safety Council; and David Wegman, University of Massachusetts.Lowell. Mr. Burkhammer stepped down from the Panel because his post 911 recovery assignments occupied all his available time.

intensity and then looked for exposure levels at which WMSDs began to occur, in particular identifying exposure levels at which there were statistically strong relative risks of at least 1.5 for one or more types of WMSDs. Next, L&I chose regulatory exposure limits consistent with these scientifically determined risk estimates but also addressing the need for consistency, simplicity, and practical application. The policy aim was to set limits that were understandable to employers, protective of employees, and administratively workable. The evidence was considered as a whole in a manner similar to NIOSH [Bernard, 1997]. L&I also identified and addressed reports that failed to find evidence for workplace causation, including a small number that purported to demonstrate the lack of workplace causation [Vender et al., 1995; Hadler, 1996; Blume and Sandler, 1997; Hadler, 1998].

Second, L&I analyzed the Washington State worker compensation database [Silverstein et al., 2000]. This database is uniquely comprehensive and reliable because, with the exception of about 300 large self-insured employers, all employers obtain workers' compensation insurance through a centrally managed state fund. The state workers' compensation fund and self-insured employers annually pay for more than 52,000 WMSD claims. While their impact is widespread, in some industry sectors the risk to workers is especially great. Industries were rank ordered by numbers and rates of WMSDs. The first industries required to comply with the rule were those with relatively high rankings for both numbers and rates.

Third, L&I considered comprehensive scientific reviews prepared by the National Academy of Sciences (NAS) [National Research Council, 1999] and the National Institute for Occupational Safety and Health (NIOSH) [Bernard, 1997]. These reviews reached similar conclusions, consistent with L&I's analysis. The NAS found that ''the positive relationship between musculoskeletal disorders and the conduct of work is clear. . . There is compelling evidence from numerous studies that as the amount of biomechanical stress is reduced the prevalence of musculoskeletal disorders at the affected body region is likewise reduced.'' NIOSH concluded that ''a substantial body of credible epidemiologic research provides strong evidence of an association between musculoskeletal disorders and certain work-related physical factors when there are high levels of exposure and especially in combination with exposure to more than one physical factor. . .''

Based on these analyses L&I concluded that WMSDs significantly impair health and function; that exposure to each physical risk factor covered by the rule has been associated with WMSDs; that exposures to these risks were widespread in workplaces; that high numbers and rates of WMSDs constitute an important problem; and that using ergonomics can effectively reduce the hazards and thereby prevent many WMSDs. The agency also found evidence of dose-response relationships, the incidence of WMSDs rising with duration and/or intensity of exposure to the regulated hazards.

The scientific evidence supporting the rule was strong and compelling, with an exceptionally broad scientific accord about the causes of WMSDs and the value of ergonomic interventions in reducing hazards and preventing WMSDs. This does not mean unanimity. There is a small, vocal group of lawyers, doctors and lobbyists that maintains ergonomics lacks scientific validity. For example, the website for the National Coalition on Ergonomics has long stated that ''while the concept of ergonomics is to fit the workplace to workers, making them more comfortable and ultimately more efficient, it is a subject utterly lacking scientific and medical consensus. . . there is a complete lack of consensus as to the causes and remedies for back, arm, neck, and other musculoskeletal aches and pains'' [National Coalition on Ergonomics, 2006]. In court, the opponents of the rule argued that ergonomics is not a science but is ''. . . the art of adapting the work environment to the comfort of the human body'' [WECARE, 2002].

OPPOSITION TO THE RULE

It was not surprising that the Washington State ergonomics rulemaking was controversial. Every significant workplace safety and health rule proposed at the federal or state level since the Occupational Safety and Health Act was passed in 1970 has met strong opposition from the business community [McGarity and Shapiro, 1993]. In virtually all such cases business representatives have argued that there was insufficient scientific evidence of risk, the rule would interfere with business operations and compliance costs would be prohibitive. In many cases OSHA rules were adopted only after petitions, litigation and court orders (e.g., OSHA formaldehyde, ethylene oxide, field sanitation, hazard communication, cadmium, and hexavalent chromium standards). In other cases, Congress directed rulemaking (e.g., blood borne pathogen and process safety management standards). Most OSHA rules were challenged in court after adoption (e.g., benzene, cotton dust, and inorganic lead). In addition to these usual grounds for opposition, the prospect of ergonomics regulation drew exceptional industry attention for three other reasons.

First, because WMSDs are so widespread among industries and occupations ergonomics rulemaking attracted especially broad employer notice. Most previous occupational safety and health rules, such as those for cotton dust, coke ovens, or blood borne pathogens have applied to relatively small groups of industries and employers. In some cases, such as OSHA's requirements for hearing conservation, entire industry sectors such as construction have been exempted. But, even though some rules such as those for hazard communication have had broad impact, none except

ergonomics have affected virtually every industry and occupation and every size workplace. Trade associations as diverse as the Farm Bureau, Pacific Maritime Association, Food Industry Association, Retail Association, Associated Builders and Contractors, and the National Association of Manufacturers found common cause in actively opposing the rule.

Second, because workplace ergonomics affects how jobs are designed and work is organized the rulemaking raised fears that employers' prerogatives, power, and control were threatened. At the federal level, Senator Kay Bailey Hutchison (R, TX) claimed that an ergonomics rule would ''give OSHA authority to control virtually every aspect of a business' operations. . . OSHA would be able to set limits on employee productivity, to limit work shifts and overtime, to re-design machinery, even entire production lines, and to prohibit innovation'' [Congressional Record, 1995a].

Third, and most importantly, the national political landscape changed dramatically in 1994 and ergonomics became a symbolic target for deregulatory enthusiasts. House Speaker Newt Gingrich proposed to end government ''that is too big, too intrusive, and too easy with the public's money'' and deregulation became a central theme in the new Republican majority Congress [Contract With America, 1994]. The rhetoric aimed at OSHA became supercharged. Representative Cass Ballenger (R, NC) labeled OSHA as a ''Gestapo'' agency [Winston Salem Journal, 1995] and Rep. Joel Hefley (R, CO) railed against ''the OSHA plague'' [Congressional Record, 1994] Ergonomics became the poster child for the political attack on OSHA.

When the Clinton administration made ergonomics an agency priority, efforts were made in Congress to prohibit OSHA from spending any budget dollars on ergonomics rulemaking. In March 1995, when Congress was considering such a restriction, OSHA special assistant Barbara Silverstein told a group that OSHA intended to publish a proposed rule by the end of the year unless Congress ''says do not work on an ergonomics standard or go to jail'' [Bureau of National Affairs, 1995]. Noting that ''no one ever died of ergonomics,'' Representative Cass Ballenger (R, NC) commented ''earlier this week, one of the top bureaucrats at OSHA's ergonomics team indicated that the agency will be pushing forward with plans to establish an ergonomics rule, blatantly flouting the will of Congress. . .'' [Congressional Record, 1995c]. Representative Tom Delay (R, TX) moved quickly to cut OSHA's budget, claiming ''OSHA is an oppressive agency. . . the best way to get a bureaucrat's attention is to cut their central office. That is what this amendment does. It. . . cuts $3.5 million right out of the heart of OSHA. . .'' [Congressional Record, 1995b].

By the time the Washington State ergonomics rulemaking began in 1998 the issue was a featured part of the national debate over the proper place of government regulation in a democratic society. Ergonomics had taken on such emblematic power for business, labor and government that the rulemaking was predictably challenged in every conceivable venue. A business coalition called Washington Employers Concerned About Regulating Ergonomics (WECARE) organized the principal opposition to the rule. The most vocal support came from the Washington State Labor Council. Each of these organizations was supported by its national counterpart, the National Coalition on Ergonomics, and the American Federation of Labor-Congress of Industrial Unions (AFL-CIO), respectively. Tens of millions of dollars were raised and spent on the debate over the next 5 years, although exact figures are unavailable.

Executive Branch Challenge

During the rulemaking opponents challenged L&I's assessment of the scientific evidence, costs and benefits, economic and technological feasibility, small business impact, and non-regulatory alternatives. Following the rule's adoption the Building Industry Association of Washington (BIAW) filed a petition for repeal of the rule, asserting it was a ''one size fits all'' approach that imposed unreasonable costs and was not clear, not needed, and not supported by adequate science. The BIAW also argued that L&I had no authority to make the rule and that the rule was unfair because large corporations received special exemptions. L&I denied the request, responding to each assertion in writing. The BIAW did not take the next step permitted by law, a further appeal directly to the Governor.

Legislative Branch Challenges

For 5 years bills were introduced in the legislature that would have prohibited or restricted rulemaking. For example, Senate Bill 5161 in 2003 would have ''nullified'' the ergonomics rule and left it in place as a voluntary guideline. Senate Bill 5882 in 2001 would have delayed enforcement for 2 years, required pilot tests of alternatives to the rule, and then required revision of the rule based on the pilots. In addition to oversight hearings each year in the State House and Senate, several specific bills received public hearings and reached the House or Senate floor for a vote. While some came close to passage none reached the Governor's desk.

Judicial Branch Challenges

Business opponents, led by the WECARE organization together with twenty eight other business organizations, sought repeal of the rule in court. Several national business groups, including the National Association of Manufacturers, the US Chamber of Commerce and the National Federation of Independent Business joined a diverse group

of Washington State employers and trade associations in the lawsuit. The case was heard in the Superior Court for Thurston County. With regard to rulemaking procedures WECARE argued that L&I's cost-benefit analysis was not released with adequate time for public review; that the evidence was not sufficient to persuade a ''reasonable person;'' and that the hazards covered by the rule were not subject to regulation because they were not the kind of ''harmful physical agents'' or ''chemical'' hazards addressed by the federal or Washington safety and health laws.

Business also raised six substantive concerns: First, that there were methodological flaws with L&I's cost-benefit analysis resulting in an overestimate of benefits and underestimate of costs; second, that prospective randomized controlled trials are the ''gold standard'' for scientific decision making and that L&I's reliance on other types of epidemiological studies rendered its rule invalid; third, that L&I ignored convincing studies that contradicted its conclusions; fourth, that musculoskeletal disorders result primarily from non-work factors; fifth, that L&I offered no evidence of dose-response relationships; and sixth, that the ergonomics rule would harm employees' health by reducing their physical activity, thereby increasing their risk of injury.

On July 12, 2002, trial court Judge Paula Casey upheld the ergonomics rule, rejecting each of the opponents' arguments [Thurston County Superior Court, 2002]. Most importantly Judge Casey ruled that epidemiological studies are ''appropriate scientifically based studies to use in determining the need for workplace regulations'' and that no court has found that randomized controlled trials are necessary. She also found that the studies relied upon by L&I comprised the best available evidence, that L&I had accumulated evidence of sufficient quantity and quality to support its conclusions and that the department's decisions were not arbitrary and capricious [Revised Code of Washington, 2006b]. The decision was appealed to the State Supreme Court where industry raised essentially the same challenges to the rule. However, the case was set aside without a high court ruling when the rule was repealed.

Electoral Challenge

Since 1912 citizens in the State of Washington have been able to exercise a direct form of democracy by voting on ballot referenda or initiatives [Washington State Secretary of State, 2006]. These measures gain access to the ballot through a signature process. Once the required signatures have been certified the parties in support and opposition conduct political campaigns using all the techniques of the modern electoral era—direct mail, talk shows, paid advertisements, celebrity endorsements, billboards and signs, newspaper columns and editorials, and door-to-door leafleting.

The initiative process seems a robust form of participatory democracy, but three features of the process encourage unconstrained campaigns that substitute sensational media tactics for rational debate. First, there are no limits on spending. In the case of the ergonomics ballot initiative this deep pocket advantage went to the rule's opponents, mostly business associations, who outspent the supporters, mostly trade unions, by three or four to one. Most of this money went into radio and television ads in the last days before the election. Second, the staff of public agencies (except for elected public officials) is prohibited from substantive participation and may not speak or act either in support of or opposition to a ballot initiative.[5] This, then, was the only forum in which the principle public proponents of the rule and custodians of the full rulemaking record were disabled from presenting the rationale, reasonableness, and necessity for the rule.

Third, in the State of Washington there have been no requirements for truthfulness in campaigning since 1998 when the Washington State Supreme Court ruled unconstitutional a state statute that had prohibited political advertising containing maliciously false statements [Washington State Supreme Court, 1998]. Invoking the overriding value of free speech ''the Supreme Court has recognized that to sustain our constitutional commitment to uninhibited political discourse, the State may not prevent others from 'resorting to exaggeration, to vilification of men who. . . are prominent. . . and even to false statement'' . . . At times such speech seems unpalatable, but the value of free debate overcomes the danger of misuse. . . For even false statements make valuable contributions to debate. . .'' The Court was deeply divided, with four justices dissenting at least in part. The Washington Supreme Court decision is at odds with at least 19 other states that continue to prohibit malicious false statements in political advertising [Larson, 1999].

Signature gatherers, while sometimes dedicated volunteers are frequently mercenaries paid on a piece basis by the number of signatures. In the case of the ergonomics initiative it was permissible and advantageous for signature gatherers to make grossly false claims such as that the ergonomics rule would prohibit roofers from working more than 2 hr a day. Likewise it was legal and opportune for opponents to run radio ads and display billboards claiming the rule would:

- Prohibit drywall installers, carpet layers, and grocery checkers from working more than 2 hr a day [Initiative 841, 2003];
- Force grocery store employers to spend $9000 annually per worker for special chairs for break areas, new

[5] The author and other officials of L&I were personally charged with, and subsequently cleared of, violating the state executive ethics law for having published during an election campaign a brochure with a schedule of ergonomics workshops and a list of questions and answers about the rule on the agency website.

lighting, floor mats, and new check stands [Henken, 2003];
- Add several thousand dollars to the cost of every new home in the state [BIAW, 2003];
- Prohibit the catcher for the Seattle Mariners from completing a baseball game [Spokane Spokesman Review, 2003];
- Force thousands of employers to move from Washington to more business friendly states and keep thousands of others from moving in [Washington State Secretary of State, 2003];
- Exempt selected big firms like Wal-Mart and Safeway while forcing small businesses to comply [Workers Against Job Killing Rules, 2003];
- Force families to give up health care insurance coverage for their children [Transcript, 2003].

There were insufficient checks and balances to prevent or correct such plainly false but compelling claims.

PUBLIC POLICY AND THE DELIBERATIVE PROCESS

The ergonomics rule prevailed handily in the rulemaking process and before the trial court, but it was nearly repealed or modified by the legislature on several occasions and was finally repealed by ballot initiative. To aid in understanding how this happened, these four mechanisms for public policy (regulatory, judicial, legislative, and ballot) can be compared by examining the degree to which they embody the elements of a fully deliberative process that would ensure informed and rational decision making [Cohen, 1989]. Such a deliberative process would have the following elements:

- a forum in which all parties, regardless of assets, have equal and protected opportunities to participate in the debate;
- the creation and preservation of a written record, including all proceedings, communications, and documents that are part of the decision making process;
- opportunity for public review of the record and debate of the issues;
- requirements for decision makers to make their policy choices only after a record has been established and certified;
- requirements that policy decisions be rationally related to the facts and explained;
- opportunities and processes for appeal;
- a set of ethical and procedural rules that are binding for all participants.

When these elements in mind the four policy processes can be arrayed along a continuum from the most to the least deliberative. (Fig. 2) The regulatory (or executive) process has all the deliberative features and is the most fact dependent and least power dependent of all the processes. At the other end of the spectrum it is ironic that the ballot (or electoral) process, which might appear to be an especially healthy form of participatory democracy, lacks virtually all the deliberative features. It is the most power dependent and least fact dependent. The judicial process comes close to a fully deliberative model, with a written record, ethical and procedural rules, and opportunities for differing views to be expressed. Moreover, the courts are expected to pay considerable deference to executive agencies as long as they have not acted in an arbitrary or capricious manner. However, as a practical matter access to the courts is not equally available but is much easier for those parties with political, economic, and technical resources. The legislative process, despite the spectacle of public hearings and the accumulation of voluminous written records, falls close to the ballot process in its absence of true deliberation. When it is politically convenient legislation can be adopted without any hearings or the creation of a public record. When hearings do occur, they are often staged political events rather than open opportu-

	Regulatory Process	Legal Process	Legislative Process	Ballot Process
Deliberative Features	Most →			Least
Fact Dependent	Most →			Least
Power Dependent	Least ←			Most
Role of Executive Agencies	Most →			Least

FIGURE 2. The spectrum of deliberative features in public policy processes.

nities for review of facts and consideration of public views. Legislatures are not required to show a factual basis in the hearing record as the basis for laws passed.

CONCLUSION

The ergonomics rule was most successful in the regulatory and legal arenas where the process was most transparent and open to public involvement, where it was most likely that differing views could be presented fully, and where decision makers were expected to explain the rationale for their decisions in light of the record. The rule fared most poorly in the legislature and at the ballot box when these features were lost and where considered deliberation was replaced by unconstrained political conflict.

The delegation of regulatory responsibility from the legislative to the executive branch is a critical feature of our representative democracy. The federal and state administrative procedure acts have been written to guard the regulatory process from abuse and to ensure that agency actions are fully deliberative and free from direct political pressure. The ergonomics story reveals important flaws with this arrangement. The executive agency responsible and accountable for adopting rules in accordance with law and in the public interest was excluded from the electoral debate about whether its rulemaking had met these tests. The delicate balance between scientific knowledge and political values was disrupted.

The events described here illustrate the need to better shield agency decisions from direct political intervention or to provide the state with the ability to defend its decisions before the public so that all the facts and views are considered. State agencies need to be better empowered to participate fully in public policy processes, particularly in the legislative and electoral arenas. If these agencies, which have the explicit responsibility for creating a public record and ensuring that public policy decisions are based on consideration of the full record, are disenfranchised or circumvented the expression of political values will not inform the process in a helpful way but will distort and overwhelm it. In the absence of such additional checks and balances politics will continue to smother science rather than coexist with it in constructive tension.

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