



Federal Register

**Tuesday,
November 14, 2000**

Part II

Department of Labor

**Occupational Safety and Health
Administration**

**29 CFR Part 1910
Ergonomics Program; Final Rule**

DEPARTMENT OF LABOR

Occupational Safety and Health Administration

29 CFR Part 1910

[Docket No. S-777]

RIN 1218-AB36

Ergonomics Program

AGENCY: Occupational Safety and Health Administration (OSHA), Department of Labor.

ACTION: Final rule.

SUMMARY: The Occupational Safety and Health Administration is issuing a final Ergonomics Program standard (29 CFR 1910.900) to address the significant risk of employee exposure to ergonomic risk factors in jobs in general industry workplaces. Exposure to ergonomic risk factors on the job leads to musculoskeletal disorders (MSDs) of the upper extremities, back, and lower extremities. Every year, nearly 600,000 MSDs that are serious enough to cause time off work are reported to the Bureau of Labor Statistics by general industry employers, and evidence suggests that an even larger number of non-lost worktime MSDs occur in these workplaces every year.

The standard contains an "action trigger," which identifies jobs with risk factors of sufficient magnitude, duration, or intensity to warrant further examination by the employer. This action trigger acts as a screen. When an employee reports an MSD, the employer must first determine whether the MSD is an MSD incident, defined by the standard as an MSD that results in days away from work, restricted work, medical treatment beyond first aid, or MSD symptoms or signs that persist for 7 or more days. Once this determination is made, the employer must determine whether the employee's job has risk factors that meet the standard's action trigger. The risk factors addressed by this standard include repetition, awkward posture, force, vibration, and contact stress. If the risk factors in the employee's job do not exceed the action trigger, the employer does not need to implement an ergonomics program for that job.

If an employee reports an MSD incident and the risk factors of that employee's job meet the action trigger, the employer must establish an ergonomics program for that job. The program must contain the following elements: hazard information and reporting, management leadership and employee participation, job hazard

analysis and control, training, MSD management, and program evaluation. The standard provides the employer with several options for evaluating and controlling risk factors for jobs covered by the ergonomics program, and provides objective criteria for identifying MSD hazards in those jobs and determining when the controls implemented have achieved the required level of control.

The final standard would affect approximately 6.1 million employers and 102 million employees in general industry workplaces, and employers in these workplaces would be required over the ten years following the promulgation of the standard to control approximately 18 million jobs with the potential to cause or contribute to covered MSDs. OSHA estimates that the final standard would prevent about 4.6 million work-related MSDs over the next 10 years, have annual benefits of approximately \$9.1 billion, and impose annual compliance costs of \$4.5 billion on employers. On a per-establishment basis, this equals approximately \$700; annual costs per problem job fixed are estimated at \$250.

DATES: This final rule becomes effective on January 16, 2001.

Compliance. Start-up dates for specific provisions are set in paragraph (w) of § 1910.900. However, affected parties do not have to comply with the information collection requirements in the final rule until the Department of Labor publishes in the **Federal Register** the control numbers assigned by the Office of Management and Budget (OMB). Publication of the control numbers notifies the public that OMB has approved these information collection requirements under the Paperwork Reduction Act of 1995.

ADDRESSES: In compliance with 28 U.S.C. 2112(a), the Agency designates the Associate Solicitor for Occupational Safety and Health, Office of the Solicitor, Room S-4004, U.S. Department of Labor, 200 Constitution Avenue, NW., Washington, DC 20210, as the recipient of petitions for review of the standard.

FOR FURTHER INFORMATION CONTACT: OSHA's Ergonomics Team at (202) 693-2116, or visit the OSHA Homepage at www.osha.gov.

SUPPLEMENTARY INFORMATION:**Table of Contents**

The preamble and standard are organized as follows:

- I. Introduction
- II. Events Leading to the Standard
- III. Pertinent Legal Authority
- IV. Summary and Explanation

- V. Health Effects
- VI. Risk Assessment
- VII. Significance of Risk
- VIII. Summary of the Final Economic Analysis and Final Regulatory Flexibility Analysis
- IX. Unfunded Mandates Analysis
- X. Environmental Impact Statement
- XI. Additional Statutory Issues
- XII. Procedural Issues
- XIII. Federalism
- XIV. State Plan States
- XV. OMB Review under the Paperwork Reduction Act of 1995
- XVI. List of Subjects in 29 CFR Part 1910
- XVII. The Final Ergonomics Program Standard

References to documents, studies, and materials in the rulemaking record are found throughout the text of the preamble. Materials in the docket are identified by their Exhibit numbers, as follows: "Ex. 26-1" means Exhibit 26-1 in Docket S-777. A list of the Exhibits and copies of the Exhibits are available in the OSHA Docket Office.

I. Introduction*A. Overview*

This preamble discusses the data and events that led OSHA to issue the final Ergonomics Program standard (Section II), and the Agency's legal authority for promulgating the rule (Section III). This discussion is followed by a detailed paragraph-by-paragraph summary and explanation of the final rule, including the Agency's reasons for including each provision and OSHA's responses to the many substantive issues that were raised in the proposal and during the rulemaking (Section IV).

The summary and explanation of the standard is followed by a lengthy discussion of the evidence on the health effects that are associated with worker exposure to MSD hazards (Section V). The next section discusses the nature and degree of ergonomic-related risks confronting workers in general industry jobs (Section VI), and assesses the significance of those risks (Section VII). The preamble also contains a summary of the Final Economic and Final Regulatory Flexibility Analysis (Section VIII). Finally, the preamble describes the information collections associated with the final standard (Section XV).

B. The Need for an Ergonomics Program Standard

Work-related musculoskeletal disorders (MSDs) currently account for one-third of all occupational injuries and illnesses reported to the Bureau of Labor Statistics (BLS) by employers every year. Although the number of MSDs reported to the BLS, like all occupational injuries and illnesses, has declined by more than 20% since 1992,

these disorders have been the largest single job-related injury and illness problem in the United States for the last decade, consistently accounting for 34% of all reported injuries and illnesses. In 1997, employers reported a total of 626,000 lost worktime MSDs to the BLS, and these disorders accounted for \$1 of every \$3 spent for workers' compensation in that year. This means that employers are annually paying more than \$15 billion in workers' compensation costs for these disorders, and other expenses associated with work-related MSDs, such as the costs of training new workers, may increase this total to \$45 billion a year. Workers with severe MSDs often face permanent disability that prevents them from returning to their jobs or handling simple, everyday tasks like combing their hair, picking up a baby, or pushing a shopping cart. For example, workers who must undergo surgery for work-related carpal tunnel syndrome often lose 6 months or more of work.

Thousands of companies have taken action to address and prevent these problems. OSHA estimates that 46 percent of all employees but only 16 percent of all workplaces in general industry are already protected by an ergonomics program, because their employers have voluntarily elected to implement an ergonomics program. (The difference in these percentages shows that many large companies, who employ the majority of the workforce, already have these programs, and that many smaller employers have not yet implemented them.) Based on its review of the evidence in the record as a whole, OSHA concludes that the final standard is needed to protect employees in general industry workplaces who are at significant risk of incurring a work-related musculoskeletal disorder but are not currently protected by an ergonomics program.

C. The Science Supporting the Standard

A substantial body of scientific evidence supports OSHA's effort to provide workers with ergonomic protection (see the Health Effects, Risk Assessment, and Significance of Risk sections (Sections V, VI, and VII, respectively) of this preamble, below). This evidence strongly supports two basic conclusions: (1) There is a positive relationship between work-related musculoskeletal disorders and employee exposure to workplace risk factors, and (2) ergonomics programs and specific ergonomic interventions can substantially reduce the number and severity of these injuries.

In 1998, the National Research Council/National Academy of Sciences

found a clear relationship between musculoskeletal disorders and work and between ergonomic interventions and a decrease in the number and severity of such disorders. According to the Academy, "Research clearly demonstrates that specific interventions can reduce the reported rate of musculoskeletal disorders for workers who perform high-risk tasks" (*Work-Related Musculoskeletal Disorders: The Research Base*, ISBN 0-309-06327-2 (1998)). A scientific review of hundreds of peer-reviewed studies involving workers with MSDs by the National Institute for Occupational Safety and Health (NIOSH 1997) also supports this conclusion.

The evidence, which is comprised of peer-reviewed epidemiological, biomechanical and pathophysiological studies as well as other published evidence, includes:

- II. More than 2,000 articles on work-related MSDs and workplace risk factors;
- II. A 1998 study by the National Research Council/National Academy of Sciences on work-related MSDs;
 - A critical review by NIOSH of more than 600 epidemiological studies addressing the effects of exposure to workplace risk factors (1997);
 - A 1997 General Accounting Office report of companies with ergonomics programs;
- I. Other evidence and analyses in the Health Effects section of the preamble to the final rule;
- II. Hundreds of case studies from companies with successful ergonomics programs; and
- I. Testimony and evidence submitted to the record by expert witnesses, workers, safety and health professionals, and others, which is discussed throughout the preamble to the final rule.

Taken together, this evidence indicates that:

- High levels of exposure to ergonomic risk factors on the job lead to an increased incidence of work-related MSDs among exposed workers;
- Reducing exposure to physical risk factors on the job reduces the incidence and severity of work-related MSDs;
- Many work-related MSDs are preventable; and
- Ergonomics programs are demonstrably effective in reducing risk, decreasing exposure and protecting workers against work-related MSDs.

As with any scientific field, research in ergonomics is ongoing. The National Academy of Sciences is currently undertaking another review of the

science in order to expand on its 1998 study. OSHA has examined all of the research results in the record of this rulemaking in order to ensure that the final Ergonomics Program standard is based on the best available and most current evidence. Although more research is always desirable, OSHA finds that more than enough evidence already exists to demonstrate the need for a final standard. In the words of the American College of Occupational and Environmental Medicine, the world's largest occupational medical society, "there is an adequate scientific foundation for OSHA to proceed * * * and, therefore, no reason for OSHA to delay the rulemaking process * * *."

D. Information OSHA Is Providing To Help Employers Address Ergonomic Hazards

Much literature and technical expertise on ergonomics already exists and is available to employers, both through OSHA and a variety of other sources. For example:

- Information is available from OSHA's ergonomics Web page, which can be accessed from OSHA's World Wide Web site at <http://www.osha.gov> by scrolling down and clicking on "Ergonomics";
- Many publications, informational materials and training courses, which are available from OSHA through Regional Offices, OSHA-sponsored educational centers, OSHA's state consultation programs for small businesses, and through the Web page;
- Publications on ergonomics programs, which are available from NIOSH at 1-800-35-NIOSH. NIOSH's Web page is also "linked" to OSHA's ergonomics Web page;
- OSHA's state consultation programs, which will provide free on-site consultation services to employers requesting help in implementing their ergonomics programs; and
- OSHA-developed compliance assistance materials, which are available as non-mandatory appendices to the standard, electronic compliance assistance training materials (e-cats) on specific tasks (e.g., lifting) or work environments (e.g., nursing homes). OSHA is also making several publications available on the web, such as the Easy Ergonomics Booklet, Fact Sheets, and so on. These materials can be obtained by accessing OSHA's Internet home page at www.OSHA.gov.

II. Events Leading to the Development of the Final Standard

In this final standard, OSHA has relied on its own substantial experience with ergonomics programs, the

experience of private firms and insurance companies, and the results of research studies conducted during the last 30 years. Those experiences clearly show that: (1) Ergonomics programs are an effective way to reduce occupational MSDs; (2) ergonomics programs have consistently achieved that objective; (3) OSHA's standard is consistent with these programs; and (4) the standard is

firmly grounded in the OSH Act and OSHA policies and experience. The primary lesson to be learned is that employers with effective, well-managed ergonomics programs achieve significant reductions in the severity and number of work-related MSDs that their employees experience. These programs also generally improve productivity and employee morale and

reduce employee turnover and absenteeism (see Section VI of this preamble, and Chapters IV (Benefits) and V (Costs of Compliance) of OSHA's Final Economic Analysis (Ex. 28-1)).

OSHA's long experience with ergonomics is apparent from the chronology below. As this table shows, the Agency has been actively involved in ergonomics for more than 20 years.

OSHA Ergonomics Chronology

March 1979	OSHA hires its first ergonomist.
Early 1980s	OSHA begins discussing ergonomic interventions with labor, trade associations and professional organizations. OSHA issues citations to Hanes Knitwear and Samsonite for ergonomic hazards.
August 1983	The OSHA Training Institute offers its first course in ergonomics.
February 1986	OSHA publishes "Working Safely with Video Display Terminals," its first publication concerning ergonomics as it applies to the use of computer technology
May 1986	OSHA begins a pilot program to reduce back injuries through review of injury records during inspections and recommendations for job redesign using NIOSH's Work Practices Guide for Manual Lifting.
October 1986	The Agency publishes a Request for Information on approaches to reduce back injuries resulting from manual lifting. (57 FR 34192)
November 1988	OSHA/Iowa Beef Processors reach first corporate-wide settlement to reduce ergonomic hazards at 8 IBP locations nationwide.
July 1990	OSHA/UAW/Ford corporate-wide settlement agreement commits Ford to reduce ergonomic hazards in 96 percent of its plants through a model ergonomics program.
August 1990	The Agency publishes "Ergonomics Program Management Guidelines for Meatpacking Plants."
Fall 1990	OSHA creates the Office of Ergonomics Support and hires more ergonomists.
November 1990	OSHA/UAW/GM sign agreement bringing ergonomics programs to 138 GM plants employing more than 300,000 workers. Throughout the early 90s, OSHA signed 13 more corporate-wide settlement agreements to bring ergonomics programs to nearly half a million more workers.
July 1991	OSHA publishes "Ergonomics: The Study of Work," as part of a nationwide education and outreach program to raise awareness about ways to reduce musculoskeletal disorders.
July 1991	More than 30 labor organizations petition Secretary of Labor to issue an Emergency Temporary Standard on ergonomics.
January 1992	OSHA begins a special emphasis inspection program on ergonomic hazards in the meatpacking industry.
April 1992	Secretary of Labor denies petition for an Emergency Temporary Standard but commits to moving forward with section 6 (b) rulemaking.
August 1992	OSHA publishes an Advance Notice of Proposed Rulemaking on ergonomics.
1993	OSHA conducts a major survey of general industry and construction employers to obtain information on the extent of ergonomics programs in industry and other issues.
March 1995	OSHA begins a series of meetings with stakeholders to discuss approaches to a draft ergonomics standard.
January 1997	OSHA/NIOSH conference on successful ergonomic programs held in Chicago.
April 1997	OSHA introduces the ergonomics web page on the Internet.
February 1998	OSHA begins a series of national stakeholder meetings about the draft ergonomics standard under development.
March 1998	OSHA releases a video entitled "Ergonomic Programs That Work."
February 1, 1999	OSHA begins small business (Small Business Regulatory Enforcement Fairness Act (SBREFA) review of its draft ergonomics rule, and makes draft regulatory text available to the public.
March 1999	OSHA/NIOSH/Institute of Industrial Engineers hold Applied Ergonomics Conference in Houston
April 30, 1999	OSHA's Assistant Secretary receives the SBREFA report on the draft ergonomics program proposal, and the Agency begins to address the concerns raised in that report.
November 23, 1999	OSHA publishes its proposed ergonomics program standard.
March 2000	OSHA/NIOSH/Institute of Industrial Engineers hold Applied Ergonomics Conference in Los Angeles
March-May 2000	OSHA holds 9 weeks of public hearings and receives 18,337 pages of testimony from 714 witnesses.
November 23, 1999 through August 10, 2000	OSHA receives nearly 11,000 comments and briefs consisting of nearly 50,000 pages collectively, into the docket of the ergonomics rulemaking.
October 27, 2000	The Occupational Safety and Health Review Commission finds that manual lifting of nursing home patients is a known and recognized risk factor for lower back pain.

A. Regulatory and Voluntary Guidelines Activities

In 1989, OSHA issued the *Safety and Health Program Management Guidelines* (54 FR 3904, Jan. 26, 1989), which are voluntary program management guidelines to assist employers in developing effective safety and health programs. These program management guidelines, which are based on the widely accepted safety and

health principles of management commitment and employee involvement, worksite hazard analysis, hazard prevention and control, and employee training, also serve as the foundation for effective ergonomics programs. In August 1990, OSHA issued the *Ergonomics Program Management Guidelines for Meatpacking Plants* (Ex. 2-13), which utilized the four program components from the safety and health

management guidelines, supplemented by other ergonomics-specific program elements (e.g., medical management). The ergonomic guidelines were based on the best available scientific evidence, the best practices of successful companies with these programs, advice from the National Institute for Occupational Safety and Health (NIOSH), the scientific literature, and OSHA's experience with enforcement

actions. Many commenters in various industries have said that they have implemented their ergonomics programs primarily on the basis of the OSHA ergonomics guidelines (Exs. 3-50, 3-61, 3-95, 3-97, 3-113, 3-121, 3-125), and there has been general agreement among stakeholders that these program elements should be included in any OSHA ergonomics standard (Exs. 3-27, 3-46, 3-51, 3-61, 3-89, 3-95, 3-113, 3-119, 3-160, 3-184).

OSHA also has encouraged other efforts to address the prevention of work-related musculoskeletal disorders. For example, OSHA has actively participated in the work of the ANSI Z-365 Committee, which was entrusted with the task of developing a consensus standard for the control of cumulative trauma disorders. The Agency also has sponsored and participated in more than 11 Ergonomics Best Practices conferences.

1. Petition for Emergency Temporary Standard

On July 31, 1991, the United Food and Commercial Workers Union (UFCW), along with the AFL-CIO and 29 other labor organizations, petitioned OSHA to take immediate action to reduce the risk to employees of exposure to ergonomic hazards (Ex. 2-16). The petition requested that OSHA issue an emergency temporary standard (ETS) on "Ergonomic Hazards to Protect Workers from Work-Related Musculoskeletal Disorders (Cumulative Trauma Disorders)" under section 6(c) of the Act. The petitioners also requested, consistent with section 6(c), that OSHA promulgate, within 6 months of issuance of the ETS, a permanent standard to protect workers from cumulative trauma disorders in both general industry and construction.

Based on the statutory constraints and legal requirements governing issuance of an ETS, OSHA calculated that the basis to support issuance of an ETS was not sufficient. Accordingly, on April 17, 1992, OSHA decided not to issue an ETS on ergonomic hazards (Ex. 2-29). OSHA agreed with the petitioners, however, that available information, including the Agency's experience and information in the ETS petition and supporting documents, supported the initiation of a rulemaking, under section 6(b)(5) of the Act, to address ergonomic hazards.

2. Advance Notice of Proposed Rulemaking

At the time OSHA issued the *Ergonomic Program Management Guidelines for Meatpacking Plants* (Ex. 2-13), the Agency also indicated its

intention to begin the rulemaking process by asking the public for information about musculoskeletal disorders (MSDs). The Agency indicated that this could be accomplished through a Request for Information (RFI) or an Advance Notice of Proposed Rulemaking (ANPR) consistent with the Administration's Regulatory Program. Subsequently, OSHA formally placed ergonomics rulemaking on the regulatory agenda (Ex. 2-17) and decided to issue an ANPR on this topic.

In June 1991, OSHA sent a draft copy of the proposed ANPR questions for comment to 232 parties, including OSHA's advisory committees, labor organizations (including the petitioners), trade associations, occupational groups, and members of the ergonomics community (Ex. 2-18). OSHA requested comments on what questions should be presented in the ANPR. OSHA received 47 comments from those parties. In addition, OSHA met with the Chemical Manufacturers Association, Organization Resources Counselors, Inc., the AFL-CIO and several of its member organizations. OSHA reviewed the comments and submissions received and incorporated relevant suggestions and comments into the ANPR.

On August 3, 1992, OSHA published the ANPR in the **Federal Register** (57 FR 34192), requesting information for consideration in the development of an ergonomics standard. OSHA received 290 comments in response to the ANPR. Those comments have been carefully considered by the Agency in developing the final ergonomics program standard.

3. Outreach to Stakeholders

In conjunction with the process of developing the proposed ergonomics rule, OSHA established various communication and outreach efforts. These efforts were initiated in response to requests by individuals who would be affected by the rule (stakeholders) that they be provided with the opportunity to present their concerns about an ergonomics rule and that they be kept apprized of the efforts OSHA was making in developing a proposed rule. For example, in March and April 1994, OSHA held meetings with industry, labor, professional and research organizations covering general industry, construction, agriculture, healthcare, and the office environment. A list of those attending the meetings and a record of the meetings has been placed in the public record of this rulemaking (Ex. 26-1370).

In March, 1995, OSHA provided a copy of an early draft proposed ergonomics rule and preamble to these

same organizations. Thereafter, during April 1995, OSHA met again with these groups to discuss whether the draft proposed rule had accurately responded to the concerns raised earlier. A summary of the comments has been placed in the public record (Ex. 26-1370).

During 1998, OSHA met with nearly 400 stakeholders to discuss ideas for a proposed standard. The first series of meetings was held in February in Washington, D.C. and focused on general issues, such as the scope of the standard and what elements of an ergonomics program should be included in a standard. The second series of meetings, held in July in Kansas City and Atlanta, focused on what elements and activities should be included in an ergonomics program standard. The third set of meetings was held in September in Washington, D.C. and emphasized revisions to the elements of the proposal based on previous stakeholder input. A summary of those meetings was placed on the OSHA web site and in the public docket (Ex. 26-1370). OSHA solicited input from its stakeholders again the next year, when it posted a working draft of its ergonomics standard after its release for Small Business Regulatory Enforcement Fairness Act (SBREFA) Panel review.

4. Small Business Regulatory Enforcement Fairness Act (SBREFA) Panel

In accordance with SBREFA and to gain insight from employers with small businesses, OSHA, the Office of Management and Budget (OMB), and the Small Business Administration (SBA) created a Panel to review and comment on a working draft of the ergonomics program standard. As required by SBREFA, the Panel sought the advice and recommendations of potentially affected Small Entity Representatives (SERs). A total of 21 SERs from a variety of industries participated in the effort. The working draft and supporting materials (a brief summary of a preliminary economic analysis, the risk assessment, and other materials) were sent to the SERs for their review. On March 24-26, 1999, the Panel participated in a series of discussions with the SERs to answer questions and receive comments. The SERs also provided written comments, which served as the basis of the Panel's final report (Ex. 23). The final SBREFA Panel Report was submitted to the Assistant Secretary on April 30, 1999. The findings and recommendations made by the Panel are addressed in the proposed rule, preamble, and economic analysis (see the discussion in Section

VIII, Summary of the Final Economic Analysis and Regulatory Flexibility Analysis).

5. Issuance of Proposed Rule

On November 23, 1999, OSHA published a proposed ergonomics program standard to address the significant risk of work-related musculoskeletal disorders (MSDs) confronting employees in various jobs in general industry workplaces (64 FR 65768). The proposed standard would have required general industry employers covered by the standard to establish an ergonomics program containing some or all of the elements typical of successful ergonomics programs: management leadership and employee participation, job hazard analysis and control, hazard information and reporting, training, MSD management, and program evaluation, depending on the types of jobs in their workplace and whether a musculoskeletal disorder covered by the standard had occurred. Employers whose employees perform manufacturing or manual handling jobs were required to implement a basic ergonomics program in those jobs.

The basic program would have included the following elements: management leadership and employee participation, and hazard information and reporting. If an employee in a manufacturing or manual handling job experienced an OSHA-recordable MSD determined by the employer to be covered by the standard, the employer would have been required to implement a full ergonomics program for that job and all other jobs in that establishment involving the same physical work activities. The full program would have included, in addition to the elements in the basic program, a hazard analysis of the job; the implementation of engineering, work practice or administrative controls to eliminate or substantially reduce the hazards identified in that job; training the employees and their supervisors in that job; and providing MSD management, including where appropriate, temporary work restrictions and access to a health care provider or other professional if a covered MSD occurred. General industry employees in jobs other than manufacturing or manual handling who experienced a covered MSD determined by the employer to be covered by the standard also would have been required by the proposal to implement an ergonomics program for those jobs.

6. Solicitation of Public Comment on the Proposed Rule

The notice of proposed rulemaking invited public comment on any aspects of the proposed ergonomics standard until the close of the comment period ending on February 1, 2000.

After receiving a number of requests for an extension of the written comment period, OSHA published a **Federal Register** notice (65 FR 4795) to extend the deadline for public, pre-hearing comments to March 2, 2000 and to reschedule the informal public hearings in Washington, D.C. to begin March 13, 2000 and run through April 7, 2000. Subsequently, the Agency published a **Federal Register** notice (65 FR 19702) to re-schedule and extend the hearings in Portland, OR by 2 days, from April 24, 2000 through May 3, 2000. In addition, a final week of informal public hearings (65 FR 13254) was scheduled to take place in Washington, D.C. from May 8, 2000 through May 12, 2000.

During the early stages of the public comment period, it was brought to OSHA's attention that the proposed ergonomics program standard published on November 23, 1999 (64 FR 65768) did not provide an analysis of the economic impacts of the rule on State and local governments, the United States Postal Service, or the railroads. To provide this additional information and analysis, OSHA published a supplement (65 FR 33263) to the Agency's Preliminary Economic Analysis and Initial Regulatory Flexibility Analysis (Ex. 28-1) of the economic impact of the Ergonomics Program Rule. OSHA also established pre-hearing and post-hearing comment periods ending June 22, 2000 and August 10, 2000, respectively, to address the analysis of economic impacts in those three industries. An informal public hearing was held in Atlanta, GA on July 7, 2000, to provide an opportunity for witnesses to question the OSHA Panel on the supplemental analysis.

Collectively, the public hearings concerning the proposed ergonomics program standard generated 18,337 pages of transcript based on testimony from 714 hearing witnesses, including those representing public entities, private industry, industry associations, labor unions and private individuals.

More than 5,900 pre-hearing comments were filed in response to the proposed ergonomics program standard. A 45-day post-hearing comment period and a 45-day summary and brief period were established, with final briefs due to be postmarked no later than August 10, 2000. A total of 240 post hearing

submissions were received. Collectively, a total of nearly 11,000 exhibits consisting of nearly 50,000 pages were submitted over the whole period.

B. Other OSHA Efforts In Ergonomics

In 1996, OSHA developed a strategy to address ergonomics through a four-pronged program including training, education, and outreach activities; study and analysis of the work-related hazards that lead to MSDs; enforcement; and rulemaking.

1. Training, Education, and Outreach

a. Training. The OSHA ergonomics web page has been an important part of the Agency's education and outreach effort. Other OSHA efforts in training, education and outreach include the following:

- Grants to train workers and employees about hazards and hazard abatement.
- Three training courses in ergonomics through the OSHA Training Institute available for OSHA compliance officers, one of which is open to the public;
- One day training for nursing home operators, at more than 500 nursing homes in each of seven targeted states;
- Booklets on ergonomics, ergonomics programs, and computer workstations, such as "Ergonomics Program Management Guidelines for Meatpacking Plants" and "Ergonomics: the Study of Work," both of which are available on OSHA's Website.
- Videotapes on ergonomics programs in general industry and specifically in nursing homes.

OSHA has awarded almost \$3 million for 25 grants addressing ergonomics, including lifting hazards in healthcare facilities and hazards in the red meat and poultry industries. These grants have enabled workers and employers to identify ergonomic hazards and implement workplace changes to abate these hazards.

Some grant program highlights follow:

- The United Food and Commercial Workers International Union (UFCW) conducted joint labor-management ergonomics training at a meatpacking plant that resulted in a major effort at the plant to combat cumulative trauma disorders. The program was so successful that management asked the UFCW to conduct the ergonomics training and work with management at some of its other facilities.
- The University of California at Los Angeles (UCLA) and the Service Employees International Union (SEIU) both had grants for preventing lifting injuries in nursing homes. SEIU developed a training program that was used by UCLA to train nursing home workers in California. UCLA also worked with some national back injury prevention

programs. At least one of the nursing home chains has replicated the program in other states.

- Mercy Hospital in Des Moines, Iowa, had a grant to prevent lifting injuries in hospitals. It trained over 3,000 hospital workers in Des Moines and surrounding counties. It had a goal of reducing lost work days by 15 percent. The goal was surpassed, and, six months after the training, none of those trained experienced a lost workday due to back injury.
- Hunter College in New York City trains ergonomics trainers for the United Paperworkers International Union. The trainers then return to their locals and conduct ergonomics training for union members. As a result of this training, changes are being made at some workplaces. Examples include purchasing new equipment that eliminates or reduces workers' need to bend or twist at the workstation, rotating workers every two hours with a ten-minute break before each rotation, and modifying workstations to reduce worker strain.

b. Education and Outreach. To provide a forum to discuss ergonomic programs and to augment information in the literature with the experience of companies of different sizes and from a variety of industries, OSHA and NIOSH sponsored the first in a series of conferences that brought industry, labor, researchers, and consultants together to discuss what works in reducing MSDs. The 1997 OSHA and NIOSH conference was followed by 11 more regional conferences across the country. OSHA and NIOSH held the second national conference on ergonomics in March of 1999. More than 200 presentations were given at the conferences on how companies have successfully reduced MSDs. Presentations were made by personnel from large and small companies in many different industries.

Other examples of successful ergonomics programs have come from OSHA's Voluntary Protection Program (VPP). The VPP program was established by OSHA to recognize employers whose organizations have exemplary workplace safety health programs. Several sites that have been accepted into VPP have excellent ergonomics programs.

In addition to OSHA's enforcement efforts, the Agency's Ergonomics Program Management Guidelines for Meatpacking Plants ("Guidelines") (Ex. 2-13) are viewed by many as essential to the implementation of successful workplace programs addressing ergonomic hazards. For example, in contrasting OSHA's proposal to the *Guidelines*, IBP Inc.'s Bob Wing acknowledged that the *Guidelines* had been successful (Ex. 30-4046, p.1). Similarly, the American Meat Institute ("AMI"), the main representative for the

U.S. meat industry, including 276 meat packers and processors, who operate 559 facilities, acknowledged that the industry worked with OSHA on the *Guidelines*, and has been using them for nearly ten years (Ex. 30-3677, p.1). The AMI notes that the *Guidelines* work and that the industry has made substantial progress in addressing ergonomic issues since development of the *Guidelines* (*id.* at 1-4). The AMI recommended that the *Guidelines* be extended throughout general industry (*id.* at 4). The utility of OSHA's *Guidelines* also was hailed by the United Food and Commercial Workers' Union, which noted that upon publication of the *Guidelines*, industry began to respond both from the standpoint of technology as well as ergonomics programs (Ex. 32-210-2, pp. 25-26). The success of the *Guidelines* led to their use and acceptance in other industries. The poultry industry appears to have secured substantial reductions in chronic MSDs from adherence to the principles in the document (Ex. 30-3375, p.1.).

2. Ergonomics Best Practices Conferences

During the period from Sept. 17, 1997 through Sept. 29, 1999, OSHA and its Regional Education Centers co-sponsored 11 Ergonomics Best Practices Conferences. These Conferences were designed to provide good examples of practical and inexpensive ergonomics interventions implemented by local companies. The concept was that if OSHA and its Regional partners could initiate the development of a network of local employers, contractors, and educators to provide practical information to solve ergonomics problems, it would be assisting employers in providing a workplace for employees that would be "free of recognized safety and health hazards." To date, attendance has exceeded 2,400 participants, including employers, contractors, and employees. Finally, OSHA has made hundreds of outreach presentations to labor, trade associations, large and small businesses, and professional organizations during the development of the proposed rule.

3. Enforcement

In the absence of a federal OSHA ergonomics standard, OSHA has addressed ergonomics in the workplace under the authority of section 5(a)(1) of the OSHA Act. This section is referred to as the General Duty Clause and requires employers to provide work and a work environment free from recognized hazards that are causing or are likely to cause death or serious physical harm.

OSHA has successfully issued over 550 ergonomics citations under the General Duty Clause. In the majority of these cases, cited employers have recognized that the implementation of ergonomics programs is in their best interest and that of their employees. Examples of companies cited under the General Duty Clause for ergonomics hazards and which then realized a substantial reduction in injuries and illnesses after implementing ergonomics programs include: the Ford Motor Company, Empire Kosher Foods, Sysco Foods, and the Kennebec Nursing Home.

Two cases have been decided so far by the Occupational Safety and Health Review Commission.

In the first general duty clause case litigated by the Occupational Safety and Health Review Commission, *Pepperidge Farm*, the Review Commission recognized that excessive lifting and excessive repetitions were recognized ergonomic hazards that had caused and were likely to cause serious physical harm to employees whose work tasks required such activity. The Commission specifically noted that carpal tunnel syndrome and other soft tissue injuries found at the cited plant were caused by work tasks; the Commission relied principally on direct medical evidence, expert medical opinion, the incidence of injury, and the epidemiological studies and testimony in the record in reaching this finding. The Commission also agreed that an employer could be required to undertake a process-based, incremental approach to abating ergonomic hazards. The citations relating to the excessive lifting hazard were affirmed by the Commission, while those relating to the excessive repetitions were vacated based on a finding that the Secretary had failed to prove feasible means of abatement in addition to those found to have been undertaken by the company.

In the second general duty clause case litigated by the Commission, *Beverly Enterprises*, the Commission held that the company's practices for lifting patients in its nursing homes exposed its nursing assistants to a serious recognized hazard. Beverly's nursing assistants suffered a disproportionate number of cases of lower back pain, which was often so severe that the employee would be off work for long periods of time, in some cases six months to over a year. The Commission found that manual lifting of nursing home residents is a known and recognized risk factor for lower back pain and that the company recognized the hazard.

When serious physical harm cannot be documented in the work environment but hazards have been identified by OSHA, compliance officers both discuss the hazards with the employer during the closing conference of an inspection and write a letter to the employer. These letters are called "Ergonomic Hazard Alert Letters." From fiscal year 1997 through October 3, 2000, approximately 498 such letters have been sent to public and private sector employers under Section 20 of the OSH Act. These letters involve no penalty and are strictly consultative in nature; they reflect OSHA's responsibility to provide consultation on ergonomics to employers. Ergonomic Hazard Alert Letters have been sent to employers in approximately 50% of OSHA's ergonomic inspections.

Since ergonomic solutions vary from one industry to another, OSHA has provided both general and industry-specific training to its compliance officers. Currently, the OSHA Training Institute (OTI) in Des Plaines, IL, offers three main ergonomic courses to OSHA compliance staff: Principles of Ergonomics Applied to Work-Related Musculoskeletal and Nerve Disorders (#225); Ergonomics Compliance (#325), an advanced ergonomics course; and Nursing Home Enforcement Training (#840). A fourth course, Healthcare (#336), has been in development and will be piloted on November 14, 2000 through November 17, 2000. That course will be designed to help OSHA compliance officers, as well as employers, to identify ergonomic and other hazards within healthcare facilities, with a specific emphasis on hospitals. Over 600 OSHA compliance staff members have been trained in these courses within the past three years alone. The courses typically cover three weeks of material.

Currently, the Principles of Ergonomics Applied to Work-Related Musculoskeletal and Nerve Disorders course also is open to the public through OTI's 12 Regional Education Centers throughout the United States. Since that course has been available nationwide, public interest has been high, and the Education Centers have been scheduling courses on a regular basis to meet the constant demand. Although the new Healthcare Course is available currently only to OSHA compliance officers, after the pilot period ends it will be open to the public on a limited basis.

In addition to education and training opportunities, OSHA has appointed one Regional Ergonomics Coordinator in each of OSHA's 10 regional offices, and one Area Office Ergonomics Coordinator

in each area office. These coordinators meet on a monthly basis to discuss recent inspections, case developments, and scientific literature on ergonomics; to share knowledge of ergonomic solutions; and to ensure that enforcement resources are provided to compliance staff for enforcement. A PhD level, professionally certified ergonomist serves as the National Ergonomics Enforcement Coordinator in OSHA's Directorate of Compliance Programs.

4. Corporate-Wide Settlement Agreements

Among the companies that have been cited for MSD hazards, 13 companies covering 198 facilities agreed to enter into corporate-wide settlement agreements with OSHA. These agreements were primarily in the meat processing and auto assembly industries, but there also were agreements with telecommunications, textile, grocery warehousing, and paper companies. As part of these settlement agreements, the companies agreed to develop ergonomics programs based on OSHA's *Meatpacking Guidelines* (Ex. 2-13) and to submit information on the progress of their programs.

OSHA held a workshop in March 1999, in which 10 companies described their experience under their settlement agreement and with their ergonomics programs. All the companies that reported results to OSHA showed a substantially lower severity rate for MSDs since implementing their programs (Ex. 26-1420). In addition, most companies reported lower workers' compensation costs, as well as higher productivity and product quality. A report from the March 1999 workshop on corporate-wide settlement agreements summarizing the results achieved by the 13 companies involved has been placed in the docket (Ex. 26-1420). Only 5 of the 13 companies consistently reported the number of MSD cases or MSD case rates. All five companies that reported data on MSD-related lost workday rates showed a significant decline in the number of lost workdays. None of the companies that reported severity statistics showed an increase in lost workdays as a result of the ergonomics program.

Similarly, the success of OSHA enforcement coupled with settlements requiring comprehensive ergonomics programs was confirmed by the United Food and Commercial Workers International Union. The union recognized that " * * * [t]he majority of our successful programs in the meatpacking and poultry industries were propelled by OSHA enforcement.

Ergonomic settlement agreements and corporate-wide settlement agreements (CWSAs) * * * demonstrate industry recognition of the existence of MSD hazards and the elements of a program to prevent worker injuries arising from exposure to these hazards" (Ex. 32-210-2, p. 5). The UFCW confirmed the efficacy of these agreements and resulting programs through a number of examples. One was that of IBP's Dakota City meatpacking plant that implemented a comprehensive program as a result of citations and subsequent settlement agreement. Cost savings attributed to the program " * * * were realized in the following areas: [employee] turnover was down significantly * * *; [MSD] incidence dropped dramatically; surgeries fell; [and] workers' compensation costs were reduced significantly" (*id.* at 9).

C. Summary

As this review of OSHA's activities in the last 20 years shows, the Agency has considerable experience in addressing ergonomics issues. OSHA also has used all of the tools authorized by the Act—enforcement, consultation, training and education, compliance assistance, the Voluntary Protection Programs, and the issuance of voluntary guidelines—to encourage employers to address musculoskeletal disorders, the single largest occupational safety and health problem in the United States today. These efforts, and the voluntary efforts of employers and employees, have led to the recent 5-year decline in the number of reported lost workday ergonomics injuries. However, in 1997, there were still more than 626,000 lost workday MSD injuries and illnesses reported.

Promulgation of an ergonomics program standard will add the only tool the Agency has so far not deployed against this hazard—a mandatory standard—to these other OSHA and employer-driven initiatives. Over the first 10 years of the standard's implementation, OSHA predicts that more than 3 million lost workday musculoskeletal disorders will be prevented in general industry. Ergonomics programs can lead directly to improved product quality by reducing errors and rejection rates. In an OSHA survey of more than 3,000 employers, 17 percent with ergonomics programs reported that their programs had improved product quality. In addition, a large number of case studies reported in the literature describe quality improvements. Thus, in addition to better safety and health for workers, the standard will save employers money, improve product quality, and

reduce employee turnover and absenteeism.

Section III. Legal Authority

A. General Criteria for OSH Act Standards

The purpose of the Occupational Safety and Health Act ("OSH Act") is "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." 29 U.S.C. 651(b). To further this goal, Congress authorized the Secretary of Labor to promulgate and enforce occupational safety and health standards. Section 6(b) of the OSH Act, 29 U.S.C. 655(b) (authorizing promulgation of standards pursuant to notice and comment); 654(b) (requiring employers to comply with OSH Act standards). This standard is being issued pursuant to section 6(b).

The OSH Act defines an "occupational safety and health standard" as "a standard which requires conditions, or the adoption or use of one or more practices, means, methods, operations, or processes, reasonably necessary or appropriate to provide safe or healthful employment and places of employment." Section 3(8) of the Act, 29 U.S.C. 652(8).

A standard is "reasonably necessary or appropriate" within the meaning of section 3(8) if it (1) substantially reduces or eliminates a significant risk of material impairment to worker health, safety, or functional capacity; (2) is technologically and economically feasible to implement; (3) is cost effective; (4) is consistent with prior agency action or supported by a reasoned justification for departing from prior agency action; (5) is supported by substantial evidence; and (6) is at least as protective as any applicable national consensus standard. 58 FR 16612, 16614 (March 30, 1993). To fulfill the congressional purpose underlying the Act, all OSH Act standards must be highly protective. *Id.* at 16614-15.

OSHA's determination that a particular level of risk is "significant" is based largely on policy considerations. *See Industrial Union Dep't. AFL-CIO v. Marshall*, 448 U.S. 607, 656 n. 62 (1980) (Benzene). The factors that enter into such a determination include the seriousness of the injuries or illnesses a standard will prevent, the likelihood that a particular employee will contract such an injury or illness, and the total number of employees affected. Where the standard seeks to prevent fatal illnesses and injuries, OSHA has generally considered an excess risk of 1 death per 1000 workers over a 45-year

working lifetime as clearly representing a significant risk. *See Benzene*, 448 U.S. at 646; *UAW v. Pendergrass*, 878 F.2d 389, 393 (D.C. Cir. 1989) (Formaldehyde); *Building & Constr. Trades Dep't v. Brock*, 838 F.2d 1258, 1264 (D.C. Cir. 1988) (Asbestos). But nonfatal injuries and illnesses are often disabling and debilitating, and death is clearly not a precondition to a finding of significant risk of material impairment. *See American Textile Mfrs. Inst. v. Donovan*, 452 U.S. 490, 506 n. 25 (1981) (Cotton Dust) (upholding OSHA's finding that cotton dust exposure at levels that caused chronic and irreversible pulmonary disease presented a significant risk to workers); *AFL-CIO v. OSHA*, 965 F.2d 962, 975 (11th Cir. 1992) (upholding OSHA's finding that "there is a level at which [sensory] irritation becomes so severe that employee health and job performance are seriously threatened."); *Formaldehyde*, 878 F.2d at 396-399 (upholding OSHA's finding that exposure limit of 1 ppm would eliminate significant risk of sensory irritation due to formaldehyde exposure); *United Steelworkers v. Marshall*, 647 F.2d 1189, 1245-51 (D.C. Cir. 1980), cert. denied, 453 U.S. 913 (1981) (Lead I) (upholding OSHA's determination that it was appropriate and necessary to lower lead exposures to reduce cases in which workers experience subclinical effects of lead exposure because such subclinical effects are precursors of serious, lead-related disease); *Forging Indus. Ass'n v. Secretary of Labor*, 773 F.2d 1436, 1444-46 (4th Cir. 1985) (en banc) (Noise) (upholding OSHA's significant risk finding that a substantial percentage of workers exposed to existing workplace noise levels would suffer material noise-induced hearing loss). *See also American Dental Ass'n v. Martin*, 984 F.2d 823, 826 (7th Cir.), cert. denied, 510 U.S. 859 (1993) (Bloodborne Pathogens) (noting that, in addition to causing death, AIDS and Hepatitis B cause protracted pain and disability).

A standard is technologically feasible if the protective measures it requires already exist, can be brought into existence with available technology, or can be created with technology that can reasonably be expected to be developed. *See Cotton Dust*, 452 U.S. at 513; *Lead I*, 647 F.2d at 1272; *American Iron & Steel Inst. v. OSHA*, 939 F.2d 975, 980 (D.C. Cir. 1991) (Lead II).

A standard is economically feasible if industry can absorb or pass on the costs of compliance without threatening the industry's long-term profitability or competitive structure. *See Cotton Dust*,

452 U.S. at 530 n. 55; *Lead I*, 647 F.2d at 1272; *Lead II*, 939 F.2d at 980.

A standard is cost effective if the protective measures it requires are the least costly of the available alternatives that achieve the same level of protection. *Cotton Dust*, 453 U.S. at 514 n. 32; *UAW v. OSHA*, 37 F.3d 665, 668 (D.C. Cir. 1994) (Lockout/Tagout II).

Within the framework of these principles, OSHA has considerable discretion ("virtually unlimited discretion," in the words of the *Lead I* decision, 647 F.2d at 1230) in choosing the measures that are reasonably necessary or appropriate to reduce significant risk. A standard may address the hazards associated with an industry (e.g., logging, 29 CFR 1910.266), a kind of work (e.g., hazardous waste cleanup, 29 CFR 1910.120), a category of equipment (e.g., respirators, 29 CFR 1910.134); an environmental area (e.g., confined spaces, 29 CFR 1910.146), a lack of information (e.g., hazard communication, 29 CFR 1910.1200), a class of harmful agents (e.g., bloodborne pathogens, 29 CFR 1910.1030), or may require general measures reasonably necessary and appropriate for safety (e.g., safety and health programs for construction, 29 CFR 1926.20(b)). Depending on the nature of the safety and health issues, some standards require highly specific control measures. E.g., 29 CFR 1926.652 (excavations). Others require the employer to conduct a hazard assessment and establish measures meant to address the problems found. E.g., 29 CFR 1910.119 (process safety management). A typical standard for a toxic chemical will contain permissible exposure limits, a control hierarchy for reaching those limits, and provisions for assessing exposure, medical examinations, medical removal, and training. E.g., 29 CFR 1910.1025 (lead). Some toxic chemical standards also mandate specific work practices that must be used to control exposures. E.g., 29 CFR 1910.1029 (coke oven emissions); 29 CFR 1926.1101 (asbestos). Vaccination against Hepatitis B is one of the protective measures required by the bloodborne pathogens standard, 29 CFR 1910.1030. Medical removal protection benefits have been mandated when they are needed to encourage employees to participate in medical surveillance. 29 CFR 1910.1025 (lead); 29 CFR 1910.1027 (cadmium); 29 CFR 1910.1048 (formaldehyde); 29 CFR 1910.1052 (methylene chloride). Job hazard analysis and employee training are cornerstones of some OSHA standards. E.g., 29 CFR 1910.147 (lockout/tagout).

Section 6(b)(7) of the Act, 29 U.S.C. 665(b)(7), requires standards to include provisions warning employees of hazards, the means needed to protect themselves against those hazards, and, where appropriate, medical examinations or tests to determine whether the health of employees has been adversely affected:

Any standard promulgated under this subsection shall prescribe the use of labels or other appropriate forms of warning as are necessary to insure that employees are apprised of all hazards to which they are exposed, relevant symptoms and appropriate emergency treatment, and proper conditions and precautions of safe use or exposure. Where appropriate, such standard shall also prescribe suitable protective equipment and control or technological procedures to be used in connection with such hazards and shall provide for monitoring or measuring employee exposure at such locations, and in such manner as may be necessary for the protection of employees. In addition, where appropriate, any such standard shall prescribe the type and frequency of medical examinations or other tests which shall be made available, by the employer or at his cost, to employees exposed to such hazards in order to most effectively determine whether the health of such employees is adversely affected by such exposure.

B. Section 6(b)(5)

Standards dealing with “toxic materials or harmful physical agents” must, in addition to meeting the “reasonably necessary or appropriate” test of section 3(8), conform to section 6(b)(5) of the Act, 29 U.S.C. 655(b)(5). That section provides:

The Secretary, in promulgating standards dealing with toxic materials or harmful physical agents under this subsection, shall set the standard 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 or functional capacity even if such employee has regular exposure to the hazard dealt with by such standard for the period of his working life.

The standards that are governed by section 6(b)(5) are sometimes referred to as “health” standards, while non-6(b)(5) standards are often referred to as “safety” standards. In enacting section 6(b)(5), Congress recognized “that there were special problems in regulating health risks as opposed to safety risks. In the latter case, the risks are generally immediate or obvious, while in the former, the risks may not be evident until a worker has been exposed for long periods of time to particular substances. It was to ensure that the Secretary took account of these long-term risks that Congress enacted § 6(b)(5).” Benzene, 448 U.S. at 649 n. 54. According to its legislative sponsor, section 6(b)(5) is

intended to require OSHA to take into account the potential that an employee may be exposed to the hazard for his entire working lifetime “so that we can get at something which might not be toxic now, if he works in it a very short time, but if he works in it the rest of his life it might be very dangerous.” (Remarks of Senator Dominick in colloquy with Senator Williams, Leg. Hist. at 503).

Section 6(b)(5) directs OSHA to set the standard which will, to the extent feasible, protect employees from material impairment to their health even if they are exposed regularly to the toxic chemical or harmful physical agent for their entire working life. Section 6(b)(5) thus requires that any standard governed by that section must reduce significant risk to the lowest feasible level. See *Cotton Dust*, 452 U.S. at 509. Safety standards, which are not governed by section 6(b)(5), need not reduce significant risk to the lowest feasible level but must provide a high degree of employee protection to be consistent with the purpose of the Act. 58 FR at 16614–15. Safety standards may therefore “deviate only modestly from the stringency required by § 6(b)(5) for health standards.” *Lockout/Tagout II*, 37 F.3d at 669.

The most important consideration in construing the scope of section 6(b)(5), as with any statutory provision, is the language of the statute itself. In many cases, it is obvious whether a hazard is a “toxic material” or “harmful physical agent” subject to section 6(b)(5). Other hazards are less clear cut. OSHA has looked to several factors in determining whether a standard fits within section 6(b)(5). These include: Is the hazard likely to cause harm promptly or after a short period of exposure, or does harm occur only after a lengthy period of exposure? Is the connection between exposure and harm apparent, or is it hidden and subtle? Is the harm coincident with exposure, or is there a latency period with harm frequently manifesting itself long after exposure has ended? See *Benzene*, 448 U.S. at 649 n. 54; *UAW v. OSHA*, 938 F.2d 1310, 1313 (D.C. Cir. 1991) (*Lockout/Tagout I*); *National Grain & Feed Ass’n v. OSHA*, 866 F.2d 717, 733 (5th Cir. 1989) (*Grain Dust*).

Because the hazardous exposures regulated by this standard cannot be neatly categorized by the factors discussed above, whether this standard is governed by section 6(b)(5) poses difficult legal issues. Some commenters supported characterizing the rule as a section 6(b)(5) rule (Ex. 32–339–1 at p. 15 (AFL–CIO), while others opposed it. Ex. 32–368–1 at p. 41–44 (National

Coalition on Ergonomics); Ex. 32–206–1 at p. 32 (American Iron & Steel Institute); Ex. 22–337–1 at pp. 3–7 (Integrated Waste Service Association); Ex. 30–1722 at pp. 33–35 (Chamber of Commerce). For a variety of reasons, OSHA concludes that the standard is not subject to section 6(b)(5).

First, the language of the statute itself suggests that this rule is not governed by section 6(b)(5). That provision applies to “toxic materials or harmful physical agents.” The “toxic materials” to which section 6(b)(5) refers include chemicals that are harmful if breathed and/or ingested, such as asbestos, lead, and mercury. S. Rep. No. 91–1282, 91st Cong., 2d Sess. at 2, reprinted in Committee Print, *Legislative History of the Occupational Safety and Health Act of 1970*, (Leg. Hist.) at 142. Ergonomic risk factors are clearly not a toxic material. The “harmful physical agents” to which Congress referred include laser radiation, ultrasonic energy, ionizing radiation, noise, and vibration. Id. at 142–43. Of the harmful physical agents mentioned by Congress, only vibration is a risk factor addressed by the ergonomics standard. The remaining risk factors addressed by this standard—force, repetition, awkward postures, and contact stress—are fundamentally dissimilar from the harmful physical agents discussed by Congress in that they relate to the position, movement, and loading on the tissues of a worker’s body rather than an external agent acting on the body. See *Pulaski v. California Occupational Safety & Health Standards Board*, 90 Cal. Rptr. 2d 54, 66 (Cal. Ct. App. 1999) (“a repetitive motion injury is neither a ‘toxic material’ nor a ‘harmful physical agent.’”). Therefore, the language and legislative history of the Act indicate that the majority of the risk factors addressed by this rule are not the type of hazards Congress intended to regulate under section 6(b)(5).

In addition, the hazards addressed by the rule differ from those addressed by section 6(b)(5). A lengthy period of exposure—years, decades, or a working lifetime—is not necessary to create a substantial risk of MSDs. As discussed below, both acute and chronic exposures to ergonomic risk factors can result in MSDs. And, although MSDs frequently develop gradually as a result of exposure over time, the period of time necessary can be days, weeks, or months, rather than the working lifetime referred to in the text of section 6(b)(5). Moreover, MSDs are unlike illnesses, such as cancer, damage to the reproductive system, and kidney failure, that can result from exposure to toxic chemicals and appear long after the

exposure ceased even though the exposure caused no overt symptoms while it was occurring. An employee who is beginning to suffer a work-related MSD will frequently recover fully after the exposure to ergonomic risk factors ceases. For that reason, the standard requires that an employee who develops a work-related MSD be restricted from participating in work activities or removed from exposure that will worsen the condition.

The ability of employers and employees to generally recognize a cause-and-effect relationship between ergonomic risk factors and many MSDs also indicates that this final standard is a non-6(b)(5) rule. In recent years, as both employers and employees have become more aware of the connection between workplace risk factors and MSDs (see Tr. 5817–19), employers have reported over 600,000 work-related MSDs that result in lost workdays each year (64 FR at 65931). Employees themselves are often able to recognize when MSDs result from exposure to risk factors in the workplace. As OSHA noted in the proposal: “Many employers have told OSHA that talking with employees is a quick and easy way to find out what kind of problems are in the job. They said that talking with employees is often the best way to identify the causes of the problem and to identify the most cost-effective solutions to it.” 64 FR at 65805 (citing Ex. 26–1370). Testimony at the public hearing made the same point. Dr. Suzanne Rodgers, a physiologist with 32 years’ experience in industrial ergonomics, testified that the companies she had worked with learn about ergonomic problems by having employees tell them when a problem exists. (Tr. 2144). Similarly, David Alexander, a certified professional ergonomist with more than 25 years’ experience, testified that encouraging employees to report early signs and symptoms of developing MSDs was a key feature of a successful ergonomics program. (Tr. 2145–46).

Further, Congress provided for special treatment of health hazards in section 6(b)(5) because it recognized that employers had little incentive to control exposures to toxic chemicals and harmful physical agents when there is a long period between exposure to a hazard and the manifestation of an illness. “In such instances a particular employer has no economic incentive to invest in current precautions, not even in the reduction of workmen’s compensation costs, because he seldom will have to pay for the consequences of his own neglect.” Leg. Hist. at 144. However, in this respect too, the

ergonomics standard is more like a typical safety standard than a health standard because many of the costs of such injuries in terms of workers’ compensation claims and lost productivity are borne by employers as MSDs occur. Thus, the ergonomics standard does not implicate section 6(b)(5)’s concern about hazardous exposures that lead to illnesses after lengthy exposure and therefore require special attention because employers can defer or avoid the costs associated with such illnesses.

Finally, the type of information on which this standard is based is far more characteristic of a safety standard than a section 6(b)(5) health standard. The risk assessment for this standard, as for a typical safety standard, is based on the number of injuries that have resulted from past exposures to the hazard being regulated and the percentage of those injuries that are preventable. By contrast, for a typical health standard, the risk assessment is based on mathematical projections to determine the significance of the risk at various levels of exposure. See, e.g., Formaldehyde, 878 F.2d at 392–96 (discussing OSHA’s quantitative risk assessment for formaldehyde exposure). In the proposal, OSHA recognized that the risk assessment methodology for this standard was similar to that for a safety standard rather than a typical health standard:

There is no need, in the case of musculoskeletal disorders, for OSHA to engage in risk modeling, low-dose extrapolation, or other techniques of projecting theoretical risk to identify the magnitude of the risk confronting workers exposed to ergonomic risk factors. The evidence of significant risk is apparent in the annual toll reported by the Bureau of Labor Statistics, the vast amount of medical and indemnity payments being made to injured workers and others every year * * * and the lost production to the U.S. economy imposed by these disorders.

64 FR at 65979.

In the NPRM, OSHA preliminarily concluded that the proposed ergonomics standard was a section 6(b)(5) standard. The NPRM stated that MSDs are caused by chronic and not by short-term exposures. 64 FR at 66057. Some commenters contended that this statement was inconsistent with OSHA’s proposed definition of MSD and the inclusion of “traumatic” injuries in its risk assessment. Ex. 22–337–1 at p. 7 (Integrated Waste Service Association); Ex. 32–241–4 at pp. 197–99 (Anheuser-Busch & United Parcel Service); Ex. 32–300–1 at pp. 15–16 (Edison Electric Institute). The proposed definition of MSD included

musculoskeletal disorders other than those caused by accidents and was intended to include, e.g., back injuries caused by lifting (for employees for whom manual handling is a core job element) without regard to whether the injury resulted from a particular exertion or the cumulative effect of numerous lifting exertions. As OSHA elsewhere explained:

The pathogenesis of work-related MSDs can refer to either single, point-in-time injuries, associated with work tasks that result in activities in which tissue tolerance is acutely exceeded, or circumstances in which the performance of specific work tasks or combinations in which the performance of specific work tasks or combinations of tasks over a prolonged period of time result in small and repeated tissue damage.

64 FR at 65900.

Moreover, the BLS injury and illness data on which OSHA based its proposed risk assessment (see 64 FR at 65931, Table VI–3) indicates that many of the injuries considered MSDs resulted from short-term rather than chronic exposures. OSHA has reexamined its reasoning in light of these comments and agrees that the acute-chronic distinction it drew in the proposal is inappropriate when describing MSDs and therefore does not afford a proper basis for classifying this rule as a section 6(b)(5) standard.

As discussed in more detail in the risk assessment section, the injury and illness data reported by BLS categorizes each incident by type of injury or illness and the nature of the exposure event leading to the injury or illness (BLS 1992, Ex. 26–1372). Under the BLS data collection system, employers are instructed to report musculoskeletal injuries and illnesses under various codes, some of which represent musculoskeletal system and connective tissue diseases and disorders that result from repetitive activity and some of which represent other types of exposure events. The BLS category that accounts for most of the reported injuries and illnesses, 021, includes sprains, strains, and tears of muscles, joints, tendons, and ligaments. The category is described as representing traumatic injuries, which generally result from a single event or exposure. Ex. 26–1372 (BLS Occupational Injury and Illness Classification Manual).

In its preliminary risk assessment, the agency closely examined the BLS data, excluded from its analysis injuries caused by accidents (*i.e.*, slips, trips, falls, and being struck by objects), and included those codes that predominantly represented work-related MSDs, including 021, that were reported under the exposure event categories

most closely representing ergonomic risk factors. 64 FR at 65928. The largest number of these injuries were classified under the exposure category for "overexertion," which includes primarily lifting, lowering, pushing, pulling, and carrying. 64 FR at 65932. OSHA has followed this same approach in its final rule and in the supporting risk assessment, *i.e.*, excluding musculoskeletal injuries due to accidents but including those resulting from ergonomic risk factors. In OSHA's view, when MSDs result from exposure to ergonomic risk factors, any distinction between acute and chronic exposures is unimportant. OSHA notes that the classification of these disorders as traumatic is in part a convention of the recordkeeping system. OSHA's general recordkeeping guidelines for back disorders instruct that because the specific event causing such a disorder cannot always be pinpointed, to keep recordkeeping determinations as simple and equitable as possible, all back disorders should be classified as (traumatic) injuries rather than (cumulative exposure) illnesses. BLS, Recordkeeping Guidelines for Occupational Injuries and Illnesses (April 1986), at p. 38. Similarly, OSHA's Ergonomics Program Management for Meatpacking Plants states that all back cases are to be classified as injuries even though some back conditions may be triggered by an instantaneous event and others develop as a result of repeated trauma. Ex. 32-210-2-2 at p. 14. Moreover, a number of experts testified in the hearings that a substantial part of the MSD injuries classified under the BLS system as traumatic in fact represent cumulative exposure. (Tr. 2175-77; 2236-44; 5802-04). In short, even though an MSD may be classified as "traumatic" in origin, it will often be the case that, while the onset of the injury was sudden, the cause was exposure to ergonomic risk factors over some period of time. However, it is neither necessary nor meaningful to limit the standard's reach to MSDs that only occur because of exposures that take place over some period of time. The purpose of this standard is to reduce the number and severity of MSDs by protecting workers against excessive exposure to ergonomic risk factors and MSD hazards, and for that purpose it is irrelevant whether those excessive exposures are "acute" or "chronic."

On reflection, OSHA has determined that other considerations relied on in the NPRM are likewise unpersuasive. Although the standard protects against one risk factor—vibration—that qualifies as a "harmful physical agent,"

OSHA does not believe that factor alone makes this a section 6(b)(5) standard. The standard is not a "vibration" standard but one that addresses the multifactorial causes of MSDs. The risk factors that are not "harmful physical agents"—force, repetition, awkward posture, and contact stress—together contribute substantially more to the vast majority of MSDs than does vibration.

Similarly, that a provision in OSHA's standard governing access to employee exposure and medical records (29 CFR 1910.1020(c)(13)) defines "toxic substance or harmful physical agent" as including "repetitive motion" does not establish that repetitive motion is a harmful physical agent within the meaning of section 6(b)(5). See Ex. 32-339-1 at p. 15 (AFL-CIO). Whether repetitive motion is a harmful physical agent was not central to that rulemaking, which dealt with the access of employees and OSHA personnel to employee records and did not regulate particular hazards. In that rulemaking, interested parties had no reason to argue whether a standard that regulates repetitive motion is a section 6(b)(5) standard, and OSHA had no occasion to address that issue. Moreover, the records access rule was not issued under section 6(b)(5) but under OSHA's general authority to issue standards (section 6(b)) and regulations (section 8(g)). And it was upheld in court as a section 8(g) regulation rather than a section 6(b) standard. *Louisiana Chem. Ass'n v. Bingham*, 731 F.2d 280 (5th Cir. 1984), *aff'd* 550 F. Supp. 1136 (W.D. La. 1982). Therefore, the fact that the records access rule applies to repetitive motion cannot be regarded as establishing an OSHA policy that repetitive motion is a harmful physical agent for purposes of section 6(b)(5).

C. This Final Rule Does Not Regulate non-Workplace Activities

Some commenters have pointed out that MSDs can result from personal activities as well as from workplace exposures. Ex. 32-368-1 at p. 40 (National Coalition on Ergonomics); Ex. 32-241-4 at p. 49 (Anheuser-Busch & United Parcel Service). They argue that OSHA is attempting through this rule to regulate the nonwork activities that may contribute to MSDs and that the rule is therefore outside OSHA's authority. However, the rule regulates only conditions or activities in workplaces, and OSHA clearly has the authority to issue the rule.

Many adverse health conditions can be caused or aggravated by both work and nonwork exposures. For example, exposures to high noise levels both inside and outside the workplace can

contribute to a worker's hearing loss. Nevertheless, OSHA has the authority to regulate harmful noise levels in the workplace as long as the workplace exposures create a significant risk of material impairment of health. *Forging Indus. Ass'n v. Secretary of Labor*, 773 F.2d 1436, 1442 (4th Cir. 1985) (en banc) (Noise).

Noise dealt with a challenge to the Hearing Conservation Amendment to OSHA's occupational noise standard. That amendment establishes certain requirements that must be met to reduce the incidence of and/or prevent hearing impairment due to occupational noise exposure. Before issuing the amendment, OSHA found that 10-15% of workers exposed to noise levels below the permissible exposure limit (PEL) would suffer material hearing impairment. 773 F.2d at 1443. OSHA based this finding on a "panoply of scientific reports and studies," including studies done by the National Institute for Occupational Safety and Health (NIOSH) and the Environmental Protection Agency (EPA). *Id.* OSHA also found that those employees who had suffered a hearing decrement of 10 decibels in either ear faced a greater risk from continued exposure to high levels of workplace noise than workers whose hearing was unimpaired. *Id.* OSHA's Hearing Conservation Amendment provided hearing-endangered workers with protection in the workplace in order to decrease the risk of hearing impairment.

The Forging Industry Association (FIA) argued that "because hearing loss may be sustained as a result of activities which take place outside the workplace—such as listening to loud music, age, or engaging in certain recreational activities—OSHA acted beyond its statutory authority by regulating non-occupational conditions or causes." Noise, 773 F.2d at 1442. The court found "no merit" in FIA's argument. The court ruled that OSHA properly relied on "the extensive and thorough research of several scientific institutions in defining the problems related to industrially-caused hearing loss in designing its proposal." *Id.* at 1443. The court also stressed that OSHA excluded non-occupational hearing loss from the rule. *Id.* at 1444 ("To be sure, some hearing loss occurs as a part of the aging process and can vary according to non-occupational noise to which employees are exposed. The amendment, however, is concerned with occupational noise—a hazard of the workplace."). The court ruled that the fact that non-occupational hazards may contribute to hearing loss does not mean that OSHA should refrain from

regulating workplace conditions that are shown to cause such loss:

The amendment provides that non-occupationally caused hearing loss be excluded from its regulation. See 29 CFR 1910.95(g)(8)(ii), 1910.95(g)(10)(ii) (1984). Assuming, however, that some loss caused by aging or smaller amounts of noise sustained for shorter periods also aggravates the hearing loss incurred by an individual employed in a high noise-producing industry, that is scant reason to characterize the primary risk factor as non-occupational. Breathing automobile exhaust and general air pollution, for example, is damaging to lungs, whether healthy or not. The presence of unhealthy lungs in the workplace, however, hardly justifies failure to regulate noxious workplace fumes. Nor would there be logic to characterizing regulation of the fumes as non-occupational because the condition inflicted is aggravated by outside irritants.

Noise, 773 F.2d at 1444.

Like the Hearing Conservation Amendment to the Noise standard, this final ergonomics rule regulates workplace hazards. As discussed in the health effects section of this preamble, this rule addresses only exposure to ergonomic risk factors that occurs in the workplace. The MSDs that trigger action under the rule must be work-related and they must have occurred in workers whose jobs place them at a heightened risk of incurring a MSD because they are exposed to risk factors at the levels in the Basic Screening Tool.

A decision by the Occupational Safety and Health Review Commission supports OSHA's conclusion that the Act can properly address work-related ergonomic hazards even though employees can also be exposed to such hazards outside the workplace. In *Pepperidge Farm, Inc.*, 17 O.S.H. Cas. (BNA) 1993 (1997), the Commission held that where work was shown to be a substantial contributing factor to MSDs, the fact that non-work factors may also play a role did not preclude OSHA from requiring the employer to abate the workplace hazards. In that case, *Pepperidge Farm* contested a number of citations for ergonomic violations that OSHA had issued under section 5(a)(1) of the Act. In order to prove a section 5(a)(1) violation, OSHA had to show that a condition or activity in the employer's workplace presents a "hazard to employees." 17 O.S.H. Cas. (BNA) at 2009 (emphasis added). The company argued that section 5(a)(1) should not apply to MSD workplace hazards because, among other things, "non-workplace factors may cause or contribute to the illnesses at issue and that individuals differ in their susceptibility to potential causal factors." Id. at 2013. The Commission held that such factors should not "ipso

facto" preclude the possibility of enforcement under section 5(a)(1). Id. The Commission also analyzed a significant amount of evidence that showed a causal relationship between MSDs and workplace hazards, including testimony from medical personnel who examined injured workers, epidemiological data, and injury incidence at a *Pepperidge Farm* plant. Id. at 2020–26. The Commission ultimately found that there was a causal connection:

We therefore conclude that the Secretary has established on this record a causal connection between [MSDs] affecting the employees at *Downington* [a *Pepperidge Farm* plant] and their work on the biscuit lines. In doing so, we are mindful that many of these injuries may have had more than one causal factor and of the experts who contend that the specific cause of such injuries is, essentially, unknowable or presently unknown. As is the case with many occupational ills with multiple possible causes, employees are more or less susceptible to injury on the job because of the individual attributes and backgrounds they bring to the workplace. As with these other ills, the Secretary is not thus foreclosed from attempting to eliminate or significantly reduce the hazard by regulating what is shown to be a substantial contributing factor to the worker injuries.

17 O.S.H. Cas. (BNA) at 2029.

The Commission's holding in *Pepperidge Farm* that the susceptibility of some employees to a particular ailment does not preclude OSHA from regulating workplace conditions or practices that cause or contribute to that type of ailment is supported by other cases. In the asbestos rulemaking, OSHA based its significant risk determination, in part, on epidemiologic studies that included workers who smoked and were therefore significantly more likely to contract cancer than those who did not. *Asbestos*, 838 F.2d at 1265. The court held that OSHA was justified in doing so. Smokers were not, the court said, "so far beyond the pale as to require OSHA to ignore them in computing the risks of asbestos." Id. (emphasis added). See also *Reich v. Arcadian Corp.*, 110 F.3d 1192, 1198 (5th Cir. 1997) (Congress intended Act's general duty clause to protect all employees, including those who are especially susceptible). Thus, workers who engage in activities outside the workplace that expose them to ergonomic risk do not thereby forfeit on-the-job protection against exposure to excessive ergonomic risk factors.

IV. Summary and Explanation

(a) What Is the Purpose of This Rule?

The first paragraph of the final standard sets out the purpose of this

ergonomics program standard. OSHA did not propose a purpose paragraph, and thus no comments on this topic were received. OSHA has decided to include a purpose statement in the final rule to clearly indicate the goal of the standard and to differentiate between those musculoskeletal disorders (MSDs) that are covered by the standard and those that are not. It clarifies that the standard's purpose is to reduce the number and severity of MSDs that are caused by occupational exposure to ergonomic risk factors (also called "ergonomic stressors") on the job.

As discussed in more detail below, the disorders addressed by this rule include those of the muscles, nerves, tendons, ligaments, joints, cartilage, blood vessels, and spinal discs occurring in the neck, shoulder, forearm, wrist, hand, abdomen (hernias only), back, knee, ankle, and foot. They include conditions classified by the Bureau of Labor Statistics in its Annual Survey as illnesses (e.g., carpal tunnel syndrome) and as injuries (e.g., low back pain), because MSDs include many different disorders, affect many tissues and areas of the body, and may be described by a wide range of medical diagnoses.

The terms used to describe this group of conditions have varied over time and geographic region. For example, in Australia, MSDs are often called "Occupational Overuse Syndrome" injuries. Other frequently used terms include "repetitive stress injuries," "cumulative trauma disorders," and "soft tissue injuries." In recent years, however, the term "musculoskeletal disorders" has gained widespread acceptance by the scientific community, and OSHA uses this term, or its abbreviation, MSD, throughout the regulatory text and supporting analyses.

Paragraph (a) makes explicit that OSHA's ergonomics program standard does not apply to injuries or illnesses caused by motor vehicle accidents, slips, trips, falls, or similar accidents that result in traumatic injuries on the job. By "other similar accidents," OSHA means, for example, caught in or caught between injuries or other accidents resulting in blunt trauma. (Throughout this notice, OSHA uses the terms "work-related," "caused by," "musculoskeletal disorders," "risk factors," and "exposure." For a detailed discussion of these terms, see the relevant sections of the Health Effects (Section V of the preamble), Summary and Explanation (Section XI), and Legal Authority (Section III) sections of this preamble.)

As stated in paragraph (a), the purpose of this standard is to reduce the number and severity of MSDs caused by

workplace exposure to ergonomic risk factors, such as force, awkward postures, or repetition, either alone or in combination. The standard requires employers to implement an ergonomics program to address risk factors in jobs that pose an MSD hazard to the employees in those jobs. As discussed in detail in Section VI of the preamble, Risk Assessment, ergonomics programs have been shown to reduce the number and severity of MSDs in old and new facilities, in large and small workplaces, and in a wide variety of jobs ranging from computer use to solid waste handling, from assembly line operations to patient handling, and from beverage distribution to meat processing.

Reducing the number and severity of MSDs in the workplace is the goal of successful ergonomics programs everywhere. As the more detailed discussions in this preamble and in the Agency's economic analysis will show, this goal cannot be achieved overnight, although positive results are generally observed soon after program implementation. One effect of a new ergonomics program, which at first glance may not appear to be a positive one, is that the number of MSDs and MSD signs and symptoms reported in the first months after the implementation of the program may actually increase. This initial increase in the number of MSD reports reflects the heightened awareness of ergonomics, the importance of early reporting, and the value of conservative treatment that routinely accompanies program implementation. In most workplaces, this increase is short-lived, generally lasting less than a year and almost never more than two years. The severity of the MSDs reported, however, generally decreases in the first few months after program initiation and declines steadily thereafter, before leveling off as the program matures. Thus, OSHA intends and expects the final rule to reduce the number and severity of MSDs in the workplaces covered by the standard over the first few years after the standard is fully in effect; OSHA is aware that the standard's purpose will not be fully achieved in the short run. When ergonomic programs mature, they continue to demonstrate ongoing reductions in the number of MSDs caused by workplace risk factors and in the severity of those MSDs that do occur.

The standard's purpose paragraph also reflects OSHA's awareness that work-related MSDs will continue to occur in many workplaces even after implementation of an effective ergonomics program that complies fully with this final rule. The standard being

issued today is thus not a "zero-risk" standard. It recognizes that substantially reducing the number and severity of these disorders is possible in most, if not all workplaces, although many establishments may not be able to eliminate MSDs completely. (For a discussion of OSHA's analysis of the standard's projected effectiveness, see the Risk Assessment section of the preamble (Section VI) and Chapter IV, Benefits, of the Final Economic and Regulatory Flexibility Analysis.)

Paragraph (b)—Does This Standard Apply To Me? (Scope and Application)

Discussion of the scope and application of the final rule is divided into three parts. Part I discusses which employers and operations the standard covers. Part II explains the exclusions from coverage of the rule and OSHA's authority to limit the standard's coverage to general industry. Part III addresses other scope and application issues raised during the rulemaking.

Part I—Scope and Application of Standard to General Industry Employers

A. Scope of Coverage

Paragraph (b) states that the standard applies to general industry employment, which means all employment except for railroads and employment covered by OSHA's agriculture, construction, and maritime standards. Unlike other OSHA general industry standards, however, this standard does not cover general industry work performed incidentally to or in support of construction, maritime, or agricultural employment or railroad operations. This means that functions such as office work, management and support services are not covered by the standard, and that, for example, a construction company office or a marine terminal cafeteria would not be covered. However, a construction company real estate division engaged in selling the finished properties would not be performing functions directly in support of the construction operations and would be within the scope of the standard.

The final rule thus imposes coverage based on the business category in which the employer belongs, *e.g.*, general industry as opposed to construction. This marks a departure from the Agency's past practice of imposing coverage based solely on the job that an employee is performing. The approach adopted in this standard, *i.e.*, basing coverage on the industry classification of the employer, is appropriate here because of the unique nature of ergonomic problems and solutions. The

requirement to implement an entire program when an MSD incident occurs in a job that meets the Action Trigger is more practical administratively if employers are required to take this broad approach.

Moreover, the standard does not apply to jobs or operations that are normally covered exclusively by the construction, agriculture and maritime standards, even if those operations are performed in a general industry establishment or for a general industry employer. Thus a construction crew whose sole job is to build in-plant structures in a steel mill is engaged in construction and is not covered by this standard, even though the steel mill itself is a general industry operation. This is consistent with the operation of other OSHA standards.

Although the proposal also applied only in general industry, its scope provision stated that coverage was further limited to general industry manufacturing jobs, manual handling jobs, and jobs with MSDs. Manufacturing jobs were defined as "production jobs" in which the activities of producing a product made up a "significant amount" of the employee's worktime. Manual handling jobs were those in which the employee performed "forceful" lifting (*i.e.*, lifting or lowering, pushing or pulling, or carrying) and the forceful lifting tasks were a "core element" of the employee's job. Jobs with MSDs were defined as jobs in which an OSHA recordable MSD occurred in a job in which the physical work activities and conditions were reasonably likely to cause that type of MSD, and the activities were a core element of the job or accounted for a significant amount of the employee's worktime (64 FR 65779–82).

The proposal explained that OSHA was focusing on general industry in this first ergonomics rulemaking because the problems in general industry are particularly severe and the solutions are well-understood (64 FR 65776). Some commenters agreed with the proposed rule's scope, and its emphasis on manufacturing and manual handling jobs (Exs. 31–3, 31–71, 31–180, 31–252, 31–284, 32–300). More, however, argued either that the rule should not exempt construction, maritime and agricultural employment (Exs. 30–400, 30–1294, 31–14, 31–105, 31–143, 31–156, 31–345, 31–352, 32–198–4, 32–210, 32–359–1, 32–461–1, 30–1294, 500–218), or that the rule should exempt even more industries or jobs (Exs. 30–372, 30–494, 1–248, 31–280, 32–77–2, 32–78, 32–234, 30–2208, 30–3167, 32–77–2, 601–X–1, Tr. 3126).

Many of the commenters who believed that the scope of the proposed rule was too broad argued that it incorporated a "one size fits all" approach that was inappropriate for the wide variety of operations found in general industry (Ex. 30-494, see also Exs. 30-380, 30-372, 30-531, 30-3167, Tr. 3126, 3332). Some of these commenters pointed out that there was great variation in MSD rates, prevalence of ergonomic risk factors, and levels of exposure to those risk factors across general industry (Exs. 30-541, 30-3167). Others pointed out that jobs differed greatly within and across industries, and claimed that OSHA did not have enough information about effective controls in all industries (Exs. 30-425, 30-3167, 32-77, 32-211-1, 32-2208). The focus of both these groups of comments was that OSHA did not have enough knowledge or evidence to find that the same approach to controlling ergonomic hazards would be appropriate in all of these disparate circumstances.

A number of commenters suggested ways to limit the standard's scope. Some urged OSHA to focus the rule more narrowly on those jobs or industries with the highest MSD rates or those deemed to have high risk potential (Exs. 30-13, 30-425, 30-2208, 30-3167, 31-248, 31-280, 32-78, 32-234, Tr. 2729-30). For example, Larry Leahy of Ruth Constant & Associates, a home health care service agency, questioned why OSHA was covering all of general industry when 60 percent of the MSDs occurred in industries representing a fairly small percentage of the national workforce (Ex. 30-611). Todd McCracken, of National Small Business United, argued:

There is a need to focus on particular types of jobs . . . There are specific types of jobs in specific industries where MSDs are much more likely to occur (Tr. 2729-30).

Similarly, Organization Resources Counselors, Inc. (ORC) recommended that the rule only cover high risk occupations or employers whose MSD incident rates were above the national background level (Ex. 32-78; see also Tr. 10633-35). The Small Business Administration's Office of Advocacy suggested covering only manual handling jobs, which it claimed accounted for 78 percent of all MSDs (Ex. 601-X-1).

As discussed in detail throughout this preamble, OSHA believes that the record supports coverage of all of general industry within the overall scope of the standard. The final standard does not, however, prescribe a one-size-fits-all solution for a wide

range of problems in diverse jobs and industries. Even in those situations where significant ergonomic hazards exist, the commonality of the response required by this standard is to implement an ergonomics program. The specific focus of that program will be targeted to the particular hazards and conditions at each workplace. The control strategies for ergonomic hazards will be targeted even more specifically to the needs of each workplace. And the extent of each employer's compliance obligation will be determined by the extent of the problem at that employer's workplace. Thus the fact that the rule applies to a variety of hazards at differing workplaces does not in any way mean that the employers in all of those workplaces need to take the same actions.

Work-related MSDs are widespread throughout general industry. They occur in every single sector within general industry, according to the Bureau of Labor Statistics (BLS). In 1996, according to BLS, there was no industry sector that did not report the occurrence of at least several hundred work-related MSDs, with a large number of industries reporting tens of thousands of work-related MSDs. Moreover, high concentrations of work-related MSDs are reported in a wide variety of occupations that are found throughout general industry establishments. BLS data for 1996 show that general industry truck drivers, laborers, and janitors, occupations found widely dispersed throughout general industry sectors, experienced more than 48,000, 38,000 and 15,000 lost workday (LWD) MSDs, respectively. (See Section VII (Risk Assessment) of this preamble.)

Evidence submitted by rulemaking participants confirms the broad distribution of MSDs and MSD hazards throughout general industry. For example, the Service Employees International Union (SEIU) submitted evidence that union members working in a variety of health care settings (*e.g.*, hospitals, nursing homes, private homes, pharmacies) have suffered MSDs (Ex. 32-311-1). These health care workers include registered nurses, licensed practical nurses, nurses' aides, orderlies, physical therapists, radiology technicians, housekeepers (maids and housemen), laundry workers, laundry machine operators, maintenance workers, kitchen and food preparation workers, central supply workers, and janitors and cleaners. In addition, SEIU said that other union members such as janitors and cleaners working in a variety of other industries, including hotels/motels, restaurants, offices have also experienced MSDs (Ex. 32-311-1).

At the rulemaking hearing, many employees testified that they had suffered serious work-related MSDs. Occupations in which these employees were working when they became injured include:

- Nurse
- Home health care aide
- Nurses' aide
- Package delivery
- Package sorting
- Meatpacking and poultry processing
- Office clerical worker
- Internet publishing
- Machinists
- Sewing machine operator
- Truck driver
- Food warehousing and distribution
- Grocery store cashier
- Physical therapist
- Mail carrier
- Letter sorter
- Teacher
- Teachers' aide
- Auto assembly
- Molding and casting machine operator
- Reporter
- Grocery shelf stocker
- Sonographer
- Television film editor
- Electrical workers

(Exs. 30-4200, 32-185-3, 32-210-2, 32-198-3, 32-311, 500-218, Tr. 4009-10, 4235, 4240, 4234, 6004, 6009, 6319, 6321-22, 6333, 7320-21, 7335-37, 7341-42, 17950).

Doctors and other health care professionals (HCPs) also testified that they had treated employees in many different jobs and industries for work-related MSDs (Exs. 37-12, 37-28, Tr. 14973, 15045-46, 16819, 16829). Dr. Robert Harrison testified that, in his research and practice, he had diagnosed and treated over 1,000 patients with work-related MSDs from a wide variety of industries and occupations, including (Ex. 37-12):

- Postal workers
- Materials handlers
- Computer operators
- Grocery checkout clerks
- Meat processors
- Assemblers
- Seamstresses
- Telephone operators
- Pipefitters
- Customer service agents
- Machine operators
- Automotive manufacturing workers
- Aircraft manufacturing workers
- Optical scanners
- Graphic artists
- Restaurant workers
- Bakers
- Plumbers
- Letter sorters

Dr. Robin Herbert, the medical co-director of the Mt. Sinai Center for Occupational and Environmental Medicine, testified that she had treated or supervised the treatment of more than 2,000 patients with upper extremity MSDs in the past 12 years:

My patients have included journalists, computer graphic artists, health care workers, technicians for telephone companies, automobile manufacturing workers, cashiers, garment workers, meat wrappers, dental hygienists, secretaries, and chefs. Industries from which I have seen patients include publishing, journalism, entertainment, manufacturing, health care, transportation, and telecommunications (Ex. 37-28).

Dr. George Piligian, who also works at the Mount Sinai Center, testified about finding and treating MSDs in dancers, musicians, editors, secretaries, telephone operators, sewing machine operators and hospital workers (Tr. 7813-20).

Similarly, insurance companies, employers and trade associations representing the following industries testified about the implementation of ergonomics interventions and programs because work-related MSDs were occurring among workers in the following environments:

- Chemical manufacturing
- Pharmaceutical manufacturing
- Automotive manufacturing
- Automotive repair
- Boat manufacturing
- Textile manufacturing
- Clothing manufacturing
- Printing
- Dental
- Meatpacking
- Electric utility
- Hospitals
- Office workers
- Hotel/motel
- Emergency medical services
- Furniture manufacturing
- Oil and gas drilling
- Moving and storage
- Fabricare
- Nursing homes
- Telephone operation and installation
- Funeral and cemetery
- Insurance
- Solid waste removal and recycling
- Paint manufacturing
- Poultry processing
- Food warehousing and distribution
- Beverage delivery
- Assembly line
- Grocery store
- Retail clothing
- Foundry

(see, e.g., Tr. 3337-9, Tr. 5104, Tr. 8458-8480, Tr. 16553-57).

Finally, several of the ergonomists who appeared as OSHA's expert

witnesses, including David Alexander (Ex. 37-7), David Caple (Ex. 37-20), Dennis Mitchell (Ex. 37-11), Maurice Oxenburgh (Ex. 37-24), Suzanne Rodgers (Ex. 37-25), and John Rosecrance (Ex. 37-26), testified that employers in the following different industries had hired them to help reduce the incidence of work-related MSDs among employees:

- Newspaper
- Luggage manufacturing
- Meatpacking
- Packaging
- Papermaking
- Plumbing supply
- Route sales and delivery
- Film products manufacturing
- Hospitals
- Heavy appliance manufacturing
- Automobile manufacturing and subassembly
- Furniture manufacturing
- Paper and pulp products
- Forest products
- Food service
- Clerical
- Electronics
- Clothing and textile manufacturing
- Baking
- Restaurant
- Home and office furniture manufacturing
- Hospitality—hotel/motel
- Fiber manufacturing
- Logistic and supply warehousing
- Telecommunication
- Textile and apparel manufacturing
- Metal forging and cast metals
- Electronics manufacturing
- Health care
- Petroleum
- Electrical manufacturing
- Airline freight handling
- Steel manufacturing
- Fishing
- Aircraft manufacturing
- Gas and electric utility
- Flooring products
- Computer and computer accessory manufacturing
- Plumbing fixtures manufacturing
- Food products manufacturing and processing
- Chemical manufacturing
- Printing
- Waste treatment
- Plastic manufacturing
- Clothing retail
- Power plants
- Research laboratories
- Transportation
- Printing
- Upholstery
- Rubber manufacturing
- Welding
- Mail sorting and delivery
- Transportation
- Electronics

• Medical products manufacturing
All of this evidence supports OSHA's decision to provide the protections of this standard to all general industry employees. On the other hand, OSHA recognizes that there may be some general industry employers with few or no MSD hazards. Until an MSD is reported, the employer's obligation is limited to distributing the information in paragraph (d).

B. Application of Requirements

Unlike the proposal, this final standard does not differentiate among general industry employers. Under the proposal, employers of employees engaged in manufacturing or manual handling would have been required to implement some elements of an ergonomics program whether or not their employees had suffered any MSDs. Other general industry employers would not have had to take any action until a "covered MSD" occurred, and a covered MSD was defined differently for them than for manufacturing and manual handling employers (64 FR 65782-84, 65791). In this final standard all general industry employers are required, as specified in paragraph (d), to provide basic information on ergonomics and the standard to their employees. The employer has no further obligation until the employee reports an MSD or the signs or symptoms of an MSD (see paragraph (e)).

OSHA developed its bifurcated proposal because about 60 percent of all reported MSDs occurred in manufacturing and manual handling jobs, even though those jobs accounted for less than 30 percent of general industry employment. Although some commenters agreed that this might justify a focus on manufacturing and manual handling (Ex. 30-4837), very few expressed satisfaction with the proposed approach (Exs. 30-400, 31-78, 32-198, 32-210, 32-461, 500-218, Tr. 3224). Many commenters said that manufacturing and manual handling jobs should not be singled out because MSD hazards were present and MSD rates were high in other jobs and industries (Exs. 30-626, 30-2208, 31-156, 500-218). For example, participants said that there were many MSD hazards and MSDs in "any job involving regular computer use," therefore, programming, journalism, data entry, system administration, accounting, analysis, and insurance jobs should have been included by name (Exs. 30-49, 30-400, 31-3, 31-12, Tr. 2783, 2932). Likewise, other commenters argued that custodians and supermarket employees including cashiers, bakery personnel, baggers and

stockers should be treated on par with manufacturing and manual handling jobs because they involved the same hazards (Exs. 31-23, 32-210; see also Exs. 30-400, 31-78, 32-198, 32-210, 32-461, 500-218, Tr. 3224).

Another group of commenters opposed requiring any employers to take any type of action before a work-related MSD is reported (Ex. 30-240, 32-300, 30-542, 601-X-1) on the grounds that it was a "waste of resources" to require a basic program for employers with manufacturing and manual handling jobs that have no MSDs (Ex. 30-542). For example, one said:

If an employer is in one of the targeted industries but has not had MSDs, why force the bureaucracy of program implementation upon him or her * * * (Ex. 30-240).

And while some participants found the definitions of manufacturing and manual handling jobs adequate to identify whether a particular job was covered (Exs. 30-3934, 30-4837, 31-38, 31-36, 31-113, 31-173, 31-205, 31-229, 31-347), most disagreed (Exs. 30-5, 30-46, 30-75, 30-293, 30-1722, 30-3032, 30-3853, 31-4, 31-27, 31-92, 31-106, 31-125, 31-135, 31-211, 31-245, 31-246, 32-78, 32-300, 32-337). Many said that the definitions, particularly the definition of manual handling jobs, were too vague (Exs. 30-137, 30-425, 30-1722, 30-3167, 31-77, 31-180, 31-225, 31-227, 31-248, 31-260, 31-342, 32-78, 32-300, 32-337, Tr. 3255-56). For example, one commenter said:

The definitions of manufacturing and manual handling jobs covered by the standard are guaranteed to leave employers as much in the dark as they are now. What constitutes "forceful" manual handling? How much force must be involved to be covered? Should the strength capabilities of individual employees be considered? (Ex. 31-211)

Others were concerned that the definitions were too broad and could include any job or "almost every employer" (Exs. 31-135, 31-180, 31-342).

Many participants told OSHA that they did not know what the terms used in the definitions ("forceful" lifting, "core element," and "significant amount" of worktime) meant (Exs. 30-46, 30-293, 30-300, 30-3032, 30-3853, 30-4837, 31-187, 31-202, 31-223, 31-260, 31-289, 32-337, Tr. 3337). For example:

How much is significant? 6 hours per 8-hr shift? 4 hours per 8-hr. shift? 2 hours per 8-hr. shift? Or 2 2-hr. periods per 8-hr. shift? (Ex. 30-4837)

Moreover, commenters did not find the examples of manufacturing and manual handling jobs to be of use:

[T]he examples of jobs are not very helpful. A careless reader could conclude that the lists were exhaustive and, not seeing the jobs in this workplace named, decide he had to do nothing. A more thorough reader would note the disclaimer to the effect that " * * * each job must be considered on the basis of its actual physical work condition * * *" and correctly conclude that there is no standard against which to compare the actual physical work conditions" (Ex. 31-211).

(See also Exs. 30-3032, 30-3853, 32-300.)

OSHA is accounting for these concerns in this restructuring of the standard's scope and application provisions. This final rule applies to all general industry employers, but no employer is required to evaluate or implement control measures or MSD management until an MSD incident occurs in a job that involves exposure to risk factors at levels meeting those in the Basic Screening Tool in Table 1. The only obligation employers have until that point is to provide information about ergonomics and the standard to their employees. And, as explained in the discussion of paragraph (d) below, OSHA is providing that information in Appendices A and B and on its website.

OSHA believes that these changes respond to most complaints about the scope and application provisions of the proposal. By eliminating the additional requirements for manufacturing and manual handling employment, OSHA is eliminating both the need to define those terms and much of the complexity and vagueness commenters found in the proposal. By limiting employers' obligations in establishments that have not experienced MSD incidents, OSHA is also taking account of the facts that not all manufacturing and manual handling jobs involve more significant ergonomic hazards than do other general industry jobs, and that some of those other jobs are also hazardous.

The minimal burden in paragraph (d) for all general industry employers to disseminate information is necessary so that employees will know how and when to report MSDs. Given the importance of providing information at the earliest possible point and the minimal burden this requirement will impose, OSHA believes that it is appropriate to apply the initial requirement to all general industry employers. (The issue of the need for information is discussed in more detail below in the summary and explanation on paragraph (d)).

II. Industries/Employment/Operations Excluded From the Final Rule

Like the proposal, the final standard does not cover construction, agriculture,

and maritime employment. Although many participants agreed with this exclusion (Exs. 30-3032, 30-3752, 31-68, 31-160, 31-187, 31-207, 31-219, 31-245, 31-252, 31-259, 32-300), a number favored expanding the scope of the rule to cover all industries regulated by OSHA (Exs. 30-400, 30-428, 30-1294, 32-210, 500-218, Tr. 2859, 3224, 5592, 9080, 13445, 113745, 14002, 17362, 17652). Their arguments fell into three categories.

First, many of these commenters pointed to the high number and rate of MSDs, especially back injuries, occurring in industries excluded from the proposed rule (Exs. 30-626, 30-2208, 31-156, 31-183, 31-225, 500-218). The Mount Sinai Center for Occupational and Environmental Medicine Construction Hygiene and Ergonomics Program (CHEP) pointed out that, aside from the transportation industry, construction has the highest rate of back injury of any industry:

Every year 1 in 100 construction workers will miss between 7 and 30 days of work due to back injuries * * * At one surveyed worksite all wallcoverers who had worked 15 years or more in the trade had required surgery or medical intervention for problems including carpal tunnel syndrome, pain in the neck, shoulder and back, and knee problems (Ex. 31-183).

Some commenters also favored expanding coverage because they said that employees in construction, agriculture and maritime are exposed to the same risk factors and MSD hazards as are employees in general industry (Exs. 30-626, 31-22, 31-183, 31-263, 31-303, 500-218). They said there was no reason to distinguish coverage by industries if the rule was also incorporating an MSD trigger because, as one put it, "[a]n injury is an injury, and I have no doubt there are always ways to handle these jobs just as safely as any others" (Ex. 31-19).

A number of commenters said that at least jobs in construction, agriculture and maritime that are essentially the same as in general industry, primarily manual handling jobs, should be added to the rule (Exs. 31-14, 31-19, 31-65, 31-98, 31-192, 31-219, 31-307, Tr. 2850-51). For example:

Many jobs, especially manual handling jobs, have similar if not identical hazards to that of general industry. If an employee is performing lifting that requires excessive force it does not matter in which industry he is performing the lifting. The actions to reduce the risk of injury would be similar for each industry (Ex. 31-307).

See also (Ex. 31-19; 31-65).

Another group of participants said that the record contains sufficient

evidence on the availability and effectiveness of ergonomic interventions to support expanding the rule to the construction, agriculture and maritime industries (Exs. 31–183, Tr. 2849–51, 7478–80, 7482, 7485, 15761–71, 17540–41, 17561). Members of this group pointed to a number of articles and studies about effective controls in those industries, especially construction (Tr. 15761–71). For example, Nancy Clark, co-director of Mt. Sinai CHEP, said:

Practical interventions are available for many identified risk factors. Many workers devise quick fix, homemade solutions to reduce the impact of musculoskeletal stress and promote self-preservation. They use team lifting, mechanized material handlers when available, floor padding for kneeling and standing on, stacking supplies to bring the work closer, and alternating work tasks or body position (Ex. 31–183)

Scott Schneider, director of occupational safety and health for the Laborers Health and Safety Fund of North America, testified:

[T]here have been many tool manufacturers who have jumped on the ergonomic bandwagon and hired ergonomists to develop better and safer tool designs, from ergonomic hammers with more comfortable shock-absorbing handles to pliers with soil handles and spring returns to reduce the stress of opening them after each use. The use of portable power tools has increased dramatically in construction as batteries have gotten lighter and more powerful. Cordless screw guns have become commonplace in construction over the past few years, reducing the repetitive use of screwdrivers by hand and the force that had to be used. There are simple pieces of equipment, like drywall carrying handles, which I have here, and a mortar-pan stand to raise the height of the pan, which cost less than \$50 and can make the work much easier. A D-handle attachment for a shovel, which I have here, costs less than \$20, and has been shown to reduce awkward postures during shoveling. There are simple carts for moving glass or drywall, vibration-dampened jackhammers and equipment for moving them on and off of trucks. (Tr. 15762–63).

These commenters also pointed out that many of the controls used in general industry, such as manual handling aids, were applicable or readily adaptable to construction, agriculture and maritime industries (Ex. 31–183). Moreover, tool and equipment interventions are becoming more widely available “as manufacturers are responding to the need for better ergonomically designed tools” (Ex. 3–183; see also Tr. 15761–62, 17561).

Finally, several participants were concerned that OSHA’s stated intent to promulgate an ergonomics standard for the excluded industries in the future would never come to fruition:

OSHA’s standard-setting history during the past 30 years raises serious doubt that workers excluded from this standard will ever have legal protection from MSD hazards. When OSHA has excluded workers from coverage under a promulgated standard, only in two cases has the Agency followed up to extend coverage to those workers—Hazard Communication and Construction. But those actions were as the result of a court decisions and order (hazard communication) * * * or legislative mandate by Congress (lead) (Ex. 500–218, p. 132–33).

These participants said that if OSHA does not cover construction, agriculture and maritime in the current rulemaking, the Agency should begin further rulemaking immediately and even establish a deadline for completing that project (Exs. 30–400, 30–576, 30–4837, 31–12, 31–263).

OSHA is aware that there is significant evidence in the record indicating that work-related MSDs exist in operations and employment beyond general industry (Exs. 31–183, 500–218, Tr. 7475, 7484–85, 17538–39). Indeed, the problem appears to exist in virtually every industry. Nonetheless, for several reasons OSHA believes its decisions to regulate MSD hazards through sequential rulemaking proceedings, and to limit the first proceeding to general industry, is appropriate and supported by the record.

A primary basis for the Agency’s decision to limit the scope of this rulemaking to general industry is that most of the available evidence and data relating to ergonomic interventions addresses general industry. For example, the vast majority of the studies reviewed in both the NIOSH and NAS reports pertained to general industry (Exs. 26–1, 26–37). Similarly, the majority of case studies on the effectiveness of ergonomics programs and control interventions that OSHA had gathered focused on general industry (64 FR 65954–75). Although some participants submitted evidence on ergonomics programs and controls in the excluded industries, mostly in construction (Exs. 32–339–1–25, 32–3888, 38–65, 38–66, 500–210), most of the available evidence continues to pertain to general industry jobs, operations and workplaces.

If it included construction, agriculture and maritime within the scope of this rule, OSHA would have had to delay issuing the rule for general industry while it gathered and analyzed the necessary evidence. Because it is likely that the rule would have a significant impact on small employers in construction, agriculture and maritime, OSHA would also have had to convene a small business review panel pursuant to SBREFA. Further, in order to include

construction, agriculture, and maritime in its final rule, OSHA, in the interest of fair notice, would have had to amend the ergonomics proposal or re-propose to include these industries and hold additional hearings. Expanding the rule to cover agriculture, construction and maritime would seriously delay addressing the urgent need for protection for general industry employees, who work in the jobs in which more than 90 percent of MSDs are reported.

In addition, as the proposal pointed out, work conditions and factors present in agricultural, construction and maritime employment often differ from those in general industry. OSHA listed a number of aspects of construction work to illustrate this statement (64 FR 65787):

- They consist primarily of jobs of short duration,
- Employees work under a variety of adverse environmental and workplace conditions (e.g., cold, heat, confined spaces, heights),
- At non-fixed workstations or non-fixed work sites,
- On multi-employer work sites,
- They involve the use of “day laborers” and other short-term “temporary workers,”
- Involve situations in which employees provide their own tools and equipment, and
- Involve employees who may be trained by unions or other outside certifying organizations, rather than by the employer.

OSHA did not mean to imply that the mere existence of any of these factors, alone or in combination, would be enough to justify excluding an entire industry from the rule. This fact was apparently not clear to some commenters, however, who argued that the presence of some of the listed factors in their industries meant that they too should be excluded from the standard (Exs. 30–297, 30–626, 31–147, 32–234, 32–300). For example, Broccolo Tree and Lawn Care Inc., pointed out that landscaping jobs involve short-duration tasks and no fixed workstations (Ex. 31–147). The National Solid Waste Management Association (NSWMA) said that its employees are also exposed to adverse environmental conditions and work at non-fixed work sites (Ex. 32–234, p. 6–7).

In the proposal, OSHA discussed its discretion to set appropriate rulemaking priorities, and to promulgate standards applicable to less than all of American industry. 64 FR 65786–65788. General industry accounts for more than 90 percent of the more than 620,000 LWD MSDs reported each year. By

promulgating a standard addressing general industry first, OSHA is giving "due regard to the urgency of the need" for a standard to protect general industry employees. 29 U.S.C. 655(b)(7). OSHA has thus ensured that the greatest number of MSD hazards will be addressed by this final rule, while the Agency determines appropriate regulatory approaches for other industries. For example, OSHA has been working closely with NIOSH on a study of ergonomic hazards and solutions in the maritime industry. In addition, OSHA recently published an ergonomics best practices guide for the construction industry on its Web page. OSHA has also provided training grant money targeted to ergonomic hazards in the construction industry.

OSHA intends to develop ergonomics rules that can be tailored to the conditions that are unique to the firms in these industries. OSHA agrees with commenters who have said that the experience the Agency gains from this first phase will provide valuable assistance in developing an effective ergonomics rule for the construction, agriculture, and maritime industries (see, e.g., Ex. 31-252).

As noted earlier, OSHA has decided that the final standard should not cover work performed by persons employed incidentally to or in support of construction, agriculture and maritime operations, regardless of what type of activity they perform. To illustrate, the standard does not cover employees of a residential home building company performing office work in support of construction activities, even though office work is a general industry operation under other OSHA standards. Similarly, the final rule does not cover janitorial workers employed by a shipyard or employees performing regular maintenance on power industrial trucks in a marine terminal. Applying the rule to general industry jobs of a construction employer (the office manager of a construction company, for example) would present the employer with logistical difficulties. Requiring construction, agriculture and maritime employers to set up an ergonomics program for the few general industry employees performing ancillary functions in their workplaces would not be an efficient allocation of safety and health resources. Several commenters have told OSHA that it is most efficient to set up an ergonomics program on a company-wide basis (see, e.g., Exs. 26-1370). Doing so allows employers to implement program elements such as providing employee information and training more efficiently.

B. Railroad Work

Paragraph (b)(3) states that this standard does not cover railroad work. Although some railroad operations are normally covered by OSHA general industry standards, other railroad work is regulated by the Federal Railway Administration (FRA) and not by OSHA. 29 U.S.C. 653(b)(4). In addition, the Preliminary Economic Analysis indicated that the standard would not cover any railroad employment, and this statement caused some uncertainty among affected parties as to the Agency's intent (Ex. 28-1, chapter II, p.3).

In a May 23, 2000 **Federal Register** notice (65 FR 33263), OSHA provided an analysis of the economic impacts of the proposed rule on railroads. On July 7, 2000, OSHA also held a supplemental hearing on this economic analysis, in which the Association of American Railroads (AAR) participated. AAR's comments and testimony, however, highlighted the complexity of the OSHA/FRA jurisdictional issues (Ex. 703-3, Tr. 18272, 18313-16, 18321). OSHA has determined that it needs to gather additional information and conduct further analysis on these issues before it can decide whether and how to address ergonomic hazards in the railroad industry. Therefore, OSHA has decided not to cover any aspect of railroad work at this time.

C. Other Exemptions Requested.

A number of other rulemaking participants also requested that certain jobs, industries or employers be excluded from this rule (e.g., ambulances, landscaping, transfer and storage, petroleum and chemical industries, forging industry). Many requesting exemptions did not provide any reasons why they should be excluded (see, e.g., Exs. 30-303, 30-491, 30-2102, 30-3005, 30-4439, 30-4444, 30-4598, 601-X-1163, 601-X-1438). Some merely said they had "many work conditions and factors present in the industries OSHA has chosen to exempt," but did not discuss either what those factors were or why they supported an exclusion (see, e.g., Exs. 30-2348, 30-3005, 30-3186, 30-3311, 30-3462, 30-3482, 30-3582, 33-1181). OSHA does not find any basis for excluding those industries from this rule.

A few requests that included more discussion supporting an exemption are discussed individually:

1. Solid Waste Management

The National Solid Waste Management Association (NSWMA)

urged OSHA to exempt the trash collection industry from the standard (Ex. 32-234). NSWMA said an exemption was warranted because, like the construction industry, its working conditions include non-fixed worksites, limited supervisory oversight, adverse environmental conditions, and high employee turnover. In addition, according to NSWMA, "uncontrollable" factors, such as variable load weights, municipal regulations, and its members' lack of control over the location of the garbage they collect, also support an exemption. Finally, NSWMA also argued that there is little available information about health effects and effective solutions in the industry. The West Coast Refuse and Recycling Coalition and the Municipal Waste Management Association (MWMA), representing municipal solid waste agencies in larger cities, requested an exemption for some of the same reasons (Ex. OR 323, Tr. 17972-73). Although OSHA recognizes that employers in this industry face particular challenges in implementing some types of ergonomic controls, it does not believe that the arguments presented compel exemption of the solid waste and recycling industry from this standard.¹

As noted above, OSHA does not believe that the fact that some aspects of an industry's working conditions are similar to some of the conditions in exempted industries necessarily warrants exempting those industries. In any event, the working conditions in the solid waste industry differ significantly from those in construction. In the solid waste industry employees repeat the same routes every week or more frequently. The route is a fixed worksite that the employee gets to know. Because the route is fixed, the employer is able to anticipate and plan for the hazards that the employees might encounter. Likewise, the fixed routes enable employers to plan for how the changing seasons will affect collection on the route. NSWMA's testimony that a "vast majority * * * if not all" of its member

¹ A number of participants who argued that compliance with an ergonomics standard would be infeasible in their industries also submitted examples of industry "best practice" guidelines and similar recommendations to the record. The participants said that even these "best practices" do not result in enough of a reduction in employee exposure to MSD hazards that further MSDs are "unlikely." OSHA recognizes that some industries will not be able to control exposures completely. OSHA also, however, approves of the steps these industries are taking to control MSD hazards to the extent they can, and commits to working with the industries in the future. This type of arrangement will help provide employees in these industries with as much protection as possible, while reassuring their employers that OSHA understands the limits of their capabilities.

companies have safety and health programs that include addressing ergonomic hazards on a "day to day" basis indicates that most industry employers already are taking these steps (Tr. 18074).

Although NSWMA argued that high turnover in the industry supports exemption in the same way that the use of "day laborers" in the construction industry does, NSWMA did not provide any evidence on turnover rates in its industry, or on how those rates compare to other industries this rule covers. Nor did NSWMA explain why high turnover rates pose the same issues as day laborers. Other solid waste associations and employers did not indicate that high turnover rates are a problem in the industry. The solid waste industry has the opportunity to train its workers; in fact NSWMA and MWMA testified that their members already provide training (Tr. 13404-405, 18079). It explained that this training is the most effective way to deal with the fact that its workers are often unsupervised:

MR. BEDERMAN: No, the most important way to monitor this type of thing is actually not to monitor it, but * * * actually good training (Tr. 18079).

The record also does not support industry claims that solid waste industry employers have little control over their employees' working conditions. For example, NSWMA said that, because of municipal ordinances, its members have no control over the weight and location of the garbage they collect and that municipalities were "very hesitant" to make changes (Ex. 32-234-2, Tr. 18041). But 60 percent of residential collection is privately controlled (Tr. 18046). For the 40 percent of trash collection that is under the control of municipalities, as noted below, the testimony of NSWMA and MWMA suggest there is not a significant problem.

NSWMA testified that a majority of municipalities have already implemented container requirements (Tr. 18071; see also Tr. 13402). Both NSWMA and MWMA testified that the growing trend is toward requiring customers to place garbage containers at the curbside (to eliminate the need for employees to carry heavy containers) and limiting container size (to reduce injury associated with heavy lifting) (Tr. 18070-71, 13402-3; see also Tr. 12019). Bruce Walker, of Portland's solid waste and recycling agency, said that such weight limits had been positively received in that city (Tr. 12014-15). NSWMA, MWMA and Mr. Walker also said that employers are instructing their employees not to lift containers that

exceed the weight limits (Tr. 12014, 13404-06, 18073). In addition, container size and location issues are regularly addressed as part of contract negotiations between private collectors and municipalities (Tr. 18041). All of this evidence suggests that solid waste employers should not have difficulties continuing to negotiate contracts that will assist them in complying with this final standard.

And contrary to NSWMA's argument, the record contains abundant evidence on MSD hazards and ergonomic solutions in this industry (Ex. 32-234-2). The industry recognizes that lifting heavy loads creates a hazard for employees (Tr. 13406, 13413, 18009). Industry representatives testified that their workers experience work-related MSDs, particularly MSDs of the lower back (Tr. 13379, 13396, 13412, 18009). In fact, NSWMA submitted a manual of recommended ergonomic practices developed by Environmental Industry Associations (EIA), NSWMA's parent organization, that identified lifting bulky loads and twisting and carrying loads as risk factors for the industry and identified back pain, hernias and strains, sprains and tears as common MSDs in the industry (Ex. 32-234-2-1). EIA also recommended that employers establish ergonomics programs for trash collection and recycle operations (Ex. 32-234-2-1).

The record also includes evidence on a wide range of controls that are successfully in use in the industry. The EIA manual on ergonomic practices said the industry "has many options" for addressing ergonomic hazards, including weight limits built into residential contracts, the use of lifting devices, and training (Ex. 32-234-2-1). The record indicates that the following controls are also in use in the industry:

- Mechanical container lifts,
- Limits on container size and weight and requirements for container handles,
- Carts, dollies and other mechanical assists for pushing, carrying and lifting containers,
- Collection trucks designed for use in narrow alleys and streets to eliminate carrying containers long distances,
- Changes in municipal collection regulations to reduce lifting hazards (e.g., curbside service, container size and weight limits, reduction in loads through increases in collections per week, separate collections for large bulky items),
- Training in proper lifting techniques,
- Work practice controls (e.g., training not to lift overweight loads),
- Changes in compensation systems to eliminate incentives for hazardous

work speed and lifting (Tr. 12017, 13402-06, 17969, 18212).

John Legler, of Waste Equipment Technology Association, added that garbage trucks are being retrofitted with mechanical lifts "quite regularly" (Tr. 18012-13). Bruce Walker, of Portland's residential solid waste and recycling agency, testified that enforcing container weight limits had been established had led to low MSD rates (Tr. 11968-70).

This evidence not only does not support exemption, it is clear evidence that effective ergonomic programs and controls are technologically and economically feasible for the industry as a whole. OSHA recognizes that some of the hazards facing waste industry employees cannot be eliminated completely. But the standard only requires employers to control MSD hazards "to the extent feasible." It expects NSWMA's member companies to continue to implement the type of safety programs they are already using, and to continue improving those programs as knowledge and technology advance.

2. Utility Workers

Utility companies asked OSHA to exempt utility line workers and power plant maintenance workers from the standard for two reasons. First, they pointed out that line workers face some of the same conditions as construction, agriculture and maritime (e.g., adverse environmental conditions). They also argued that these jobs involve both general industry and construction activities because utility line workers not only maintain and repair utility lines, a general industry activity, but also they install, alter, and improve lines, activities which are governed by OSHA construction standards (Exs. 30-3853, 32-300, Tr. 2893-95). Edison Electric Institute (EEI) testified:

As you know, a line worker working on a pole may at one moment be engaged in what is considered to be construction work under 1910.12(b) and under 1926(b) and at the next moment be engaged in what is considered to be general industry work under 1910.269. That is to say that if a person is doing work for the improvement of the facility, that is construction as defined by OSHA and the Review Commission. And if not, then general maintenance (Tr. 97-98).

EEI also pointed out that it would not be practical for its employees to be covered by the standard for only some of their tasks:

EEI recommends that OSHA clarify that to perform a job hazard analysis means to analyze a job, not a task. A job may not involve only one task, but may involve multiple tasks depending upon the nature of

the work on that given day (Ex. 32–300, p. 29).

OSHA agrees with EEI that determining whether a job exposes an employee to an MSD hazard requires looking at all of the tasks and activities that comprise that job. That is what this job-based standard requires. But as EEI itself pointed out, some utility companies already have programs in place for analyzing and controlling MSD hazards (Ex. 30–2725, Tr. 2384, 2396–98). Presumably, these companies analyzed the entire jobs of utility line workers and power plant maintenance personnel rather than just the general industry tasks in those jobs. None of the utility companies indicated that construction activities constitute the primary operations of utility companies. Thus, including all rather than part of the tasks of these jobs in the ergonomics program this rule requires should not impose a substantial additional burden for utility companies. OSHA requires utility companies to protect their employees, including those that spend part of their days performing construction work.

3. Building Materials Distributors

A number of building materials distributors argued that they should be exempted because a large portion of their business involves delivering supplies to construction sites and to various places on construction sites (Exs. 30–541, 30–4267, 30–4351). Because of this, they said, their employees are exposed to the same ergonomic risk factors and adverse working conditions that justified an exclusion for the construction industry. OSHA has never excluded general industry employers from standards because they provide equipment or materials for exempted industries. Thus, while marine terminals are excluded from this standard, manufacturers and transportation companies that deliver new equipment to marine terminals are still covered.

In addition, almost every comment received from building materials distributors indicated that the industry has already taken substantial steps to control MSD hazards. For example, Panther Building Materials, Inc., said that it provides hydraulics crane, carts and other material handling equipment in order to safely deliver supplies (Ex. 30–4351). It also provide at least two employees per truck crew in order to minimize carrying.

4. Home Health Care.

The American Association for Homecare (AAHomecare), asked that the home health care industry be exempted

from the standard because home health care employees perform work in private homes that are not under the employer's control.

AAHomecare said its industry should be exempted because OSHA has indicated that it will not impose OSHA standards on private homes, unless they are being used as part of the "manufacturing process" (Ex. 30–3862). But the OSHA policy AAHomecare refers to only addresses work that employees perform in their own homes.

AAHomecare also argues that the court in the Bloodborne Pathogens decision (*American Dental Association v. Martin*, 994 F.2d 823 (7th Cir. 1993)), held that the OSH Act "does not authorize OSHA to impose work-site related standards on home work sites that are not under the employers control" and that the Agency's directive limiting the application of the Bloodborne Pathogens rule at home-based worksites (CPL 2–2.44D) should apply to this standard as well (Ex. 30–3862). But the Seventh Circuit did not make as broad a holding as AAHomecare suggests. The court said only that OSHA has an "obligation to consider such questions and the general issue that they present before imposing" a standard. *American Dental Assn.*, 984 F.2d at 830.

In this case, OSHA is considering these issues and addressing them here. In general, employers sending their employees to work at sites they do not control are required to do everything within their control to protect those employees, but will not be held liable for the existence of conditions they cannot control. Thus home health care agencies must provide their employees with the information required by paragraph (d), provide those employees with MSD management where an MSD incident occurs in a job that meets the levels in the Basic Screening Tool, and perform job hazard analyses when necessary. In addition, they must comply with the other programmatic elements of the standard, in particular providing the employees with necessary training and equipment to minimize ergonomic hazards.

But employers' control obligations will be limited by the control they have over their employees' actual working conditions. Thus an employee who is expected to move patients in their own homes should be taught how to do so as safely as possible. For example, evidence was submitted to the record that portable lifting devices and other control measures are available for use in home settings (Ex. 37–4, Tr. 11743–45). According to witnesses, some portable lifting devices have been designed

especially for home settings (Tr. 11743–45). The witnesses said that these devices allow mechanical transfer in and out of bed, onto a toilet, and even into a tub (Tr. 11745). Other control measures described in the record include friction reduction sheets, gait belts, toilet and shower chairs, slide boards, and convertible chairs and wheelchairs (Ex. 37–4). To the extent these controls are feasible, and employers find them to be effective, employers could provide them to their home health worker employees. But an employer is not expected to change the configuration of a patient's bedroom or bathroom, although it must provide the worker with the training and controls necessary to allow him or her work as safely as possible in that location.

5. Small Businesses

A number of commenters said OSHA should exempt small businesses because compliance would be too burdensome (Ex. 30–3167, Tr. 3126–27, 3332). They said that small businesses do not have the knowledge or resources to hire outside experts to help identify and address MSD hazards (Tr. 3127). They also said that MSD rates were low for small businesses (Exs. 30–3167, 600–X–1, Tr. 3332). National Small Business United (NSBU) said that for the majority of small businesses the occurrence of an MSD was rare (Ex. 30–3167). By contrast, another participant (Ex. 26–1370) at OSHA's stakeholder meetings for Ergonomics Program Standard Development specifically supported the inclusion of small employers in the rule, saying that the rule was particularly needed in these facilities because they were less likely already to have either an ergonomics or a safety and health program (Exs. 26–1370).

OSHA considered whether to apply alternative regulatory provisions to small employers as part of the analysis required by SBREFA and the Regulatory Flexibility Act (64 FR 66040–53). OSHA does not believe the record supports such an approach for small business. First, employees who work for small businesses are experiencing work-related MSDs, and they need the protection this standard will provide. According to BLS, employees in establishments of all sizes have reported MSDs that are serious enough to involve days away from work.

In a number of industries comprised predominantly of small businesses, the risk of MSDs is particularly high. This is especially true in the health care industry. For example, many medical sonographers are employed by small businesses. Joan Baker, of the Society of Diagnostic Medical Sonographers,

testified that the MSD prevalence rate among sonographers exceeds 80 percent and that the frequency and severity of these MSDs appears to be increasing (Tr. 11881–82). Dr. Linda Morse, chief of occupational medicine at Kaiser San Francisco, said that the injury rate among ultrasound technicians in Northern California was almost 100 percent (Tr. 15045). Many nurses, nurses' aides, and orderlies are also employed by small businesses, including small nursing homes and small health care agencies. According to BLS, in 1996 about 15 percent (more than 103,000) of all MSDs resulting in days away from work were reported by health care workers. In addition, the American Nurses Association and the Service Employees International Union, among others, testified that the occurrence of MSDs among home health workers is particularly high (Exs. 32–274–1, 502–215).

OSHA does not believe this standard will be too burdensome for small businesses. The record shows that many small businesses have successfully implemented ergonomics programs (see, e.g., Exs. DC 66, 500–208–3, Tr. 17350–17355). These programs have paid for themselves in terms of reductions in medical costs, lost workdays and product reject rates (Tr. 17354). Moreover, if small businesses have low rates of MSDs, the obligations for those employers will be commensurately small (Ex. 30–3167). The only obligation that many small employers will have is a one-time requirement to provide basic information to their employees. And these employers can satisfy that burden by copying, distributing, and posting the information sheets in Appendices A and B.

The record shows that small businesses are easily able to get the information they need to address MSD hazards. A number of organizations have developed and are providing model programs, checklists, “best practices” guides and control information to small businesses (see, e.g., Exs. 32–234–2–1, OR 351). A number of organizations have developed and are providing model programs, checklists, “best practices” guides and control information (Exs. 32–234–2–1, OR 351). For example, the American Dental Association and state affiliates, such as the Oregon Dental Association, have developed and disseminated information on ergonomics for its members and held a “Dental Ergonomics Summit Conference” this year (Ex. OR 351). A number of trade associations are also providing ergonomics training for small businesses (Ex. 37–25, OR 351). For example,

Suzanne Rodgers, an ergonomist with 32 years of experience assisting a wide range of companies in addressing MSD hazards, said that she has provided training to small businesses at various conferences organized by the Chamber of Commerce (Ex. 37–25).

There are also other sources of information and assistance for small employers. OSHA and NIOSH provide free hazard evaluation services for small employers. OSHA will be providing additional information in the appendices to this final rule and other materials on the OSHA Webpage (www.osha.gov). Many other Internet sites also provide free ergonomics information.

III. Other Scope and Application Issues

A. Jobs Involving Both General Industry and Non-General Industry Tasks

Several commenters raised questions about whether this standard applies when an employee's job involves both general industry and non-general industry activities (Exs. 30–3853, 32–300, Tr. 2893–95). As explained above in reference to utility workers, because this is a job-based standard, OSHA intends employers to include all employees who perform general industry work within this standard, even if those employees also perform some work that may be classified as construction, agriculture, or maritime. Thus, employers engaged in landscaping or lawn and garden services, a general industry classification, are covered by this standard even if their employees' jobs include some harvesting of sod or trees, an agricultural classification. On the other hand, nurseries and tree farms, which are agricultural classifications, need not comply with the standard even if their employees perform some minor landscaping or horticultural services. Comments by the AFL–CIO best sum up the need for defining the application of the standard in this way:

Since this is a job-based standard, it is important that jobs in fact are covered. To apply the standard in some aspects of a job and not others would leave workers without protection and make compliance and enforcement confusing and difficult (Ex. 500–218, p. 133).

In addition, as stated in the discussion of utility line workers, the only way an employer can determine whether a job exposes an employee to an MSD hazard is to look at all the tasks and activities that comprise that job. Eliminating some tasks from this analysis may prevent identification of risk factors that are causing or contributing to the hazard. If employers

do not have that information, the controls they implement may not be successful. Therefore, in order to ensure that an employee is protected from MSD hazards while performing the general industry tasks, it may be necessary to control risk factors for the job as a whole.

B. Multiple Employer Worksites and Contract or Shared Employee Situations

A number of participants asked how the standard would apply at multi-employer worksites. Similar situations arise under many standards, and OSHA has published a “Multi-Employer Citation Policy” that discusses the allocation of responsibility among various categories of employers. CPL–0.124 (Eff. Dec. 10, 1999). OSHA has not historically discussed the operation of this policy in rulemaking documents, viewing it as an enforcement issue. In a challenge to OSHA's Bloodborne Pathogens standard, however, the United States Court of Appeals for the Seventh Circuit held that, where parties to a rulemaking raise issues about the application of the standard in this circumstance, OSHA should discuss the application of this policy. *American Dental Ass'n. v. Martin*, 984 F.2d 823 (7th Cir. 1993). Such a discussion is particularly useful with respect to some of the issues raised by this standard.

Under the multi-employer worksite policy, employers are generally required to take whatever steps are within their power to protect their own employees, and also to abate hazards within their control when other employees are exposed to those hazards. This means that an employer whose employees are working at a location controlled by another employer, for example a temporary services agency, must provide its employees with the information required by paragraph (d). Both employers will need to know if an employee reports an MSD, and must implement measures to share this information. They should consult to determine whether the report qualifies as an MSD incident under this standard, but the employer with control over the workplace must screen the job to determine whether further action is required. If so, the employer with control over the workplace must also implement the program elements required by this standard. And if such an employer hires a temporary worker to work in a job for which an ergonomics program under this standard is already in place, that employer must provide the temporary employee with any necessary training. The employing agency, however, will necessarily be responsible for providing the employee

with any necessary MSD management, including WRP. OSHA believes that this is basically how businesses are currently operating. OSHA expects that they may pay more attention to these issues and address them explicitly in their contracts after the standard is in effect.

C. United States Postal Service

Questions were also raised as to the effect of this standard on the United States Postal Service. In 1998, Congress amended Section 3(5) of the OSH Act to include the United States Postal Service within the Act's definition of employer. 29 U.S.C. 652(5). Postal Service Enhancement Act, P.L. 105-241. As a result, this standard applies to all USPS operations that are not construction, agriculture or maritime operations.

D. Municipalities

A number of municipalities asked whether the standard applies to local governments. States and their political subdivisions are not employers under the OSH Act, and they are not covered by this final rule or any other federal OSHA standards. However, the 23 States and 2 Territories with approved State Plans are required by Section 18(c)(2) of the OSH Act to issue standards that are "at least as effective" as Federal standards. 29 U.S.C. 667. Therefore, State Plan States must adopt ergonomics program standard within six months of the publication of this standard. Under Section 18(c)(6), State Plan States must apply such standards to State employees and to employee's of the State's political subdivisions. (See State Plan States section of this preamble for the list of State plan States.)

Industries and Jobs This Standard Covers

- Agricultural services
- Soil preparation and crop services, including crop planting, cultivating and protecting
 - Crop harvesting
 - Veterinary services
 - Lawn and garden services
 - Ornamental shrub and tree service
 - Tree trimming
 - Landscaping and horticultural services
 - Oil and gas drilling/extraction operations
 - Health care employees
 - Truck driving
 - Office workers employed by general industry establishments
 - Office workers employed by agricultural services establishments
 - Utility line operations including maintenance, repair, installation, construction, alteration and improvement operations
 - Power plant maintenance operations including repair, alteration and improvements

- Boat building and repair
- Airline baggage handlers
- Airline reservation and ticket agents
- Airline maintenance crews
- Railroad equipment building and rebuilding
 - Maintenance of equipment or structures
 - Forestry services
 - Forestry nurseries and gathering of forest products
 - Commercial fishing
 - Fish hatcheries and preserves
 - Hunting and trapping
 - Game propagation
 - State and municipal employees (in State Plan States) performing general industry operations
 - U.S. Postal Service
 - Federal government employees performing general industry operations

Industries and Jobs This Standard Does Not Cover

- Construction employment and operations
 - Agriculture employment and operations
 - Farm labor and management services
 - Livestock and animal specialty services
 - Maritime employment and operations
 - Ship building and repair
 - Longshoring
 - Office workers employed by construction, agriculture or maritime establishments
 - Maintenance workers employed by construction, agriculture or maritime establishments
 - Work at the employee's own home
 - Railroad work
 - Railroad terminal and switching
 - Airline attendants
 - Airline pilots

Paragraph (c)—How Does This Standard Apply if I Already Have an Ergonomics Program in Place When the OSHA Ergonomics Program Standard Becomes Effective?

Paragraph (c) of the final standard is a grandfather clause, which, under certain conditions, permits an employer who has already implemented and evaluated his or her ergonomics program by the date on which the final rule becomes effective to continue that program instead of complying with the OSHA standard. This paragraph permits employers to do this only if the program: is in writing, contains the core elements of basic ergonomics programs, and is demonstrably effective. The criteria for judging whether an employer's program adequately addresses the core elements are contained in paragraphs (c)(1)(i) through (v). Examples of criteria for judging the effectiveness of the program are contained in paragraph (c)(1)(v). Paragraph (c)(2) requires that, within 1 year of the standard's effective date, grandfathered programs have in place an MSD management policy that meets the requirements of paragraphs (p)

through (s) of the final rule. Final paragraph (c)(3) denies grandfather status to employers who have policies or procedures that discourage employees from participating in the program or reporting signs or symptoms of MSDs or the presence of MSD hazards in the workplace.

In the final rule, OSHA is requiring that grandfathered programs be in writing. The final rule's grandfather clause requires the employer to demonstrate program effectiveness and, like the proposal, to have a program that includes the core elements of effective programs. The Agency believes that this can best be accomplished with a written program. Further, both OSHA and the employer will find compliance with the grandfather clause easier to demonstrate if the program is written. By "written," OSHA also intends that the program can be maintained electronically.

Final paragraph (c)(1) requires grandfathered programs to include the core elements of effective ergonomics programs: management leadership and employee involvement; job hazard analysis and control; training; and program evaluation. This paragraph also indicates the subelements within each core element that OSHA believes are essential to the proper functioning of that core element. These subelements are stated broadly. For example, a subelement of management leadership (paragraph (c)(1)(i)) that OSHA considers essential is the establishment of an effective reporting system that permits employees to report the signs and symptoms of MSDs and to receive prompt responses to their reports. The employer's program must include all of the subelements of the core elements to qualify for grandfather status.

The following discussion explains the subelements comprising each of the core elements. Employers are free to include additional elements or subelements in their program, and doing so will not interfere with the program's grandfather status, provided that the program includes the core elements identified by paragraphs (c)(1)(i) through (v), and the subelements associated with them.

The proposed rule would have required an existing program to meet a "basic obligation" provision for each core element. Basic obligations, which were intended to capture the essence of the more detailed subelements proposed for each program element, were proposed for each program element. Table 1 compares the proposed rule's basic obligations sections with the corresponding subelements of the final rule's grandfather clause. The following discussion also explains OSHA's

reasons for revising the basic obligations proposed.

Final paragraph (c)(1)(i) states that grandfathered programs must include management leadership and identifies the subelements for that core element. Employers are required to demonstrate management leadership of their ergonomics program through the following subelements: an effective MSD reporting system and prompt responses to employee reports, the assignment of clear program responsibilities, and regular communication with employees about the ergonomics program. OSHA's experience has shown that, to be effective, management leadership must be active rather than passive. Leadership that is limited to a "paper program" with written policies and procedures but is not translated into practice by management would not meet the intent of this provision. On the other hand, management leadership that is known throughout the organization because of management's active engagement in the ergonomics process and appropriate follow-through on commitments would clearly fulfill this intent. The final rule's management leadership subelements are equivalent to those of the proposed basic obligation for this core element, except that OSHA has added "regular communication with employees" and "prompt" responses to reports to the subelements of the final rule's grandfather clause. The Agency has added these subelements to make sure that management leadership is responsive to employee reports and that management's commitment to the ergonomics program is communicated from top management down to the employees performing the work and implementing the program. Taken as a whole, OSHA believes that the subelements in final paragraph (c)(1)(i) will ensure that grandfathered programs have active rather than passive management leadership.

Final paragraph (c)(1)(ii) requires that grandfathered programs include employee involvement, as demonstrated by the early reporting of MSDs and active employee involvement in the implementation, evaluation, and future development of the employer's ergonomics program. OSHA has vigorously advocated employee participation in workplace safety and health issues for many years and is pleased by the growing recognition of the importance of employee participation on the part of private-sector companies, trade associations, safety and health professionals, and employees themselves. OSHA supports employee participation because

employees have the most direct interest in their safety and health on the job, they have an in-depth knowledge of the tasks they conduct at the worksite, they often have excellent ideas on how to solve ergonomic problems, and their interest in the program is vital to its success. If employees do not report their MSD signs and symptoms or MSD hazards, any ergonomics program will fail. OSHA has specifically included in paragraph (c)(1)(ii) a provision that employees be involved in the implementation, evaluation, and future development of grandfathered programs to make it clear that employee involvement extends to every element of the program, including program evaluation and future modifications to the program to reflect changes over time.

Final paragraph (c)(1)(iii) requires grandfathered programs to contain job hazard analysis and control, as demonstrated by a process for identifying, analyzing, prioritizing (if necessary), and controlling MSD hazards in affected jobs and following up to ensure control effectiveness. This is the heart of any ergonomics program. For employees to be protected from MSD hazards, it is obvious that those hazards must be eliminated or controlled. A note following this paragraph explains that personal protective equipment (PPE) may be used as a supplement to engineering, work practice, and administrative controls. The employer may only use PPE alone where other controls are not feasible. In addition, the note explains that, if PPE is used, the employer must provide it at no cost to employees.

As can readily be seen from Table 1, this provision has been changed substantially from the corresponding requirement in the proposal. The job hazard analysis and control subelements in the final rule's grandfather clause are designed to be less prescriptive and more flexible than those proposed and to fit better with the way rulemaking participants (see, e.g., Ex. 32-77, Tr. 14723, Tr. 4973) described this process in their existing ergonomics programs.

The final rule's grandfather clause requires employers to use a process for identifying, analyzing, and controlling MSD hazards in problem jobs. Employers may also prioritize jobs identified as having MSD hazards and then follow their prioritization scheme when controlling these hazards. Employers with grandfathered programs must also follow up on their hazard control measures to ensure that the controls implemented are effective. This is the process that participants in the rulemaking told OSHA they use in their

existing ergonomics programs. Companies like the Dow Chemical Company (Ex. 32-77; Tr. 5297), Levi Strauss (Tr. 14723, 14736, 14746), the Consolidated Edison Company of New York (Tr. 4644), and IBP, Inc. (Tr. 4973) described a process that includes these job hazard analysis features.

As discussed in the summary and explanation for the standard's job hazard analysis and control requirements (paragraphs (j) through (m)) later in this section of the preamble, the rulemaking record demonstrates that, currently, employers with existing programs do not always fix all problem jobs, nor do they eliminate all MSDs. To address these facts, the final rule's grandfather clause (1) permits employers to bring all problem jobs into their programs, and (2) acknowledges that employers will not eliminate all MSDs. Employers with grandfathered programs must, however, implement controls that (1) control the MSD hazards, (2) reduce MSD hazards to the levels specified in Appendix D, or (3) reduce MSD hazards to the extent feasible. These are the same compliance endpoints specified in paragraph (k)(1) of the final rule. These endpoints are explained in the summary and explanation for that paragraph.

Thus, the grandfather clause in the final rule will enable employers with existing programs that only address certain jobs to qualify for the grandfather clause if they include all problem jobs in their program before the standard's effective date. Thus, even programs that do not currently address all problem jobs would not be precluded from qualifying for grandfather status, providing that they revise their approach to include all such jobs before the standard is in effect.

Final rule paragraph (c)(1)(iv) requires grandfathered programs to provide for the training of managers, supervisors, and employees in the employer's ergonomics program and their role in it; the recognition of MSD signs and symptoms; the importance of early reporting; the identification of MSD hazards, and methods that the employer is using to abate them. Training is to be provided at no cost to the employees trained. Training is necessary to ensure that employees in problem jobs, their supervisors, and the individuals who set up and manage the ergonomics program are provided with the knowledge and skills necessary to recognize MSD signs, symptoms, and hazards in their workplace and to effectively participate in the ergonomics program. These individuals also need to be trained in the need for early reporting. The length and frequency of training is determined

by the needs of the workplace. Periodic training is necessary to address new developments in the workplace and to reinforce and retain the knowledge already acquired in previous training, but to make this element as flexible as possible, OSHA is not specifying the frequency with which training must be provided.

Final rule paragraph (c)(1)(v) requires grandfathered programs to include evaluations of the program, as demonstrated by regular reviews of the elements of the program, the effectiveness of the program as a whole, and the correction of identified deficiencies. This means that employers must, at a minimum, assess the functioning of their ergonomics program, compare its provisions to the elements and subelements specified in the grandfather clause, identify any deficiencies in the program, and correct them. Employers are required to make sure that the ergonomics program they have implemented is eliminating or controlling the MSD hazards in jobs in their workplace. A program designed for a large site with many different jobs, for example, is likely to be more formal and extensive than one designed for a small site with one or two high-risk jobs. Similarly, an ergonomics program that fits a manufacturing facility may not be appropriate for a work environment in the service sector. To make the evaluation requirements for grandfathered programs as flexible as possible, OSHA is not specifying the frequency with which evaluations must be conducted. However, employers do need to reevaluate their programs periodically to ensure that they are performing up to expectations.

Final rule paragraph (c)(1)(v) also requires the program evaluation to review the effectiveness of the program, using such measures as: reductions in the number or severity of MSDs, increases in the number of jobs in which ergonomic hazards have been controlled, reductions in the number of jobs posing MSD hazards to employees,

or any other measure that demonstrates program effectiveness.

Lastly, final rule paragraph (c)(1)(v) requires the employer to conduct at least one review of the elements and effectiveness of the program before January 16, 2001. This provision, which is discussed in detail below, ensures that only effective programs are grandfathered. Although paragraph (c)(1)(v) requires employers to correct deficiencies in the program, OSHA would not consider an employer who uncovers major deficiencies in the program elements or whose evaluation does not demonstrate the overall effectiveness of the program to be in compliance with this paragraph. Requiring any program that is grandfathered to be demonstrably effective is basic to employee protection and to ensuring that grandfathered programs are at least as effective as the programs required by the standard OSHA is promulgating for all general industry employers and employees.

The final rule's grandfather clause does not identify specific rates of MSDs or other similar measures of effectiveness that a grandfathered program must achieve because OSHA is aware that the programs grandfathered in will be at many different stages of program development and because OSHA wishes to recognize as wide a range of existing effective programs as possible. Although the grandfather clause does not set a specific reduction goal, employers are required by paragraph (c)(1)(v) to demonstrate the effectiveness of their programs.

Paragraph (c)(2) of the final rule requires employers with grandfathered programs to institute an MSD management policy (including work restriction protection) that meets paragraphs (p) through (s) of the final rule within 12 months of the effective date of the standard. Thus, the final rule's grandfather clause is designed to recognize existing ergonomics programs that are effective even if they do not have an MSD management policy until

a year after the effective date of the standard.

OSHA believes that all successful ergonomics programs depend on the early reporting of and intervention with regard to MSD signs and symptoms; this is as true for grandfathered programs as for those that are not grandfathered. As discussed at length in connection with paragraph (r), OSHA has found, both on this record and in the records of many other OSHA standards, that wage and benefit protection is essential to early reporting and employee participation in the employer's program. Without such protection, employees fear economic loss and often simply do not report their signs and symptoms until the injury has progressed to the point where work (and perhaps full recovery) is no longer possible. In addition, as fully explained in the summary and explanation for paragraphs (p) through (s) of the final rule, when an employee reports an MSD, early intervention is required to ensure appropriate treatment, work restrictions, and follow up. OSHA anticipates that many existing programs will be able to meet the requirements of paragraph (s) by use of the dispute resolution mechanisms described in paragraph (s)(5).

Final rule paragraph (c)(3) states that an ergonomics program of an employer who has policies or procedures that discourage employee from participating in the program or reporting the signs or symptoms of MSDs or the presence of MSD hazards in the workplace does not qualify for grandfather status. This provision, which is equivalent to paragraph (h)(3) of the final rule, ensures that employees are as free to participate fully in grandfathered programs as employees in programs that are not grandfathered. As discussed at length in connection with paragraph (h)(3), OSHA has found that employee participation is essential to a program's effectiveness and that a prohibition on policies that inhibit that participation is warranted.

TABLE 1—COMPARISON OF PROPOSED BASIC OBLIGATIONS WITH FINAL GRANDFATHER CLAUSE PROGRAM ELEMENT CORE ELEMENTS AND SUBELEMENTS

Proposed basic obligation	Corresponding core elements and subelements of the final grandfather clause
Proposed Management Leadership Obligation	Final § 1910.900(c)(1)(i) and (ii) and (c)(3): [Your program must contain the following elements:]
You must demonstrate management leadership of your ergonomics program. Employees (and their designated representatives) must have ways to report MSD signs and MSD symptoms; get responses to reports; and be involved in developing, implementing and evaluating each element of your program. You must not have policies or practices that discourage employees from participating in the program or from reporting MSD signs or symptoms.	(c)(1)(i) Management leadership, as demonstrated by an effective MSD reporting system and prompt responses to reports, clear program responsibilities, and regular communication with employees about the program; (c)(3) An employer who has policies or procedures that discourage employees from participating in the program or reporting the signs or symptoms of MSDs or the presence of MSD hazards in the workplace does not qualify under paragraph (c) of this section.

TABLE 1—COMPARISON OF PROPOSED BASIC OBLIGATIONS WITH FINAL GRANDFATHER CLAUSE PROGRAM ELEMENT CORE ELEMENTS AND SUBELEMENTS—Continued

Proposed basic obligation	Corresponding core elements and subelements of the final grandfather clause
<p>Proposed Employee Participation Obligation:</p> <p>You must set up a way for employees to report MSD signs and symptoms and to get prompt responses. You must evaluate employee reports of MSD signs and symptoms to determine whether a covered MSD has occurred. You must periodically provide information to employees that explains how to identify and report MSD signs and symptoms.</p> <p>Proposed Job Hazard Analysis and Control Obligation:</p> <p>You must analyze the problem job to identify the ergonomic risk factors that result in MSD hazards. You must eliminate the MSD hazards, reduce them to the extent feasible, or materially reduce them using the incremental abatement process in this standard. If you show that the MSD hazards only pose a risk to the employee with the covered MSD, you may limit the job hazard analysis and control to that individual employee's job.</p> <p>Proposed Training Obligation:</p> <p>You must provide training to employees so they know about MSD hazards and your ergonomics program and measures for eliminating or materially reducing the hazards. You must provide training initially, periodically, and at least every 3 years at no cost to employees.</p> <p>Proposed MSD Management Obligation:</p> <p>You must make MSD management available promptly whenever a covered MSD occurs. You must provide MSD management at no cost to employees. You must provide employees with the temporary "work restrictions" and "work restriction protection (WRP)" this standard requires.</p> <p>Proposed Program Evaluation Obligation:</p> <p>You must evaluate your ergonomics program periodically, and at least every 3 years, to ensure that it is in compliance with this standard.</p>	<p>(c)(1)(ii) Employee participation, as demonstrated by the early reporting of MSDs and active involvement by employees and their representatives in the implementation, evaluation, and future development of your program; [See also paragraph (c)(1)(iv).]</p> <p>Final § 1910.900(c)(1)(iii): [Your program must contain the following elements:] Job hazard analysis and control, as demonstrated by a process that identifies, analyzes, and uses feasible engineering and administrative controls to control MSD hazards or to reduce MSD hazards to the levels specified in Appendix D or to the extent feasible, and evaluates controls to assure that they are effective. Note to Paragraph (c)(1)(iii): Personal protective equipment (PPE) may be used to supplement engineering and administrative controls, but you may only use PPE alone where other controls are not feasible. Where PPE is used you must provide it at no cost to employees.</p> <p>Final § 1910.900(c)(1)(iv): [Your program must contain the following elements:] Training of managers, supervisors, and employees (at no cost to these employees) in your ergonomics program and their role in it; the recognition of MSD signs and symptoms; the importance of early reporting; the identification of MSD hazards in jobs in your workplace; and the methods you are taking to control them.</p> <p>Final § 1910.900(c)(2): [Your program must contain the following elements:] By January 16, 2002, you must have implemented a policy that provides MSD management as specified in paragraphs (p), (q), (r) and (s) of this section.</p> <p>Final § 1910.900(c)(1)(v): [Your program must contain the following elements:] Program evaluation, as demonstrated by regular reviews of the elements of the program; regular reviews of the effectiveness of the program as a whole, using such measures as reductions in the number and severity of MSDs, increases in the number of jobs in which ergonomic hazards have been controlled, or reductions in the number of jobs posing MSD hazards to employees; and the correction of identified deficiencies in the program. At least one review of the elements and effectiveness of the program must have taken place prior to [insert date 60 days after the publication date of this standard].</p>

The following paragraphs discuss the comments, evidence and testimony received on the proposed grandfather clause and present OSHA's reasons for accepting or rejecting the rulemaking participants' suggestions and for including the final rule's grandfather clause requirements.

1. Whether the Proposed Standard Would Recognize Existing Effective Programs

Many rulemaking participants said that the proposed rule's grandfather clause would not, as drafted, recognize existing effective programs (see, e.g., Exs. 30-574, 30-973, 30-1722, 30-3765, 30-3813, 30-3815, 30-3845, 30-3853, 30-3934, 30-3956, 30-4185, 31-297, 32-141; 500-188; Tr. 3320, 4137, 11265,

11290, 11615). Most of these commenters argued that the proposed standard would only permit existing programs that already met all of the details of the program required by OSHA's standard to be grandfathered (see, e.g., Exs. 30-1722, 30-3853, 30-3934, 30-3956, 32-141; Tr. 11265, Tr. 11290, Tr. 11615). According to these commenters, the basic obligation OSHA proposed for each core element would in actuality have required an employer to meet each of the proposed subrequirements under that core element. Thus, they reasoned that the proposed grandfather clause would only recognize existing programs that already met all of the particulars of the program envisioned by OSHA's proposed standard even in cases where the

employer's program had been demonstrated to be effective in preventing MSDs. For example, the U.S. Chamber of Commerce stated this view as follows:

OSHA claims that employers who already have ergonomics programs in place "may continue that program, even if it differs from the one [the proposed] standard requires" if the program meets certain requirements * * *. The Proposed Rule requires that ergonomics programs that were implemented and evaluated before the effective date of the Proposed Rule must, among other things, (1) satisfy the "basic obligation" of each of the standard's six program elements; and (2) demonstrate that the elements of the preexisting program are "functioning properly * * *." This provision is completely inadequate to assist employers with preexisting programs. The qualifications

written in to this provision essentially require that employers reconstruct their existing programs, even if any given program is effective in addressing supposed "MSD hazards," so that it mirrors the Proposed Rule's notion of an appropriate ergonomics program.

[A]n employer is supposed to ensure that his program satisfies the "basic obligation" of each program element. The "basic obligation" of each [proposed] element is so broadly written that it encompasses all requirements enumerated under that particular element. Thus, employers, including those Chamber members who have [spent] a great deal of effort and money to establish voluntary ergonomics programs, will be forced to [alter] their preexisting programs to comply with the Proposed Rule (Ex. 30-1722).

Edison Electric Institute's (EEI's) comments were similar:

EEI supports the concept of a "grandfather" clause. However, the proposed version is more illusory than real, for it appears to require that all newly proposed controls be put in place before the effective date of the standard. It is unrealistic and unfair to "grandfather" only those programs that track the proposed standard. It is as if OSHA is saying, "You don't have to do anything, provided that you have done everything." A true "grandfather" provision would give credit for effective past programs, regardless of whether those programs conform to the scheme of the proposed program (Ex. 30-3853).

The American Hotel and Motel Association gave examples of how an effective existing program might fail OSHA's proposed grandfather test:

OSHA does not allow for any variation from OSHA's regulation if a [company's] ergonomics program does not satisfy "the basic obligation section of each program element in this standard." An ergonomics program that is proven to be 100 percent effective would fail if it only offered, for example, training every five years. An ergonomics program also would likely fail if it provided program evaluation only upon a report of an ergonomic injury yet did not have a reportable injury in less than three years (Ex. 30-3233).

The Center for Office Technology noted that none of the exemplary ergonomics programs that have won the Center's ergonomics award have requirements for work restriction protection, which would have been required by the proposed standard to be in place by the standard's effective date in order for a program to be grandfathered (Ex. 30-2208). Thus, the Center pointed out that these very good programs would not meet OSHA's proposed grandfather clause. The Center recommended that OSHA include in the final rule a grandfather clause that would allow any program to be grandfathered in that was reducing MSD

incidence and severity rates and educating employees about how to minimize discomfort on and off the job.

The National Association of Manufacturers (NAM) and others noted that some companies have adopted effective ergonomics programs under OSHA's Voluntary Protection Program (VPP) or through corporate settlement agreements (see, e.g., Exs. 30-3392, 30-3815, 30-3819, 30-4499). These rulemaking participants observed that these ergonomics programs would not be acceptable under the proposed grandfather clause even though they have been recognized as effective by the Agency in the past. NAM urged OSHA in the final rule to grant employers' existing ergonomics programs greater acceptance for grandfather status based on the results they achieve.

Similarly, Organization Resources Counselors, Inc. (ORC) noted that a recent General Accounting Office (GAO) study recommended that OSHA adopt a flexible approach in its ergonomics standard (Ex. 500-214). ORC argued that OSHA ignored this GAO recommendation in drafting the proposed grandfather clause. As evidence, ORC pointed out that even the best ergonomics programs would not qualify for status under the proposal's grandfather clause, stating:

OSHA has predicated its proposed Ergonomics Program Standard on its observations that many businesses are successfully addressing ergonomics issues using similar approaches. In recognition of this conclusion and in order to focus its own scarce resources on the areas of greatest need, OSHA has proposed a "limited grandfather clause" for employers with existing ergonomics programs that meet certain criteria. OSHA's proposal made numerous references to the 1997 General Accounting Office (GAO) study of several companies with ergonomics programs which found that the companies' programs reduced work-related MSDs and associated costs, and that the programs and controls selected by employers to address ergonomic hazards in the workplaces were not necessarily costly or complex. As a result, OSHA said, "GAO recommended that OSHA use a flexible regulatory approach in its ergonomics standard that would enable employers to develop their own effective programs." OSHA claimed that the standard it proposed reflects this recommendation and "builds on the successful programs that thousands of proactive employers have found successful in dealing with their ergonomic problems" (64 FR 65770). Unfortunately, in crafting the proposed grandfather clause, OSHA ignored a major finding of the GAO report: that although there were common elements in each of the employer's programs studied, there was significant variety in the way each program element was implemented (GAO/HEHS-97163, page 4). There was no evidence in the GAO study that one method

of implementation was better than another, yet OSHA has drafted a rule that makes only one program approach—OSHA's—acceptable.

* * * [A]s written, virtually no employer would qualify under [the proposed grandfather clause's] terms, rendering it a nullity. As was attested to by several industry representatives during the public hearings, even those programs that OSHA has acknowledged as being among the best in industry today would not be in compliance with the proposal. As pointed out in ORC's oral testimony, it is unlikely that any of the approximately 150 member companies of ORC's occupational safety and health groups, whose safety and health programs are among the most sophisticated and effective in the world, would meet the criteria under section 908 of the proposal. This is because of the proposed requirement that an employer must meet all of the "basic obligation" sections of each program element. Virtually all of the proposed "basic obligations" are too prescriptive and should be simplified as described more fully in ORC's written comments. In particular, many ORC employers would not meet the provisions of [proposed] sections 911, 917, 923 or 929, individually, and almost none would meet all four (Ex. 500-214).

Summing up the concerns of commenters wanting a more flexible grandfather clause, the American Dental Association argued that the proposal would reject alternative programs that might be equally or even more effective (Ex. 32-141). The Association recommended that OSHA establish a standard based on objective measures or performance and leave the methods of achieving those objectives to employers.

Several employer representatives illustrated how various effective existing ergonomics programs would fail to meet the proposed grandfather clause (see, e.g., Ex. 30-4185; Tr. 8634, 9181, 11265). For example, IBP, Inc., which has a corporate-wide ergonomics settlement agreement with OSHA, identified several aspects of the proposed program that their program does not address: responses to every MSD symptom, communication with the health care provider, and WRP (Tr. 4929, Tr. 5041). In the hearings, an IBP representative stated that its program would not meet the grandfather clause because of proposed requirements in these three areas (Tr. 5041). Many other employer representatives also noted that their programs did not include provisions providing for work restriction protection and, consequently, would not qualify under the grandfather clause (Tr. 8634, Tr. 9181).

Constangy, Brooks and Smith stated that their clients could not meet the hazard control endpoints in the proposed standard (Ex. 30-4185). They argued that, as drafted, the proposal

would mean that the occurrence of even a single MSD would require their clients to implement new engineering controls. Consequently, they believed that their clients' programs would not qualify under the proposed grandfather clause. Other commenters also noted that their, their members', or their clients' programs would not meet the proposed standard's grandfather clause for similar reasons (see, *e.g.*, Exs. 30-3344, 30-3347, 30-3368, 30-3845, 30-4137).

One witness at the hearing, Thomas J. Durbin of PPG Industries, noted that since no one would benefit from the grandfather clause as it was proposed, OSHA should either put in a true grandfather clause that recognizes programs containing the six core elements or eliminate it altogether (Tr. 3135, Tr. 3147). In questioning, he stated that he interpreted the proposal to require the full program as long as MSDs continued to occur (Tr. 3140).

The Boeing Company argued that the restrictive nature of the proposal's grandfather clause ran counter to the intent of the OSH Act (Ex. 30-1547). In support of their position, they pointed to section 6(d) of the Act, which provides for a variance procedure to recognize alternative approaches to compliance with OSHA standards, provided that the alternative provides equivalent employee protections. Boeing was particularly concerned that the standard, as proposed, would deny grandfather status to an employer who had a program but who had not yet completed the implementation of all of the control measures required by the proposal.

On the other hand, many rulemaking participants indicated that the proposed standard's grandfather clause would allow ineffective programs to be grandfathered (see, *e.g.*, Exs. 30-4200, 32-111, 32-182, 32-198, 32-210, 32-339; Tr. 3477). For example, the United Steelworkers of America and others were concerned that employers whose program evaluations failed to identify deficiencies simply because the evaluations were not done properly could be grandfathered in under the proposed standard (see, *e.g.*, Exs. 32-111, 32-182). They recommended that OSHA develop additional regulatory text to strengthen the program evaluation provisions. The Union of Needletrades, Industrial and Textile Employees (UNITE) was also very concerned that the proposed grandfather clause would inadequately protect employees (Ex. 32-198), stating:

The acceptability of existing programs depends largely on the criteria used to determine acceptability. Therefore, the correctness of the current criteria—

compliance solely with the "basic obligation" provisions—is critical to the protection of workers from OSHA's approval of programs which are in fact ineffective. For the reasons [summarized by OSHA] below, UNITE does not believe that these criteria will provide the appropriate level of workers protection (Ex. 32-198).

Several unions, including UNITE and the United Food and Commercial Workers International Union (UFCW), gave the following reasons why the proposal's grandfather clause was inadequate:

- The detailed provisions implementing each of the proposed program elements, which would not be required for grandfathered programs, are necessary for adequate protection of employees. UNITE pointed to OSHA's extensive justification for each of these proposed provisions in the preamble and indicated that the justification applied just as well to programs in existence before the rule becomes effective as to programs implemented afterward (Ex. 32-198).

- The proposed basic obligation sections for the management leadership and training elements, which would be the only requirements employers with grandfathered programs would have to meet, would allow poorly trained managers to make determinations that their program complies with the standard. The unions noted that training for managers was not included as part of the proposed basic obligation for these elements. They were particularly concerned that inadequate training of managers would result in improper program evaluations (see, *e.g.*, Exs. 30-4200, 32-198, 32-210, 32-421).

- Job hazard analysis and control and quick fixes could be performed without the input of employees because employee participation is not a part of the proposed basic obligation of those provisions.² The unions argued that, without feedback from employees, a provision not addressed in the proposed basic obligation for the job hazard analysis section, employers would be likely to improperly identify risk factors or select improper hazard controls (see, *e.g.*, Exs. 30-4200, 32-198, 32-210, 32-461).

- The proposed MSD management basic obligation is missing a requirement for health care professionals to be provided with information about the workplace and the employee's job (Ex. 32-198). According to UNITE, which has had first-hand experience with programs that do not require such information

sharing, this omission would result in ill-conceived recommendations from the health care professional (Ex. 32-198).

- The basic obligation for the proposed job hazard analysis and control section omitted requirements that limited the use of personal protective equipment and mandated that employers provide it at no cost to employees (Ex. 32-210).

- The proposal's requirements for program evaluation were inadequate and would allow employers to overlook serious program deficiencies (see, *e.g.*, Exs. 30-4200, 32-198, 32-210). The unions believed that, because the rule's evaluation provisions are the primary means for determining the acceptability of an existing program under the grandfather clause, these provisions should be revised in the final rule to prevent employers from inappropriately approving unacceptably weak programs for grandfather status. (Also see the summary and explanation for paragraph (u), later in this section of the preamble.)

The International Brotherhood of Teamsters (IBT) observed that the proposed standard would consider any new ergonomics program coming into effect to comply with the standard as deficient if the new program did not meet one or more of the standard's requirements (Exs. 30-4200, 32-461). The IBT argued that existing programs should be held to the same standard:

Any program grandfathered under this proposal would essentially be judged by a different set of criteria than a program developed after the effective date. The grandfathered program would be considered to be in compliance despite having missing components, provided that the [proposed] basic obligations as currently defined, are met. An identical program, that was developed after the effective date and was not grandfathered would not be considered to be fully in compliance and would be cited by compliance officers for each component of the standard that was lacking, despite meeting the very same basic obligations that the grandfathered program met. This weakness can not be used as an argument that compliance is too difficult to determine, but rather must be viewed as an argument that the grandfathering provision, as it currently stands, has serious flaws and must be significantly improved such that every worker is provided the same protections under this standard (Ex. 32-461).

At the hearing, OSHA stated that the Agency's intent in the proposal was to include a grandfather provision that recognized existing effective ergonomics programs:

Other requirements of the proposal that OSHA has designed to be flexible include a grandfather clause that permits employers who have already implemented an

² UNITE also noted that the proposed quick fix section had no basic obligation section at all.

Ergonomics Program to continue to operate that program as long as it meets minimal requirements (Tr. 19).

It is readily apparent from the rulemaking record that very few, if any, existing ergonomics programs would be able to fulfill the requirements of the proposed grandfather clause. Although OSHA drafted the language in the proposed standard generally and in the grandfather clause specifically to be flexible, the Agency recognizes that the grandfather clause, as proposed, was not sufficiently flexible to allow existing programs that are effective in protecting employees from MSD hazards to be grandfathered in. On the other hand, OSHA agrees with many of the union comments, discussed above, that it is important that the grandfather clause not recognize programs that are ineffective in protecting employees from MSD hazards. OSHA has structured the final rule's grandfather clause to strike an appropriate balance between flexibility, on the one hand, and program effectiveness, on the other.

In drafting the proposed and final rules, OSHA has relied heavily on the Agency's experience with effective ergonomics programs that proactive employers have implemented; in fact, the final rule is modeled after such programs. OSHA has concluded that it is reasonable for the Agency to include in the final rule a grandfather clause that is less prescriptive than the one proposed and is more closely focused on the effectiveness of existing programs. The Agency has made several changes to the final rule's grandfather clause to achieve this end. First, OSHA has streamlined the subelements (called "basic obligations" in the proposed rule) under each core element and has removed some of the more prescriptive requirements. For example, the final rule has not carried forward the proposal's provision that periodic training and program evaluations in grandfathered programs be conducted at intervals of no more than 3 years. Second, OSHA is permitting employers to add or strengthen elements of their programs, provided that they do so, and evaluate the program at least once, before the effective date of this rule. Third, because so many commenters with otherwise effective programs reported that their program would not qualify for grandfather status solely because it did not have a WRP component, the final rule gives employers a year from the effective date of the standard to add such protections (which are a part of MSD management) to their existing programs. Fourth, OSHA has included, in the final rule,

examples of some of the specific measures that employers may use to demonstrate that their programs are effective. These changes will enable more employers' programs to qualify for the grandfather clause but will also ensure that only effective existing programs are recognized. The changes also shift the focus from compliance with the rule to effectiveness in preventing MSDs. Although OSHA believes that having all six elements is vital to qualify a program for grandfather status, OSHA is not interested in technical compliance but in real effectiveness.

2. Whether Effectiveness of an Ergonomics Program Is All That Matters

Many rulemaking participants believed that it would be more appropriate for the standard to simply accept proven, effective programs than to require that grandfathered programs also include the core elements of successful programs (see, e.g., Exs. 30-523, 30-1090, 30-1901, 30-1722, 30-2208, 30-3211, 30-3765, 30-3813, 30-3934, 30-3956; Tr. 3319, 15657). In their view, effectiveness is the only part of the program that matters, and therefore any existing program that is effective should be grandfathered. Doerle Food Services, Inc., exemplified many of these comments:

OSHA has made its position clear, at 64 Fed. Reg. 65791, in which it states that the agency believes "enforcement of the standard will be more consistent and more equitable * * * if the test of an employer's program is whether it contains the core elements, rather than whether it is effective." This is, we submit, an incredible statement, and reflects OSHA's devotion to its mandated program and "control" strategy, as opposed to actual effective programs. It is this outlook which is at the core of the "grandfather" provision, since it does not accord recognition in any meaningful way to a pre-existing effective program that can be shown to have minimized the conditions that are at issue. This portion of the standard clearly needs to be reconsidered and expanded (Ex. 30-523).

The Washington Aviation Group gave examples of how an employer's ergonomics program might be effective without meeting the proposal's grandfather criteria:

There are a variety of reasons why a company might experience few or no ergonomics problems. The business owner may have an intuitive sense of how to promote comfort among the employees that has a beneficial effect on ergonomics issues. The nature of the work might be such that it does not lend itself to repetitive motion disorders or other ergonomics problems. Management may have established an effective rapport with the employees that is sufficiently responsive so that potential

problems are generally resolved in an expedient manner before they represent hazards. While all of these are approaches that can support safety in an effective and expedient manner, none of these would represent sufficient ergonomics programs under the proposal; and that is part of the problem with the proposal: it discounts systems that work, but that are not as comprehensive or well-documented as the proposal (Ex. 30-3849).

Some rulemaking participants recommended that programs be grandfathered based solely on one or more measures of effectiveness (see, e.g., Exs. 30-1901, 30-3211, 30-3344, 30-3348, 30-3361). For example, Armstrong World, Inc., recommended accepting for grandfather status programs based on the employer's injury incidence rates:

Employers should be exempt from any proposed standard based on their performance in preventing such injuries. We would suggest using 50% of the employers' industry's respective SIC Code rates for Total Recordable Cases and Cases With Days Away From Work as a meaningful measure of accepting existing employer ergonomics processes as they are (Ex. 30-1901).

Other rulemaking participants also recommended using injury rates, either in absolute terms or in terms of showing a reduction, as a measure of effectiveness and qualification for grandfather status (see, e.g., Exs. 30-3344, 30-3348, 30-3361). For example, the Exxon Mobil Production Company suggested that the standard grandfather a program if the employer's records demonstrate that the program is preventing MSDs and is managing ergonomic concerns (Ex. 30-2433). John W. Braddock suggested that employers be permitted to produce evidence that the existing program was working and that there is an effective early reporting mechanism in place and to qualify for grandfather status on this basis (Ex. 30-4301).

ORC argued that there are a number of ways to measure program effectiveness, which should be the true gauge of the worthiness of any ergonomics program (Ex. 30-3813; Tr. 4112). They suggested several possible ways to measure effectiveness:

OSHA might place the initial burden of demonstrating effectiveness of the program on the employer and include in a non-mandatory appendix a number of types of performance measures and approaches that OSHA would consider appropriate. OSHA mentions some in the preamble, e.g., decreases in the numbers or rates of MSDs and decreases in severity. Other measures might include reduced workers' compensation claims for MSDs, use by the employer of periodic symptoms surveys and other indicia of effective early reporting, or

demonstration that risk factors have been reduced and/or tools and equipment have been modified. An employer might demonstrate effectiveness based on periodic program evaluation that measures effectiveness based on an internal "score card" that looks at a number of appropriate effectiveness measures.

* * * * *

ORC believes strongly that OSHA should be focusing its attention on results or performance, not methodology (Ex. 30-3813).

However, even though ORC objected to the proposed grandfather clause's emphasis on core elements and their basic obligations, they did agree with OSHA that there is a need to ensure that any demonstration of effectiveness that relies on numbers or rates of MSDs not mask any underreporting of MSDs (Exs. 30-3813, 32-78).

Unisea, Inc. suggested the following language for OSHA to use in the final rule to recognize existing ergonomics programs based on effectiveness:

If a company is able to show by operation redesign with ergonomics considerations made, or injury records or near-miss reports that a reduction of reported MSD's has occurred, that company shall be considered in compliance of the standard and its intent.

OR, If a company is able to show a steady overall reduction of injuries, either by total number or incident rate, that company shall be considered in compliance of the standard and its intent (Ex. 500-158).

Abbott Laboratories argued along similar lines and submitted data in support of its position. According to a comment in the record, Abbott Laboratories instituted ergonomics programs at three laboratories in the late 1980's (Ex. 500-153). Abbott's comment presented the OSHA-recordable illness rates at those facilities over the last 9 years. These data are shown in Table 2. Abbott states that the fall in rates over that period reflected ergonomic improvements made at each facility and should qualify these establishments for grandfather status.

TABLE 2.—OSHA RECORDABLE ILLNESS CASE RATES AT THREE ABBOTT LABORATORIES PLANTS

Year	Plant A	Plant B	Plant C
1999	1.03	1.44	1.46
1998	0.47	1.90	2.87
1997	1.02	1.81	2.50
1996	0.43	1.00	2.30
1995	0.71	3.27	2.74
1994	2.69	3.13	3.47
1993	3.70	4.27	4.51
1992	3.25	2.52	6.68
1991	4.41	4.54	7.06

Source: Ex. 500-153.

Another point raised by commenters concerned the proposed requirement

that grandfathered programs must be in place and be judged effective by the time the standard is effective in order to be grandfathered. The Departments of Defense and Navy recommended that the standard provide employers wishing to grandfather their programs in with sufficient time to conduct a statistically significant evaluation of the effectiveness of the program even if the evaluation did not take place until after the effective date (Ex. 30-3818; Tr. 3228). They were concerned that it would not be possible to perform such an evaluation before the effective date of the standard, as the proposal required. In addition, they suggested that the standard clarify what effectiveness measures or evaluation points OSHA would accept for each program element in grandfathered programs (Ex. 30-3818; Tr. 3228).

Other commenters suggested a variety of indicators of program effectiveness. For example, the American Industrial Hygiene Association (Ex. 32-133) stressed measures of effectiveness other than injury rates:

OSHA needs to be more specific on what constitutes an equivalent program so that mediocre programs do not pass compliance, but programs showing improvements will have a reasonable chance to be considered acceptable. The evaluation of quality of the program should rely on real evidence of hazards identified and risk reduction. Specifically, have physical risk factors been reduced and have ergonomics improvements been made? Indeed, this is the "bottom line." Other things to look at include whether training has been done, and if there is a reduction in MSDs and associated workers' compensation costs (Ex. 32-133).

Herman Miller, Inc., listed several measures that employers could use to measure effectiveness: "Reduction in MSD hazards, MSD severity rates, lost workdays or benchmarked improvements in employee satisfaction rates" [Ex. 30-518]. They suggested leaving the specific protocol to the discretion of the employer and noted that OSHA compliance officers would need to be given proper training and tools so that they could make logical and qualitative assessments of ergonomics programs and determine whether they were effective enough to qualify for grandfather status.

Dennis Morikawa, testifying on behalf of Morgan, Lewis and Bockius, did not specify a particular measure of effectiveness but recommended instead that OSHA make the grandfather clause widely available to employers to encourage as many of them as possible to adopt programs before the final rule's effective date (Tr. 15657). He argued that this approach would further

OSHA's real goal: The reduction in the number of MSDs experienced by workers.

In their post-hearing submission, the U.S. Chamber of Commerce criticized the proposed grandfather clause's reliance on the proposed core elements' basic obligations instead of effectiveness:

The Agency claims that existing programs will be evaluated upon the existence of the core elements rather than a program's effectiveness * * * because it will make such evaluation "less time-consuming" and "administratively simpler" for both OSHA and the employers. 64 Fed. Reg. at 65791. Of course, the real reason that the Agency has chosen to focus on content is that OSHA simply cannot judge effectiveness and has no idea what it means to be an effective program. Indeed, in order to qualify under the Grandfather Clause, an employer's existing program must not only contain the core elements of the Proposed Rule, but must also be "functioning properly." And although according to the Preamble "effectiveness" is not a measure of whether or not the program is "functioning properly," 64 Fed. Reg. at 65791, Marthe Kent testified to precisely the opposite effect:

And further [proposed 1910.908], which says the evaluation indicates that the program elements are functioning properly, what we mean there is [that the elements] are effective. I mean, you cannot have a program with the elements functioning properly and it not be effective.

Tr. at 1-182. Thus, not only can the Agency not determine what "effectiveness" means, it also apparently cannot decide whether or not "effectiveness" means the same thing as "functioning properly." Until the Agency sorts out this conundrum in some understandable way, there can be no real Grandfather Clause in the Proposed Rule (Ex. 500-188).

OSHA did not propose a grandfather clause that relied heavily on injury rate goals to demonstrate effectiveness because, as the Agency noted in the proposal (see 64 FR 65980 *et seq.*), MSDs are currently substantially underreported, and relying on reported rates would therefore, in many cases, overstate effectiveness. Some commenters, however, argued that MSD rates were appropriate for this purpose (see, e.g., Exs. 30-2989, 30-3845). For example, the Forum for a Responsible Ergonomics Standard stated:

If OSHA is concerned with how to measure "effectiveness," it can prescribe the manner in which effectiveness is to be measured, such as reductions in the number and severity of MSDs. OSHA contends, however, that most means of measuring "effectiveness" have built-in incentives to discourage reporting. See *id.* This contention ignores the fact that companies are subject to regulatory requirements in the proposed rule, backed up by OSHA fines and penalties, to facilitate employee reporting (Ex. 30-3845).

A. O. Smith Corporation commented that, in its experience, few employers discourage reporting of workplace injuries:

The provisions in the standard that allude to the employer having programs in place that discourage the reporting of MSD injuries tends to suggest that entire safety and health awareness and accident prevention programs would be construed as disincentives to reporting. We do not accept this premise and find that most employers work hard at making sure their employees are provided a safe work environment and a mechanism to report injuries should they occur (Ex. 30–2989).

Other rulemaking participants agreed with the approach taken in OSHA's proposal and opposed basing the grandfather clause solely on a measure of the reduction in the number of MSDs in a workplace (see, e.g., Exs. 30–2387, 32–339, 500–207). For example, the AFL–CIO stated that the elements that OSHA included in the proposal's grandfather clause are widely recognized as the basic elements of an effective program (Ex. 32–339). The International Brotherhood of Teamsters argued that, to be grandfathered, an existing program needed to be comprehensive and to provide workers and their representatives with full information and rights of participation in addition to being effective in reducing the number of MSDs (Ex. 500–207).

In response to these comments, OSHA finds that the record evidence demonstrates that the Agency should emphasize the effectiveness of grandfathered programs much more in the final rule than it did in the proposal. Record evidence also demonstrates that the core elements are essential to effectiveness (see the discussion of the core elements below). If a program is not demonstrably effective in protecting employees from MSD hazards, OSHA believes that such a program should not qualify for grandfather status and should instead have to comply with all the requirements of the final rule. On the other hand, if an existing ergonomics program has the core elements and is truly effective in protecting employees, it merits grandfather status. The central question then becomes how to measure effectiveness; if effectiveness measures are not carefully chosen, ineffective programs will be grandfathered in and the employees in the establishments covered by such ineffective programs will be inadequately protected.

One widely used method of measuring effectiveness is the tracking of MSD incidence and severity rates. However, MSD incidence and severity

rates can be misleading if efforts are not made to ensure that the rates reported are accurate and that the use of such rates is appropriate for the workplace. Some of the problems with various objective measures of effectiveness are described below.

(a) *Incidence rates are dependent on accurate reporting.* An employer's recordkeeping system must accurately count work-related MSDs if incidence rates are to be a meaningful index of effectiveness. An employer whose employees are reluctant to report, or one who does not record all MSDs, will appear to have a lower incidence rate than a comparable employer with an accurate recordkeeping system, and the incidence rate in the first employer's establishment will bear no relationship to program effectiveness. There are many reasons why MSDs are underreported (see the discussion of this issue in the summary and explanation for MSD management). If there are disincentives to reporting, employees may not report all MSDs. If an employee is not well informed about MSD signs and symptoms, he or she probably will not realize that the signs and symptoms of an MSD are work-related and will fail to report them. Employees also fail to report MSDs in some cases because they do not want to submit a claim to the workers' compensation system. Thus, incidence rates must be used with care.

(b) *Severity rates are dependent on consistency in return-to-work policies.* Severity rates are typically measured in terms of days away from work or days on restricted duty. Changes in how employers treat injured workers can affect severity rates. For example, if an employer who has traditionally measured severity in terms of lost workdays institutes a new policy of placing employees with MSDs on restricted duty rather than removing the employee from work, the number of days away from work will decrease. Thus, severity rates must also be used carefully to ensure that they are not reflecting a change in the employer's MSD management process rather than a true decrease in MSD severity.

(c) *The randomness inherent in injury and illness statistics may make incidence rates an unreliable indicator of effectiveness.* Injuries and illnesses are events that occur based on probability. In other words, hazards do not automatically lead to injuries or illnesses; the presence of hazards simply increases the probability that an injury or illness will occur. Just as a coin flipped 10 times will not automatically land heads up 5 times, a workplace with an average MSD

incidence rate of 19.3 per 1000 employees³ will experience an MSD incidence rate that varies about that number from year to year. If employee exposure to MSD hazards at this workplace remains relatively constant, the actual incidence rate in any one year (assuming that the number of employees and other factors also remain constant) will probably be reasonably close to that value. In one year, for example, 17 of the 1000 employees could suffer an MSD, while in the next year, 21 might be injured. This variability can be seen in the Abbott Laboratories data in Table 2, especially in the last 5 years, after the program had matured.

Variability is even more pronounced in a workplace with few employees. If the employer in the earlier example had 10 full-time employees and the same overall average MSD incidence rate, the establishment could be expected to have 0, 1, or 2 MSDs in a given year.⁴ The corresponding incidence rates per 1000 employees, however, would be 0, 100, and 200. If incidence rates alone were used as the measure of effectiveness at such a facility, the program would be rated very effective in one year and in need of major correction in the other years.

In the context of the grandfather clause, this year-to-year variability poses problems for OSHA and for employers. If the final rule were to identify a specific rate as the sole criterion for grandfathering existing programs, then an employer whose program was acceptable one year might be unacceptable the next simply as a result of this variability. For example, suppose that the final rule selected 1.45 as the maximum acceptable incidence rate for a grandfathered program. Abbott Laboratories Plant A (from Table 2) would have had an acceptable program in terms of grandfathering since 1995 (Ex. 500–153). Abbott's Plant C program (from Table 2) would never have met the incidence rate limit in this period and would therefore have had to comply with the ergonomics standard. Abbott's Plant B (from Table 2) could have had its program grandfathered in 1996 and 1999, but would have had to comply with the standard in 1997 and 1998. From this example, it can be seen that some employers' programs, after initially qualifying for the grandfather

³ This is the overall MSD incidence rate for SIC 283.

⁴ It would take 100 years for this firm to have 1000 employee-years of experience. If the employer had an incidence rate of 17 MSDs per 1000 full-time employees, the employer would see 17 incidents over 100 years. Over that period, in most years, no MSDs would occur. In other years, one or maybe two MSDs would occur.

clause, would subsequently be required to comply with the ergonomics standard in at least some years.⁵ This “sometimes in and sometimes out” phenomenon is not what OSHA or employers with existing ergonomics programs want from a grandfather clause.

Alternatively, the final rule could mandate that, to be grandfathered, the employer’s MSD incidence rates had to decrease over time, as suggested by some rulemaking participants (see, for example, the comments of Unisea, Inc., Ex. 500–158, above). Again, the Abbott Laboratories data in Table 2 show that this approach would also be problematic (Ex. 500–153). All three of Abbott Laboratories’ plants experienced increasing rates in some years in the period reported. Although the overall trend over the full 9-year period is downward for all of the Abbott plants, this is not the case for all time periods. For example, Plant C’s incidence rates went up over the 4-year period from 1995 to 1998 (see Table 2). In fact, OSHA’s experience is that, as an employer’s ergonomics program matures, incidence rates begin to level off, albeit at a much lower rate than before the program was established (see Chapter IV of the Economic Analysis).

Other “objective” measures of effectiveness recommended by rulemaking participants (see *e.g.*, Ex. 30–3813; Tr. 4112) pose similar problems. Decreases in the rate of workers’ compensation claims have the same problems as incidence rates when they are used as effectiveness measures. Symptom surveys, although valuable as an early reporting tool, vary from one workplace to another and therefore cannot be used for different sites. Reductions in employee exposure to MSD hazards is a good measure of whether an ergonomics program is working but, OSHA has no benchmark that adequately describes the performance of an effective program. Without a benchmark, reductions in employee exposure to MSD hazards cannot be used as the sole criterion for grandfathering programs at different sites.

In addition, OSHA has concluded that the core elements (management leadership and employee participation, hazard identification and assessment, hazard prevention and control, MSD management, training, and evaluation) are essential to a properly functioning ergonomics program. These elements are included in the safety and health programs recommended or used by

many different organizations (the ergonomics standard uses slightly different terminology for some of these elements):

- OSHA’s VPP, SHARP, and consultation programs;
- The safety and health programs mandated by 18 states;
- The safety and health programs recommended by insurance companies for their insureds (many of which give premium discounts for companies that implement these programs or impose surcharges on those that do not);
- The safety and health programs recommended by the National Federation of Independent Business, the Synthetic Organic Chemical Manufacturers Association, the Chemical Manufacturers Association, the American Society of Safety Engineers, and many others;
- The strong recommendations of OSHA’s Advisory Committees (NACOSH, ACCSH, and MACOSH), which consider these program elements essential to effective worker protection programs.

OSHA also is including WRP, or equivalent protections against wage loss, as a requirement for all programs (both those that are grandfathered and those complying with the standard) because, without it, OSHA believes that many employees will be reluctant to report their MSDs because they fear economic loss. There is strong evidence that such underreporting is currently taking place, as well as evidence that protecting workers from wage loss increases reporting (see the discussion of underreporting in the summary and explanation for MSD management). OSHA’s purpose in including a WRP provision, both in the grandfather clause and in the standard, is to ensure employee participation and free and full reporting of MSDs and MSD hazards. Effective ergonomics programs depend on such reporting, and the standard also depends on employee reporting for its effectiveness. Absent such reporting, no ergonomics program will achieve its worker protection goals.

For these reasons, OSHA has concluded that quantitative effectiveness measures alone cannot be the sole basis for judging whether an employer’s program should be grandfathered. The Agency’s experience over the last two decades, and that of private industry and insurance companies, is that safety and health programs, and ergonomics programs, containing the core elements are effective in lowering injury and illness rates. These programs work because they involve everyone in the organization in finding and fixing

hazards. They also establish two-way communication in the form of reporting and response systems. OSHA finds that the core elements are essential to effective ergonomics programs, and the record provides ample evidence of this (see the discussion below on whether the core elements are necessary). Employee participation, for example, is a prominent component of the programs of many leading companies (see, *e.g.*, Exs. 32–77, 32–185, 32–210; Tr. 4973, Tr. 5339). The core elements also help to ensure that employees are reporting their MSDs, that management is responding to these reports, that jobs are being analyzed and fixed, and that the program is functioning as it should. The core elements thus help to ensure that programs are not focusing too heavily on quantitative measures of effectiveness, which, as the discussion above shows, are often misleading.

OSHA agrees, however, that effectiveness measures can be useful in determining the degree to which an ergonomics program is working. Employers and authors of effectiveness studies routinely rely on them as evidence that an ergonomics program is having a positive effect. Of the measures available, incidence and severity rates are most commonly used and were most often recommended in the rulemaking record (see, *e.g.*, Exs. 30–1901, 30–2208, 30–3344, 30–3348, 30–3361). If one of these measures is used, the employer must take care to ensure that the calculated incidence or severity rate accurately reflects conditions at the workplace. First, the effectiveness measure chosen must be appropriate for the size and nature of the workforce and the employer’s MSD experience. For example, as explained earlier, an employer with few employees will not find incidence rates useful to measure effectiveness. Instead, such employers could examine whether employee exposure to MSD hazards has been reduced. Second, the employer must check to ensure that some MSDs are not going unreported. If employees are failing to report MSDs, the employer’s calculated incidence and severity rates will not accurately reflect the injury experience at the workplace. Third, the employer should check rates over a variety of periods to ensure an overall downward trend in the data. Looking at data over a single period can be misleading.

OSHA finds, based on the evidence in the record as a whole, that reliance on both qualitative (the core elements) and quantitative (effectiveness measures) components will best assure that any program that is grandfathered deserves this status and will continue to operate

⁵ Using a rolling average incidence rate would help smooth out, but would not eliminate the year-to-year variability.

effectively in the future. Consequently, the final rule's grandfather clause requires that grandfathered programs contain the core elements of effective ergonomics and be demonstrably effective. Employers may use any of a broad range of measures, including reductions in the number or severity of MSDs, increases in the number of jobs in which ergonomic hazards have been controlled, reductions in the number of jobs posing MSD hazards to employees, or any other measure that demonstrates program effectiveness to meet the grandfather clause's requirement for a demonstration of program effectiveness.

3. Whether the Core Elements Are Necessary

Some industry representatives objected to the proposed requirement that grandfathered programs contain all the core elements of the proposed standard (see, *e.g.*, Exs. 30–1722, 30–3853, 30–3956; Tr. 5699). They argued that any program that was effective in reducing MSD rates should be accepted for grandfather status, even if it did not include all the core elements.

For example, the Washington Legal Foundation was particularly concerned that employee participation was proposed as a required component of grandfathered programs and of the program required by the standard (Tr. 11265). They argued against mandatory employee participation:

OSHA's proposed ergonomic standard perhaps more so than any other standard mandates full employee involvement in every aspect of its requirements.

In many ways, the proposed standard places employees in the driver's seat.

Certainly many companies have determined that a [cooperative] relationship with their employees is beneficial on both a safety and a production level.

Other companies, however, have reached a different conclusion. And certainly, the conclusion to be reached may differ depending on the type of work involved, the size of the company, the characteristics of the work force, and other factors.

The Washington Legal Foundation does not believe that it is its place to determine that some of these [employers] are right and others are wrong nor is it the place of the federal government to mandate a specific mode of employer/employee relations (Tr. 11265).

On the other hand, some union representatives argued strongly in favor of the core elements (see, *e.g.*, Exs. 32–210, 32–461, 500–218). The International Brotherhood of Teamsters noted that they had worked with various employers through the collective bargaining process to address ergonomic hazards and that some employers' programs took a piecemeal

rather than comprehensive approach to the problem and should therefore not be granted grandfather status (Exs. 30–4200, 32–461). The UFCW argued that the proposed core elements are recognized as the basic elements of a good ergonomics program (Ex. 32–210). They presented their experience with successful ergonomics programs as follows:

The six elements OSHA is proposing in the ergonomics program standard are included in all successful company programs! Further, the experience of the myriad of companies who have successfully tackled the problem through these elements attests to the feasibility of the methods. The settlement agreements OSHA has entered into with IBP, Sara Lee, Cargill, ConAgra Poultry, John Morrell & Co., Empire Kosher, Marshall Durbin Companies, National Beef, Worthington Packing and Tyson Foods contain these six elements—all work, and all are feasible. Many of the companies used ergonomists, they analyzed the jobs and developed engineering solutions to address the most egregious jobs. They developed medical protocols so that workers can get to treatment early rather than waiting until they were crippled and needed surgery. They protect workers wages and benefits when they report MSDs. And in our represented companies, all this included the union in a fundamental way. In order to be effective, ergonomics programs by their very nature must be participatory and include workers at many levels, including those that do the problem jobs (Ex. 32–210).

Mr. Bawan Saravana-Bawan, a representative from the Canadian province of British Columbia, described how that province handled existing programs when its ergonomics standard came into effect (Tr. 14260). He stated that existing programs needed to incorporate any missing elements in order to be accepted. On the basis of his experience, he stated that any ergonomics program needed to have all the core elements (management leadership and employee participation, information dissemination, hazard identification, hazard assessment and control, training, and program evaluation) to be successful.

The Department of Defense (DoD) also argued that the program elements are essential. The DoD noted that the success of their program is due to the elements of the program, including, in particular, management leadership, employee participation, hazard prevention and control, and monitoring injury records and responding to potential problem areas (Ex. 30–3826).

OSHA has concluded that it is essential for ergonomics programs, whether grandfathered or not, to address all of the core elements: Management leadership and employee participation, hazard information and reporting, job

hazard analysis and control, training, MSD management, and program evaluation. (The Agency has presented evidence supporting each of these core elements in the summary and explanation for the corresponding provisions of the standard, below.) Further, the Agency finds that it is as important for a grandfathered program to include all of the core elements as it is for a program brought into existence to comply with the final rule to include these elements. Although some commenters, as discussed above, argued that a program could be effective without all of the core elements, OSHA finds their arguments unpersuasive, based both on the record and the Agency's own experience with successful programs.

The Agency believes that the core elements provide assurance that the program will work as intended—management leadership will ensure that the program has the continued backing of management, which is essential to continued success; employee participation in the program will help ensure that ergonomic hazards do not go undetected; hazard information and reporting will ensure that employees are informed about MSD symptoms and how to report them so that work-related MSDs are not ignored; work restriction protection helps to ensure that workers report signs and symptoms as early as possible; job hazard analysis and control are needed to ensure that ergonomic hazards are found and abated; MSD management is necessary so that MSDs are managed appropriately and injured employees get well as soon as possible; and program evaluation is necessary for the correction of deficiencies in the program. Without the checks and balances the core elements provide, OSHA believes that ineffective programs may be judged effective on the basis of an inappropriate measure, and once-successful ergonomics programs could deteriorate over time and leave employees unprotected.

Some rulemaking participants agreed that grandfathered programs should include the core elements but argued that compliance with the proposed basic obligation sections for each core element was not essential to having an effective program (see, *e.g.*, Exs. 30–1294, 30–3813, 30–3723, 30–3765). These commenters believe that many employers have effective programs that would not be recognized by the proposed standard because they would not meet the proposed basic obligation sections. ORC reflected the thrust of these comments as follows:

Equally important, contrary to OSHA's contention in the preamble, the ability of an employer to continue applying an existing program should not be based on whether the "basic obligation section of each program element in this standard" is satisfied. OSHA has provided no objective evidence that the requirements of the proposed standard will be any more effective than other programs already in place. There is certainly no basis for compelling an employer to rework an effective program to force it to meet the specifics even of the proposed basic obligations (Ex. 30-3813).

Dow, ORC, and others suggested that OSHA simply require grandfathered programs to address the six basic elements of the program instead of requiring them to meet the proposal's full basic obligation for each core element (see, e.g., Exs. 30-2134, 30-2725, 30-3171, 30-3765, 30-3813, 32-77). ORC noted that the proposed work restriction protection requirements were particularly troublesome, since "[v]irtually none of ORC's member companies, whose ergonomics programs are among the most sophisticated and effective in the country, would meet this requirement * * *" (Ex. 30-3813). Dow was concerned that the language in the proposal would not recognize their program, which is tailored to fit their management structure. They stated:

The so-called Grandfather clause that OSHA has proposed is so demanding in its requirements that companies that have existing and successful ergonomics programs, such as Dow, will not be able to take advantage of this provision to maintain their current programs. The Grandfather clause is so limited that already functioning and successful programs, tailored to the needs of a particular company, business or workplace, will not be able to satisfy the requirement. For example, in Dow's case, we would not be able to satisfy the extensive recordkeeping requirements or elements of the WRP section (since it goes beyond that required by Workers' Compensation laws.) Similarly, given Dow's management structure, we would not satisfy OSHA's communication and training requirements wherein they intend a more archaic management structure, such as one having "supervisors" and the like, than what Dow utilizes. So even though Dow has had a successful ergonomics program for years and has a lower than average MSD incidence rate, we would have to scrap our efforts and use a program which will not fit our needs or management structure, just to comply with this standard. Dow believes this is unacceptable.

Instead, Dow urges OSHA to delete the proposed Grandfather clause and replace it with a provision that allows for an "acceptable" or "appropriate equivalent" program. Such a concept is not foreign to OSHA or the regulated community as other OSHA standards, such as the Process Safety Management ("PSM") standard, utilize this concept so that companies that have existing programs that are functioning successfully

can continue to use them. This concept also allows companies who may not yet have an existing program to create one tailored to their own needs, rather than use a more "one size fits all" program as envisioned by this proposal. "Acceptable (or appropriate) Equivalence" would include those programs who have the basic elements of a program, but not all the mandated details or documentation. Such a concept embodies "performance-oriented mandates" at their best as they allow an employer to employ those methods of prevention that best meets the needs of its particular workforce and/or workplace. OSHA should only be concerned with the results (i.e. lower injury rates) rather than the methodology a particular employer used to obtain that goal (Ex. 30-3765).

At the hearing and in their notice of intention to appear at the public hearing, Dow described their ergonomics program and detailed how they believe their program would fall short of the proposal's requirements (Ex. 32-77; Tr. 5339). Dow expressed concern that, although their program meets the spirit of the proposed standard, it would not meet the letter of the law.

In response to Dow's concern, OSHA reviewed the perceived discrepancies between the proposed rule and Dow's description of their program. In every respect except one, Dow's program would have satisfied the proposed grandfather clause; the discrepancies Dow was concerned about were apparently the result of misinterpretation rather than deficiencies on the part of Dow's program. For example, Dow stated that, in its program, employees report MSDs using the company's existing injury and illness reporting system rather than a separate system set up just for MSDs; Dow evidently believed that a separate system would have been required by the proposal (Ex. 32-77; Tr. 5340). However, the proposed standard would not have required employers to set up a separate system for reporting MSDs as long as their existing system included a system for the reporting of MSDs. On the other hand, Dow was correct in stating that their program did not include the proposed work restriction protection provisions and would therefore not have been eligible for grandfather status under the proposed rule.

In its post-hearing submission, Edison Electric Institute argued that the specificity of the proposal's basic obligations is counter to the goal of flexibility, and the Institute recommended that the final rule reduce the detail in the basic obligation sections to allow employers greater latitude (Ex. 500-33).

The Mead Corporation suggested that, if the Agency's safety and health program rule was not promulgated before the ergonomics rule, OSHA should alter the grandfather clause in the ergonomics rule in one of two ways: (1) Make the basic obligations less prescriptive and detail acceptable alternatives for prevention-oriented programs, or (2) permit employers with effective programs to maintain them without making sweeping changes (Ex. 30-2216).

On the other hand, the AFL-CIO argued that the standard should require employers to meet the proposed basic obligations for each core element before being grandfathered in (Ex. 32-339; Tr. 3477). The AFL-CIO pointed out, however, that the basic obligation sections for several of the proposed core elements left out important requirements that were included under the core elements:

The AFL-CIO believes that employers with existing programs should be permitted to continue with these programs if they are comprehensive, provide workers and their representatives full information and rights of participation, and are effectively reducing MSDs and exposure to hazards. However, as proposed, the "grandfather" provisions are deficient in a number of respects and will permit employers to continue programs that do not provide adequate protection.

First, the [proposed] basic obligation requirements which all programs must meet, exclude a number of elements that in our view are essential for an effective program. For example:

- The [proposed] basic obligation section for Hazard Information and Reporting * * * does not [include] any requirement to provide employees information about MSD hazards.
- The [proposed] basic obligation on training * * * excludes any requirement for training supervisors or individuals responsible for the ergonomics program, thus permitting programs to be "grandfathered" even if persons responsible for the program do not have the necessary training. The basic obligation for training also fails to provide for job specific training on MSD hazards and control measures.
- The [proposed] basic obligation for Medical Management * * * does not require that medical evaluations be conducted by a health care provider.
- The [proposed] basic obligation for Program Evaluation * * * does not require consultation with employees in problem jobs or their designated representatives to determine their views on the effectiveness of the program (Ex. 32-339).

As noted earlier, other rulemaking participants also urged OSHA to strengthen the proposed basic obligations sections (see, e.g., Exs. 30-4200, 32-198, 32-210, 32-461). These commenters criticized the proposed rule's lack of basic obligation

requirements for the training of managers and for employee participation in job hazard analysis and control. UNITE decried the omission from the proposal of a requirement for the health care provider to be furnished with information about the workplace and the employee's job (Ex. 32-198). Another commenter objected to the omission from the proposal of requirements that limited the use of personal protective equipment and required employers to provide it at no cost to employees (Ex. 32-210).

Another group of commenters were particularly concerned about the fact that the proposal would not have permitted their otherwise excellent programs from being grandfathered because they did not have work restriction protections now (see, *e.g.*, Ex. 30-3723, 30-3765, 30-3813). SBC Communications, Inc., represented those who opposed the proposed grandfather clause's requirement for work restriction protection:

In order to meet the grandfather clause, a company must have a "functioning properly" Wage Protection Program. Through our extensive research and benchmarking, no company has this element to their ergonomics program. Nor did OSHA provide any evidence of the Wage Protection Program being trialed, researched, and/or tested at a company. OSHA has made it nearly impossible for any company to meet the requirements of the grandfather clause (Ex. 30-3723).

On the other hand, the AFL-CIO noted that the hearing testimony demonstrates that some employers do currently provide wage protection for employees who suffer MSDs:

The hearing record shows that some employers indeed are maintaining the full wages of workers who are put on medical restrictions as a result of MSDs (Tr. 16014, Tr. 14357) (Ex. 500-218).

The General Electric Company argued that employers who have employee involvement and an environment free of barriers to reporting should not be required to follow the rule's requirements for WRP (Ex. 30-1071). Novartis Corporation went further, suggesting that the entire MSD management element be removed from the standard (Ex. 30-3092). They also recommended that compliance with the endpoint provisions not be a condition for grandfathering existing programs.

The AFL-CIO recommended that OSHA permit existing programs without work restriction protection to be grandfathered as long as the employer incorporates such protections into the ergonomics program before the effective date of the standard (Ex. 500-218). They believed that this would help alleviate

the concerns of employers whose programs were missing only that one element.

Although the AFL-CIO provided evidence that some employers do provide wage protection for their employees, OSHA believes, based on the record, that very few employers' existing ergonomics programs incorporate work restriction protection in the form required by the proposed standard. Despite the fact that many employers have policies (such as sick leave, short-term disability, and so on) that assure employees that they will not experience economic loss if they are injured, the record of this rulemaking indicates that many workers fear they will lose wages and benefits if they report their injuries (see the detailed discussion of the record in the summary and explanation for paragraph (r) below). The Agency therefore concludes that grandfathered programs must protect against such loss if they are to achieve the early reporting that is essential to program success.

Consequently, in paragraph (c)(2) of the final rule, OSHA is allowing existing ergonomics programs that otherwise meet the criteria of the grandfather clause up to an additional 12 months to adopt an MSD management policy, including work restriction protection. The MSD management policy must meet paragraphs (p) through (s) of the final rule. The MSD management requirements in the final rule contain many inter-related provisions that are key to a successful ergonomics program. (See the summary and explanation for paragraphs (p) through (s) of the final rule.) The Agency has concluded that, because of the many interdependencies in final rule paragraphs (p) through (s), employers need to follow all of the detailed requirements of those paragraphs. However, to ensure that existing programs will still be able to qualify for grandfather status even if they do not meet the final rule's MSD management requirements, OSHA is allowing employers up to a year to meet those provisions.

Based on a review of the evidence in the record, OSHA has concluded that the proposed standard's basic obligation requirements failed to provide employers with effective existing programs sufficient flexibility with regard to grandfather status.

Accordingly, in paragraph (c)(1) of the final rule, OSHA has not carried forward the proposed requirement that employers' programs satisfy the basic obligation of each element and instead requires that those programs simply contain the core elements and certain subelements, which the Agency has

pared to the minimum necessary to ensure the continued effectiveness of grandfathered programs. In particular, OSHA has streamlined and made more flexible the provisions that rulemaking participants claimed were most problematic such as the employee participation and WRP provisions. OSHA also has placed the required subelements in the text of the grandfather clause itself rather than in the basic obligations sections for each of the core elements, as proposed. OSHA believes that these changes will make the core elements that grandfathered programs must currently have as flexible as possible while still ensuring that the basic components that make each core element effective are present.

In addition to considering the comments of industry representatives objecting to the core elements and their subelements, OSHA has reviewed the list of subelements that several labor organizations believed were essential to determine whether they should be included in the final rule's grandfather clause requirements (Exs. 32-198, 32-339; Tr. 3477). The Agency has included several improvements in the final rule's grandfather clause as a result of this review. First, the grandfather clause's training element now contains a requirement that employees be trained in MSD risk factors (see paragraph (c)(1)(iv)). This provision ensures that employees will be informed of MSD hazards in their workplace. Second, OSHA has added a requirement for the training of managers and supervisors to this core element. Third, OSHA has included language specifically requiring employees to be involved in program evaluation to the core element for employee participation (see paragraph (c)(1)(ii)). These additions will help ensure that ineffective programs are not accepted under the grandfather clause.

The remaining suggestions from these commenters, such as UNITE's recommendation to include a requirement for the health care provider to be furnished with information about the workplace and the employee's job (Ex. 32-198), have been accommodated by paragraph (c)(2) of the final rule. Existing programs need not currently have MSD management as a core element in order to qualify for grandfather status. However, grandfathered programs will need to add an MSD management element meeting paragraphs (p) through (s) within 1 year after the final standard's effective date. Thus, grandfathered programs will have to meet the same MSD management requirements as programs that are not grandfathered.

4. Whether the Language of the Grandfather Clause Is Vague

Some rulemaking participants argued that the language in the proposed grandfather clause was vague (see, *e.g.*, Exs. 30–494, 30–2208, 30–3922, 30–4467; Tr. 16470). They thought that this language would make it difficult for an employer to determine if he or she qualified under the grandfather clause. For example, Dennis Morikawa of Morgan, Lewis, and Bockius stated:

These vague requirements do not inform employers which ergonomic programs OSHA would accept. Specifically, OSHA does not explain what a “basic obligation” is; nor does the Proposed Rule specify the level of detail employers must achieve when they attempt to comply with a basic obligation. Moreover, the grandfather clause does not make clear whether an effective, existing program without a single-incident trigger would be acceptable. For example, if programs that satisfy the CAL/OSHA standard discussed above would be accepted under the grandfather clause, then most companies would seek to design and install ergonomics programs before the effective date of the new Proposed Rule. But if a two-incident trigger would not satisfy a “basic obligation,” employers would be forced to re-design existing programs in order to meet the Proposed Rule, thereby creating a double standard of compliance. This, of course, would effectively eviscerate the notion of a grandfather clause. OSHA needs to specify which aspects of the Proposed Rule would be considered basic obligations, and the amount of attention to detail that employers must pay when adhering to these basic obligations. Without an assurance from the agency that an adherence to basic obligations would not require major overhauls of effective programs, the grandfather clause is illusory (Ex. 30–4467, p. 13).

Some rulemaking participants stated that the vagueness of the grandfather clause would force employers to refer to the more detailed provisions of the standard to understand their compliance obligations (see, *e.g.*, Exs. 30–494, 30–4340). They argued that the effect of this vagueness would be that employers would be forced to comply with the entire standard, which would render the grandfather clause useless.

Even some of those who supported OSHA’s proposal in general agreed that the proposed grandfather clause was vague (see, *e.g.*, Exs. 30–4538, 32–210). These rulemaking participants and others urged the Agency to provide compliance assistance material, such as flowcharts, checklists, and other tools, to help employers determine whether their programs qualified under the grandfather clause (see, *e.g.*, Exs. 30–4538, 32–210, 32–339, 500–207). For example, the International Brotherhood of Teamsters stated:

[W]e strongly urge OSHA to provide checklists and evaluation tools to assist employers with the evaluation of their programs. Employers who want to take advantage of the “grandfather” provisions should be required to use a checklist based on objective criteria to demonstrate that their program is effectively reducing exposures to ergonomic risk factors, reducing the incidence and severity of musculoskeletal disorders, and complies with the standard’s basic obligations. These materials are currently used by many ergonomics programs and could be made available by OSHA through its website (Ex. 500–207).

OSHA believes that the grandfather clause in the final standard is clear. For example, the training element requires the training of managers, supervisors, and employees in: (1) The employer’s ergonomics program and their role in it; (2) the recognition of MSD signs and symptoms; (3) the importance of early reporting; (4) the identification of MSD risk factors and methods that may be used to abate them; and (5) the risk factors in problem jobs in the workplace and methods of controlling them. To provide employers flexibility, the standard does not address the details of how that training is provided, but it is clear about the topics the training must cover.

Other elements provide clear direction about how an employer is to demonstrate compliance. For example, the employer must evaluate the program, as demonstrated by regular reviews of the elements of the program, the effectiveness of the program as a whole, and the correction of identified deficiencies. Again, this language provides clear criteria that employers’ evaluations must meet in order to be grandfathered in.

There are two aspects to Mr. Morikawa’s comments (Ex. 30–4467) about the acceptability for grandfather clause status of programs meeting the California standard’s two-incident trigger. The first relates to Federal OSHA’s acceptance of the California ergonomics rule under the Act’s provisions for ensuring that state standards developed by the State Plan States are as effective as the Federal standard. OSHA will, after it promulgates this final ergonomics program standard, evaluate the ergonomic standards developed by State Plan States (such as California and Washington) to determine whether they are “as effective as” the Federal standard. OSHA clearly could not have made such a determination at the time of the proposal, as Mr. Morikawa suggests, because the form and content of the final OSHA rule could not be known at that time. However, OSHA is unlikely to find any standard that delays

protection to employees, including those in small firms, or that provides less protection to employees overall, as effective as the final rule.

The second relates to the details of grandfathered programs. Paragraph (c) of the final rule does not attempt to dictate precisely what form a grandfathered program must have, beyond stating that it must have the core elements of successful programs, be demonstrably effective, and be evaluated and in place by the final rule’s effective date. OSHA has not mandated such program specifics because grandfathered programs will take many different forms, be at many different stages of development, and be taking various approaches to achieving success. The grandfather clause thus insists on the fundamentals but leaves the specifics to employers.

The final standard also requires the employer to demonstrate that an existing program is effective before that program qualifies under the grandfather clause (see paragraph (c)(1)(v)). The employer is free to use one of the measures specified in the standard itself (that is, reductions in the number or severity of MSDs, increases in the number of jobs in which ergonomic hazards have been controlled, reductions in the number of jobs posing MSD hazards to employees) or any other valid measure that the employer chooses to evaluate the program and demonstrate effectiveness. The Agency currently provides some compliance assistance materials that include ways to measure the effectiveness of ergonomic interventions. For example, the “Ergonomic Program Management Guidelines for Meatpacking Plants” (Ex. 2–13) provides a method for monitoring trends in cumulative trauma disorders that may be used for this purpose. OSHA’s 1989 Voluntary Safety and Health Program Management Guidelines (Ex. 2–12) also describe effective program evaluations. These documents are available on OSHA’s Website (<http://www.osha.gov>). OSHA also intends, as resources permit, to provide additional compliance assistance materials that will help employers determine whether or not their programs are effectively addressing MSDs.

In sum, OSHA believes that the final grandfather clause provides sufficient information for employers to determine if their programs qualify for the grandfather clause. OSHA compliance officers also will be able to assess whether the employer’s program qualifies for grandfather status. OSHA will include directions on how this is to be done in a compliance directive to be

issued soon after promulgation of the final rule.

5. Alternatives and Revisions to the Grandfather Clause

Several rulemaking participants suggested approaches that would permit alternative programs developed after the standard is in effect to be followed by employers in lieu of compliance with the standard (see, *e.g.*, Exs. 30–2216, 30–3765; 30–3813, 32–339, 500–44; Tr. 3477). Many of these commenters argued that their recommendations would address the previously discussed concerns with the proposed rule's grandfather clause—concerns such as the perceived illusory nature, vagueness, and subjectivity of the proposed grandfather clause. The alternatives or revisions to the proposed grandfather clause suggested by these commenters included:

- Revising the clause to allow programs that are incomplete at the time of the effective date to be grandfathered (see, *e.g.*, Ex. 30–3813; Tr. 4111);
- Revising the clause to make clear that a company whose program had been grandfathered could extend that program (and grandfather status) to establishments newly built or owned, or acquired through mergers or acquisitions (see, *e.g.*, Exs. 30–3813, 30–3922, 32–78; Tr. 5538);
- Revising the clause to allow any program developed by an employer at any time, including after the standard has become effective, to be implemented without fear of citation for noncompliance with the OSHA standard (see, *e.g.*, 30–429, 30–1090; Tr. 15657);
- Revising the clause to specify that OSHA will certify or approve employers' programs as qualified for grandfather status (see, *e.g.*, Ex. 32–133, 500–139);
- Revising the clause to recognize for grandfather status any program that complies with either the Washington State or the California standard (see, *e.g.*, Exs. 30–429, 30–434, 30–973, 30–1090, 30–1547, 30–1671, 30–2835, 30–3813, 30–4134, 31–337, 32–311);
- Delete the grandfather clause and substitute instead provisions giving employers credit for already having performed some of the required elements, such as training, before the effective date (see, *e.g.*, Exs. 30–1547, 32–185, 32–311, 32–339, 32–461, 500–207; Tr. 6423, 11129, 13092).

For example, ORC made several suggestions along these lines (Ex. 30–3813; Tr. 4111). First, they recommended that OSHA rename this section "Alternative Programs Provision." They also suggested that, as

a stimulus to innovation, OSHA allow employers who do not now have fully developed programs to qualify for grandfather status in the future when they do have such programs. DuPont SHE Excellence Center made a similar recommendation:

[One] improvement in the flexibility would be to allow whichever elements that have been put in place to be grandfathered and those which are not in place to be added. The grandfather clause should not be an "all-or-nothing" clause (Ex. 30–2134).

In addition, ORC, along with other rulemaking participants, recommended allowing an employer's program to be grandfathered after the effective date of the standard, which would permit employers involved in mergers and acquisitions to put their already grandfathered programs into place in new establishments (see, *e.g.*, Exs. 30–3813, 30–3922, 32–78; Tr. 5538). ORC also recommended that OSHA permit employers to extend existing grandfathered programs to new establishments operated by the same employer (Ex. 500–214).

The rulemaking participants who recommended that the standard permit future alternative ergonomics programs to be grandfathered did not address how an employer might avoid noncompliance while developing the program or in the period before the employer had demonstrated the effectiveness of the new program. OSHA does not believe that such an approach would be workable. First, it would be administratively difficult (if not impossible) to enforce. Second, OSHA is issuing a final standard addressing ergonomic injuries because the varied approaches and often isolated interventions that many employers have adopted have not effectively addressed the problem, and a uniform and comprehensive approach to this most serious of occupational safety and health issues is clearly necessary. The approach recommended by the commenters would mean that, while employers try different programmatic approaches, employees would continue to be exposed to ergonomic hazards with no guarantee that the employers would ever qualify for "grandfather" status. Third, OSHA is loathe to require the expenditure of resources to make existing, effective programs containing all the core elements meet all the requirements being imposed by the full ergonomics standard. Employers without programs and employers with ineffective programs or programs missing key elements would need to expend resources to meet whatever requirements OSHA imposed on

alternative programs. The Agency believes that these resources should be expended to meet the final standard in all its details so as to ensure adequate protection for employees.

OSHA agrees, however, that a company that meets the rigorous standards of paragraph (c) and thus qualifies for grandfather status should be permitted to apply the same excellent program that was grandfathered to new plants it builds or acquires by merger or acquisition. OSHA believes that permitting a grandfathered program to be extended in this way makes sense from two perspectives: first, it ensures that the new establishments will benefit from the expertise in ergonomics programs that the parent company brings, and, second, it ensures that the company will have a single, cohesive corporate ergonomics program. For these reasons, OSHA has decided to extend grandfather status to the programs implemented in newly acquired or built plants of a corporation that already has a grandfathered program.

The American Industrial Hygiene Association (Ex. 32–133) recommended that employers formally request OSHA to recognize their programs:

As the standard puts much of the burden on employers to adapt the program to their own needs, it would be appropriate for OSHA to say that employers can ask to have their program "grandfathered". This would require them to formally document their program and compare it with the OSHA requirements. This should not be a problem if the company has a functional program (Ex. 32–133).

Kaiser Permanente made the same recommendation in their post-hearing comments (Ex. 500–139).

However, OSHA's resources do not permit it to evaluate employers' programs for grandfather status; in addition, a "paper" review of a program is not adequate to determine how it is working in practice. OSHA continues to believe that employers are in the best position to determine whether their programs qualify for grandfather status.

The Eastman Kodak Company (Exs. 30–429, 30–1090) suggested that the Agency adopt a flexible grandfather clause that recognizes good faith on the part of employers:

We believe that what OSHA needs is a "good faith" grandfather clause that recognizes employers for a positive effort and ongoing solutions. We believe that it should be sufficient for an employer to have a written active program and show intent, to be compliant. The existing program rule (WAC 296–62–05110) of the Washington State proposed standard is better suited to this end and is recommended for incorporation (Ex. 30–429).

Other rulemaking participants also recommended that OSHA adopt the proposed Washington State approach towards existing programs (see, e.g., Exs. 30-434, 30-2835, 30-3813, 30-4134, 31-337, 32-311). They argued that Washington's approach, which accepts alternative programs when the employer can demonstrate that the alternate methods taken as a whole are as effective as the requirements of the standard, would grandfather far more effective programs than OSHA's proposal. They also noted that this approach would focus the Agency's efforts on results rather than on details they perceived as minor.

The Washington State standard's grandfather clause reads as follows:

WAC 296-62-05110 When Do Employers' Existing Ergonomics Activities Comply With This Rule?

Employers may continue to use effective alternative methods established before this rule's adoption date. If used, the employer must be able to demonstrate that the alternative methods, taken as a whole, are as effective as the requirements of this rule in reducing the WMSD hazards of each job and providing for employee education, training and participation (Ex. 500-71).

Other commenters (see, e.g., Ex. 30-4467) urged OSHA to accept compliance with the California ergonomics standard as constituting acceptance under the grandfather clause.

Again, as discussed above, formal recognition of the "as effective as" status of these two State-plan State standards must await a formal determination by Federal OSHA. However, since acceptance under the final rule's grandfather clause depends on program effectiveness, confirmation of that effectiveness through evaluation, and the inclusion in the program of the core elements, many proactive California and Washington employers' programs are likely to meet the final standard's requirements for grandfather status. The programs of many employers in these states may not meet these requirements, however, since neither State standard requires all of the core elements.

The AFL-CIO, the International Brotherhood of Teamsters, and others suggested that OSHA give employers credit for steps, such as training and job hazard analysis, they have taken toward controlling ergonomic hazards or for controlling hazards in problem jobs in their workplaces (see, e.g., Exs. 30-1547, 32-185, 32-311, 32-339, 32-461, 500-207; Tr. 6423, Tr. 11129, Tr. 13092). These commenters believed that such credit could substitute for a true grandfather clause.

The final ergonomics standard does give credit to employers who have already carried out certain procedures or voluntarily complied with portions of the standard. For example, employers who have already performed job hazard analysis in some jobs would not have to re-analyze those jobs (see paragraph (j)(1) of the final rule). Likewise, employers who have already trained their employees in the ergonomic control measures they instituted would not have to duplicate that training (see paragraph (t)(5) of the final rule).

Some rulemaking participants suggested that OSHA recognize for grandfather status any ergonomics program in effect at the time the final rule becomes effective (see, e.g., Exs. 30-494, 30-2989, 30-3781, 500-213; Tr. 10089). These commenters believe that these employers should be rewarded for their proactive stance toward ergonomics. For example, the National Council of Agricultural Employers said, "a grandfather clause should recognize and exempt forward-thinking employers that have already implemented an ergonomics program" [Ex. 30-3781]. The National Association of Convenience Stores went further to suggest that OSHA also grandfather trade-association-provided programs: "OSHA [should] consider grandfathering existing risk management programs or industry-specific programs which trade associations may be able to provide to their members' (Tr. 10089). The Air Conditioning Contractors of America recommended that OSHA recognize virtually any existing ergonomics program under the grandfather clause (Ex. 500-53). It said that OSHA could require grandfathered programs to be improved at such time in the future as MSD hazards became better understood.

As explained earlier, OSHA believes that it is essential for grandfathered ergonomics programs to include all of the core elements of successful ergonomics programs and to meet demonstrable effectiveness criteria. OSHA agrees that employers who have already adopted existing programs are proactive; however, some of these employers are likely to have programs that are not as protective as the program OSHA is requiring or programs that do not include those elements shown to be essential to program effectiveness. It would therefore be inappropriate for OSHA to grandfather these programs.

Several hearing participants provided OSHA with alternative regulatory language for the grandfather clause in their post-hearing submissions (Exs. 500-44, 500-78, 500-80). Southwestern

Bell recommended the following language (Ex. 500-78):

How does this standard apply if I already have an ergonomics program?

If you already have an ergonomics program for the jobs this standard covers, you may continue that program provided:

(a) You have a written program that contains:

(i) Defined roles and responsibilities;
(ii) Training on the prevention of work-related MSD's; and
(iii) Procedures for completing job hazard analysis for work-related MSD's.

(b) The controls implemented are intended to reduce or eliminate risk factors for work-related MSD's;

(c) You have a program evaluation process; and you have implemented your program before the effective date of the final rule (Ex. 500-78).

OSHA has considered Southwestern Bell's suggested language but has rejected it because the programs that would be grandfathered in by such language would be missing several important elements—employee participation, hazard information and reporting, and MSD management, for example. As explained earlier, OSHA considers these elements essential to any successful ergonomics program. In addition, Southwestern Bell's approach does not contain any requirement that the program be effective, be achieving positive results, or be reducing the number of MSDs.

The American Petroleum Institute (API) proposed language that would accept an employer's existing program if it contained the following seven elements: (1) Management leadership and employee participation, (2) hazard information and reporting, (3) job hazard analysis and control, (4) training, (5) MSD management, (6) program evaluation, and (7) recordkeeping (Ex. 500-80). API's proposal also would require grandfathered programs to contain subelements under each element. For example, under job hazard analysis and control, API's language included the following provisions: "Jobs in the workplace must be assessed to identify the potential for MSD hazards. Consistent with the job assessment, an action plan is developed to control identified or potential MSD hazards determined to present a significant risk." Their language also suggested that grandfathered programs demonstrate effectiveness via measures such as the following: Decreases in the frequency of reported MSDs, decreases in the severity of MSDs, reduced workers' compensation claims related to MSDs, symptoms surveys, and a reduction of MSD risk factors. API did not include

work restriction protection among the elements grandfathered programs must have.

API's suggested grandfather clause had two other features. First, it specifically recognized any program meeting the requirements of an employer's State OSHA ergonomics standard. Second, it recognized existing programs in both existing workplaces and newly acquired or built plants of a corporation that has a grandfathered program (Ex. 500-80).

API's approach is similar to the one OSHA is taking in the final standard's grandfather clause. The final standard includes all of API's recommended elements, and also requires the employer to demonstrate that the ergonomics program is effective. API's suggested criteria for determining effectiveness are also similar to those listed as examples in the final standard. Further, the final rule permits employers with grandfathered programs to extend those programs to new corporate plants.

On the other hand, OSHA is not, as discussed above, automatically grandfathering in employers' programs that comply with State-plan State ergonomics programs. In addition, API's suggested regulatory text would not require employers to provide WRP to employees who suffer work-related MSDs. As discussed earlier, OSHA has concluded that WRP is an essential part of any ergonomics program whether it is grandfathered or not.

The Dow Chemical Company also provided alternative language for a grandfather clause (Ex. 500-44). Their alternative provided criteria for seven core elements that ergonomics programs would have to meet to be grandfathered: hazard communication, MSD reporting, hazard identification, hazard evaluation and prioritization, risk mitigation or control, appropriate knowledge and skills (that is, training), and program evaluation. Dow included specific criteria for each of these elements and an explanation of how the criteria could be met for each of the elements. Dow likened their proposal to OSHA's Process Safety Management Standard (§ 1910.119), which sets the basic elements of a process safety management program and requires the employer to spell out the details.

However, OSHA is not adopting Dow's alternative grandfather clause approach in the final rule, for several reasons. First, Dow's language does not address several elements of ergonomics programs that OSHA considers essential, including management leadership, employee participation, and MSD management. Second, Dow's

alternative is overly detailed. For example, the hazard communication element incorporates separate provisions on general information regarding MSDs and general information on warning signs associated with MSDs. It also includes a provision for providing specific information on potential ergonomic hazards in an employee's work area. Third, Dow's suggested grandfather clause appears to be designed to tightly match the company's own program rather than to fit a more widely recognized model ergonomics program, such as that in OSHA's meatpacking guidelines, a program lauded by many rulemaking participants who had experience with ergonomics programs (see, e.g., Exs. 30-1294, 30-2216, 30-3046, 30-3677, 32-185; Tr. 14713). OSHA believes that more employers with effective existing programs will be able to qualify under OSHA's final grandfather clause, which is modeled after the Meatpacking Guidelines program, than those required by Dow's alternative.

Dow also commented on the enforcement implications of a performance-based grandfather clause:

The verification of compliance to a performance language regulation is most effectively achieved when the method used for prescriptive regulation compliance verification is modified. The method used by Compliance Officers for a prescriptive regulation is based on the Officer's knowledge of what is specified by the regulation to be the practice, *i.e.* guard rail specification. However, for performance language regulations, such as the Process Safety Management regulation and the language suggested by Dow for this proposed regulation. The Compliance Officer only knows what elements are to be addressed by an employer's program: They will not know what to expect for practices. The means to address those elements are left to the employer so that they can use whatever means best match their workplace needs and the local culture. The Compliance Officer can only gain an understanding of that workplace program from the employer. This, we believe, is where the modification in approach should occur (Ex. 500-44).

OSHA believes that, like a true performance standard, the final grandfather clause is not prescriptive in nature and leaves the details of compliance to employers to determine. OSHA compliance personnel will look first to the employer's demonstration that the program includes the core elements and subelements and second that the program is effectively addressing MSDs. Compliance officers also may assess whether the employer's program in practice matches the written program that the employer has developed.

Magnus Farley, Inc., did not provide alternative language for the grandfather clause; however, they did recommend that OSHA develop revised language and publish it for comment before adopting a final rule (Ex. 500-102). They argued that this would give industry time to evaluate the new provision and respond to it. OSHA finds a re-proposal unnecessary, because participants had ample opportunity to provide comments on the proposed grandfathered clause. The sheer volume of comments received on this topic provides evidence of this fact. Further the final rule's grandfather clause is a logical outgrowth of the proposal. In fact, the final rule responds to the overwhelming public comment that OSHA should focus on effectiveness and recognize existing programs that do not look exactly like the one required by the rule.

Some rulemaking participants supported the proposal's approach toward existing programs with only minor modification (see, e.g., Exs. 30-973, 30-1547, 30-2387, 30-3748, 32-85, 32-111, 32-339, 500-207; Tr. 15893). For example, the American Association of Occupational Health Nurses supported the proposed grandfather clause, but recommended that OSHA provide guidance for employers to use in evaluating their programs (Ex. 30-2387). The American Nurses Association supported the proposed requirement that existing program meet the basic obligation of each of the core elements of an ergonomics program (Ex. 30-3686). They did, however, recommend allowing employers up to 6 months to modify their programs so that they meet these basic obligations.

As noted earlier, program evaluation guidance is already available from the Agency. In addition, OSHA will be providing additional compliance assistance materials in the period following publication of the final rule. These materials will help employers judge whether their programs are effective and whether they qualify for grandfather status.

The final grandfather clause essentially accommodates the American Nursing Association's suggestion. Employers who, through one of the measures given in paragraph (c)(1)(v), can demonstrate that their programs are effective are free to add features that will bring them into compliance with the criteria given in paragraph (c)(1) any time before the effective date of the final standard. In addition, employers are given an extra 12 months to incorporate work restriction protection into their programs.

The Eastman Kodak Company argued that the proposal's grandfather clause would have required employers to fix all problem jobs before their programs were recognized (Exs. 30-429, 30-1090). The Boeing Company also noted that employers may have an acceptable program that covers some, but not all, of the jobs covered by the standard (Exs. 30-973, 30-1547). Boeing suggested allowing employers up to 2 years after the effective date to cover all such jobs.

As noted earlier, the final grandfather clause would permit employers to extend an ergonomics program that was successful in addressing some problem jobs to all problem jobs. In addition, because the final rule's compliance endpoints do not contain a set compliance deadline, employers may prioritize jobs for analysis and control if all jobs could not be controlled by the final rule's effective date.⁶ Thus, the final standard addresses the concerns of these two rulemaking participants.

Some rulemaking participants suggested making the grandfather provisions more comprehensive (see, e.g., Exs. 32-182, 32-198, 32-210, 32-339, 32-461). First, as noted earlier, the AFL-CIO and others recommended strengthening the basic obligations for four of the six core elements (see, e.g., Exs. 32-198, 32-210, 32-339). Second, some participants urged OSHA to develop and publish checklists and evaluation tools to assist employers with the evaluation of their programs (see, e.g., Exs. 32-85, 32-210, 32-339). Without these tools, they argued, an employer's program could be grandfathered without any solid demonstration that it is effective. The AFL-CIO argued that the standard should be as protective as, and consistent with, existing effective ergonomics programs, OSHA general duty clause settlement agreements, and OSHA and NIOSH recommended practice (Ex. 32-339). In keeping with this goal, they developed principles that they believe should guide OSHA in casting the final standard:

The standard should codify and reflect the good industry practices and programs implemented by employers who have effectively addressed ergonomic hazards. It should build on the agency's enforcement actions and settlement agreements on ergonomic hazards under the general duty clause. The standard also should be

consistent with the measures used in other agency standards on toxic substances and physical agents such as the lead and formaldehyde standards and those which follow a programmatic approach, such as the Process Safety Management and Hazard Communication Standards (Ex. 32-339).

OSHA believes that the final rule's grandfather clause is comprehensive enough to ensure that inadequate programs do not qualify and is flexible enough to permit many different kinds of effective programs to qualify. As explained previously, the Agency believes that requiring programs to meet a combination of essential program elements and recognized effectiveness measures will prevent inadequate ergonomics programs from achieving grandfather status. On the other hand, OSHA does not agree that it is necessary to codify the precise practices used in the most effective programs, as the AFL-CIO suggests. Doing so would unnecessarily limit an employer's flexibility in complying with the final standard. The Agency believes that the final rule has achieved a balance between flexibility and comprehensiveness that will recognize effective ergonomics programs and deny grandfather status to inadequate ones.

6. Other Comments on the Proposed Grandfather Clause

The National Soft Drink Association objected to the requirement that the employer's program be evaluated and found to be functioning properly before the effective date of the standard (Ex. 30-3368). The trade association argued that a thorough evaluation of any program will probably uncover areas that could be improved. Other rulemaking participants also recommended that the standard allow employers to modify their programs so that they could be improved (see, e.g., Exs. 30-1547, 30-3765, 30-4130, 30-4537). For example, the Boeing Company was concerned that an employer would not be able to improve an existing program without falling out of compliance with the grandfather clause (Ex. 30-1547). In response, OSHA recognizes that all ergonomics programs will need to be modified over time to correct deficiencies. The standard not only accommodates this, but requires it in paragraph (c)(1)(v).

Some commenters stated that the proposed grandfather clause would force existing programs to include the six core elements if they wished to be grandfathered even if the employer did not have an employee with an MSD that triggered the standard (see, e.g., Exs. 30-715, 30-3678). In response, OSHA considers it most unlikely that an

employer with an effective existing program would not have employees experiencing MSDs.

Some rulemaking participants suggested that OSHA strengthen the grandfather clause in various ways (see, e.g., Exs. 30-2039, 30-4538, 32-182, 32-185). For example, the American Federation of Government Employees recommended that employers have a documented program in place for at least 2 years before being eligible and that a grandfathered program be required to comply with the full standard if any MSDs occur (Ex. 30-4538). They also urged OSHA to require that, in evaluating the program, the employer determine that it is effective in addition to functioning properly. The American Federation of State, County, and Municipal Employees recommended that OSHA require that all elements of an employer's ergonomic program be effective before the employer is eligible under the grandfather clause (Ex. 32-182). Mr. Howard Egerman was concerned that having the employer evaluate its own program was bound to be ineffective because the employer could not be disinterested (Ex. 30-115). Communication Workers of America Local 2222 recommended that the standard require employees to agree with the employer's evaluation before an existing program would be acceptable and that OSHA mediate any disputes (Ex. 30-2039).

OSHA believes that the grandfather clause in the final rule will be protective of employees' safety and health without the addition of these suggestions. The Agency is therefore not setting a minimum time period that an employer's program must have been in place to be judged effective to qualify for the grandfather clause. The final grandfather clause requires the employer to be able to demonstrate that the program is effective and to evaluate its elements and correct any deficiencies identified before the effective date.⁷ This will ensure that only relatively mature programs qualify for grandfathering.

Many rulemaking participants testified that MSDs still occur in workplaces with the best ergonomics programs in place (Exs. 30-3765; 30-4046; Tr. 14730). OSHA agrees that this is often the case, and the final rule specifically notes that the occurrence of MSDs does not constitute a violation of

⁶ Even though the final rule's grandfather clause does not contain a fixed deadline for implementing controls for a problem job, an employer with a grandfathered program is expected to institute permanent controls as soon as possible. An employer who postponed the control of MSD hazards beyond a reasonable amount of time would have difficulty demonstrating the effectiveness of the program.

⁷ However, as explained earlier, the final grandfather clause does permit an employer to incorporate work restriction protection in the ergonomics program within 12 months of the effective date.

the standard (see the note to paragraph (k)).

Although the employer will be evaluating the program, OSHA believes that Mr. Eggerman's concern is unfounded, because paragraph (c)(1)(v) requires the employer to be able to demonstrate that the program is effective. This provision, and the inclusion of the core elements, should ensure that the evaluation is appropriate. In addition, the final grandfather clause requires qualifying programs to include employee participation in program evaluation. This will also act as a check on the accuracy of the evaluation process. For these reasons, the Agency believes that the grandfather clause in the final ergonomics standard will provide an appropriate level of protection for employees.

Some rulemaking participants objected to language in the proposal that required the employer to show that their program complies with the basic obligations and is functioning properly (see, e.g., Exs. 30-541, 30-562, 30-1355, 30-1547, 30-3117, 30-3783, 30-4607). They argued that the burden should be on OSHA's compliance staff to address ergonomic hazards rather than on the employer to demonstrate that its program qualifies. Some of these rulemaking participants argued that placing the burden on employers to demonstrate program effectiveness would disproportionately affect small employers, who do not have the resources of larger ones (see, e.g., Exs. 30-3117, 30-3783). Caterpillar, Inc. stated that the subjective nature of the grandfather clause would lead to uneven enforcement across employer groups and across the nation (Ex. 30-4607).

The American Apparel Manufacturers Association also was concerned about enforcement and gave the following example of how an employer's interpretation of what constitutes a problem job could differ from that of an OSHA compliance officer:

An apparel manufacturer may see two sewing jobs as extremely different, involving different activities and physical requirements, but an OSHA inspector with no experience in the apparel industry may well see them as the same. This ambiguity of language may cause penalties against companies who believed they were, in good faith, running a successful ergonomics program (Ex. 30-4470).

The Boeing Company was also concerned about being second guessed by OSHA enforcement personnel (Exs. 30-973, 30-1547). They recommended that the standard unambiguously recognize programs addressing the basic

obligations. In particular, Boeing urged OSHA to clarify that an employer who is complying with a written program that meets the grandfather clause is in compliance with the standard (Ex. 30-1547). They argued as follows:

Where employers are already undertaking what can reasonably be done in good faith to minimize problem jobs, they should be protected from second-guessing by inspectors. OSHA's limited resources are better used focusing on worksites where ergonomic hazards have yet to be addressed, not on worksites which have already implemented effective ergonomics programs (Ex. 30-1547).

Others believed that it is appropriate for OSHA to require employers to demonstrate the effectiveness of their programs (see, e.g., Exs. 30-429, 30-2835, 30-3813, 30-4134, 31-337, 500-214). These commenters argued that this was the approach taken by Washington State in its ergonomics standard, and they believed that it was reasonable.

OSHA finds, based on a review of the evidence in the record as a whole, that the final grandfather clause is not likely to lead to uneven enforcement. It is true that employers will need some method of assuring themselves that their ergonomics program qualifies for the grandfather clause, and the method chosen also will be useful to OSHA compliance personnel. However, OSHA will not cite employers who make an adequate demonstration⁸ that their programs are effective and include the elements and subelements in paragraph (c)(1). However, if the Agency finds objective evidence that the employer is basing the demonstration on inaccurate information, OSHA will not consider that employer's program as qualifying for grandfather status.

OSHA also believes that it is reasonable and appropriate to place the burden of demonstrating that their programs qualify for grandfather status on employers because grandfathered programs are the "exception" to the standard. Employers who choose to take advantage of using a program that is not required to meet the full ergonomics standard in all its details can reasonably be expected to produce evidence that their programs qualify for the grandfather clause. OSHA needs assurance that employees in workplaces with grandfathered programs will be adequately protected by these programs. For these reasons, the final grandfather clause requires the employer to demonstrate that their programs qualify for grandfather status.

⁸ An adequate demonstration is one that touches on all subelements spelled out in paragraph (c)(1) and that shows effectiveness using an appropriate measure of effectiveness.

Some rulemaking participants complained that the proposal would require employers wanting to take advantage of the grandfather provision to keep unnecessary records (see, e.g., Exs. 30-2645, 30-2815, 30-2835, 30-4628). For example, the Chemical Manufacturers Association and others stated that an unwarranted paperwork burden would be forced on an employer because it would have to document that the program met the basic obligations and that the program is functioning properly (see, e.g., Exs. 30-2835, 30-3356, 30-4628).

The final grandfather clause does not require the employer to maintain any records. In fact, the final standard does not require employers whose programs are grandfathered to maintain any of the records required by the full standard in paragraph (v). Some employers may choose to maintain certain records to facilitate their demonstration of effectiveness. However, some effectiveness measures require no records. For example, the Dow Chemical Company, whose program involves the evaluation of all tasks in high risk jobs and control of all ergonomic hazards in those jobs, would need only show that adequate controls are in place to demonstrate effectiveness. (They also would need to show that their program includes the elements and subelements given in paragraph (c)(1).) In addition, most employers with existing programs are already required, under 29 CFR Part 1904, to maintain injury and illness records. Employers should be able to use those records, with little or no modification, to demonstrate effectiveness. Thus, OSHA has concluded that comments that the grandfather clause would create an unwarranted paperwork burden are unfounded.

Some rulemaking participants argued that companies would be forced to alter their existing safety and health programs to meet the OSHA ergonomics standard, forcing them to inefficiently allocate resources away from their safety and health programs (see, e.g., Exs. 30-2216, 30-3845, 30-4818, 31-310; Tr. 11379, 11403). These commenters apparently believe that two separate and incompatible programs would be required or that grandfathering would require major restructuring of their current ergonomics program. For example, the Forum for a Responsible Ergonomics Standard recommended that OSHA recognize existing programs that met the goal of reducing or eliminating MSD hazards regardless of whether or not they met the technical specifications of the six proposed program elements (Ex. 30-3845).

Otherwise, they argued, the standard would not only upset the performance of existing programs but would result in poor allocation of risk control resources. They gave examples of what they believed might occur:

[O]ne Forum member, CCE, has spent millions of dollars researching and developing methods to reduce injuries related to various warehousing and delivery activities, such as improving new order fulfillment systems. In this respect, CCE is pioneering achievements that likely will eventually be adopted throughout its industry. However, particularly with respect to employee participation in developing safety programs, CCE is unlikely to meet the strict requirements for grandfathering. As a result, CCE anticipates that many of its current efforts will be derailed as resources, especially the time of its highly trained staff, will have to be diverted to ensuring compliance with the OSHA standard. Instead of developing fixes that will prevent injuries, these resources will be directed towards "fixing" the administrative structure of its program.

Similarly, many NACS members (convenience store operators and petroleum marketers) incorporate MSD prevention and ergonomics issues into their general worker safety programs that cover a wide range of issues, from dealing with slips and falls to robbery deterrents to customer safety issues. These programs have been extremely effective in reducing MSD injuries. If not grandfathered, implementing OSHA's proposed standard would require upsetting and dramatically changing these already effective programs (Ex. 30-3845).

Mead Corporation (Ex. 30-2216) made a similar comment:

Responsible employers would be forced to alter achieving programs and pursue measures that we know are not as effective as what we are already doing. The resources that are focused on MSD prevention would be shifted toward less meaningful activities. A new infusion of MSDs may result at many workplaces that have effectively controlled these types of accidents to date because of the shift in emphasis brought on by compliance demands.

Consider:

- Many companies utilize periodic risk assessments to update priorities for ergonomics projects. Risk assessments commonly include a survey of the workplace, discussions with employees about potential concerns, and analysis of MSDs. Priorities are established and incorporated into a work plan for the site's ergonomics/safety team.
- When ergonomics teams in Mead conduct analyses of jobs, they are encouraged to identify as many opportunities for continuous improvement (potential risk factors) as possible and then to prioritize based upon risk. Action plans are developed for high risk concerns. Lower priorities are not addressed at the time unless they are low cost. Teams maintain documentation of these items and may revisit them in the future once higher priority items are resolved

In each of these examples, employers are pursuing activities that should be recognized as meaningful and exceeding the level of protection OSHA is currently seeking for the control of MSDs. With the proposed standard, however:

- When persistent symptoms develop at a job considered to be moderate priority for continuous improvement, higher priority changes would be delayed, placing more employees at higher risk for developing MSDs;
- Similarly, when partial work aggravation associated with a low risk task triggers a manufacturing job, high priority changes recommended by the ergonomics team based upon comprehensive analysis will be delayed; and
- Documentation of MSD prevention activities will be increasingly scrutinized and restricted due to concerns over how OSHA would interpret the information (Ex. 30-2216).

On the other hand, the American Society of Safety Engineers stated that ergonomics programs fit easily into existing safety and health programs:

The establishment of basic ergonomic management programs, increasing employee awareness and involvement on these issues is not a burden to employers when compared to other safety and health compliance requirements.

In fact, most efficient and effective ergonomic initiatives will usually dovetail with other existing safety and health programs (Tr. 11611).

The final rule in general, and the grandfather clause in particular, will not, in OSHA's view, require an inefficient reallocation of resources. In fact, because MSDs are the leading cause of on-the-job injuries and illnesses, OSHA believes that the final rule will ensure that resources will be devoted to areas where significant improvement in injury and illness rates can be realized.

OSHA agrees with the American Society of Safety Engineers that ergonomics programs fit well as part of comprehensive workplace safety and health programs. The final grandfather clause does not require employers to divorce ergonomics from their existing safety and health programs. Thus, employers who address ergonomics in existing effective safety and health programs typically will not need to reinvent their ergonomics program just to qualify for the grandfather clause.

In addition, as noted earlier, the final rule accommodates prioritization of the implementation of permanent controls, as Mead Corporation is doing, where the employer cannot fix all problem jobs at once. Therefore, OSHA does not believe that the final rule's grandfather clause

will be disruptive or result in an unwarranted reallocation of resources.

Union Carbide recommended that the standard not require employee participation in the *development* of existing programs that would otherwise qualify under the grandfather clause (Ex. 30-3784). ORC also identified employee participation in the development of each element of the program as one area that few of its member companies could comply with (Tr. 4135).

OSHA agrees with these rulemaking participants that employee participation in the development of ergonomics programs is not necessary where an existing program that qualifies for the grandfather clause is at issue. The primary purpose of the grandfather clause is to recognize ergonomics programs that employers have already put into place, *i.e.*, that are already well past the developmental stage. According to ORC, some of these programs have not involved employees in the past development, implementation, or evaluation of the program. As drafted in the final rule, employee participation in these stages of program implementation is required as appropriate, from this time forward. In other words, OSHA is not requiring employee participation in the past development of a program as a condition of the grandfather clause; it is requiring employee participation in the implementation, evaluation, and future development of grandfathered programs, however.

Alcoa, Inc., recommended that, for existing capital-intensive industries and equipment, OSHA allow employers additional time to come into compliance with the grandfather clause (Ex. 30-3922). They argued that the implementation of permanent controls within 2 years, as proposed, was neither realistic nor economically feasible for some employers. The final rule's grandfather clause allows an employer to have a process for identifying, analyzing, and controlling MSD hazards in problem jobs and following up to ensure control effectiveness. Through a prioritization process, an employer may choose to temporarily implement interim controls. Although the employer is expected to institute permanent controls as soon as possible, the final rule does not provide a date when this must be accomplished. Thus, employers in all industries with qualifying programs will be able to prioritize their jobs for control in a rational manner that permits them to take advantage of the capital involvement and replacement schedules of their industries.

Paragraph (d)—What Information Must I Provide to my Employees?

Paragraph (d) of the final rule requires employers to provide their employees with basic information about five items:

- (i) Common musculoskeletal disorders (MSDs) and their signs and symptoms;
- (ii) The importance of reporting MSDs and their signs and symptoms early and the consequences of failing to report them early;
- (iii) How to report MSDs and their signs and symptoms in the workplace;
- (iv) The kinds of risk factors, jobs and work activities associated with MSD hazards; and
- (v) A description of the requirements of OSHA's ergonomics program standard.

This information must be provided to new employees within 14 days of hiring, and must be posted conspicuously in the workplace. Consistent with applicable law, information may be posted or provided electronically to employees who have electronic access. To assist employers in meeting their obligation under this paragraph, OSHA has included nonmandatory Appendices A and B, which contain all the information needed to comply with this paragraph, except for the workplace-specific information on reporting MSDs and their signs and symptoms.

The proposed rule also would have required employers to provide employees with information on how to recognize MSDs (and their signs and symptoms); on the importance of early reporting of MSDs; and on how to report MSDs at their workplace. It also would have required employees to establish a reporting system for MSDs. These provisions in the proposed rule, however, would only have applied to manufacturing and manual handling employers. OSHA expected the provisions to serve three purposes: to facilitate employees' active participation in their employers' ergonomics programs; to promote early reporting so that MSDs could be treated most effectively; and to assure prompt identification of MSD hazards so that the incident trigger of the standard would work properly.

There was a great deal of support, in general, for requiring employers to provide hazard and reporting information to employees (see, *e.g.*, Exs. 30-2116, 30-3813, 30-3748, 30-3765, 30-3934, 32-339-1, 32-111-4, 32-185-3, 30-3686, 32-461, 32-210-2, 30-3826, 30-3686, 32-182-1, 30-2116, 30-3748, 30-4564, 32-198-2, 500-33, 32-21-1, 32-450-1, 30-4247 and 32-450-1). Mr.

Mark Davidson, Risk Manager for Safeway Stores testified (Tr. 13674, 13658) that he adamantly supported pre-injury efforts to train and evaluate people. He stated the fact that Safeway had produced a video to educate employees on symptoms of soft tissue injury and had merely shown it to employees across the United States. Both Akers Logging (Tr. 12325) and Swift Company Timber Management (Tr. 12315-16) believed that this information could be incorporated into regular safety meetings, and Mr. Swift testified that the cost would be nominal, if anything.

In fact, a number of participants urged OSHA to go even further and require employers to survey their employees to identify existing signs and symptoms (see, *e.g.*, Exs. 31-113, 31-150, 30-4538, 31-243, 31-186, 30-2387, 31-156, 31-125, 31-105, 31-43, 31-23, and Tr. 4732-33). One commenter (Ex. 31-186) said that, as well as promoting the early detection of MSDs, thereby saving employers money and lost work time, surveys also send the message that the employer cares about employee health and safety. The American Association of Occupational Health Nurses (AAOHN) (Ex. 30-2387) also said that MSD symptoms surveys should be strongly encouraged, if not required.

Other commenters argued that the benefits of this information provision should not be limited to jobs involving manufacturing and materials handling (Ex. 30-3826). Since implementation of any ergonomics program outside manufacturing and manual handling would have been based on the occurrence of an OSHA-recordable MSD, it made little sense, these commenters felt, not to provide employees in other jobs with information on what and how to report:

Employees cannot be expected to report early if they are not educated on what signs and symptoms of MSDs are and if the employer is not communicating with them the importance of reporting early. Also, if employees are not aware of, or do not know the mechanism of reporting, then it is surely less likely that they will report * * *. This will be a great disincentive for reporting (Ex. 32-210-2, pg. 130).

See also, *e.g.*, Exs. 500-126, 32-85-3, 30-4538, 32-198-4, 30-2387.

Some commenters, however, objected that employers should not be required to provide hazard and reporting information before an MSD occurred (see, *e.g.*, 30-3723, 30-3867, 30-3086, 30-4465, 30-4607, 30-1012). These commenters argued that providing the information would be an unjustified consumption of resources, infrastructure capacity, and support, adding overhead

and cost with no potential benefit. The General Electric Company (Ex. 30-1071) felt that an employer proactively identifying ergonomic issues would likely unearth complaints of MSD signs and symptoms. The American Iron and Steel Institute (AISI) (Ex. 32-206-1) stated:

The provisions in proposed Sections 1910.914 and 1910.916 requiring the employer * * * to inform workers of the signs and symptoms of MSDs and how to report them would create an enormous potential for abuse of the system. The manner in which OSHA is expected to enforce those provisions will only exacerbate the problem (Ex. 32-206-1, pg. 40).

Other participants also expressed concern that providing employees with additional information about MSDs will cause workers to misattribute benign symptoms to serious injury or disease, thereby heightening symptoms and distress, or otherwise to make false reports (Exs. 32-241-3-2, 30-3716, 30-3000, 30-4843, Tr.16087, Tr. 10445-6). Omni Services Incorporated (Ex. 30-4496-35) believes it would be easy for employees to report almost any ache or pain as work-related and get paid time off until they feel better.

The Painting and Decorating Contractors of America (Ex. 30-3716) voiced concern that the information presented to employees about MSD signs and symptoms and the importance of reporting them early would not only require employers to develop expertise in ergonomics-related injuries, but would encourage employees to classify almost any job-related ache or pain as an MSD. The Plastics Engineering Company (Ex. 30-2435) stated that the requirements would encourage employees to report both real and phoney or exaggerated MSDs. The American Road and Transportation Builders Association (Ex. 30-4676) argued that the number of work-related MSD claims, and the number determined to be work-related, would significantly increase. See also Exs. 500-127, 31-106, 31-344, 32-82-1, 30-3749, 30-3336, 30-3367. The AAOHN (Ex. 30-2387), however, pointed out that often, after ergonomic training, employers experience an increase in MSD complaints and should be prepared for this eventuality. As noted elsewhere in the Preamble, these are not "new" MSDs, but instead the expected earlier reporting of MSDs that are already occurring.

OSHA does not find evidence that encouraging early reporting of MSDs promotes abuse. Evidence discussed in other sections of this Preamble indicates that programs that encourage early reporting of MSDs, so that employees

can enter an MSD management program, actually reduce the time employees are subject to work restrictions. OSHA also has analogous requirements in other standards, for example, the Bloodborne Pathogens standard (29 CFR 1910.1030) and several of its chemical exposure standards (Cadmium, 29 CFR 1910.1027; 1,3-Butadiene, 29 CFR 1910.1051; Methylene Chloride, 29 CFR 1910.1052), and has seen no evidence that the provisions are abused. These provisions simply require that the employer provide basic information to employees; have a system in place for employees to report possible injuries, illnesses, and exposures; and evaluate and respond to these reports. As is discussed more fully in connection with paragraphs (e) and (f), a report of an MSD does not impose any obligations on employers unless the employer determines that the MSD is work related and meets the severity criteria, and the job itself meets the levels of the Basic Screening Tool in Table 1.

OSHA also agrees with the comments discussed above urging that all general industry employees be provided with this information. It believes the incident trigger in the standard can only be fully effective if all employees have basic information about MSDs and how and why to report them promptly. This means that some general industry employers, who under the proposal would have had no obligations at all until receiving a report of an MSD, will now have to provide this information. OSHA emphasizes, however, the minimal nature of the burden imposed by this paragraph. All of the information, except that on how to report MSDs and signs and symptoms to a particular employer, is contained in Appendices A and B to this standard, and will also be posted on OSHA's website. Employers need only copy or download the information for distribution to their employees. This responds to a number of comments asking OSHA to provide materials to assist employers in providing information to employees (see, *e.g.*, Exs. 30-429, 30-4492, 30-2987, 30-3232, 30-3853, 32-337-1, 32-210-2, 32-461-1, 32-461-1, 30-3826, 30-4538, 30-3686, 30-2387).

The requirement that employees be given information on how to report MSDs and their signs and symptoms is also necessary to ensure the effectiveness of the standard's exposure trigger. This requirement is even more basic than that contained in the proposed rule. It does not require employers to set up any particular reporting system, only that employees know how to report their MSDs or signs

and symptoms. Particularly for a very small employer, this could be as basic as telling them to report them to a supervisor or safety official. Larger employers may use their existing reporting systems (Ex. 30-3826). Although OSHA intended this option also to be available under the proposed rule, several commenters interpreted the proposal as requiring a reporting system specific to MSD signs and symptoms (Exs. 31-78, 30-240, 30-3723, 30-3765, 32-77-2, Tr. 5340, 30-3853, 32-337-1, 30-716, 30-2215, 500-127). In light of the revised language in the final standard, these comments are now moot.

Other commenters, however, urged OSHA to adopt a more elaborate MSD reporting system. The American Federation of Teachers (Ex. 32-326-1) urged OSHA to strengthen the reporting requirements by stipulating that employers document a method for encouraging employees to report. Morgan, Lewis, and Bockius (Ex. 30-4467) expressed concern that employers would have no sure way of knowing whether a reporting system would satisfy an OSHA compliance officer's interpretation of the standard's requirements. OSHA does not agree that more detail is necessary in this provision.

The final standard allows employers extensive flexibility to tailor reporting systems to the demands of individual workplaces. Variations among employers (*e.g.*, size, management structure, number and type of facilities) could lead to some types of reporting systems being more effective than others for different employers. Some may choose written reporting systems, while others may feel that an oral system is a "better fit" for their particular situation. OSHA demands only that, whatever approach is used, it must be accessible and carried out in an orderly way that is recognized and understood by the involved parties.

A few commenters questioned the requirement to provide employees with a summary of the standard (see, *e.g.*, Exs. 30-3765, 30-1336, 30-3782-12, 30-2836, 30-2940, 30-240). The G. Leblanc Corporation (Ex. 30-4837) stated that, with the exception of this item, the information to be provided to employees would be very helpful in making the reporting/response system successful. It also felt that inclusion of the summary resulted in additional cost and expertise necessary for providing the information. The Dow Chemical Company (Ex. 30-3765) also commented that, while it supports telling employees about MSD hazards, signs and symptoms, the importance of

reporting them early, and the mechanics of how to report them and uses a program that emphasizes the information envisioned by this provision, it does not support providing a summary of the requirements of the standard. The Edison Electric Institute (Ex. 32-300-1) also objected to the requirement that supervisors and employees be trained in the requirements of the standard.

Some of these commenters (see, *e.g.*, Exs. 30-1336, 30-2836, 30-2940) voiced concern about not knowing how many pages of information were sufficient to comply with this requirement, while others (see, *e.g.*, Ex. 30-3782-12) felt that how to interpret a "summary of the standard" and how to provide this to the employee was left to the employer's imagination. These concerns are addressed by the inclusion of nonmandatory Appendix B to the standard.

On the other hand, several commenters stated that employees should receive even more information (Exs. 30-4538, 31-242, 32-461-1, 32-210-2, 32-182-1, 32-111-4, 32-339-1, 500-218, Tr. 3481-82, 500-126, 31-280, Tr. 4542-43). For example, the AFL-CIO recommended that the hazard information and training requirements be restructured to move some of the training requirements up-front and stated:

Specifically, we recommend that the Hazard Information and Reporting section require information and awareness initial training on the following:

1. Common MSD hazards;
2. The signs and symptoms of MSDs and the importance of recognizing and reporting them early;
3. How to report MSDs, signs and symptoms of MSDs, and MSD hazards and the prohibition against discouraging employee reports;
4. An explanation of this standard, including ways for employees to participate and how to get a copy of the standard;
5. An explanation of MSD management, including temporary work restrictions and work restriction protection; and
6. The principles for controlling common MSD hazards. (Ex. 32-339-1, pgs. 32-33)

Other commenters suggested that additional topics such as employee rights to job protection, right to report reporting procedures, symptom reporting procedures and training be included (see, *e.g.*, Exs. 32-461-1, 30-4538, 30-3686, 32-198-4, 32-198-4-1, 32-198-4-13).

OSHA has considered these comments and incorporated some of the suggestions. Other topics are addressed in the context of ergonomics program training under paragraph (t). The information requirement in this

paragraph (d), however, is intended to provide employees with the minimum amount of information they need to perform their function under the standard: recognizing and reporting MSDs and their signs and symptoms, and doing so as early as possible. Employers are free to provide additional information (e.g., explaining their particular ergonomics program), but OSHA does not believe that more detailed information is necessary before any MSD hazards have been found. As previously discussed, the Agency has attached an information sheet for the employer to use in providing the required information.

Finally, the issue of the posting of this information was also raised by several commenters (see, e.g., Exs. 31-70, 31-342, 30-240, 30-1726, 30-1104, Tr. 10586). One commenter (Ex. 31-70) stated that the final standard should require mandatory posting of information for employees. Similarly, another commenter (Ex. 31-342) commented that there should be a requirement to either post a notice that employees should report possible MSDs promptly or inform employees in another effective manner. The National Association of Orthopaedic Nurses (Ex. 30-1104, Tr. 10586) supported a readily identifiable posting of MSD signs and symptoms, who to report to, and how to report. In addition, the University of Wisconsin Extension (Ex. 30-1726) urged OSHA to develop "more boilerplate" on a policy that encourages reporting and to require that this policy be posted in the workplace. On the other hand, August Mack Environmental (Ex. 30-240) argued that posting was redundant, unnecessary and posed a problem due to often limited space available for postings. It felt that the currently required OSHA poster already contains information on how to get additional information about OSHA standards.

Paragraph (d)(2) of the final standard requires that the information provided to employees must also be posted in a conspicuous place. In addition to an employee bulletin board, such places may be the employee locker room, lunch room, or near the time clock. Electronic posting is also permissible where all employees have access. While the Agency realizes that these options are not available in all facilities, most employers have some area, recognized by employees, where the employer posts company announcements and information. OSHA believes the posting requirement is necessary because many employees may not have immediate access to their original information

sheet when they are beginning to develop an MSD.

In conclusion, OSHA has considered all of the comments and testimony received on the proposed provisions requiring employers to provide hazard information and reporting. It has decided to retain the requirement that employers covered by the final rule to provide minimal information to employees before an MSD incident occurs. OSHA believes the final rule provision is adequate without requiring additional measures such as surveying employees to identify signs and symptoms of MSDs.

Paragraph (e)—When Must I Take Further Action?

A. Introduction

The final rule incorporates a two-stage action trigger. It requires further action when (1) an employee experiences a work-related MSD involving either one or more days away from work, one or more days of limitations on the work activities of the employee, medical treatment beyond first aid, or 7 days of persistent MSD signs or symptoms (2) in a job with exposures to risk factors that meet the Basic Screening Tool in Table 1. Unless both stages of this action trigger are reached, the standard does not require employers to take any action beyond providing the information in paragraph (d) to their employees.

The action trigger in this standard serves a purpose analogous to that served by action levels in OSHA standards regulating exposures to air contaminants. Those standards generally require that airborne levels of the contaminant be kept below a permissible exposure level (PEL). At a much lower level, however, employers are required to take actions such as conducting air monitoring and providing training and medical surveillance to exposed employees, although they do not actually need to implement controls to reduce exposures to the regulated substance. Similarly, in this standard, once a job meets the action trigger, the employer must implement an ergonomics program that includes job hazard analysis, training, and MSD management (for the injured employee), although it may not actually be necessary to control or reduce the MSD hazard.

This concept is similar to the approach OSHA took in the proposed rule. In the proposal, an employer was required to take further action if an OSHA-recordable MSD occurred in a job meeting certain "screening criteria," i.e., the job involved physical work activities and conditions that were reasonably

likely to result in the MSD, and those activities were either a "core element" of the job or accounted for a "significant amount" of the employee's worktime. In manufacturing and manual handling jobs, an OSHA-recordable MSD was not necessary if an employee reported persistent symptoms and the employer had knowledge of problems in the job.

OSHA received a large number of comments about the proposal's triggering mechanism. These comments fell into several categories. Many parties objected that the single MSD incident trigger included in the proposal was either too sensitive or not protective enough. Others objected to the use of an OSHA-recordable MSD, often pointing out that OSHA has proposed to amend its recordkeeping regulation, and that those amendments could also affect this ergonomic standard. In addition, commenters complained that the proposed standard's screening criteria would be extremely difficult to apply in practice, pointing in particular to the terms "core element," "substantial part of the workday," and "reasonably likely to result in the MSD."

As explained below, OSHA has made a number of changes in response to these comments. The triggering mechanism in the final rule has more precisely defined elements, and OSHA believes it should be much easier to apply.

A job meets the action trigger in the final standard based on two criteria. The first is what has been called the "single-incident trigger." Under this criterion, an employee working in the job must have incurred either a work-related MSD severe enough to result in a work restriction, medical treatment beyond first aid, or MSD signs or symptoms lasting at least 7 consecutive days after being reported to the employer. A work restriction is defined in the standard as one or more days away from work, one or more days of limitations on the work activities of the employee's current job, or one or more days of temporary transfer to alternative duty (see paragraph (z)). Under the final rule, an MSD meeting this description is an "MSD incident." The employer's first duty, after receiving a report of an MSD or MSD signs or symptoms, is to determine whether the report constitutes an MSD incident.

The second step of the action trigger, which must only be addressed after an MSD incident occurs, is based on the employee's exposures to ergonomic risk factors. If the employee is exposed to one or more of the risk factors described in the Basic Screening Tool in Table 1 for longer than the time listed for that

risk factor, then the job meets the screen.

B. MSD Incident Trigger

1. Incident-Based Approach

The proposed standard also included a single-incident trigger. Under the proposal, employers of workers engaged in manufacturing and manual handling would have been required to implement some elements of an ergonomics program standard soon after the standard took effect, whether or not MSDs had occurred in their jobs. Once a "covered MSD" meeting the screening criteria occurred, those employers would have been required to adopt a full ergonomics program. Other employers would not be required to take any action before a "covered MSD" meeting the screening criteria occurred, but once that happened, they also were required to adopt the full program. In this final rule, OSHA has clarified that the only action explicitly triggered by an MSD incident is to apply the Table 1 screen. OSHA finds that the record supports using an MSD incident for this purpose.

A number of participants objected to the proposal's incident trigger on the basis that it was reactive and appeared inconsistent with OSHA's mission "to prevent the first injury" (Ex. 500-218, Tr. 9071, 9156, 12277, 12477). A number of labor organizations favored a proactive approach because, according to the International Chemical Workers' Union, "[w]aiting for a covered MSD or persistent MSD symptoms to arise, versus evaluation and prevention, is a lose-lose proposition" (Ex. 32-198-4, 32-461-1, 500-137; see also Ex. 500-218, Tr. 12365, 17543). The Farm Workers Justice Fund urged OSHA to adopt a hazard-based approach because in many workplaces employees experience a great deal of pressure not to report injuries (Tr. 17515).

Some employers and representatives of employers also supported a hazard-based rather than an incident-based rule (Ex. 30-1294, DC67, Tr. 9070-74, 12277, 13633, 10631, 10636). Mark Davidson, of the Oregon Self Insurance Association, preferred a proactive approach because:

If the goal is to cut down on the occurrence of MSD complaints, shouldn't the regulatory effort [focus on] preventing the occurrence rather than punish it (Tr. 13633).

Anthony Barsotti, of Hoffman Construction Company, said that an incident-based approach was "heading backwards in terms of prevention" versus reaction:

[H]aving the standard be triggered by the injuries seems inconsistent with where we

have been going, both as a safety profession and as a society in terms of identifying hazards, developing systems and processes to control them. And then, kind of when those systems fail and we have an injury, then what are our back-up systems and our approaches? (Tr. 12277).

See also (Tr. 9115-16).

OSHA has carefully considered these comments. In response, it has added a proactive element to the definition of an MSD incident. MSD signs and symptoms that last for 7 consecutive days since first reported to the employer are considered MSD incidents under this standard. Several health care professionals testified that, in most cases, MSD signs and symptoms are completely reversible when they are caught at such an early stage (see, e.g., Exs. 37-1; 37-2, pp. 14-15; 37-12, p. 5; 37-16, p. 8; 37-17, p. 4; Tr. 7687-88, 9884, 13397-98, 13410). Thus, OSHA has concluded that its incident-based approach can prevent employees from experiencing permanent damage or disability, while at the same time minimizing burdens for employers who have few or no ergonomics problems (Ex. 16969-70).

Where employers have provided their employees with appropriate information to allow the employees to recognize MSDs and MSD signs and symptoms, and have also instituted good reporting systems, and employees still are not reporting MSDs, a full ergonomics program may not be necessary. OSHA agrees with commenters who said that a purely hazard-based approach, which would require all employers to analyze all jobs, regardless of whether those jobs have ever caused an MSD, might result in an inefficient use of resources (Exs. 500-1-329, 500-75, Tr. 3095).

This is particularly true because the vast majority of employers will not have an MSD incident reported in their workplace during any given year (Exs. 30-542, 30-3167, 500-1-128, Tr. 2980, 3073, 3096). One report prepared for the Small Business Administration's Office of Advocacy estimated that as many as 75 percent of manufacturers employing fewer than 11 employees are not likely to experience any MSD incident for up to six years. (Ex. 30-542). (See also Ex. 500-67; Final Economic Analysis, chapters II and IV). The testimony of a number of hearing participants representing small businesses confirmed this (Exs. 30-3167, 500-1-128). They told OSHA that they had never had a report of an MSD in their workplace (Tr. 2980), did not have MSDs every year, or had only isolated or few occurrences (Tr. 3073, 3096). Small employers comprise 75 percent of all private industry establishments (Final

Economic Analysis, Industry Profile, chapter II), and the incident trigger ensures that most of these employers will have only minimal obligations under the final rule.

The record also shows that an incident trigger is a reasonable proxy for an increased risk of exposure to MSD hazards. For example, some employers with successful ergonomics or safety and health programs use reports of MSD symptoms or symptom surveys to identify jobs posing MSD hazards (Ex. 37-2, Tr. 5503, 5358; Tr. 14707, 14723-26). Dr. Frederick Gerr, Associate Professor of Environmental and Occupational Health at the Rollins School of Public Health at Emory University, testified:

The use of reported cases of illness, such as MSDs, to trigger investigation into potentially excessive exposure to known MSD hazards is a well-established method of protecting others with similar exposures (Ex. 37-2, p. 15).

Many employers also use MSD reports as a way to prioritize their control activities (Tr. 10631, 14723, 14746). Sean Cady, of Levis Strauss & Co., testified:

If we have repetitive motion injuries or musculoskeletal disorders on various jobs that occur at the same time how do we prioritize which jobs we select for job modification, because we don't have unlimited resources in the company. So what we do is we review many factors of that job and we qualitatively prioritize jobs. And we review things like the number of symptoms reported on a job, possibly the number of injuries, or the severity of injuries on a job (Tr. 14723-24).

OSHA has made clear throughout this rulemaking that a portion of its intent is to require more employers to implement the kinds of effective programs that are already in place in many industries (64 FR 65770). Incorporating an approach already in wide use is consistent with this purpose, and will reduce employer burden while increasing compliance with the standard.

Other commenters were concerned that OSHA's use of an incident trigger would doom those preexisting programs that involve what these participants view as a more proactive method of identifying ergonomic hazards (Ex. 500-1-452, Tr. 9070-74, 10630-32). But nothing in this rule prohibits employers from taking action, analyzing jobs or setting up an ergonomics program before MSD incidents are reported. And the grandfather clause in paragraph (c) of this standard specifically allows qualifying employers to continue their preexisting programs. Based on the record, OSHA expects that many employers who have established

ergonomics programs that do not rely on MSD reports to identify MSD hazards will maintain those programs (Tr. 3130–33, 5539, 9070–74, 10631).

2. One MSD Trigger

A separate group of rulemaking participants complained that the single-incident trigger in the proposal was too sensitive (Exs. 30–2208, 31–324, 500–1–27, 500–1–28, 500–1–45, 500–1–128, 500–52, 500–75, Tr. 5506–07). For instance, the Association of Independent Corrugated Converters said that the “one-incident threshold makes full coverage a virtual certainty for virtually every sizable employer, and for the vast majority of small employers” (Ex. 500–1–128, Tr. 16930–31). The National Tooling and Machining Association also said that a single MSD incident was too low a threshold:

On its own, a single reported MSD might not be statistically significant to warrant the corrective measures required by the proposed regulation. NTMA contends that a trigger mechanism of at least two MSDs should be the minimum threshold for the full program, especially for small businesses (Ex. 500–2).

Jack Pohlman, of the American Foundryman’s Society, added that a report of one MSD “is simply not indicative of systematic problems” (Tr. 5636). Marathon Ashland Petroleum agreed, saying that a single incident “is not reflective of the true nature of risk that exists in a given facility” (Tr. 5540). And the National Paint and Coating Association complained that a one MSD trigger was biased against large employers (Ex. 30–4340).

A number of commenters said that a one MSD trigger also would unduly burden employers by requiring them to respond to “every ache and pain” an employee reports (Exs. 30–4340, 500–1–18 (“a single complaint of pain”), 500–1–385, 500–1–386, Tr. 8772 (“perceived minor problems”), 12256). The National Telecommunications Safety Panel testified:

Extremely minor conditions with little or no connection to the workplace may trigger the standard in many facilities (Tr. 8774).

Several commenters said that the one MSD trigger ignores that “unique physical characteristics” or “predisposing medical conditions” of the worker may be involved (Exs. 30–328, 30–1651, 30–2208, Tr. 5560–61). James Haney, of Wisconsin Manufacturers & Commerce, said:

Thus, the most injury- or illness-prone employee becomes the benchmark for implementing the proposed standard’s requirements (Ex. 500–1–27).

Finally, some commenters argued that imposing a one MSD trigger would be

very costly for employers (Exs. 30–2208, 30–4340, 500–1–26, Tr. 8772). David Potts of the National Electrical Contractors Association testified:

[B]ecause [of] the broad scope of what constitutes an MSD, the program standard’s coverage will be easily activated. As such, an employer could be required to institute costly job analysis and corrective actions as a result of a single injury illness to an overly susceptible employee while all other employees in the same operation or job location has no discernable adverse reaction. Considering this hair trigger and that the Agency has only offered general remediation measures in the proposed rule, small business will surely face burdensome compliance responsibilities and stressful decisions including where to best place their limited resources (Tr. 5645).

These commenters urged the Agency to adopt a MSD trigger having a higher threshold. A number of commenters urged OSHA to increase the trigger to two or more MSDs (Ex. 30–3731–1, 500–2, 601–X–1). Other commenters said that incidence rates should be used to trigger action (Exs. 30–3845, 30–3853, 30–4137, 32–77–2, 500–1–128, Tr. 5370, 8842). Several commenters recommended that the trigger be a “pattern” or “cluster” of MSDs or MSD reports (Ex. 32–330–1, 500–23–1, 500–92). Paul Adams, director of ergonomics at Owens-Corning, suggested that OSHA should adopt a set of alternative triggers from which employers could choose (Tr. 10630, 10633).

OSHA believes many of these concerns resulted from a misunderstanding of the screening criteria in the proposal. However, the Agency also recognizes the validity of the concerns that those screening criteria were not clear enough to provide adequate assistance to employers trying to screen out non-work-related MSDs (Exs. 30–1722, 30–3956, 500–18, Tr. 8847, 16969–70). OSHA has addressed these concerns through the new definition of “MSD incident” in paragraph (e)(1) and the Basic Screening Tool in Table 1. The result is a single-incident trigger that is only half of the standard’s action trigger and does not, by itself, require employers to implement a full ergonomics program or impose other substantial obligations on them.

A single-MSD trigger is appropriate for this purpose. Most important, a one MSD trigger is necessary to prevent the occurrence of serious and disabling MSDs. There is abundant record evidence that early detection and intervention can halt the progression of most MSDs, and reduce their severity (Tr. 7687–88, Ex. 32–450–1). On the other hand, where medical treatment

and ergonomic interventions are delayed, it is more likely that conservative treatment will be less effective or will not even be an available option, or that the MSD condition will not be reversible and the employee will be permanently disabled (Ex. 38–285). For example, if carpal tunnel syndrome and other nerve-related MSDs go untreated long enough, damage to the nerves will be irreversible (Ex. 37–17, Tr. 13349 (the nerve dies)). If OSHA included a multiple-incident trigger, the first employee to be injured could become permanently disabled while waiting for other MSDs to trigger the employer’s obligations to provide MSD management and ergonomic intervention. This would be particularly likely in small businesses and in workplaces where relatively few people perform the same job (Ex. 32–450–1). In addition, not acting on the first MSD may discourage other employees from reporting their MSD signs and symptoms (Ex. 32–450–1).

The use of a single MSD trigger is also consistent with employer practice. Many employers testified that they respond to all employee reports of injury or illness, including MSDs (Ex. 37–2, Tr. 5358, 5359–60, 5503, 5539, 14707, 14739, 17312–13). Even employers who recommended that OSHA adopt a multiple-incident trigger testified that they themselves conduct investigations of every report of injury, including MSD signs and symptoms (Tr. 2920, 5503, 5358). For example, James Lancour, safety and health regulatory consultant with Southern Company Services, testifying on behalf of Edison Electric Institute, said:

[We] have a reporting mechanism where signs and symptoms are reported. Then we have, it’s turned over to the industrial hygiene group to go out and do a job assessment. And, again, depending upon what they find out it may be something that can be unique to that particular person or workstation, et cetera, or it may require more in-depth analysis. So basically depending upon the job they take a look at what they’re trying to determine how simple or complex the problem might be, and then go through and develop an assessment protocol based on that operation (Tr. 2920).

When questioned, no employer testified that it was company policy to wait until a second or third employee gets hurt in a job before investigating the first injury. This suggests that employers understand the importance of responding to each report of injury and, in practice, do not consider it appropriate to ignore individual reports of injury.

Other evidence in the record also shows that a one MSD trigger should not

impose an undue burden on employers. As discussed above, most small manufacturing establishments do not experience any injuries or illnesses in any given year (Exs. 30-542, 30-3167, 500-1-128, Tr. 2980, 3073, 3096). In fact, many establishments do not experience any injuries or illnesses over a considerable period. According to a report prepared for the Small Business Administration Office of Advocacy, 75 percent of manufacturing establishments with fewer than 11 employees, 50 percent with 11-50 employees, and 25 percent of those with 50-249 employees would experience almost no MSD incidents in any given 6-year period. (See also Economic Analysis, chapters III and IV.) If this standard were to adopt a multiple MSD requirement, particularly one requiring at least two MSDs in the same job during a single year, injured employees in many establishments might never be provided with needed medical intervention or protection from additional injuries because it would take so long for the triggering event to occur.

The changes in the definition of "MSD incident," and the new Basic Screening Tool, both discussed below, will also help to address the concerns of some commenters that significant employer action will be triggered by the report of "any ache or pain," whether or not it is work related (Exs. 30-1722, 30-2208, 30-3956, 500-52). P.J. Edington, executive director of the Center for Office Technology, said:

OSHA assumes any discomfort on the job is work-related. That leaves all employers in a continuous and costly cycle of trying to eliminate all "signs and symptoms" of MSDs (Ex. 30-2208).

But employers have the right under this final rule to make reasonable determinations that particular MSDs are not work related. And only MSDs severe enough to require medical treatment or a job restriction, or signs and symptoms persistent enough to last for seven consecutive days, have any triggering effect. Moreover, the standard's Basic Screening Tool establishes specific thresholds for the duration, magnitude and frequency of exposure to risk factors that a job must involve in order for an MSD incident in that job to be one that triggers the standard's program requirements.

The final rule also takes into account the concerns of commenters that a single incident trigger ignores the fact that an MSD may be related to the "unique physical characteristics" of the worker (Exs. 30-328, 30-1651, 30-2208, 500-1-27, Tr. 5660-61). For example,

where the employer has reason to believe that only the injured employee is exposed to awkward postures because he or she is very tall or very short, the employer can limit the response to that individual employee's job or workstation. See paragraph (j), below.

3. Definition of "MSD Incident"

In this standard, the term "MSD incident" means either an MSD that is work-related and:

- Involves a work restriction, or
- Requires medical treatment beyond first aid, or
- Involves MSD signs or symptoms that are work-related and persist for 7 or more consecutive days after the employee reports them to the employer.

Work restriction is defined to mean one or more days away from work, one or more days of limitations on the work activities of the employee's current job or temporary transfer to alternative duty. Reducing an employee's work requirements in a new job to reduce muscle soreness from the use of muscle in an unfamiliar way is not considered a work restriction under this final rule. Also, the day an employee first reports an MSD is not considered a day away from work or a work restriction even if the employee is temporarily removed from work to recover.

Relationship to Recordkeeping Rule. The proposed rule defined a "covered MSD" as an OSHA recordable MSD that occurred in a job in which the physical work activities and conditions were reasonably likely to cause or contribute to that type of MSD, and those activities and conditions were a core element or took up a significant amount of the employee's worktime. In this final rule OSHA has changed the term "covered MSD" to "MSD incident" to dispel any implication that any such MSD immediately triggers a full ergonomics program. Although some participants found the definition of covered MSD to be "relatively clear" (Exs. 30-3934, 30-4837; 31-173, 31-186, 31-205, 31-229, 31-347), many more objected that it covered too many MSDs, was too vague, or was improperly linked to OSHA's recordkeeping rule (Exs. 30-1364, 30-1722, 30-2088, 30-3167, 30-3845, 30-3956, 500-73, 500-104, 32-337-1, Tr. 4366, 8226, 10000, 12797, 15977). The new definitions of MSD and Action Trigger in this standard address these concerns.

OSHA received a great deal of comment on the proposal's use of an OSHA-recordable MSD, *i.e.*, an MSD required by 29 CFR Part 1904 to be recorded on the employer's injury/illness log, as a trigger for further action. Many of these comments pointed out

potential problems that could be caused by linking an employer's obligations under this standard to obligations and interpretations contained in a separate rule (Exs. 30-3853, 30-4137, 32-77-2, Tr. 10632). This problem was highlighted by the facts that OSHA has proposed to amend its recordkeeping rule, so that it has not been clear at any stage of this ergonomics rulemaking what the definition of an OSHA-recordable MSD would be, and that OSHA incorrectly described the recordability of one class of MSDs in the proposal (Exs. 30-3853, 32-78-1, 32-300-1). Moreover, according to commenters, linking the definition of MSD incident to the recordkeeping regulations would give employers a strong incentive to underreport MSDs or would punish employers who already have effective early intervention programs (Exs. 30-46, 30-75, 30-137, 30-1294, 30-1902, 30-4137, Tr. 8848, 10630-32).

OSHA agrees that these concerns, particularly those related to the ongoing recordkeeping rulemaking, outweigh any potential benefit employers would gain from being able to use recordability criteria to determine whether an MSD report triggers further action under this standard. Therefore, in this final standard, OSHA has dropped any reference to the recordkeeping rule's recordability criteria. Although the definition of an MSD incident in this standard uses criteria similar to those used in determining recordability, each of the criteria used in this rule is supported by evidence in this rulemaking record. This has also allowed OSHA to tailor the definition of an MSD incident so that it more closely corresponds with the purposes of this standard.

Definition of "musculoskeletal disorder." For purposes of this rule, an MSD is a disorder of the soft tissues, specifically of the muscles, nerves, tendons, ligaments, joints, cartilage, blood vessels and spinal discs that is not caused by a slip, trip, fall, or motor vehicle accident. See paragraph (z). This standard covers MSDs affecting the neck, shoulder, elbow, forearm, wrist, hand, back, knee, ankle, and foot as well as abdominal hernias. It does not, however, cover eye disorders, even when associated with jobs involving computer monitors.

Although some commenters recommended that the standard address conditions resulting from slips, trips, and falls (Ex. DC 58, DC 405), those injuries are not caused by exposure to the risk factors this standard covers. For the same reason the final rule does not cover computer-related eyestrain, which

is caused by factors such as glare from lights and windows, computer flicker and other monitor resolution problems, and by not blinking or looking away from the screen (Tr. 16159–66).

“Work-related.” In paragraph (z), “work-related,” is defined to mean that a workplace exposure caused or contributed to an MSD incident or significantly aggravated a pre-existing MSD. This is a change from the proposal, which would have considered an MSD work-related if physical work activities and conditions caused or contributed to an MSD or aggravated a pre-existing one. Many commenters complained that the proposed definition of work-related, in essence, established a presumption of work-relatedness (Exs. 30–1722, 30–3934, 30–3956, DC65, 500–1–28). The Chamber of Commerce said that the rule should not cover “minimal workplace exposure that merely aggravates non-work exposures” (Ex. 30–1722, p. 62). Mike Edmunds, corporate safety director for Tyson Foods, said:

Even if upper extremity musculoskeletal pain (e.g., wrist pain) arises solely as a result of non-work-related activities, it is virtually impossible for an employer or physician to establish that subsequent work activities did not in some minor way ‘aggravate’ or ‘contribute’ in some way to the condition—regardless of the job (Ex. 30–4137).

To address this concern, a number of commenters recommended incorporating language from various State workers’ compensation regulations so that an MSD would be considered work-related only where work was the predominant cause of the injury or was more than 50 percent responsible for the injury (Exs. 30–3934, 32–77–2, Tr. 5507). Others recommended that OSHA adopt the definition of work-relatedness from California’s ergonomics standard, i.e., that work must be 51 percent responsible for the MSD (Ex. 32–300–1). Several suggested that the MSD incident not include pre-existing MSDs (Tr. 3097–98).

OSHA believes that some of these concerns resulted from a misunderstanding about what “contribute to” means. It does not mean that an MSD is considered to be work-related if work contributes in some de minimis (e.g., “1% contribution” (Ex. 30–3934)) or vague way. Rather, work contributes to an MSD if a specific physical work activity or condition can be identified as having contributed in some discernable way to the onset of the MSD or the signs or symptoms of an MSD. If nothing specific can be identified as a factor, then work is not considered to have contributed to the MSD.

OSHA also has responded to concerns that, once an employee has an MSD, minor aggravations of the MSD can occur very easily (Tr. 3315). In the final rule, only “significant” aggravation of a pre-existing MSD is considered to be an MSD incident. “Significant aggravation” occurs only when risk factor exposures in the workplace aggravate a pre-existing MSD to the extent that it results in an outcome that it would not otherwise have caused. For example, workplace exposure is considered to have significantly aggravated an employee’s pre-existing MSD if the MSD would have resolved on its own or with only first aid, but because of the employee’s exposure to identified risk factors in the workplace, the MSD has progressed to the extent that medical treatment is now necessary. On the other hand, if an employee experiences more pain when at work, simply because the employee is using an injured body part, that extra pain does not constitute significant aggravation. In addition, workplace exposure aggravates an MSD only where a specific physical work activity or condition can be identified as a factor in the progression of the pre-existing MSD.

Although the employer is ultimately responsible for determining whether an MSD is work-related, employers may consult with others, such as HCPs or safety and health personnel at the workplace, in making that determination. Where an employer uses an HCP to provide assistance in determining the work-relatedness of an MSD, the HCP must use the definition of work-related in this final rule and not criteria for determining work-relatedness under workers’ compensation.

Another frequent objection to the proposed definition was that it did not establish an adequate severity threshold and, as a result, would have captured all the “aches and pains of life” that employees experience while performing work activities (Ex. 30–3956, see also Exs. 30–1722, 30–2208, Tr. 9824). The Chamber of Commerce said that MSD was “so loosely defined as to cover unverified complaints of pain rather than just objectively verifiable medical conditions” (Ex. 30–1722, p. 61). The severity criteria in the final rule address this complaint. In deciding to include within its definition only those MSDs resulting in a work restriction, in medical treatment beyond first aid, and in MSD signs or symptoms lasting at least 7 days after being reported to the employer, OSHA is adopting appropriate medical severity thresholds.

Work restriction. A work restriction in this context means at least one full day

when the injured employee either must take off the entire work day for recuperation or medical treatment, or is able to work for only a portion of the workday or to perform only some job functions, either regular or alternative tasks, during the recovery period. The latter category includes job transfer, light duty jobs, and alternative duty jobs. Employees who cannot work regularly scheduled or mandatory overtime during the recovery period are also considered to be on work restriction. Neither the initial day on which the MSD is reported or occurred, nor any day on which the employee is not scheduled to work, is counted as a day of work restriction.

On the other hand, the standard now makes clear that work restrictions do not include situations where an employer adjusts the work assignments to deal with the temporary muscle soreness that an employee may experience as a result of starting a job that requires the use of muscles in an unfamiliar way (paragraph (z)). The record indicates that some employers have “conditioning” programs, most often lasting about two weeks, to help employees adjust to this type of new job assignment (64 FR 65955 (Case Study No. 2), (Exs. 26–1175, 30–4340, Tr. 9225, 9403, 13589). These programs recognize that it is not uncommon for employees to experience pain or stiffness when they begin exercising muscle groups in new or more strenuous ways (Exs. 26–1175, 30–4340). In these situations, pain or soreness may not indicate the presence of an MSD hazard. In most cases these symptoms resolve as the employee becomes accustomed to the physical activities of the job (Ex. 26–1175). They do not indicate that a hazard needing to be controlled may exist. OSHA believes that this clarification will help alleviate the concerns of some commenters that the single-incident trigger would not only trigger coverage of passing aches and pains, but could also trigger WRP obligations for employees who experience symptoms while they are becoming accustomed to a new job (Ex. 30–4340, Tr. 4316–17).

Medical conditions that result in work restrictions are widely recognized as serious (Exs. 26–1039, 37–1, 37–12, 37–28). Repeatedly, physicians and other HCPs testified that they consider MSDs that rise to this level to warrant both medical evaluation and intervention and job interventions (Exs. 37–1, 37–12, 37–28). Accepted standards of clinical practice, reflected in guidelines published by medical associations, also recommend intervention at least at this stage (Exs. 37–12, 500–34, 26–1039). For

example, guidelines on low back disorders (developed by a panel of private sector clinicians for the Agency for Health Care Policy and Research that recommend strategies for assessing and treating low back problems) defined low back problems as "activity intolerance due to low back symptoms," such as pain (Ex. 26-1039, p. 1).

The insurance industry also considers conditions that are severe enough to require work restrictions to constitute medical disability (Exs. 37-1, 37-6, 37-12, 37-28). These conditions are often compensable through workers' compensation, and insurance companies consider them to be serious (Ex. 37-6). According to Stover Snook, former director of the Ergonomics Laboratories at Liberty Mutual Insurance Company who conducted ergonomics research at the company for more than 30 years, the accepted definition of "low back disability" in the insurance industry is "lost time or restricted duty that results from low back pain" (Ex. 37-6, p. 3).

Medical treatment beyond first aid. The definition of MSD incident includes MSD signs and symptoms that require medical treatment beyond first aid. This is a familiar concept that is also used in OSHA's recordkeeping regulation. It also makes no difference whether an employee obtains medical treatment from his or her own HCP or one selected by the employer; or whether the employee obtains medical treatment before or after reporting the MSD signs or symptoms to the employer. Physicians and other HCPs testified that MSDs that require medical treatment such as physical therapy, prescription medication or surgery are more serious than conditions where resting the injured body area is enough to allow the injury to heal (Exs. 37-1, 37-12, 37-16, 37-17, 37-28).

Persistent MSD signs or symptoms. The third type of MSD incident is MSD signs or symptoms that persist for at least 7 days after being reported to the employer. "MSD signs" are defined in paragraph (z) as objective physical findings that an employee may be developing an MSD. MSD signs include deformity, decreased grip strength or range of motion, and loss of function. Some signs are readily observable, for instance, loss of function when an employee with carpal tunnel syndrome cannot hold a powered hand tool because of muscle atrophy in the hand. Other signs, commenters said, may not be as observable to non-HCPs (Tr. 7677). For this and other reasons, MSD signs are treated in the same way as MSD symptoms in the final rule. Under the proposed rule, any MSD sign would

have been a "covered MSD" because it is a recordable event under OSHA's recordkeeping rule. This raised concerns for a number of commenters, who pointed out that some signs, such as redness, may be mild and transitory, not warranting a full program response (Exs. 30-3344, 30-3749, 30-4674, 32-211).

"MSD symptoms," as defined in paragraph (z), are other physical indications that an employee may be developing an MSD. Symptoms include pain, numbness, tingling, burning, cramping, and stiffness. The proposed rule would only have addressed persistent symptoms in manufacturing and manual handling jobs, and then only if the employer knew that an MSD hazard existed in the injured employee's job.

A number of commenters opposed the proposal's inclusion of persistent symptoms in its trigger mechanism (Exs. 30-623, 30-898, 30-1722, 30-4777, 30-4821, 32-78, Tr. 10634). Some recommended at least limiting the types of symptoms included in the definition of an MSD incident (Ex. 32-78, Tr. 10634). For example, ORC said:

At a minimum, * * * OSHA must limit coverage to those symptoms that can be medically verified and that fall somewhere in the severity range between minor/transient and severe enough to interfere materially with job performance (Ex. 32-78, p. 17).

Other commenters, however, agreed with the inclusion of persistent symptoms in the incident trigger (Ex. 500-218, Tr. 12295), and virtually all of those urged OSHA to extend this criterion to all jobs, not just those in manufacturing and manual handling (Exs. 32-198, 500-218). A number of HCPs were among those supporting, including persistent signs and symptoms in the MSD incident trigger (Exs. 37-1, 37-12, 37-28, Tr. 7660, 13349). They said that persistent signs and symptoms should be evaluated because, left untreated, they often progress into more serious disorders and permanent damage (Tr. 7660, 7884, see also Ex. 32-450-1). One study has shown that employees experiencing MSD symptoms alone are at approximately 2 to 4 times the risk of being off work as employees without such symptoms (Ex. 500-71-27). A number of employers now encourage employees to report signs and symptoms to prevent such results and related costs (Tr. 5539, 5550, 14707, 14739).

The record establishes clearly that MSD signs and symptoms that persist uninterrupted warrant further investigation (Ex. 30-4468, 500-71-27,

37-12, Tr. 1531, 13382, 1763-65). Sound medical judgment supports intervening when an employee has experienced at least a week of MSD signs or symptoms. Dr. Bradley Evanoff, Assistant Professor of Medicine at Washington University School of Medicine specializing in research and clinical practice addressing occupational MSDs, testified:

I think whatever the occupation, whatever the type of work, if someone has had persistent musculoskeletal symptoms for some period [of] time, and I think a week is a reasonable period of time, then they should be evaluated to see if they have a musculoskeletal disorder (Tr. 1531).

Dr. Robin Herbert, medical director of the Mount Sinai Center for Occupational and Environmental Medicine, testified that providing early intervention for employees whose symptoms persist beyond a few days is "consistent with accepted medical practice" (Tr. 1653). In fact, according to ACOEM, such intervention is "essential" (Ex. 30-4468). Dr. Robert Harrison, who has treated more than 1,000 patients with work-related MSDs over the past 20 years, and has also conducted research in the area of work-related MSDs, testified that there is "broad consensus among the medical profession that effective treatment and prevention of MSDs relies on early reporting of symptoms. * * *" (Ex. 37-12). He also summed up why 7 days is an appropriate threshold:

[S]even days is early enough to catch the symptoms early but is late enough so that transient symptoms that may last only two or three days don't come through as a reportable symptom to a health care provider. I think it's a reasonable line (Tr. 1764).

The record shows that where signs and symptoms persist beyond a few days, they are likely to indicate that an MSD has occurred. Dr. Gary Franklin confirmed that MSDs can develop in a very short period of time:

If I was taking the history of the person and getting these kinds of symptoms of numbness and tingling and burning particularly at night, it would not matter to me whether it was two days or seven days or 14 days, if I thought clinically the symptoms were correct. I have seen patients that developed [carpal tunnel syndrome] in a day or two (Tr. 13382).

HCPs also testified that employees who have had MSD signs or symptoms for only a short period of time can already be experiencing physiologic changes or damage (Ex. 37-16). For instance, Dr. Evanoff testified:

I think people who have prolonged symptoms, lasting more than a few days * * * if you want to use the cut off of a week