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## **Appendix A: Getting Started**

### **Compliance Assistance for Employers**

The materials in Appendices A through D have been designed to provide employers with additional guidance for implementation of the standard's provisions. This is done through descriptive text, as well as with forms and other compliance assistance tools. These guidance materials are intended to explain and supplement the regulatory text, but not to add to, replace or detract from the stated requirements. It should be noted that Appendix A is mandatory with regard to representative sampling requirements (if the employer chooses to rely on representative sampling).

The purpose of Appendix A is to provide employers with assistance in complying with the provisions of the proposed rule through the identification of problem jobs.

#### **Introduction**

The standard includes a table of contents, which is followed by a brief introductory paragraph which is designed to help the reader learn where to get help in understanding the requirements. These include a flow chart of the provisions, and this appendix, "Getting Started", which describes the provisions of the standard that apply to every covered employer. Subsequent appendices address the requirements that apply primarily where employers have employees with work-related musculoskeletal disorders or jobs that must be controlled to reduce employee workplace risk factor exposures. They are Appendix B, Controlling Workplace Risk Factors; Appendix C, Medical Management Guidelines; and Appendix D, Training.

The definitions in paragraph (l) are particularly critical to understanding the standard's requirements. OSHA has defined a number of terms used in the standard, and employers must clearly understand these terms to properly comply. Refer to the definitions paragraph whenever you find a term in the text of the standard you are not sure you understand. Several definitions are especially important in establishing the scope of coverage for the standard.

The first is "**work-related musculoskeletal disorder**". This is defined in part as:

**[A]n injury or an illness of the muscles, tendons, ligaments, peripheral nerves, joints, cartilage (including intervertebral discs), bones and/or supporting blood vessels in either the upper or lower extremities, or back, which is associated with**

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**musculoskeletal disorder workplace risk factors and which is not the result of acute or instantaneous events (e.g., slips or falls).**

OSHA recognizes that work-related musculoskeletal disorders have been commonly referred to by a number of different designations, and includes in the definition some of these classifications as examples of what would be covered:

**...[C]umulative trauma disorders, repetitive strain injuries or illnesses, repetitive motion injuries or illnesses, and repetitive stress injuries or illnesses...**

The definition also indicates that for purposes of this standard, the term "musculoskeletal disorder" refers collectively to signs; persistent symptoms; or clinically-diagnosed work-related musculoskeletal disorders. Each of these is further explained in the definition.

It is especially important to understand that an employee experiencing signs or persistent symptoms is considered to have a musculoskeletal disorder for purposes of the standard. A "sign" is defined as:

**An objective finding that indicates a musculoskeletal disorder has occurred.**

An objective finding is something that can be readily observed. The definition includes examples of commonly-observed signs of work-related musculoskeletal disorders:

**[D]ecreased range of joint motion; decreased grip strength; or swelling of a joint or part of an arm, shoulder, neck, back, or leg; or change in skin color (e.g., skin turns abnormally white) on exposure to cold or vibration.**

Persistent symptoms are limited to the following:

**[A] symptom which has persisted for at least 7 calendar days from onset, or is interfering with the employee's ability to perform the job.**

A symptom is a subjective response to exposure experienced by the employee. The definition also provides examples of symptoms that would be covered if they are persistent:

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**[P]ain from exertion, pressure, or exposure to cold or vibration, except when the pain is due to an acute or instantaneous event (e.g., burn, abrasion, splinter, slip or fall) or some other condition not associated with musculoskeletal disorder workplace risk factors; or numbness or tingling in a digit, arm, shoulder, neck, back, or leg.**

This definition does not include the types of transitory pain or stiffness employees may experience during a break-in or conditioning period for a new job.

The definition also lists a number of specific illnesses that are considered to be musculoskeletal disorders. This list is not all inclusive-- there are many other illnesses that are classified as this type of disorder. But many of the most commonly found illnesses are indicated:

**Clinical diagnoses of musculoskeletal disorders include, but are not limited to, low back pain, sciatica, tendinitis, epicondylitis, rotator cuff tendinitis, synovitis, DeQuervains' disease, nerve entrapments (such as carpal tunnel syndrome) and neurovascular syndromes (such as hypothenar hammer or Raynaud's phenomenon).**

Another key definition for understanding the scope of coverage is "**workplace risk factors**". These are defined as:

**...[A]ctions in the workplace, workplace conditions, or a combination thereof, that may cause or aggravate a musculoskeletal disorder. Workplace risk factors include, but are not limited to, repetitive, forceful, or prolonged exertions; frequent or heavy lifting; pushing, pulling, or carrying of heavy objects; a fixed or awkward work posture; contact stress; localized or whole-body vibration; cold temperatures; and poor lighting (leading to awkward postures). These workplace risk factors can be intensified by work organization characteristics, such as inadequate work-rest cycles, excessive work pace and/or duration, unaccustomed work, lack of task variability, machine-paced work, and piece rate.**

There are two other terms that become important: "**problem job**" and "**control the job**". These will be explained in more detail later.

## **Purpose**

With these definitions in mind, the next paragraph to review in the standard is the purpose, paragraph (c). The purpose paragraph establishes

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what OSHA's intent is in promulgating this standard:

**Prevent the occurrence of work-related musculoskeletal disorders such as tendinitis, low back pain, and carpal tunnel syndrome, by controlling employee exposure to the workplace risk factors which can cause or aggravate them.**

**Reduce the severity of work-related musculoskeletal disorders through early medical management.**

When work-related musculoskeletal disorders do occur, their severity can be decreased by early intervention. The standard addresses early reporting of symptoms, and proper medical management procedures. Implementation of these requirements by employers should reduce the severity of work-related musculoskeletal disorders, thus reducing employee pain and suffering, as well as lost work time and the costs of treatment.

**Ensure that affected employees are informed about work-related musculoskeletal disorders and the workplace risk factors that can cause or aggravate them.**

Early reporting is critical to implementation of an ergonomic protection process. Without employee reports of signs or symptoms, employers may not know they have "problem jobs." Thus potentially affected employees must be informed about work-related musculoskeletal disorders and the workplace risk factors that may be in their workplaces in order to ensure early reporting.

**Promote continuous improvement in the technology to control exposure to risk factors in the workplace.**

The field of ergonomics is dynamic, with new research on workplace risk factors and methods to control them being conducted in this country as well as internationally. The standard recognizes this situation, and does not specify the types of controls to be used. Employers are free to choose whatever engineering or administrative controls are best suited

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to their workplaces, and to develop new technology to control the jobs. This concept of continuous improvement is consistent with international activities regarding quality assurance and control. Safety and health of workers is an important quality consideration within each facility.

**Ensure management leadership and employee involvement in controlling exposure to risk factors in the workplace.**

As with any safety and health process, management commitment and leadership in solving problems is critical to success. This includes the allocation of sufficient resources to identify problems and implement solutions. In addition, employee involvement is vital to the success of the process. No one knows better than the employees performing the job what the problems are, and frequently, what solutions may be most effective.

OSHA has developed a chart that summarizes the proposed Ergonomic Protection Standard, see DECISION LOGIC OF PROPOSED ERGONOMIC PROTECTION STANDARD. The chart contains key decision points in the proposal and the actions required.

**(decision logic)**

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## **Scope and Application**

The purpose paragraph is followed by the scope and application, paragraph (d). The standard is limited to employers with workplaces that meet one of two conditions:

- An employee has daily exposure to one or more of the signal risk factors when performing work tasks; or
- A work-related musculoskeletal disorder has been recorded since the effective date of the standard.

Where the employer determines that neither of these conditions is present anywhere in the workplace, the standard does not apply to that employer. If either of these conditions occurs at some time in the future, the rule then applies.

## Signal Risk Factors

Evidence indicates that every type of industry has some jobs that involve workplace risk factor exposures. And work-related musculoskeletal disorders have been reported in virtually every type of industry and all sizes of facilities. This does not mean, however, that every workplace in a particular industrial sector poses the same risk. Workplace design and conditions vary. However, as the extent of exposure increases, so does the risk of developing these ailments.

OSHA has determined that five specific workplace risk factors have been most closely associated with an increased risk for the development of work-related musculoskeletal disorders. The literature also shows that the musculoskeletal disorders generally occur after exposure to a combination of risk factors. In addition, it appears that the risk increases with increased exposure, i.e., the more exposure an employee has during a workshift, the greater chance there is that the exposed employee may develop a musculoskeletal disorder. Thus OSHA has designated these workplace risk factors as "signal risk factors" as their presence in the workplace is a signal that there is an increased likelihood of work-related musculoskeletal disorders.

The signal risk factors include the concept of duration of exposure--it is not the mere presence of a signal risk factor in the workplace that signals a potential problem. There must be presence for some period of time. In addition, the standard requires daily exposure to one of the signal risk factors in order to trigger requirements for further evaluation. Daily exposure to one of these factors during the workshift is likely to result in a higher risk job. The signal risk factors are used to target those workplaces and jobs which must be examined more closely. They are a screening mechanism to focus attention on those jobs of greatest concern. The **"signal risk factors"** are:

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**Performance of the same motion or motion pattern every few seconds for more than (2) hours at a time.**

Frequent repetitions of the same motions stress the body parts involved. The repetition may be of a "pattern" where several motions get repeated every few seconds, e.g., completion of the task may involve three steps that get repeated in sequence every few seconds. Much assembly line work involves repetition for long periods of time. When this repetition occurs for more than two hours at a time during the workshift without a break, the body may not have time to sufficiently rest the body parts that are being repeatedly stressed.

**A fixed or awkward work posture (for example, overhead work, twisted or bent back, bent wrist, kneeling, stooping, or squatting) for more than a total of (2) hours.**

Holding body parts in fixed or awkward postures for more than two hours during a workshift also creates excess stress that can cause or aggravate work-related musculoskeletal disorders. Agricultural workers who must stoop to pick or weed crops are subject to these kinds of stresses. Construction workers such as carpet layers also work frequently in fixed or awkward postures.

**Use of vibrating or impact tools or equipment for more than a total of (2) hours.**

Stress on the body due to vibration or impact of tools or equipment has also been shown to cause work-related musculoskeletal disorders. These may be hand-held power tools, such as a power sander, or large pieces of equipment that are being driven, such as forklifts.

**Forceful hand exertions for more than a total of (2) hours.**

**TO BE DISCUSSED.**

**Unassisted frequent or forceful manual lifting.**

Many jobs require workers to lift, carry, or otherwise handle



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objects. Generally speaking, the heavier the object is, the greater risk to the employees handling it. However, frequency of lifting or handling is also a concern, as are the size and shape of the objects, the distance they have to be carried, and the height from which or to which they are lifted.

There is also a definition of **unassisted frequent or forceful manual handling** in the standard. It provides the reader more technical information about what is meant by this term.

**[L]ifting, lowering, carrying, handling or pushing/pulling animals, people, heavy objects, equipment, or tools without assistance from mechanical devices.**

**THE FOLLOWING ARE TO BE DISCUSSED:**

**Frequent manual handling is defined in terms of the number of lifts and the duration of time during which the lifts are performed. For example, manually handling objects more than 25 times in 2 hours would be frequent manual handling, however, the objects must require 10 pounds or more of force. If less than 10 pounds of force is needed, then it is not a signal risk factor.**

**Forceful manual handling is defined in terms of the amount of force required to handle the item. Manual handling which requires 35 pounds or more of force to perform qualifies as a signal risk factor exposure. Manual handling that requires less than 10 pounds of force does not qualify as a signal risk factor exposure. To determine whether handling which requires between 10 and 35 pounds of force qualifies as a signal risk factor exposure includes consideration of both the weight handled, and the distance the weight being handled is from the lower back.**

The signal risk factors identify workplaces where further evaluation of jobs must be done. There may be situations where the problem has already been addressed, and therefore the standard does not apply. For example, the problem with fixed postures is that without adequate support and the ability to change position, fatigue increases and blood flow to the tissues decreases. However, if the job is being performed at a workstation where a desk and chair provide adequate support and the employee has the ability to move around in the chair or stand periodically, this would not constitute signal risk

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factor exposure.

### Work-Related Musculoskeletal Disorders

In addition to the presence of signal risk factors, the standard also indicates that newly recorded work-related musculoskeletal disorders require further examination. The disorders of concern are those which occur after the effective date of the final rule.

### Multi-Employer Workplaces

An important requirement to note in this paragraph involves multi-employer workplaces. The standard requires full coverage of all employees in such workplaces. The host employer and the employment service or subcontractor are required to make arrangements to share responsibility for ensuring that requirements of the standard are met for all employees. These arrangements are to be made prior to initial assignment of each employee in the host employer's workplace. For example, these arrangements could be made part of the contract governing conduct of work.

### Employers with Existing Effective Ergonomic Protection Processes

This paragraph also includes a significant exception for employers who initiate ergonomic job improvement processes at least 1 year prior to publication of the final rule. It is essentially a "grandparent" clause that allows these employers to continue working to provide employee protection as quickly as possible by eliminating the need to repeat steps that they have already successfully completed on their own. Under the provisions of this exception, such employers are exempted from the workplace risk factor checklist required by paragraph (e)(2), and the job improvement process requirements under paragraph (f)(4), provided employees are involved in their process and the employer:

- Controls each problem job, as defined in paragraph (l) of the standard, no later than 4 years after the effective date of the rule
- Can demonstrate, if requested, that problem jobs have been identified in the workplace; plans for implementation of controls for the problem jobs have been developed and initiated; and work-related musculoskeletal disorder incidence rates and/or severity rates in the workplace have decreased since initiation of the employer's ergonomic job improvement process.
- Complies with other requirements of the standard as they become due

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(for example, training).

- If requested, can make available documentation of the process to OSHA, affected employees, or their designated representatives.

Employers whose ergonomic job improvement processes are well underway should thus not have to divert resources to repeat the identification of workplace risk factors and assessment of jobs, but can continue to focus their efforts on providing ergonomic protection for their employees.

### **Identification of Problem Jobs**

The identification of problem jobs is a two-step process. First, the employer must give employees exposed to signal risk factors information about work-related musculoskeletal disorders and workplace risk factors. Second, the employer must complete risk factor checklists or an alternative evaluation to further examine employee exposures in the workplace and determine whether there are jobs which must be controlled.

An employer is required to give each employee exposed to any signal risk factor information about work-related musculoskeletal disorders, including their signs and symptoms; the workplace risk factors that can cause or aggravate them; and ways to reduce exposure to the workplace risk factors. The primary purpose of this requirement is to increase employee awareness, giving them the background they need to recognize illnesses as well as workplace causes so they can effectively participate in the ergonomic improvement process in their workplace.

It is very important that signs or symptoms of work-related musculoskeletal disorders be reported early so they can be properly assessed and treated. This may help slow the development of the disorder, and speed the healing process. The severity of the disorder can be decreased by early identification and management. Early treatment increases the chances an employee can recover, remain at work or return to work successfully.

In order to ensure that this happens, employees must be aware of what symptoms they might experience. They must also know how to report those symptoms, and to whom.

Employers must realize that reporting of symptoms is an important consideration in assessing and correcting workplace ergonomic problems. Reports of symptoms are an additional "check" for employers to ensure that the risk factors in the workplace have been controlled. It is the employer's

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responsibility to ensure that employees are not discriminated against for such reporting. The employer should encourage reporting as an important part of their effort to protect workers.

The information provided to the employee must include employer assurances that early reporting is encouraged and that no reprisals will be taken against any employee who reports a problem. In addition, the employer must ensure that no policy or practice that discourages early reporting is established. The design of some incentive programs, safety competitions, or financial incentives may have the effect of discouraging reporting, depending on how they are implemented in the workplace. For example, providing rewards for employees or supervisors when safe work methods are observed would not discourage reporting. However, if employees or supervisors are given financial bonuses if there are no OSHA recordable cases, this may have the unintended but real effect of discouraging reporting of work-related musculoskeletal disorders.

Distribution of the information to the affected employees may be done in a variety of ways. For example, it may be included with employee paychecks, given to new employees during orientation, handed out at employee workstations, or distributed through a computer system.

Every type of employee is covered under this requirement if they are exposed to a signal risk factor. Management, professional, technical, and maintenance employees are included, as well as office and line workers. While there may be a tendency by employers to assume that certain employees are more "at risk" than others, there are no industries or occupations that are "risk-free". Even some jobs that employers have traditionally thought of as being relatively "safe" from occupational hazards, such as office work, have resulted in work-related musculoskeletal disorders. Increased awareness will benefit these individual employees in terms of recognizing signs or symptoms of work-related musculoskeletal disorders or the existence of workplace risk factors in their own work areas, as well as helping them identify problems in areas for which they may be responsible--such as purchasing equipment.

To assist employers to comply with this requirement, OSHA has prepared a sample general information sheet (see Figure 1). The employer may simply copy it and distribute it to employees in order to meet the requirements of this paragraph. The only site-specific information that must be added by the employer is the designated person for receiving reports of symptoms or workplace risk factors. Employees must know who in their workplace is designated to receive their reports. For employers who have employees who do not speak or read English, OSHA has translated the

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general information sheet into Spanish, as well as a number of other languages. Call your local OSHA Area Office for further information.

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## **Workplace Risk Factor Checklists**

As you can see from the definition of **workplace risk factors**, there are a number of workplace conditions or actions that can cause or aggravate work-related musculoskeletal disorders. Examination of these workplace risk factors allows employers to determine whether control measures are required to reduce employee exposures to the risk factors to prevent the development of work-related musculoskeletal disorders. Identification of the workplace risk factors also allows employers to properly design and implement control measures before any employee develops a work-related musculoskeletal disorder.

However, the mere presence of workplace risk factors is not enough to indicate that work-related musculoskeletal disorders will occur or be aggravated. Generally speaking, the duration of employee exposure to the workplace risk factors must be considered to determine if there is a likelihood of work-related musculoskeletal disorders developing. In addition, in most jobs where work-related musculoskeletal disorders have occurred a combination of workplace risk factors is usually present.

To identify "problem jobs", the employer must examine the workplace to see whether workplace risk factors are present to the extent that they could present a problem for workers in those jobs. The jobs that must be examined are those where:

- A work-related musculoskeletal disorder has been recorded since the effective date of the standard; or
- An employee has daily exposure to one or more of the signal risk factors when performing work tasks.

OSHA has provided a workplace risk factor checklist that employers may use to meet the requirements of the standard (see Figure 2). It applies to all types of work environments. The checklist is divided into two parts: workplace risk factors for the upper extremities, and workplace risk factors for the back and lower extremities. If the checklist score exceeds 5 for either of these two parts alone, the job is considered to be a problem job. The scores are not to be added together to determine whether the job is a problem job--a score of more than 5 on either part is required.

In all cases it is vital that employees be involved in the completion of checklists. Employees have the best knowledge of what their jobs actually entail, and how they accomplish their assigned tasks. Their inclusion in the assessment process will help to ensure its accuracy and validity. The

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employer is encouraged to refer to Appendix D, which addresses training, for assistance in preparing employees to help complete the workplace assessments.

Employers may also choose to use checklists or other alternative evaluation tools they have developed themselves, rather than those provided by OSHA. For example, an employer's insurance company or a consultant may have conducted an evaluation of a specific job. The employer may be able to use this evaluation rather than assessing the job again using the OSHA checklist. These alternative checklists or evaluation tools must be at least as effective as the OSHA checklists in identifying and assessing risk factors in the workplace. It should be noted that OSHA inspectors will use the checklist in this Appendix in order to determine if an employer is in compliance with the Ergonomic Protection Standard (EPS). By providing this checklist, OSHA is letting employers know in advance what they can expect during an inspection.

The OSHA checklist lists the workplace risk factors of primary concern. The employer must assess each job to determine whether these workplace risk factors are present, and the amount of time the employees are exposed to each workplace risk factor during a workshift. The OSHA checklists indicate the number of points assigned to each workplace risk factor for various durations of exposure. The more exposure there is, the greater number of points will be assigned.

A checklist score of more than 5 requires further action for that job. If the employer uses an alternative, it must have a means to identify at least the same workplace risk factors as the OSHA checklist, and have a way to evaluate the extent and duration of exposures to make a determination that corresponds to the checklist score of more than 5 on the OSHA checklist. In almost every instance, it will require a combination of two or more workplace risk factors performed for significant durations of the workshift to score above 5. Evidence in the scientific literature indicates that such combinations, performed often or for long periods of the work shift, frequently result in the development or aggravation of work-related musculoskeletal disorders. There may be some instances in which exposure to a workplace risk factor is for such long duration or an object being lifted is so heavy that one risk factor alone may result in a score above 5.

After each workplace risk factor is considered on the OSHA checklist, along with the frequency and duration of employee exposure to the workplace risk factor, the employer must total the number of points. If it is 5 or less, then the identification of workplace risk factors is completed and the employer does not have to proceed to controlling the job. However, if the



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employee has a work-related musculoskeletal disorder, the employer is required to follow the medical management provisions in paragraph (i) even where the checklist score is below 5. If the total is more than 5, it is a "problem job" and the employer must "control the job" (see paragraph (f) and Appendix B for details).

While the checklists address the major workplace risk factors of concern, there may be some jobs that have other workplace risk factors the employer is aware of and these should also be considered in the process. The employer is free to add such workplace risk factors to the checklist, and to assign points based on the frequency and duration that are consistent with the points assigned for the workplace risk factors already on the checklist. In terms of scoring for the OSHA checklist, the addition of workplace risk factors to the list does not increase the total score that requires further action (more than 5).

There are many situations where employees are rotated through several jobs during the course of the day. Where this is the case, the employer will have to assess the workplace risk factors in each of these rotations, and weight the score for the amount of time spent in that particular job.

Completion of the workplace risk factor checklist should be done by people who are familiar with the job requirements, including the employees themselves. It is intended to be a quick and simple assessment of the workplace risk factor exposures by people who know the job, not an exact count of every minute that an employee spends on each task (i.e., it is not intended to be a time and motion study). An example of using the checklist is provided at the end of this appendix.

The checklist includes descriptions and explanations of the workplace risk factors and instructions for completion.

**(risk factor checklist)**

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## **Representative Sampling**

In some facilities, there may be situations where there are numerous employees performing the same job tasks. While there is always some individual variability in job performance, the standard allows employers to complete checklists for a smaller subset of these employees rather than doing one for every employee in the same job.

If there are five or fewer employees in the job, then all of them must have a checklist completed for them. Over five, the employer may do those five plus 10 percent of the number of employees over five. So if there are 20 employees in the same job, the employer must complete checklists for 7 of the employees. The following table shows how the representative sampling would apply to various numbers of employees:

<b>Number of Employees</b>	<b>Number to be Sampled</b>
5	5
10	6
25	7
50	10

The number of employees to be sampled must be rounded up after calculating the percentage. The employer must choose employees who are likely to have the highest exposures to workplace risk factors from among those in the job they are representing.

The standard also allows another option for employers that have an employee performing the same job in multiple non-fixed locations. For example, a construction employer may have painters who are sent daily to different job sites. While there is undoubtedly some variability in their exposure to workplace risk factors, their job tasks are basically the same in whatever location the job is performed.

For these types of situations, the employer may use a checklist completed for the expected job tasks of a given trade, subtrade, or profession. These checklists may be completed by the employer, or by a trade association, labor union, or other organization familiar with the tasks performed by that occupation. If such a checklist is used, the employer still has an obligation to ensure that it accurately reflects the situation of their own employees.

These accommodations for representative sampling should simplify the completion of initial determinations for many employers' workplaces, while

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ensuring that workers' exposures are adequately characterized, and that situations requiring further evaluation and control are appropriately identified.

### **Other Uses of the Checklists**

While the checklists are critical to the identification of problem jobs, completion of them is also required in other parts of the standard. In particular, they are required to evaluate the progress the employer is making in controlling the jobs and decreasing exposure to workplace risk factors. New checklists must be completed after controls are implemented to determine whether the job is controlled (e.g., reduced to a score of 5 or less on the OSHA checklist), and the employer has complied with the rules' requirements for that job. The checklists are thus an important measure of effectiveness. In addition, giving the checklists to health care providers involved in medical management of employees with work-related musculoskeletal disorders is also a critical use of the information.

### **Additional Ways Employers May Identify Workplace Problems**

While not required by the standard, there are other approaches employers have used to ascertain whether there are problems in the workplace. The discussion which follows gives employers additional guidance for procedures they may wish to implement in addition to completing checklists to improve their ergonomic protection process.

A common method of making determinations regarding the identification of problem jobs in a workplace is to review existing records over several years that are related to the occurrence of musculoskeletal disorders in the workplace. In particular, employers may want to review the following records:

**OSHA Logs:** OSHA requires many employers to maintain logs of recordable occupational injuries and illnesses that occur in their workplaces under 29 CFR Part 1904. The log form is currently numbered OSHA 200. Work-related musculoskeletal disorders are among the injuries and illnesses that must be reported. It should be noted that employers should consider both illnesses due to repeated trauma (column 7(f)) and back injuries to get the total count of work-related musculoskeletal disorders in the workplace.

**Workers' Compensation Records:** In most states, employers are required to participate in a Workers' Compensation program. Work-related musculoskeletal disorders are compensable under most Workers' Compensation systems, and the employer must keep records of those which

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have occurred in the workplace. Any accepted claim for a musculoskeletal disorder Workers' Compensation case is presumed to be work-related.

The employer's review of the records will be to determine whether employees in the workplace have experienced work-related musculoskeletal disorders during recent years. Where the employer has both OSHA logs and Workers' Compensation data, they should all be considered in doing the records review. A positive result (reports of work-related musculoskeletal disorders) should also trigger further evaluation of the workplace, and control of workplace risk factors in the jobs of the employees with disorders. If the employer must implement measures to control the job, follow-up records review in addition to checklists will be helpful later to demonstrate the effects of the interventions.

It is also helpful to calculate workplace-wide baseline incidence and severity rates in order to compare pre-program and post-program rates. Just looking at the numbers of cases without consideration of the population of workers at risk does not allow for future evaluations and comparisons. For example, the employer may identify 5 cases in the records review today, and in 3 years may still have 5 cases. However, if the total size of the work force increases during that 3 years, those 5 cases may actually reflect an improvement in workplace conditions because the rate of occurrence has decreased.

If no cases were identified, the calculations are simple, i.e., the incidence and severity rates are zero. Where there are cases identified, Figure 4 indicates how to calculate the rates. In addition to the number of cases, the employer will need to know the work hours for the year or the number of full-time equivalent workers. For calculation of the severity rate, the number of lost work days will also be required.

### **Optional Use of Symptoms Survey**

There are situations where employers may not have either the OSHA logs or Workers' Compensation records to rely on for a records review. For example, employers with fewer than 11 employees and employers in certain industries are currently exempted from maintaining OSHA logs. Requirements for participation in a Workers' Compensation system vary among states.

Employers in these circumstances may want to conduct a symptoms survey to determine whether work-related musculoskeletal disorders are occurring in their workplaces. Figure 3 is a symptoms survey that may be used by the employer for this purpose.

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A positive symptoms survey may be considered a report of a musculoskeletal disorder. A symptoms survey should be considered positive where an employee reports symptoms of at least moderate intensity (a score of 2 or more on the 4-point intensity score on the survey), or reports symptoms that have persisted for at least 7 calendar days from onset, or are interfering with the employee's ability to perform the job.

In order to ensure that the symptoms are reported as accurately as possible, it is important for employees to be assured that the information will not be used to discriminate against them, or to take any reprisal. Therefore, the surveys may be completed anonymously. And completion by any individual worker should be optional. The employer should calculate an incidence rate after the symptoms survey is completed and analyzed. On the symptoms survey, employees are asked to give the year during which the symptoms started. This can be used to calculate the incidence rates for several years. A positive symptoms survey should be considered a musculoskeletal disorder for purposes of calculating the incidence rate. Figure 4 explains how to calculate the incidence rate.

**(symptoms survey)**

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## **Other Available Information**

The employer may also wish to evaluate or reevaluate jobs in the workplace based on information from other sources. For example, new studies published in the scientific literature may provide additional insight or guidance to the hazards of a particular type of job. Trade publications may also provide information regarding jobs in their specific industry that are of concern. And, as mentioned earlier, consultant reports or reports from other sources such as insurance companies, also provide useful information for employers to evaluate their jobs.

## **Use of Rates to Monitor the Workplace and Assess Effectiveness of Controls**

In order to assess the effectiveness of the controls, the employer may wish to calculate the incidence and severity rates for the workplace each year, and determine the remaining proportion of problem jobs. Guidance for calculating these rates is included in Figure 4.

The primary purpose of calculating these rates is to monitor the conditions in the workplace. For workplaces which don't have any problem jobs or musculoskeletal disorders, it is important to ensure that the workplace remains in this stage. If recorded work-related musculoskeletal disorders begin to occur, the employer will have to evaluate workplace risk factors in the reporting employee's job and determine whether control measures need to be implemented.

For workplaces with work-related musculoskeletal disorders, or with problem jobs, it is also important to monitor progress in reducing the occurrence of work-related musculoskeletal disorders, the severity of the disorders, and exposure to workplace risk factors (as evidenced by decreasing the number of problem jobs).

Employers that have already implemented ergonomic protection processes have found that incidence rates may increase during the initial phase as there is increased awareness of the problem. Thus it is not unexpected that employers complying with this standard may see this same result. This does not mean, however, that the employer's efforts are not working. The incidence rate should decrease after the initial phase as problems are identified and controlled.

However, a decrease in severity is expected to occur in the short term.



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The increased awareness should result in symptoms being reported earlier, and medical management should allow corrective action to be taken to prevent the disease from progressing. If severity is not decreasing, this is a signal that the employer's ergonomic process needs to be reevaluated.

Finally, the number of employees in problem jobs should also decrease as the employer implements controls for the workplace risk factors. This control should in turn contribute to the decrease in severity and later in incidence of work-related musculoskeletal disorders.

The ultimate goal for job improvement processes is to eliminate the occurrence of work-related musculoskeletal disorders in the workplace. Accomplishment of this goal is related to the reduction and elimination of employee exposures to workplace risk factors.

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**Figure 4  
Calculation of Rates**

**Incidence Rate**

An incidence rate is the number of new work-related musculoskeletal disorders that occur during a given period of time, divided by the population at risk at the beginning of that time period.

Usually an incidence rate for the workplace is calculated to represent the number of new work-related musculoskeletal disorders that occur per 100 worker years. That is, the number of cases that occur in 100 workers during a year. The number of new cases includes work-related musculoskeletal disorders that occur in any part of the body (upper and lower extremities, as well as the back), and in any job in the workplace. The resulting rate will be workplace-wide. The equation to be used is as follows:

$$\frac{\text{Number of new cases during the time period} \times 200,000 \text{ hours}}{\text{Work hours during the time period}}$$

If the number of work hours during the year is not available, it can be estimated by using the number of full-time equivalent workers (e.g., 2 workers each working 20 hours per week for a full year would equal one full-time equivalent worker) multiplied by 2,000 hours (the estimated number of work hours per year for each worker). This will give you the denominator for the calculation.

**Severity Rate**

A severity rate is the number of lost workdays due to work-related musculoskeletal disorders divided by the population at risk.

The calculation for the severity rate is as follows:

$$\frac{\text{Number of lost work days during time period} \times 200,000 \text{ hours}}{\text{Work hours during time period}}$$

If the number of work hours during the year is not available, it can be estimated by using the number of full-time equivalent workers multiplied by 2,000 hours (the estimated number of work hours per year for each worker). This will give you the denominator for the calculation.

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### **Proportion of Problem Jobs**

This is a simple percentage calculation. The number of employees in problem jobs (including all of those employees represented by a checklist score) is divided by the total number of employees (workplace-wide) and the resulting number is multiplied by 100:

$$\frac{\text{Number of employees in problem jobs}}{\text{Number of employees in the workplace}} \times 100$$

### **What's Next?**

Employers who have no work-related musculoskeletal disorders, and no problem jobs, have no further obligations under this rule. However, if there is a work-related musculoskeletal disorder, or a signal risk factor is introduced later, the employer is required to take further action.

Employers with problem jobs must proceed to controlling them (see paragraph (f) and Appendix B for further details). Employers who have problem jobs and must proceed further to address them may also wish to consult Appendix C, Medical Management Guidelines, and Appendix D, Training, as they read the requirements of the standard in these areas.

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**Example of Using the Checklist**

**Occupation/Task:** Hospital Employee/ Makes Up Boxes of Linen to Order  
**Industry and SIC:** Hospital, SIC 8062

**Job Description:** Hospital employee stands to lift linen items from shelves, loads the items into cardboard boxes, and then loads full cardboard boxes onto a pallet. Employee then moves pallet to an outer storage area. Each full box weighs 15 pounds. Employee lifts and stacks 200 boxes/2.2 hours (1.5 boxes per minute). The lifts are close to the body but with more than 45 degrees of torso twisting.

Workplace risk factors:	Score
Table A	
Employee has elbow above mid-torso height more than 2 hours	2
Neck Twist/Bend more than 2 hours	<u>1</u>
Total	<u>3</u>
Table C	
Lifting load 10 inches from body is middle zone where 15 pounds is in caution area	3
Lift more than 1 per minute	1
Twisted lift more than 1 hour	1
Lift below knuckle more than 1 hours	2
Table B	
Severe forward bending	2
Twisted torso	<u>2</u>
Total B (and C)	11

**Solutions:**

- Eliminate high and low shelves, thus eliminating awkward postures of neck and shoulder
- Provide height adjustable pallet transporter to eliminate lifting and lowering full boxes to pallet while stacking.

**Post-Control Score**

Table A	0
Table B	3
(eliminated lifting but still have some mild torso bending and twisting)	